

CHƯƠNG TRÌNH ĐÀO TẠO KHÓA 2025
NGÀNH CÔNG NGHỆ SINH HỌC
TRÌNH ĐỘ ĐẠI HỌC

*(Kèm theo Quyết định số 1180/QĐ-ĐHQT ngày 04 tháng 9 năm 2025
của Hiệu trưởng Trường Đại học Quốc tế)*

1. Thông tin chung

- Tên ngành đào tạo: Công nghệ Sinh học
- + Tiếng Việt: Công nghệ Sinh học
- + Tiếng Anh: Biotechnology
- Mã ngành đào tạo: 7420201
- Trình độ đào tạo: Đại học
- Loại hình đào tạo: Chính quy
- Thời gian đào tạo: 4 năm
- Tên văn bằng sau khi tốt nghiệp:
 - + Tiếng Việt: Cử nhân Công nghệ Sinh học
 - + Tiếng Anh: Bachelor of Science in Biotechnology
- Nơi đào tạo: Trường Đại học Quốc tế - ĐHQG HCM

2. Thông tin tuyển sinh và kế hoạch đào tạo

a. Đối tượng tuyển sinh

Đối tượng tuyển sinh căn cứ theo quy chế tuyển sinh đại học của Bộ Giáo dục và Đào tạo và Thông tin tuyển sinh hàng năm của Đại học Quốc gia TP.HCM và Thông tin tuyển sinh của trường Đại học Quốc tế.

b. Hình thức tuyển sinh

Trường Đại học Quốc tế thực hiện tuyển sinh theo Quy chế tuyển sinh Đại học ban hành hàng năm bởi Bộ Giáo dục và Đào tạo, căn cứ theo Thông tin tuyển sinh hàng năm của Đại học Quốc gia TP.HCM và Thông tin tuyển sinh của trường Đại học Quốc tế.

c. Nhóm ngành tuyển sinh: Khoa học sự sống và Hóa học (IU04)

d. Tổ hợp môn xét tuyển

Toán, Vật lí, Hóa học

Toán, Hóa học, Sinh học

Toán, Hóa học, Tiếng Anh

Toán, Sinh học, Tiếng Anh

Ngữ Văn, Hóa học, Sinh học

Ngữ Văn, Hóa học, Tiếng Anh

Ngữ Văn, Sinh học, Tiếng Anh

e. Dự kiến chỉ tiêu tuyển sinh, quy mô đào tạo: 110 sinh viên

3. Mục tiêu đào tạo

a. Mục tiêu chung

Chương trình ngành Công nghệ Sinh học (CNSH) được thiết kế nhằm trang bị cho sinh viên những kiến thức và kỹ năng toàn diện về các lĩnh vực thuộc ngành CNSH như CNSH phân tử, kỹ thuật gene và tế bào, kỹ thuật hỗ trợ sinh sản, tế bào gốc, y sinh học tái tạo và các ứng dụng của CNSH hiện đại của thế kỷ 21 phục vụ cho y học, dược học, nông nghiệp và công nghiệp.

Bảng 1. Sự phù hợp của mục tiêu đào tạo với Tầm nhìn, sứ mạng và Mục tiêu giáo dục của Luật giáo dục đại học.

Mục tiêu đào tạo của CTĐT	Tầm nhìn	Sứ mạng	Luật giáo dục
Trau dồi cho sinh viên sự phát triển toàn diện về trí tuệ, thể chất, đạo đức, tình cảm, kỹ năng mềm, kiến thức chuyên môn, học tập suốt đời, khả năng lãnh đạo và những phẩm chất cần thiết khác như trách nhiệm công dân, phát triển nguồn nhân lực cho Việt Nam và đóng góp cho nhân loại.	-Trở thành đơn vị dẫn đầu về giáo dục, nghiên cứu cũng như trách nhiệm xã hội cả trong nước lẫn ngoài nước. -Trở thành bộ môn học thuật và nghiên cứu hàng đầu thế giới về công nghệ sinh học.	-Mang đến sự xuất sắc và đổi mới trong giáo dục và nghiên cứu khoa học trong lĩnh vực công nghệ sinh học. -Góp phần xây dựng kiến thức và đào tạo nhân tài cho đất nước. -Đào tạo các thế hệ sinh viên có kiến thức và kỹ năng cao về khoa học kỹ thuật. -Đóng góp vào sự phát triển của xã hội và cộng đồng.	-Tăng cường đổi mới giảng dạy lấy sinh viên và nhu cầu xã hội làm trung tâm. -Hỗ trợ những mô hình sáng tạo và giáo dục hội tụ. -Môi trường giáo dục tự do và sáng tạo. -Giảng dạy bằng tiếng Anh để ươm mầm tài năng cho Việt Nam và khu vực Châu Á. -Tăng cường nỗ lực tuyển dụng những giảng viên xuất sắc. -Tìm kiếm và tuyển chọn những sinh viên tài năng sáng tạo.

b. Mục tiêu cụ thể (Program Objectives - POs)

Mục tiêu cụ thể của CTĐT được xác định từ mục tiêu chung, bao gồm 4 mục tiêu, trong đó có 1 mục tiêu về kiến thức, 1 mục tiêu về kỹ năng và 2 mục tiêu về tự chủ và trách nhiệm,

được trình bày như sau:

Kiến thức:

PO1. Đào tạo sinh viên có kiến thức toán học và khoa học kỹ thuật cơ bản và có năng lực số, trở thành công dân toàn cầu, đáp ứng nhu cầu phát triển kinh tế và hội nhập trong giai đoạn công nghiệp hóa, hiện đại hóa đất nước.

Kỹ năng:

PO2. Đào tạo những sinh viên có kỹ năng chuyên sâu trong lĩnh vực công nghệ sinh học, vững vàng về chuyên môn và có đạo đức nghề nghiệp; khả năng tự giải quyết vấn đề, khả năng làm việc nhóm, kỹ năng giao tiếp.

Tự chủ và trách nhiệm:

PO3. Đào tạo sinh viên có năng lực làm việc trong các lĩnh vực công nghiệp công nghệ sinh học; năng lực thực hiện công tác quản lý tại các nhà máy, viện nghiên cứu, bệnh viện, trường đại học, trung học phổ thông và các doanh nghiệp liên quan đến lĩnh vực nông nghiệp, môi trường, thực phẩm, y dược, v.v...

PO4. Đào tạo sinh viên có đủ kiến thức và năng lực để tiếp tục học lên chương trình sau đại học như cao học hoặc tiến sĩ ngành công nghệ sinh học, khoa học y sinh ứng dụng ở trong nước và nước ngoài, đồng thời rèn luyện cho sinh viên có tinh thần học tập suốt đời.

4. Chuẩn đầu ra của chương trình đào tạo (Program Learning Outcomes –PLOs)

Chuẩn đầu ra của chương trình đào tạo Công nghệ sinh học với ba mức độ đóng góp được xác định bằng cách sử dụng phân loại trình độ năng lực theo thang Bloom (Thấp [L]: Ghi nhớ và Hiểu; Trung bình [M]: Áp dụng và Phân tích; Cao [H]: Đánh giá và Sáng tạo).

Chuẩn đầu ra (CDR)	Nội dung Chuẩn đầu ra	Trình độ năng lực*
Kiến thức		
PLO1 Kiến thức chung	Nắm vững các kiến thức cơ bản liên quan đến sinh học, toán học, khoa học tự nhiên, sinh học phân tử, sinh học tế bào, vi sinh vật và sinh lý học người và động thực vật.	Cấp độ 1-Ghi nhớ. Cấp độ 2-Hiểu.
PLO3 Kiến thức chuyên sâu	Nắm vững kiến thức chuyên sâu trong lĩnh vực công nghệ sinh học từ mức độ phân tử đến tế bào và tổ chức sinh vật.	Cấp độ 2-Hiểu. Cấp độ 3-Áp dụng
Kỹ năng		
PLO2 Kỹ năng chung	Nắm vững về phương pháp luận trong nghiên cứu khoa học công nghệ sinh học và áp dụng một cách linh hoạt trong các bối cảnh khác nhau, xác định và giải quyết các vấn đề cụ thể một cách hiệu quả và có năng lực số.	Cấp độ 2-Hiểu. Cấp độ 4-Phân tích.

PLO4 Kỹ năng chuyên sâu	Có khả năng thực hành các thí nghiệm trong lĩnh vực công nghệ sinh học và các ngành liên quan một cách độc lập.	Cấp độ 4-Phân tích. Cấp độ 6-Sáng tạo.
Mức tự chủ và trách nhiệm		
PLO5 Thái độ	Nắm vững các kiến thức liên quan đến an toàn phòng thí nghiệm, bảo vệ môi trường, đạo đức trong nghiên cứu cũng như các vấn đề về liên chính khoa học và trách nhiệm xã hội.	Cấp độ 5-Đánh giá.
PLO6 Áp dụng	Có khả năng áp dụng các kỹ thuật – công nghệ hiện đại để tạo ra các sản phẩm công nghệ sinh học phục vụ cho sức khỏe con người và phát triển xã hội	Cấp độ 3-Áp dụng. Cấp độ 4-Phân tích. Cấp độ 6-Sáng tạo.
PLO7 Học tập suốt đời	Nắm vững các kỹ năng và kiến thức cụ thể đã được trang bị trong quá trình học và sử dụng các kỹ năng này hỗ trợ nâng cao kiến thức, năng lực sau khi tốt nghiệp.	Cấp độ 4-Phân tích. Cấp độ 6-Sáng tạo.
PLO8 Khả năng phát triển	Nhận thức tốt về phát triển chuyên môn trong ngành nghề và năng lực lãnh đạo.	Cấp độ 4-Phân tích. Cấp độ 5-Đánh giá. Cấp độ 6-Sáng tạo.

**Trình độ năng lực theo thang Bloom:*

6 cấp độ trong Thang đo Bloom (theo thứ tự từ thấp đến cao):

Ghi nhớ (Remembering): Khả năng nhớ lại hoặc nhận biết thông tin đã học.

Hiểu (Understanding): Khả năng diễn giải, giải thích hoặc tóm tắt thông tin.

Vận dụng (Applying): Khả năng sử dụng kiến thức, kỹ năng đã học vào các tình huống mới.

Phân tích (Analyzing): Khả năng chia nhỏ thông tin thành các phần, tìm ra mối quan hệ giữa chúng.

Đánh giá (Evaluating): Khả năng đưa ra những phán đoán, nhận xét dựa trên các tiêu chí cụ thể.

Sáng tạo (Creating): Khả năng tạo ra những sản phẩm mới, đưa ra những giải pháp mới dựa trên những kiến thức đã học.

5. Ma trận giữa mục tiêu đào tạo và chuẩn đầu ra

CDR sẽ gắn kết với mục tiêu cụ thể đã được xác định ở Mục 3, theo Bảng 2.

Bảng 2. Mối quan hệ giữa CDR của CTĐT và mục tiêu đào tạo

	PLOs⁽¹⁾	POs⁽²⁾			
		PO1	PO2	PO3	PO4
Kiến thức	PLO1	x			
	PLO3	x			

	PLOs ⁽¹⁾	POs ⁽²⁾			
		PO1	PO2	PO3	PO4
Kỹ năng	PLO2		x		
	PLO4		x		
Tự chủ và trách nhiệm	PLO5			x	x
	PLO6			x	x
	PLO7			x	x
	PLO8			x	x

6. Quy trình đào tạo, điều kiện tốt nghiệp

Căn cứ Quyết định số 1342/QĐ-ĐHQG ngày 30 tháng 9 năm 2022 của Giám đốc Đại học Quốc gia Thành phố Hồ Chí Minh về việc ban hành Quy chế đào tạo trình độ đại học.

Căn cứ Quyết định số 719/QĐ-ĐHQT ngày 06 tháng 12 năm 2021 của Hiệu trưởng trường Đại học Quốc tế về việc ban hành Quy chế đào tạo trình độ đại học theo hệ thống tín chỉ tại trường Đại học Quốc tế.

7. Thang điểm (theo thang điểm chính thức của trường)

Trường quy định thang điểm đánh giá kết quả học tập của người học (Quy chế đào tạo trình độ đại học theo hệ thống tín chỉ tại trường Đại học Quốc tế)

Bảng 3: Thang điểm

Xếp loại	Thang điểm 100	Điểm chữ	Thang điểm 4
Xuất sắc	Từ 90 đến 100	A+	4,0
Giỏi	Từ 80 đến cận 90	A	3,5
Khá	Từ 70 đến cận 80	B+	3,0
Trung bình khá	Từ 60 đến cận 70	B	2,5
Trung bình	Từ 50 đến cận 60	C	2,0
Yếu	Từ 40 đến cận 50	D+	1,5
Kém	Từ 30 đến cận 40	D	1,0
	Dưới 30	F	0,0

8. Khối lượng kiến thức toàn khoá

Tổng số tín chỉ: **126 tín chỉ**, trong đó phân bổ kiến thức như Bảng 4 (không bao gồm Giáo dục thể chất và Giáo dục quốc phòng):

Bảng 4. Cấu trúc chương trình đào tạo

TT	Các khối kiến thức ⁽³⁾	Khối lượng			
		Số tín chỉ			Tỷ lệ % (Tổng khối kiến thức/ Tổng số tín chỉ)
		Tổng	Lý thuyết	Thực hành	
I	Khối kiến thức giáo dục đại cương	28	28	0	22.2
	- Bắt buộc: 28 tín chỉ	28	28	0	
	- Tự chọn: 0 tín chỉ	0	0	0	
II	Khối kiến thức cơ sở ngành	55	45	10	43.7
	- Bắt buộc 55 tín chỉ	55	45	10	
	- Tự chọn: 0 tín chỉ	0	0	0	
III	Kiến thức chuyên ngành	28	23 (hoặc 24)	5 (hoặc 4)	22.2
	- Bắt buộc 0 tín chỉ	0	0	0	
	- Tự chọn: 28 tín chỉ	28	23 (hoặc 24)	5 (hoặc 4)	
IV	Kiến thức bổ trợ	3	3	0	2.4
	- Bắt buộc 0 tín chỉ	0	0	0	
	- Tự chọn: 3 tín chỉ	3	3	0	
V	Thực tập, khóa luận/luận văn tốt nghiệp	12	0	12	9.5
	Tổng cộng	126	99 (hoặc 100)	27 (hoặc 26)	100

9. Nội dung chương trình đào tạo

Bảng 5: Khung CTĐT chung của nhóm ngành Khoa học sự sống và Hóa học

Mã MH	Tên MH	Loại MH (bắt buộc/ tự chọn)	Tín chỉ			Môn học tiên quyết (TQ)/ Môn học học trước (HT)/ Môn học song hành (SH)
			Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
Học kỳ I	Năm 1 - HK1 - K2025		20			
PT001IU	Physical Training 1	bắt buộc	3	3	0	

Mã MH	Tên MH	Loại MH (bắt buộc/ tự chọn)	Tín chỉ			Môn học tiên quyết (TQ)/ Môn học học trước (HT)/ Môn học song hành (SH)
			Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
PE015IU	Philosophy of Marxism and Leninism	bắt buộc	3	3	0	
PE016IU	Political economics of Marxism and Leninism	bắt buộc	2	2	0	
PE017IU	Scientific socialism	bắt buộc	2	2	0	
MA001IU	Calculus 1	bắt buộc	4	4	0	
PH013IU	Physics 1	bắt buộc	2	2	0	
CH011IU	Chemistry for Engineers	bắt buộc	3	3	0	
EN007IU	Writing AE1	bắt buộc	2	2	0	
EN008IU	Listening AE1	bắt buộc	2	2	0	
Học kỳ II	Năm 1 - HK2 - K2025		14		0	
PT002IU	Physical Training 2	bắt buộc	3	3	0	
PE018IU	History of Vietnamese Communist Party	bắt buộc	2	2	0	PE015IU, PE016IU, PE017IU (HT)
PE019IU	Ho Chi Minh's Thoughts	bắt buộc	2	2	0	PE015IU, PE016IU, PE017IU (HT)
PE021IU	General Law	bắt buộc	3	3	0	
MA040IU	Applied Statistics	bắt buộc	2	2	0	
MA041IU	Applied Statistics lab	bắt buộc	1	0	1	
EN011IU	Writing AE2	bắt buộc	2	2	0	
EN012IU	Speaking AE2	bắt buộc	2	2	0	

Bảng 6. Các môn học thuộc CTĐT

STT	Mã MH	Tên môn học (MH)		Loại MH	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	
I	Kiến thức giáo dục đại cương							
	Lý luận chính trị				14	14		
1	PE021IU	General Law	Pháp luật đại cương	Bắt buộc	3	3		
2	PE015IU	Philosophy of Marxism and Leninism	Triết học Marx- Lenin	Bắt buộc	3	3		
3	PE016IU	Political economics of Marxism and Leninism	Kinh tế chính trị Marx- Lenin	Bắt buộc	2	2		
4	PE017IU	Scientific socialism	Chủ nghĩa xã hội khoa học	Bắt buộc	2	2		
5	PE018IU	History of Vietnamese Communist Party	Lịch sử Đảng Cộng sản Việt Nam	Bắt buộc	2	2		
6	PE019IU	Ho Chi Minh's Thoughts	Tư tưởng Hồ Chí Minh	Bắt buộc	2	2		
	Khoa học xã hội - Nhân văn - Nghệ thuật							
	Ngoại ngữ			Bắt buộc	8	8		
1	EN007IU	Writing AE 1	Viết học thuật	Bắt buộc	2	2		
2	EN008IU	Listening AE 1	Nghe và ghi chú	Bắt buộc	2	2		
3	EN011IU	Writing AE 2	Viết bài nghiên cứu	Bắt buộc	2	2		
4	EN012IU	Speaking AE 2	Thuyết trình	Bắt buộc	2	2		
	Toán - Tin học - Khoa học tự nhiên - Công nghệ - Môi trường				6	6		
1	MA001IU	Calculus 1	Giải tích 1	Bắt buộc	4	4		
2	PH013IU	Physics 1	Vật lý 1	Bắt buộc	2	2		
	Kinh tế - Quản lý			Tự chọn 3 TC	3	3		
1	IS050IU	Project Management	Quản lý dự án	Tự chọn	3	3		Nhóm tự chọn 1 (yêu cầu đạt tối thiểu 3 tín chỉ)
2	BA115IU	Introduction to Business Administration	Nhập môn quản trị kinh doanh	Tự chọn	3	3		
3	BA006IU	Business Communications	Giao tiếp kinh doanh	Tự chọn	3	3		
4	BA003IU	Principle of Marketing	Nguyên lý Marketing	Tự chọn	3	3		

STT	Mã MH	Tên môn học (MH)		Loại MH	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	
II	Kiến thức cơ sở ngành				55	45	10	
1	BT311IU	Biology	Sinh học đại cương	Bắt buộc	3	3		
2	BT312IU	Practice in Biology	Thực hành Sinh học đại cương	Bắt buộc	1		1	Aqua Lab
3	CH011IU	Chemistry for Engineers	Hóa đại cương	Bắt buộc	3	3		
4	BT150IU	Introduction to Biotechnology	Nhập môn Công nghệ Sinh học	Bắt buộc	2	2		
5	BT313IU	Genetics	Di truyền học	Bắt buộc	3	3		
6	BT314IU	Practice in Genetics	Thực hành Di truyền học	Bắt buộc	1		1	La1. 701
7	BT010IU	Plant Physiology	Sinh lý thực vật	Bắt buộc	3	3		
8	BT315IU	Analytical Chemistry	Hóa phân tích	Bắt buộc	3	3		
9	BT316IU	Practice in Analytical Chemistry	Thực hành Hóa phân tích	Bắt buộc	1		1	La1. 501
10	MA040IU	Applied Statistics	Thống kê ứng dụng	Bắt buộc	2	2		
11	MA041IU	Applied Statistics lab	Thực hành thống kê ứng dụng	Bắt buộc	1		1	
12	BT319IU	Biochemistry	Hóa sinh	Bắt buộc	3	3		
13	BT320IU	Practice in Biochemistry	Thực hành Hóa sinh	Bắt buộc	1		1	La1. 501
14	BT321IU	Microbiology	Vì sinh vật học	Bắt buộc	3	3		
15	BT322IU	Practice in Microbiology	Thực hành Vi sinh	Bắt buộc	1		1	Aqua Lab
16	BT009IU	Cell Biology	Sinh học tế bào	Bắt buộc	3	3		
17	BT210IU	Human Physiology	Sinh lý người	Bắt buộc	3	3		
18	BT333IU	Molecular Biotechnology	Kỹ thuật công nghệ sinh học phân tử	Bắt buộc	3	3		
19	BT334IU	Practice in Molecular Biotechnology	Thực hành Kỹ thuật công nghệ sinh học phân tử	Bắt buộc	1		1	La1. 702
20	BT335IU	Immunology	Miễn dịch	Bắt buộc	3	3		

STT	Mã MH	Tên môn học (MH)		Loại MH	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	
			học					
21	BT336IU	Practice in Immunology	Thực hành Miễn dịch học	Bắt buộc	1		1	La1.702
22	BT365IU	Bioprocess Engineering	Tối ưu hóa các quá trình sinh học	Bắt buộc	2	2		
23	BT342IU	Practice in Bioprocess Engineering	Thực hành Tối ưu hóa các quá trình sinh học	Bắt buộc	1		1	Aqua Lab
24	BT337IU	Bioinformatics	Tin sinh học	Bắt buộc	3	3		
25	BT338IU	Practice in Bioinformatics	Thực hành Tin sinh học	Bắt buộc	1		1	A1.301 A1.302
26	BT216IU	Experimental Design	Thiết kế thí nghiệm	Bắt buộc	3	3		
III	Kiến thức chuyên ngành				28			
	Nhóm tự chọn cơ sở ngành (Chọn tối thiểu 12 tín chỉ trong nhóm môn học dưới đây)				12			
1	BT218IU	Plant Science	Khoa học thực vật	Tự chọn cơ sở ngành	3	3		
2	BT306IU	Developmental Biology	Sinh học phát triển	Tự chọn cơ sở ngành	3	3		
3	BT361IU	Scientific Writing Workshop	Phương pháp viết báo cáo khoa học	Tự chọn cơ sở ngành	3	3		
4	BT207IU	Human Pharmacology	Dược lý học ở người	Tự chọn cơ sở ngành	3	3		
5	BT366IU	Protein Biotechnology	Công nghệ sinh học protein	Tự chọn cơ sở ngành	2	2		
	BT340IU	Practice in Protein Biotechnology	Thực hành Công nghệ sinh học protein	Tự chọn cơ sở ngành	1		1	La1.701 (học song hành cùng môn Protein Biotechnology (BT366 IU))

STT	Mã MH	Tên môn học (MH)		Loại MH	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	
6	BT217IU	Molecular Genetics	Di truyền phân tử	Tự chọn cơ sở ngành	3	3		
7	BT363IU	Molecular Microbiology	Vì sinh vật học phân tử	Tự chọn cơ sở ngành	3	3		
8	BT364IU	Microbial Genomics	Bộ gene vi sinh vật	Tự chọn cơ sở ngành	3	3		
Nhóm tự chọn chuyên ngành (Chọn tối thiểu 16 tín chỉ trong nhóm môn học dưới đây)					16			
1	BT343IU	Medical Genetics	Di truyền y học	Tự chọn chuyên ngành	3	3		
	BT344IU	Practice in Medical Genetics	Thực hành Di truyền y học	Tự chọn chuyên ngành	1		1	La1.702
2	BT345IU	Crop Biotechnology	Công nghệ sinh học giống cây trồng	Tự chọn chuyên ngành	3	3		
	BT346IU	Practice in Crop Biotechnology	Thực hành Công nghệ sinh học giống cây trồng	Tự chọn chuyên ngành	1		1	La1.702
3	BT347IU	Techniques in Plant Biotechnology	Kỹ thuật công nghệ sinh học thực vật	Tự chọn chuyên ngành	3	3		
	BT348IU	Practice in Techniques in Plant Biotechnology	Thực hành Kỹ thuật công nghệ sinh học thực vật	Tự chọn chuyên ngành	1		1	La1.709
4	BT349IU	Pharmaceutical Biotechnology	Công nghệ sinh học dược	Tự chọn chuyên ngành	3	3		
	BT350IU	Practice in Pharmaceutical Biotechnology	Thực hành Công nghệ sinh học dược	Tự chọn chuyên ngành	1		1	La1.701
5	BT351IU	Molecular Diagnostics	Chẩn đoán phân tử	Tự chọn chuyên ngành	3	3		
	BT352IU	Practice in Molecular Diagnostics	Thực hành Chẩn đoán phân tử	Tự chọn chuyên ngành	1		1	La1.702

STT	Mã MH	Tên môn học (MH)		Loại MH	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	
6	BT353IU	Reproductive and Regenerative Biomedicine	Y sinh học tái tạo và sinh sản	Tự chọn chuyên ngành	3	3		
	BT354IU	Practice in Reproductive and Regenerative Biomedicine	Thực hành Y sinh học tái tạo và sinh sản	Tự chọn chuyên ngành	1		1	La1. 710
7	BT355IU	Stem Cell Biology	Sinh học tế bào gốc	Tự chọn chuyên ngành	3	3		
	BT356IU	Practice in Stem Cell Biology	Thực hành Sinh học tế bào gốc	Tự chọn chuyên ngành	1		1	La1. 701
8	BT357IU	Medical Microbiology	Vi sinh y học	Tự chọn chuyên ngành	3	3		
	BT358IU	Practice in Medical Microbiology	Thực hành Vi sinh y học	Tự chọn chuyên ngành	1		1	Aqua Lab
9	BT359IU	Microbial Biotechnology	Công nghệ sinh học vi sinh	Tự chọn chuyên ngành	3	3		Aqua Lab
	BT360IU	Practice in Microbial Biotechnology	Thực hành Công nghệ sinh học vi sinh	Tự chọn chuyên ngành	1		1	Aqua Lab
IV	Kiến thức bổ trợ				3			
1	PE008IU	Critical Thinking	Tư duy phản biện	Tự chọn	3	3		Nhóm tự chọn 1 (yêu cầu đạt tối thiểu 3 tín chỉ)
2	T120IU	Entrepreneurship	Khởi nghiệp	Tự chọn	3	3		
3	PE014IU	Environmental Science	Khoa học môi trường	Tự chọn	3	3		
V	Thực tập, khóa luận/luận văn tốt nghiệp			Bắt buộc	12		12	
1	BT221IU	Internship	Thực tập	Bắt buộc	2		2	
2	BT367IU	Thesis	Khóa luận tốt nghiệp	Bắt buộc	10		10	
Tổng số (tín chỉ)					126			

11. Dự kiến kế hoạch giảng dạy tham khảo (phân bổ các môn học theo từng học kỳ)

Bảng 7. Kế hoạch giảng dạy theo từng học kỳ (tham khảo)

Mã MH	Tên MH	Loại MH (bắt buộc/tự chọn)	Tín chỉ			Môn học tiên quyết (TQ)/ Môn học học trước (HT)/ Môn học song hành (SH)
			Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
Học kỳ I	Năm 1 - HK1 - K2025		20			
PT001IU	Physical Training 1	Bắt buộc	3	3	0	
PE015IU	Philosophy of Marxism and Leninism	Bắt buộc	3	3	0	
PE016IU	Political economics of Marxism and Leninism	Bắt buộc	2	2	0	
PE017IU	Scientific socialism	Bắt buộc	2	2		
MA001IU	Calculus 1	Bắt buộc	4	4	0	
PH013IU	Physics 1	Bắt buộc	2	2	0	
CH011IU	Chemistry for Engineers	Bắt buộc	3	3	0	
EN007IU	Writing AE1	Bắt buộc	2	2	0	
EN008IU	Listening AE1	Bắt buộc	2	2	0	
Học kỳ II	Năm 1 - HK2 - K2025		20			
PT002IU	Physical Training 2	Bắt buộc	3	3	0	

PE018IU	History of Vietnamese Communist Party	Bắt buộc	2	2	0	PE015IU, PE016IU, PE017IU (HT)
PE019IU	Ho Chi Minh's Thoughts	Bắt buộc	2	2	0	PE015IU, PE016IU, PE017IU (HT)
PE021IU	General Law	Bắt buộc	3	3	0	
MA040IU	Applied Statistics	Bắt buộc	2	2	0	
MA041IU	Applied Statistics lab	Bắt buộc	1	0	1	
EN011IU	Writing AE2	Bắt buộc	2	2	0	
EN012IU	Speaking AE2	Bắt buộc	2	2	0	
BT150IU	Introduction to Biotechnology	Bắt buộc	2	2	0	
BT311IU	Biology	Bắt buộc	3	3	0	
BT312IU	Practice in Biology	Bắt buộc	1	0	1	Biology (SH)
Học kỳ III	Năm 2 - HK1 - K2025		17			
BT210IU	Human Physiology (3,0)	Bắt buộc	3	3	0	
BT313IU	Genetics (3,0)	Bắt buộc	3	3	0	Biology (HT)
BT314IU	<i>Practice in Genetics (0,1)</i>	Bắt buộc	1	0	1	Biology (HT) practice in biology (HT) Genetics (SH)
BT010IU	Plant Physiology (3,0)	Bắt buộc	3	3	0	Biology (HT) Introduction to Biotechnology (HT)
BT315IU	Analytical Chemistry (3,0)	Bắt buộc	3	3	0	Chemistry for Engineers (HT)

BT316IU	<i>Practice in Analytical Chemistry (0,1)</i>	Bắt buộc	1	0	1	Analytical Chemistry (SH)
BT009IU	Cell Biology (3,0)	Bắt buộc	3	3	0	Introduction to Biotechnology (HT)
Học kỳ IV	Năm 2 - HK2 - K2025		18			
BT335IU	Immunology (3,0)	Bắt buộc	3	3	0	Biology (HT)
BT336IU	<i>Practice in Immunology (0,1)</i>	Bắt buộc	1	0	1	Biology (HT) practice in biology (HT) Immunology (SH)
BT319IU	Biochemistry (3,0)	Bắt buộc	3	3	0	Biology (HT)
BT320IU	<i>Practice in Biochemistry (0,1)</i>	Bắt buộc	1	0	1	Biology (HT) practice in biology (HT) Biochemistry (SH)
BT321IU	Microbiology (3,0)	Bắt buộc	3	3	0	Biology (HT)
BT322IU	<i>Practice in Microbiology (0,1)</i>	Bắt buộc	1	0	1	Biology (HT) practice in biology (HT) Microbiology (SH)
BT365IU	Bioprocess Engineering (2,0)	Bắt buộc	2	2	0	Introduction to Biotechnology (HT)
BT342IU	<i>Practice in Bioprocess Engineering (0,1)</i>	Bắt buộc	1	0	1	Bioprocess Engineering (SH)
	Free Elective (3 credits)		3			
IS050IU	Project Management (3,0)		3	3	0	

BA115IU	Introduction to Business Administration (3,0)	Tự chọn nhóm 1 (chọn 3 chỉ)	3	3	0	
BA006IU	Business Communications (3,0)		3	3	0	
BA003IU	Principle of Marketing (3,0)		3	3	0	
PE008IU	Critical thinking		3	3	0	
IT120IU	Entrepreneurship		3	3	0	
PE014IU	Environmental Science (3,0)		3	3	0	
Học kỳ V	Năm 3 - HK1 - K2025		17			
BT333IU	Molecular Biotechnology (3,0)	Bắt buộc	3	3	0	Genetics (HT)
BT334IU	Practice in Molecular Biotechnology (0,1)	Bắt buộc	1	0	1	Genetics (HT) Practice in Genetics (HT) Molecular Biotechnology (SH)
BT337IU	Bioinformatics (3,0)	Bắt buộc	3	3	0	Biology (HT)
BT338IU	<i>Practice in Bioinformatics (0,1)</i>	Bắt buộc	1	0	1	Biology (HT) practice in biology (HT) Bioinformatics (SH)
	Foundation Elective (12 credits)		9			
BT218IU	Plant Science (3,0)	Tự chọn cơ sở ngành nhóm 2 (chọn 9/12 chỉ)	3	3	0	Introduction to Biotechnology (HT)
BT306IU	Developmental Biology (3,0)		3	3	0	
BT361IU	Scientific Writing Workshop (3,0)		3	3	0	
BT207IU	Human Pharmacology (3,0)		3	3	0	Introduction to Biotechnology (HT)

BT366IU	Protein Biotechnology (2,0)		2	2	0	Introduction to Biotechnology (HT)
BT340IU	<i>Practice in Protein Biotechnology (0,1)</i>		1	0	1	Introduction to Biotechnology (HT) Protein Biotechnology (2,0) (SH)
BT217IU	<i>Molecular Genetics (3,0)</i>		3	3	0	Biology (HT)
BT363IU	Molecular Microbiology (3,0)		3	3	0	
BT364IU	Microbial Genomic (3,0)		3	3	0	
Học kỳ VI	Năm 3 - HK2 - K2025		16			
BT216IU	Experimental Design (3,0)	Bắt buộc	3	3	0	Biostatistics
	Foundation Elective (12 credits)		3			
BT218IU	Plant Science (3,0)	Tự chọn cơ sở ngành nhóm 2 (chọn 3/12 chỉ)	3	3	0	Introduction to Biotechnology (HT)
BT306IU	Developmental Biology (3,0)		3	3	0	
BT361IU	Scientific Writing Workshop (3,0)		3	3	0	
BT207IU	Human Pharmacology (3,0)		3	3	0	Introduction to Biotechnology (HT)
BT366IU	Protein Biotechnology (2,0)		2	2	0	Introduction to Biotechnology (HT)
BT340IU	<i>Practice in Protein Biotechnology (0,1)</i>		1	0	1	Introduction to Biotechnology (HT) Protein Biotechnology (2,0) (SH)
BT217IU	<i>Molecular Genetics (3,0)</i>		3	3	0	Biology (HT)
BT363IU	Molecular Microbiology (3,0)		3	3	0	
BT364IU	Microbial Genomic (3,0)		3	3	0	
	Professional Elective (16 credits)		8			

BT343IU	Medical Genetics (3,0)	Tự chọn chuyên ngành nhóm 3 (chọn 8/16 chỉ)	3	3	0	Genetics (HT) Cell Biology (HT)
BT344IU	<i>Practice in Medical Genetics (0,1)</i>		1	0	1	Genetics (HT) Practice in Genetics (HT) Cell Biology (HT) Medical Genetics (2,0) (SH)
BT345IU	Crop Biotechnology (3,0)		3	3	0	
BT346IU	<i>Practice in Crop Biotechnology (0,1)</i>		1	0	1	Crop Biotechnology (2,0) (SH)
BT347IU	Techniques in Plant Biotechnology (3,0)		3	3	0	Plant Physiology (3,0) (HT)
BT348IU	<i>Practice in Techniques in Plant Biotechnology (0,1)</i>		1	0	1	Plant Physiology (3,0) (HT) Techniques in Plant Biotechnology (2,0) (SH)
BT349IU	Pharmaceutical Biotechnology (3,0)		3	3	0	
BT350IU	<i>Practice in Pharmaceutical Biotechnology (0,1)</i>		1	0	1	Pharmaceutical Biotechnology (2,0) (SH)
BT351IU	Molecular Diagnostics (3,0)		3	3	0	Cell Biology (HT)
BT352IU	<i>Practice in Molecular Diagnostics (0,1)</i>		1	0	1	Cell Biology (HT) Molecular Diagnostics (2,0) (SH)
BT353IU	Reproductive and Regenerative Biomedicine (3,0)		3	3	0	Cell Biology (HT) Human Physiology (3,0) (HT)
BT354IU	<i>Practice in Reproductive and Regenerative Biomedicine (0,1)</i>		1	0	1	Cell Biology (HT) Human Physiology (3,0) (HT)

						Reproductive and Regenerative Biomedicine (2,0) (SH)
BT355IU	Stem Cell Biology (3,0)		3	3	0	Cell Biology (HT) Human Physiology (3,0) (HT)
BT356IU	<i>Practice in Stem Cell Biology (0,1)</i>		1	0	1	Cell Biology (HT) Human Physiology (3,0) (HT) Stem Cell Biology (2,0) (SH)
BT357IU	Medical Microbiology (3,0)		3	3	0	Microbiology (3,0) (HT)
BT358IU	<i>Practice in Medical Microbiology (0,1)</i>		1	0	1	Microbiology (3,0) (HT) Practice in Microbiology (0,1) (HT) Medical Microbiology (2,0) (SH)
BT359IU	Microbial Biotechnology (3,0)		3	3	0	Microbiology (3,0) (HT)
BT360IU	<i>Practice in Microbial Biotechnology (0,1)</i>		1	0	1	Microbiology (3,0) (HT) Practice in Microbiology (0,1) (HT) Microbial Biotechnology (2,0) (SH)
BT221IU	Internship (0,2)	Bắt buộc	2	0	2	
Học kỳ VII, VIII	Năm 4 - HK1, HKII - K2025		18			
	Professional Elective (16 credits)		8			
BT343IU	Medical Genetics (3,0)		3	3	0	Genetics (HT) Cell Biology (HT)
BT344IU	<i>Practice in Medical Genetics (0,1)</i>		1	0	1	Genetics (HT) Practice in Genetics (HT)

		Tự chọn chuyên ngành nhóm 3 (chọn 8/16 chỉ)				Cell Biology (HT) Medical Genetics (2,0) (SH)
BT345IU	Crop Biotechnology (3,0)		3	3	0	
BT346IU	<i>Practice in Crop Biotechnology (0,1)</i>		1	0	1	Crop Biotechnology (2,0) (SH)
BT347IU	Techniques in Plant Biotechnology (3,0)		3	3	0	Plant Physiology (3,0) (HT)
BT348IU	<i>Practice in Techniques in Plant Biotechnology (0,1)</i>		1	0	1	Plant Physiology (3,0) (HT) Techniques in Plant Biotechnology (2,0) (SH)
BT349IU	Pharmaceutical Biotechnology (3,0)		3	3	0	
BT350IU	<i>Practice in Pharmaceutical Biotechnology (0,1)</i>		1	0	1	Pharmaceutical Biotechnology (2,0) (SH)
BT351IU	Molecular Diagnostics (3,0)		3	3	0	Cell Biology (HT)
BT352IU	<i>Practice in Molecular Diagnostics (0,1)</i>		1	0	1	Cell Biology (HT) Molecular Diagnostics (2,0) (SH)
BT353IU	Reproductive and Regenerative Biomedicine (3,0)		3	3	0	Cell Biology (HT) Human Physiology (3,0) (HT)
BT354IU	<i>Practice in Reproductive and Regenerative Biomedicine (0,1)</i>		1	0	1	Cell Biology (HT) Human Physiology (3,0) (HT) Reproductive and Regenerative Biomedicine (2,0) (SH)
BT355IU	Stem Cell Biology (3,0)		3	3	0	Cell Biology (HT) Human Physiology (3,0) (HT)

BT356IU	<i>Practice in Stem Cell Biology (0,1)</i>		1	0	1	Cell Biology (HT) Human Physiology (3,0) (HT) Stem Cell Biology (2,0) (SH)
BT357IU	Medical Microbiology (3,0)		3	3	0	Microbiology (3,0) (HT)
BT358IU	<i>Practice in Medical Microbiology (0,1)</i>		1	0	1	Microbiology (3,0) (HT) Practice in Microbiology (0,1) (HT) Medical Microbiology (2,0) (SH)
BT359IU	Microbial Biotechnology (3,0)		3	3	0	Microbiology (3,0) (HT)
BT360IU	<i>Practice in Microbial Biotechnology (0,1)</i>		1	0	1	Microbiology (3,0) (HT) Practice in Microbiology (0,1) (HT) Microbial Biotechnology (2,0) (SH)
BT367IU	Thesis	Bắt buộc	10	0	10	
	Tổng		126			

11. Ma trận các môn học và chuẩn đầu ra (kỹ năng)

Mức độ đóng góp của các môn học vào chuẩn đầu ra của CTĐT ngành Công nghệ Sinh học được trình bày như Bảng 8.

Bảng 8. Đóng góp của các môn học vào CDR của CTĐT

STT	Mã môn học	Tên môn học	Số TC (theo ECTS)	Số TC	Học kì	Chuẩn đầu ra							
						1	2	3	4	5	6	7	8
1	MA001IU	Calculus 1	6.2	4	1	L	M		M				
2	BT311IU	Biology	4.6	3	1	L	L	M		M			
3	BT312IU	Practice in Biology	2	1	1	L	L			L			
4	CH011IU	Chemistry for Engineers	4.6	3	1	L	H	M					
5	EN007IU	Writing AE1	3.1	2	1	M	M			M			M
6	EN008IU	Listening AE1	3.1	2	1	M	M			M			M
7	PE021IU	General Law	4.6	3	2		H			M			
8	EN011IU	Writing AE2	3.1	2	2	M	L			M			
9	EN012IU	Speaking AE2	3.1	2	2	M	L			M			
10	PH014IU	Physics 1	3.1	2	2	L	M						L
11	BT150IU	Introduction to Biotechnology	3.1	2	2	M	M	M		M			M
12	PE015IU	Philosophy of Marxism and Leninism	4.6	3	1	M	M					M	L
13	PE016IU	Political economics of Marxism and Leninism	3.1	2	1	M				L		M	L
14	BT313IU	Genetics	4.6	3	3	H	L	M		H		M	H
15	BT314IU	Practice in Genetics	2	1	3	H	M		M	H		M	
16	BT010IU	Plant Physiology	4.6	3	3	M			M		M	M	M
17	BT315IU	Analytical Chemistry	4.6	3	3	L	M		L	M	L	L	L
18	BT316IU	Practice in Analytical Chemistry	2	1	3	L	L		M	M		M	
19	PE017IU	Scientific socialism	3.1	2	3	M				L		M	L
20	MA040IU	Applied Statistics	3.1	2	4	M	H	M		L			
21	MA041IU	Applied Statistics lab	2	1	4	M	H	M		L			
22	BT319IU	Biochemistry	4.6	3	4			M	M	M	M		
23	BT320IU	Practice in Biochemistry	2	1	4	M	H		M	M		M	
24	BT321IU	Microbiology	4.6	3	4	M	M-H	M		H			
25	BT322IU	Practice in Microbiology	2	1	4			M	H	H		M	
26	BT009IU	Cell Biology	4.6	3	4	H	H	M					M
27	BT210IU	Human Physiology	4.6	3	4	L	H	M	H		H		
28	PE018IU	History of Vietnamese Communist Party	3.1	2	5	M							M

29	PE019IU	Ho Chi Minh's Thoughts	3.1	2	5	M	M							H
30	BT333IU	Molecular Biotechnology	4.6	3	5	L		L-M	M	L	L		L-M	L
31	BT334IU	Practice in Molecular Biotechnology	2	1	5			M	H	H	M			
32	BT335IU	Immunology	4.6	3	5	M			M		M			
33	BT336IU	Practice in Immunology	2	1	5			H	H	H			M	
34	BT365IU	Bioprocess Engineering	3.1	2	6	L-H				H		M		
35	BT342IU	Practice in Bioprocess Engineering	2	1	6						M	H	M-H	
36	BT337IU	Bioinformatics	4.6	3	6				M	M	M	M	M	M
37	BT338IU	Practice in Bioinformatics	2	1	6	H			H	M			M	
38	BT221IU	Internship	6.5	2	6			M	H	H	H		M-H	M-H
39	BT216IU	Experimental Design	4.6	3	7		H	M	M		M	H		
40	BT218IU	Plant Science	4.6	3	6			M		H			M	M
41	BT306IU	Developmental Biology	4.6	3	6			M	H			M-H		M-H
42	BT361IU	Scientific Writing Workshop	4.6	3	6		M			H			H	H
43	BT207IU	Human Pharmacology	4.6	3	6	M	M	M		M			H	
44	BT366IU	Protein Biotechnology	3.1	2	6		M		M	M	M	H		
45	BT340IU	Practice in Protein Biotechnology	2	1	6			H	H		H	M		
46	BT217IU	Molecular Genetics	4.6	3	6		M		M		M	M	M	M
47	IS050IU	Project management	4.6	3	6	M	M							M
48	BA115IU	Introduction to Business Administration	4.6	3	6	M	M						M	M
49	BA006IU	Business Communication	4.6	3	6	M	M						M	M
50	BA003IU	Principle of Marketing	4.6	3	6					M			M	M
51	PE014IU	Environmental Science	4.6	3	6	M				L				
52	PE008IU	Critical Thinking	4.6	3	6	L	H							M
53	IT120IU	Entrepreneurship	4.6	3	6	L	M							
54	BT343IU	Medical Genetics	4.6	3	7	H	H	M						M
55	BT344IU	Practice in Medical Genetics	2	1	7				H	H	H	H		
56	BT345IU	Crop Biotechnology	4.6	3	7	M		L-M	M	M			M	L
57	BT346IU	Practice in Crop Biotechnology	2	1	7			M	H	H	M			
58	BT347IU	Techniques in Plant Biotechnology	4.6	3	7	M			M		M	M	M	M
59	BT348IU	Practice in Techniques in Plant Biotechnology	2	1	7			M	H	H				
60	BT349IU	Pharmaceutical Biotechnology	4.6	3	7		H	M	M		M	H		
61	BT350IU	Practice in Pharmaceutical Biotechnology	2	1	7		M	M		H	M	H		

62	BT351IU	Molecular Diagnostics	4.6	3	7	M	H	H					M
63	BT352IU	Practice in Molecular Diagnostics	2	1	7				H	H	M	H	
64	BT353IU	Reproductive and Regenerative Biomedicine	4.6	3	7		M			H	H		M-H
65	BT354IU	Practice in Reproductive and Regenerative Biomedicine	2	1	7		L	M	H	H	H		
66	BT355IU	Stem cell Biology	4.6	3	7			M	M	H	H		M-H
67	BT356IU	Practice in Stem cell Biology	2	1	7		L	M	H	H	H		
68	BT357IU	Medical Microbiology	4.6	3	7	M			M	M	M		
69	BT358IU	Practice in Medical Microbiology	2	1	7	M			M		M		
70	BT359IU	Microbial Biotechnology	4.6	3	7			M	H		M	M	
71	BT360IU	Practice in Microbial Biotechnology	2	1	7	H	H	H		M			
72	BT367IU	Thesis		10	8	L	L-M	M	H	H	M-H	M-H	H

12. Mô tả vắn tắt nội dung và khối lượng các môn học (số thứ tự của môn học tương ứng với số thứ tự của môn học trong Bảng 6 - Các môn học thuộc chương trình đào tạo)

12. 1. General Law (Pháp luật đại cương)

- Mã môn học: **PE021IU**

- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)

- Môn học trước: không

- Mô tả nội dung môn học: The course will introduce students to Vietnamese legal systems. In particular, students will understand their rights and obligations in the Constitution, Criminal law, administrative law, civil law, labor law and enterprise law of Vietnam. From this, students will raise awareness towards their responsibility to ensure justice, including ending corruption, in society.

12.2. Philosophy of Marxism and Leninism (Triết học Mác-Lenin)

- Mã môn học: **PE015IU**

- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)

- Môn học trước/môn học song hành/ môn học tiên quyết: N/A

- Mô tả nội dung môn học: The course equips students with basic knowledge of Marxist- Leninist philosophy.

12.3. Political economics of Marxism and Leninism (Kinh tế chính trị Mác-Lenin)

- Mã môn học: **PE016IU**

- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành) (3.08 ECTS)

- Môn học trước/môn học song hành/ môn học tiên quyết: N/A

- Mô tả nội dung môn học: The program consists of 6 chapters, in which Chapter 1 discusses the Objects, research methods and functions of Marxist-Leninist political economy; the remaining chapters present the core content of Marxist-Leninist Political Economy according to the module's objectives. Specifically, the content includes commodities, markets and the role of stakeholders; producing surplus value; competition and monopoly; socialist-oriented market economy and economic interest relations in Vietnam; and industrialization, modernization, and international economic integration in Vietnam.

12. 4. Scientific socialism (Chủ nghĩa xã hội khoa học)

- Mã môn học: **PE017IU**
- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành) (3.08 ECTS)
- Mô tả nội dung môn học: The course equips students with basic knowledge of scientific socialism.

12.5. History of Vietnamese Communist Party (Lịch sử Đảng Cộng sản Việt Nam)

- Mã môn học: **PE018IU**
- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành) (3.08 ECTS)
- Môn học trước: PE015IU - Philosophy of Marxism and Leninism, PE016IU - Political economics of Marxism and Leninism, PE017IU - Scientific socialism
- Mô tả nội dung môn học: The course equips students with basic knowledge about the History of the Communist Party of Vietnam.

12.6. Ho Chi Minh's Thoughts (Tư tưởng Hồ Chí Minh)

- Mã môn học: **PE019IU**
- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành) (3.08 ECTS)
- Môn học trước: PE015IU - Philosophy of Marxism and Leninism, PE016IU - Political economics of Marxism and Leninism, PE017IU - Scientific socialism
- Mô tả nội dung môn học: The course equips students with basic knowledge about subjects, research methods and meaning of Ho Chi Minh's ideologies; origin of Ho Chi Minh's ideologies; national independence and socialism; Communist Party of Vietnam and the Vietnamese State; great national unity and international solidarity; culture, morality and human.

12.7. Writing AE 1 (Viết học thuật)

- Mã môn học: **EN007IU**
- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành) (3.08 ECTS)

- Môn học trước/môn học song hành/ môn học tiên quyết: N/A

- Mô tả nội dung môn học: This course provides students with comprehensive instructions and practice in essay writing, including transforming ideas into different functions of writing such as process, cause-effect, comparison-contrast, and argumentative essays.

12.8. Listening AE 1 (Nghe và ghi chú)

- Mã môn học: **EN008IU**

- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành) (3.08 ECTS)

- Môn học trước/môn học song hành/ môn học tiên quyết: N/A

- Mô tả nội dung môn học: The course is designed to prepare students for effective listening and note-taking skills, so that they can pursue the courses in their majors without considerable difficulty. The course is therefore lecture-based in that the teaching and learning procedure is built up on lectures on a variety of topics such as business, science, and humanities.

12.9. Writing AE 2 (Viết bài nghiên cứu)

- Mã môn học: **EN011IU**

- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành) (3.08 ECTS)

- Môn học trước/môn học song hành/ môn học tiên quyết: N/A

- Mô tả nội dung môn học: This course introduces basic concepts in research paper writing, especially the role of generalizations, definitions, classifications, and the structure of a research paper to students who attend English- medium college or university. It also provides them with methods of developing and presenting an argument, a comparison or a contrast.

12.10. Speaking AE 2 (Thuyết trình)

- Mã môn học: **EN012IU**

- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành) (3.08 ECTS)

- Môn học trước/môn học song hành/ môn học tiên quyết: N/A

- Mô tả nội dung môn học: Giving presentations today becomes a vital skill for students to succeed not only in university but also at work in the future. Speaking AE2, therefore, provides students with the knowledge and skills needed to deliver effective presentations (informative and persuasive presentations).

12.11. Calculus 1 (Toán cao cấp 1)

- Mã môn học: **MA001IU**

- Số tín chỉ: 4 tín chỉ (4 lý thuyết + 0 thực hành) (6.16 ECTS)

- Môn học trước/môn học song hành/ môn học tiên quyết: N/A
- Mô tả nội dung môn học: This course equips students with basic concepts of calculus: limits, continuity, differentiation, and integration. Applications of these concepts are extensively discussed.

12.12. Physics 1 (Vật lý 1)

- Mã môn học: **PH013IU**
- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành) (3.08 ECTS)
- Môn học trước/môn học song hành/ môn học tiên quyết: N/A
- Mô tả nội dung môn học: This subject will provide an introduction to mechanics including: concepts and principles of kinetics, dynamics, energetics of motion of a particle and a rigid body.

12.13. Project Management (Quản lý dự án)

- Mã môn học: **IS050IU**
- Số tín chỉ: 3 tín chỉ (3 Lý thuyết)
- Điều kiện tiên quyết/Môn học trước: không
- Mô tả nội dung môn học: This course is developed to provide the principal concept on project management which was characterized by the project management body of knowledge guide (PMBOK Guide). This guide emphasizes the five project process groups of initiating, planning, executing, controlling and closing, and the nine knowledge areas of project integration, scope, time, cost, quality, human resources, communication, risk, and procurement management.

12.14. Introduction to Business Administration (Nhập môn Quản trị kinh doanh)

- Mã môn học: **BA115IU**
- Số tín chỉ: 3 (3 Lý thuyết)
- Điều kiện tiên quyết/Môn học trước: không
- Mô tả nội dung môn học: Employing the interactive learning and problem-based teaching approach, this course emphasizes the interaction between lecturers and students. The lecture materials will be uploaded in Blackboard to help the students to preview the materials and to concentrate on listening and critical thinking during the lecture. This will help students to interact with the lecturer during the classroom. The sessions for presentations and discussions comprise company case studies as well as answering some theoretical and conceptual questions, which help the students to see how the concepts are applied in the real business context. Students will present the case to the class and discuss with the peers. Guest speakers are invited to talk about selected topics or real-life experiences.

12.15. Business Communication (Giao tiếp kinh doanh)

- Mã môn học: **BA006IU**

- Số tín chỉ: 3 (3 Lý thuyết)

- Điều kiện tiên quyết/Môn học trước: không

- Mô tả nội dung môn học: This course is designed to provide students with a strong foundation in communicating at the workplace, focusing on: (1) communicating in the digital-age workplace, (2) developing business writing skills, (3) embracing professionalism at work, (2) developing business presentation skills, (4) preparing for successful job search, resumes, cover letters, and job interviews.

12.16. Principles of Marketing (Nguyên lý Marketing)

- Mã môn học: **BA003IU**

- Số tín chỉ: 3 (3 Lý thuyết)

- Điều kiện tiên quyết/Môn học trước: không

- Mô tả nội dung môn học: The course named “Principles of Marketing” provides the students with necessary information on the basic concepts of marketing and its principles. It focuses on the understanding of Market Demand and Customers Behaviors as well as Marketing strategies developed by firms in terms of Pricing, Product, Place, Promotion, etc. The course also mentions various methods to market research and environmental factors that affect the marketing activities.

12.17. Biology (Sinh học đại cương)

- Mã môn học: **BT311IU**

- Số tín chỉ: 3 (3 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: không

- Mô tả nội dung môn học: The key concepts in the course are organized into units on biochemistry, molecular biology, cell biology, genetics, evolution, and ecology. Basic principles and theories of biology addressed in the course include: the chemical basis of life; cell theory; energy flow and management; gene and gene products (including inheritance and gene expression); evolution, especially by means of natural selection; and studies of ecological populations and their interactions with living and non-living aspects of their environment.

12.18. Practice in Biology (Thực hành Sinh học đại cương)

- Mã môn học: **BT312IU**

- Số tín chỉ: 1 (1 thực hành)

- Điều kiện tiên quyết/Môn học trước: học song hành cùng Sinh học đại cương

- Mô tả nội dung môn học: This course demonstrates the basic practice works with biological samples and reactions. Students will be introduced with sample preparation,

observation, and analysis.

12.19. Chemistry for Engineers (Hóa đại cương)

- Mã môn học: **CH011IU**

- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)

- Môn học trước/môn học song hành/ môn học tiên quyết: N/A

- Mô tả nội dung môn học: This one-semester course is designed for students who are pursuing an engineering degree (e.g., information technology, biotechnology, civil, biomedical, electronic, and telecommunication engineering) and chemistry-related ones (e.g., applied chemistry and chemical engineering). The course will introduce the basic principles of chemistry and connect those principles to issues in the engineering profession.

12.20. Introduction to Biotechnology (Nhập môn Công nghệ sinh học)

- Mã môn học: **BT150IU**

- Số tín chỉ: 2 (2 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: không

- Mô tả nội dung môn học: The course Introduction to Biotechnology is designed as an initial course to immerse the students in the techniques, applications and social issues that focus on molecular biotechnology, genetic engineering, assisted reproductive technology, stem cell and regenerative biomedicine, pharmaceutical biotechnology, micro-biotechnology and plant biotechnology. The course also equips students with bioethical issues in biotechnology.

12.21. Genetics (Di truyền học)

- Mã môn học: **BT313IU**

- Số tín chỉ: 3 (3 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: Sinh học đại cương

- Mô tả nội dung môn học: This course introduces the mechanisms of inheritance and gene action from molecular to population levels. Topics include Mendelian principles; Extension of Mendelian principles; Genetic materials and gene expression; Quantitative genetics and population genetics.

12.22. Practice in Genetics (Thực hành Di truyền học)

- Mã môn học: **BT314IU**

- Số tín chỉ: 1 (1 thực hành)

- Điều kiện tiên quyết/Môn học trước: Sinh học đại cương

- Mô tả nội dung môn học: This course introduces the basic practice works with genetic materials such as reproducing cells, DNAs and fruit flies. This includes preparing flies for

genetic analysis, preparing DNA and preparing cells.

12.23. Plant Physiology (Sinh lý thực vật)

- Mã môn học: **BT010IU**

- Số tín chỉ: 3 (3 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: Sinh học đại cương, Nhập môn CNSH

- Mô tả nội dung môn học: Plant physiology is a foundation course for more advanced ones in Plant Biotechnology. This course covers a wide range of knowledge regarding plant physiology such as plant metabolism, development and essential conditions for development, environmental stresses and secondary metabolites and engineered plants in plant biotechnology.

12.24. Analytical Chemistry (Hóa phân tích)

- Mã môn học: **BT315IU**

- Số tín chỉ: 3 (3 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: Không

- Mô tả nội dung môn học: This course covers the basic principle, practice and methodology of chemical and biochemical analysis. The course also introduces the modern analytical chemistry and instrumental techniques with emphasis on techniques relevant to biochemical analyses. Some applications for bioanalytical techniques will also be discussed.

12.25. Practice in Analytical Chemistry (Thực hành Hóa phân tích)

- Mã môn học: **BT316IU**

- Số tín chỉ: 1 (1 thực hành)

- Điều kiện tiên quyết/Môn học trước: Học song song Hóa phân tích

- Mô tả nội dung môn học: This course is designed to provide students with practical skills in different common techniques that are used in chemical analysis. Students will also learn how to use equipment, analysis machines, analyze data and interpret results.

12.26. Applied Statistics (Thống kê ứng dụng)

- Mã môn học: **MA040IU**

- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành)

- Môn học trước: MA001IU – Calculus 1

- Mô tả nội dung môn học: This course is designed for students pursuing a degree in chemical/environmental engineering and provides knowledge on statistical data, plotting data, descriptive statistics, probability and distribution, hypothesis test, T-test, analysis of variance (ANOVA), time series analysis and forecasting.

12.27. Applied Statistics Lab (Thực hành Thống kê ứng dụng)

- Mã môn học: **MA041IU**

- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)

- Môn học trước/môn học song hành/ môn học tiên quyết: N/A

- Mô tả nội dung môn học: This course is designed for students pursuing a degree in chemical/environmental engineering and provides knowledge and skills in using Python/R software for plotting data, descriptive statistics, hypothesis test, T-test, analysis of variance (ANOVA), time series analysis and forecasting.

12.28. Biochemistry (Hóa sinh)

- Mã môn học: **BT319IU**

- Số tín chỉ: 3 (3 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: Sinh học đại cương

- Mô tả nội dung môn học: This subject will provide students the knowledges of four major molecules, enzymes, and the skills in the lab-works.

12.29. Practice in Biochemistry (Thực hành Hóa sinh)

- Mã môn học: **BT320IU**

- Số tín chỉ: 1 (1 thực hành)

- Điều kiện tiên quyết/Môn học trước: Học song song Hóa sinh

- Mô tả nội dung môn học: This Practice in Biochemistry course will provide students with lab skills, lab techniques, and training of analytic equipment regarding the analysis of major molecules and enzymes in biochemistry. In addition, students will also be trained in data analysis, data interpretation, together with lab safety and ethical responsibility in laboratories.

12.30. Microbiology (Vi sinh vật học)

- Mã môn học: **BT321IU**

- Số tín chỉ: 3 (3 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: Sinh học đại cương

- Mô tả nội dung môn học: This microbiology course is designed for the biotechnology/foodtechnology/biochemistry major interested in learning about the microbial world. In this course, students will study the fundamental structural and metabolic characteristics of microorganisms, the interactions between them and their environments; and basic microbial culture techniques. The course also offers introductory information on the applications of microorganisms in a number of different fields.

12.31. Practice in Microbiology (Thực hành Vi sinh vật học)

- Mã môn học: **BT322IU**

- Số tín chỉ: 1 (1 thực hành)

- Điều kiện tiên quyết/Môn học trước: Song song Vi sinh vật học

- Mô tả nội dung môn học: This course is designed for undergraduate students to acquire basic knowledge and techniques in microbiology research. Students will be introduced and practice with basic techniques and procedure such as media preparation; aseptic and subculturing technique; setup conditions for microbial growth; Gram staining and analysis using microscope, as well as bacterial enumeration. In addition, students will be also engaged partially with process of characterizing an unknown microbial species.

12.32. Cell Biology (Sinh học tế bào)

- Mã môn học: **BT009IU**

- Số tín chỉ: 3 (3 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: Nhập môn Công nghệ Sinh học

- Mô tả nội dung môn học: Cell is a fundamental unit of life. So molecular cell biology is a foundation of life science. Regardless of the extreme diversity of the living forms on the Earth, this course will provide the firm definition of the living cell, cell classification, in which more focus into the eukaryote class. The course concentrates on describing two parts of a cell: the structure and the work of the cell. All organelles and macromolecules within the cell will be described, then, discusses about the role of each in cell growth, cell divide, cell transport, and cell signaling. For each activity of the cell, the mechanisms will be described to explain how the cell plays their work in the organism. Besides, the basic knowledge the course also provides information about the genetic mutation which is fundamental of the evolution and human genetic diseases as well as the cancer and the related molecular context.

12.33. Human Physiology (Sinh lý người)

- Mã môn học: **BT210IU**

- Số tín chỉ: 3 (3 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: không

- Mô tả nội dung môn học: This course is designed to help further student's understanding of the physiology function of human, particularly from cells to body systems. The principal goal is to learn about the function & regulation of the human body and physiological integration of the organ systems to maintain homeostasis. Students examine the mechanisms of body function, organized around the central theme of homeostasis – how the body meets changing demands while maintaining the internal constancy necessary for all cells and organs to function. Course content will include neural & hormonal homeostatic control mechanisms, as well as study of the cell physiology, plasma membrane and membrane potential, circulatory, respiratory, urinary, immune, reproductive physiology, and endocrine organ systems. The lecture also provides to students the applications of human physiology

on advanced research for regenerative biomedicine, cell therapy and assisted reproductive for human.

12.34. Molecular Biotechnology (Công nghệ sinh học phân tử)

- Mã môn học: **BT333IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Genetics
- Mô tả nội dung môn học: This course introduces students to molecular biotechnology, a scientific discipline arises from the combination of recombinant DNA technology and biotechnology.

12.35. Practice in Molecular Biotechnology (Công nghệ sinh học phân tử)

- Mã môn học: **BT334IU**
- Số tín chỉ: 1 (1 thực hành)
- Điều kiện tiên quyết/Môn học trước: Song song Công nghệ Sinh học phân tử
- Mô tả nội dung môn học: This course introduces students to practical procedure in cloning a gene of interest. Students will learn about the fundamental theory of the process and practice techniques regarding DNA extraction procedure, DNA gel electrophoresis, DNA quantification, PCR, PCR product purification, ligation, bacterial transformation and identification of putative transformants.

12.36. Immunology (Miễn dịch học)

- Mã môn học: **BT335IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Sinh học đại cương
- Mô tả nội dung môn học: This subject will provide a general introduction to basic knowledge on immune system and its application: the components and functions of the immune system, mechanisms of innate and adaptive immunity at different levels and to different invading microorganisms such as fungi, bacteria, protozoa, worms and viruses; applications of Immunology in vaccine production, blood transfusion, allergy treatment, autoimmune diseases, cancer, monoclonal antibody, and in tissue or organ transplantation.

12.37. Practice in Immunology (Thực hành Miễn dịch học)

- Mã môn học: **BT336IU**
- Số tín chỉ: 1 (1 thực hành)
- Điều kiện tiên quyết/Môn học trước: Sinh học đại cương
- Mô tả nội dung môn học: The course will introduce students to various methods used in immunological field. It will equip students with skills on immunological techniques and complement the information gained in lecture. This includes determining types of immune cells, blood types, detecting specificity of antigen and antibody, separating different blood components, ELISA.

12.38. Bioprocess Engineering (Tối ưu hóa các quá trình sinh học)

- Mã môn học: **BT365IU**
- Số tín chỉ: 2 (2 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Introduction to Biotechnology
- Mô tả nội dung môn học: This Bioprocess Engineering course is designed for Biotechnology majors and related disciplines who have little or no engineering background but want to understand and be able to strategically manipulate the processes for manufacturing commercial bio-products, mostly derived from, but not restricted to microorganisms. The course provides students with a fundamental understanding of different stages of a bioprocess including upstream (material and equipment preparation, fermentation, and downstream (product recovery, purification and packaging). The first few lectures will review relevant knowledge in microbiology, chemistry, and molecular biology, which influences product accumulation in the producers (e.g. microbes). Steps for setting up a microbial/cell culture from lab to industrial scale and the selection and preparation of the substrate used will be guided. In addition, types of fermentation and components of a typical fermentor will be discussed. A part of the course will introduce students to major kinetic and mass transfer principles that can help control and monitor process performance and process scale-up. Statistical methods for optimization of bioprocesses will also be included. Additionally, major methods for product recovery and purification will be discussed at the end of the course.

12.39. Practice in Bioprocess Engineering (Tối ưu hóa các quá trình sinh học)

- Mã môn học: **BT342IU**
- Số tín chỉ: 1 (1 thực hành)
- Điều kiện tiên quyết/Môn học trước: Học song song Tối ưu hóa các quá trình sinh học
- Mô tả nội dung môn học: This course gives students an opportunity to use Bioprocess Engineering theoretical knowledge to statistically design experiments for enhancing a target microbial product and analyze the obtained data.

12.40. Bioinformatics (Tin Sinh học)

- Mã môn học: **BT337IU**

- Số tín chỉ: 3 (3 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: Sinh học đại cương

- Mô tả nội dung môn học: The basics of bioinformatics are explained, followed by discussions of the state-of-the-art computational tools available to solve biological research problems. All key areas of bioinformatics are covered including biological databases, next-generation sequencing, sequence alignment, gene and promoter prediction, molecular phylogenetics, structural bioinformatics, genomics and proteomics. Some applications of bioinformatics in drug design will be introduced at the end of the course

12.41. Practice in Bioinformatics (Thực hành Tin Sinh học)

- Mã môn học: **BT338IU**

- Số tín chỉ: 1 (1 thực hành)

- Điều kiện tiên quyết/Môn học trước: song song Tin sinh học

- Mô tả nội dung môn học: The course will introduce students to different environments of bioinformatic tools. Students will gain the knowledge in knowing different version of tools, installing Windows-supported tools, reading the manual to use the tool.

12.42. Experimental Design (Thiết kế thí nghiệm)

- Mã môn học: **BT216IU**

- Số tín chỉ: 3 (3 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: Không

- Mô tả nội dung môn học: This course guides and trains the students to design and implement experiments. The lectures include an introduction to scientific research, hypothesis, control of variables, randomization, replication, sampling, blocking, and statistical inference, data collection and experimental design, data analysis for the research in biotechnology and related fields. Case studies for experimental design in microbial, molecular, pharmaceutical, stem cell and related fields are illustrated. Students will learn how to improve teamwork, critical thinking, problem-solving and scientific writing skills. From that, students can design the experiments by themselves for studying long-life.

12.43. Plant Science (Khoa học Thực vật)

- Mã môn học: **BT218IU**

- Số tín chỉ: 3 (3 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: Nhập môn CNSH

- Mô tả nội dung môn học: This course provides learners comprehensive aspects of the plant kingdom, including the morphology, anatomy, physiology, function and responses of

plants, as well as introduction of approaches for modification of plant traits. In addition, importance of plant diversity to human and ecosystem is also highlighted.

12.44. Developmental Biology (Sinh học phát triển)

- Mã môn học: **BT306IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Nhập môn CNSH
- Mô tả nội dung môn học: Developmental Biology program includes extensive research aimed at elucidating the molecular and genetic mechanisms that underlie embryonic development and tissue regeneration. This course is designed to provide characteristics of mammal embryo during pre-implantation and post-implantation development with an emphasis on the underlying cellular and molecular mechanisms. Developmental biology aims to understand how a single-cell embryo grows and changes to become a fully functional adult organism. Topics to be discussed include fertilization, determination of cell fate and differentiation, cell migration, establishment of the body, formation of selected organs and organ systems, stem cells, and limb regeneration.

12.45. Scientific Writing Workshop (Phương pháp viết báo cáo khoa học)

- Mã môn học: **BT361IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: không
- Mô tả nội dung môn học: The main objective of this course is to provide students with basic knowledge of ethical issues in the use of human and animal materials for research, as well as ethical issues in the use of human embryos and stem cell in research. This course is also to provide students with advanced knowledge of academic integrity, plagiarism in scientific writing and misconduct in research and scientific publications, as well as how to avoid violations of academic integrity standards, plagiarism and misconduct in scientific research and publications. In addition, the course will help students gain a comprehensive understanding of the key elements of clinical research, including clinical trial phases, types and designs of clinical trials, trial operations and administration, and avoid violations of academic integrity standards, plagiarism and misconduct in scientific research and publication.

12.46. Human Pharmacology (Dược lý người)

- Mã môn học: **BT207IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Nhập môn Công nghệ sinh học
- Mô tả nội dung môn học: Development of the new drug discovery is necessary to treat the serious diseases threatening to human lives. Screening a new and potent drug is

important step in drug discovery development. This course is designed as an introduction to pharmacology and toxicology. Pharmacology is broadly defined as the effect of drugs and chemicals on living organisms. This course supplies advantages and disadvantages of routes of administration, the movement way of drug molecules across cell membranes, the drug metabolism and elimination in the body, drug interactions & rationale for drug combinations. The course also lectures how to screen the new drug approved by FDA (Food and Drug Administration), the mechanism of action of and drugs affecting on central nervous system, endocrine and blood system, antimicrobial drugs such as vaccine, peptides and protein; antitumor agents such as monoclonal antibodies.

12.47. Protein Biotechnology (Công nghệ sinh học protein)

- Mã môn học: **BT366IU**
- Số tín chỉ: 2 (2 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Nhập môn Công nghệ sinh học
- Mô tả nội dung môn học: This course provides students with a comprehensive overview of protein biotechnology in three main themes: protein biochemistry, protein analysis and purification, process for recombinant protein production and applications. Protein Biotechnology course also equips students with routine techniques and analytical skills used to study proteins.

12.48. Practice in Protein Biotechnology (Thực hành công nghệ sinh học protein)

- Mã môn học: **BT340IU**
- Số tín chỉ: 1 (1 thực hành)
- Điều kiện tiên quyết/Môn học trước: Học song song Công nghệ sinh học protein
- Mô tả nội dung môn học: This course is designed for undergraduate students who are interested in working with recombinant proteins and protein analysis. It trains students commonly used techniques in the field of protein biotechnology.

12.49. Molecular Genetics (Di truyền phân tử)

- Mã môn học: **BT217IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Sinh học đại cương
- Mô tả nội dung môn học: The course includes: (i) Mechanisms of gene control and nature of mutation in both prokaryotes and eukaryotes; (ii) Application of key molecular genetic techniques in the laboratory and in practice; (iii) Genomics and proteomics studies; (iv) QTL analysis for quantitative traits; (v) Introduction to bioinformatics; (vi) Evolution at molecular level.

12.50. Molecular microbiology (Vi sinh vật học phân tử)

- Mã môn học: **BT363IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Không

- Mô tả nội dung môn học: In Molecular Microbiology the fascinating array of intricate microbial components and genetic pathways, principally from of bacteria and fungi, will be revealed with particular emphasis on how these relate to their cellular biology, environmental survival strategies, human infection and treatment of disease. Students will learn how these molecular processes are not only important to the microorganisms but also how they can be exploited through advanced molecular techniques for human benefit (societal, environmental and industrial) and for the advancement of medicine. This course has an emphasis on research and as such consists of current-knowledge lecture material and advanced, comprehensive practicals.

12.51. Microbial Genomics (Bộ gene vi sinh vật)

- Mã môn học: **BT364IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Không

- Mô tả nội dung môn học: This course covers the principles of microbial genomics and its application to cultured and uncultured microbial diversity (metagenomics), including the use of informational macromolecules such as 16S rRNA. The course emphasises the use of genomics and metagenomics to advance the fields of metabolic engineering, geobiology and human health. This course has content relevant to Biotechnology and Genetics majors.

12.52. Medical Genetics (Di truyền y học)

- Mã môn học: **BT343IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Di truyền học, Sinh học tế bào

- Mô tả nội dung môn học: Medical genetics is the integration between the basic science and clinical science, in which the knowledge from genetics is applied to human medical care. The subject reveals the relationship between genetic alterations and the disease consequence in human. Those alterations encompass from the small scale of the mutation on genes to the large scale of the abnormal structure or number of chromosomes. The subject also studies the inheritance pattern of disease in families as well as provides the method to explore the association of the disease to the specific genes or chromosome locations. From that, the subject also equips the students with basic knowledge of genetic disease diagnostics, genetic counseling for suspected families and recently, methods for gene therapy. Specifically, medical geneticists care for fetuses, newborns, children, and adults with inherited conditions, adults with infertility or recurrent miscarriages, and adults who

are genetically predisposed to cancer.

12.53. Practice in Medical Genetics (Thực hành Di truyền y học)

- Mã môn học: **BT344IU**
- Số tín chỉ: 1 (1 thực hành)
- Điều kiện tiên quyết/Môn học trước: Di truyền học, Sinh học tế bào
- Mô tả nội dung môn học: Medical genetics is the integration between the basic science and clinical science, in which the knowledge from genetics is applied to human medical care. The subject reveals the relationship between genetic alterations and the disease consequence in human. Those alterations encompass from the small scale of the mutation on genes to the large scale of the abnormal structure or number of chromosomes. The subject also studies the inheritance pattern of disease in families as well as provides the method to explore the association of the disease to the specific genes or chromosome locations. From that, the subject also equips the students with basic knowledge of genetic disease diagnostics, genetic counseling for suspected families and recently, methods for gene therapy. Specifically, medical geneticists care for fetuses, newborns, children, and adults with inherited conditions, adults with infertility or recurrent miscarriages, and adults who are genetically predisposed to cancer.

12.54. Crop Biotechnology (CNSH cây trồng)

- Mã môn học: **BT345IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước:
- Mô tả nội dung môn học: This course introduces students to genetic engineering for crop improvement: plant cell and tissue culture, gene transfer techniques into plant cells, application in agricultural and food industries

12.55. Practice in Crop Biotechnology (Thực hành CNSH cây trồng)

- Mã môn học: **BT346IU**
- Số tín chỉ: 1 (1 thực hành)
- Điều kiện tiên quyết/Môn học trước: học song song CNSH cây trồng
- Mô tả nội dung môn học: This course will allow you to experience one of common molecular approaches in crop research - techniques relating to RNA work and gene expression analysis.

12.56. Techniques in Plant Biotechnology (Kỹ thuật công nghệ sinh học thực vật)

- Mã môn học: **BT347IU**
- Số tín chỉ: 3 (3 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: Không
- Mô tả nội dung môn học: A completely presents detailed descriptions of basic cell culture techniques. Includes clearly illustrated practical examples for easy understanding and direct implementation. Covers important applications. This course provides all relevant protocols for basic and applied plant cell and molecular technologies, such as histology, electron microscopy, cytology, virus diagnosis, gene transfer and PCR. Also included are chapters on laboratory facilities, operation and management. In-depth compilation on the latest global trends of plant tissue culture and transgenic crops. Brings out focused content RNAi, miRNA and on development of marker-free transgenic plants. Discusses nanotechnology, genome engineering and plant - omics applications in agricultural practices

12.57. Practice in Techniques in Plant Biotechnology (Thực hành kỹ thuật công nghệ sinh học thực vật)

- Mã môn học: **BT348IU**
- Số tín chỉ: 1 (1 thực hành)
- Điều kiện tiên quyết/Môn học trước: Sinh lý thực vật
- Mô tả nội dung môn học: The course is designed for undergraduate students who are interested in plant biotechnology. Students will be introduced with facilities for working with plants such as environmentally controlled growth rooms and net house, techniques in plant tissue culture such as sterilization, in vitro culture for seedlings and callus, media preparation and subculture of plants of interest

12.58. Pharmaceutical Biotechnology (Công nghệ sinh học dược)

- Mã môn học: **BT349IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Không
- Mô tả nội dung môn học: This course will be lectured in the 6,7 th semester for Biotech students. This course emphasizes the biotechnological aspects in the pharmaceutical and biopharmaceutical product development, fundamentals of genetic engineering, analyzing the products and its application in medicine. This course also emphasizes the principle of synthesis and manufacturing processes of monoclonal antibodies, introduction to gene therapy, recombinant therapeutic protein, enzymes, biotech compounds and materials used in pharmaceutical and biopharmaceutical fields. This course is designed to provide how to formulate a biopharmaceutical product and establish a pharmaceutical pilot.

12.59. Practice in Pharmaceutical Biotechnology (Thực hành Công nghệ sinh học dược)

- Mã môn học: **BT350IU**
- Số tín chỉ: 1 (1 thực hành)

- Điều kiện tiên quyết/Môn học trước: Học song song CNSH được

- Mô tả nội dung môn học: This course emphasizes the upstream processing in producing therapeutic recombinant protein, protein recovery by cell extraction, concentration, purification, desalt process, SDS-PAGE, nanoparticle production, killing microorganism for vaccine preparation and cream formulation. The study also focused on analyzing and interpreting the products and its application in medicine. This course is designed to provide how to formulate a biopharmaceutical product and establish a pharmaceutical pilot.

12.60. Molecular Diagnostics (Chẩn đoán phân tử)

- Mã môn học: **BT351IU**

- Số tín chỉ: 3 (3 lý thuyết)

- Điều kiện tiên quyết/Môn học trước: Sinh học tế bào

- Mô tả nội dung môn học: The molecular diagnostics course is an applied course, using molecular biotechnology using both protein and nucleic-acid-based methods in diagnosis of the infectious diseases in human, plant, animal, and food as well as the identify genetic causative or risks contributing to diseases. The molecular techniques are reviewed and studied to apply them as the diagnosis tools, also the troubleshooting for diverse technical applications. The course gives the approach to develop new or advance methods for diagnosis of the diseases based on the principle of molecular biotechnology. The applications in detection of target infectious disease or genetic or somatic causative/risk variants will be introduced and discussed.

12.61. Practice in Molecular Diagnostics (Thực hành Chẩn đoán phân tử)

- Mã môn học: **BT352IU**

- Số tín chỉ: 1 (1 thực hành)

- Điều kiện tiên quyết/Môn học trước:

- Mô tả nội dung môn học: The molecular diagnostics course is an applied course, using molecular biotechnology using both protein and nucleic-acid-based methods in diagnosis of the infectious diseases in human, plant, animal, and food as well as the identify genetic causative or risks contributing to diseases. The molecular techniques are reviewed and studied to apply them as the diagnosis tools, also the troubleshooting for diverse technical applications. The course gives the approach to develop new or advance methods for diagnosis of the diseases based on the principle of molecular biotechnology. The applications in detection of target infectious disease or genetic or somatic causative/risk variants will be introduced and discussed.

12.62. Reproductive and Regenerative Biomedicine (Y sinh học tái tạo và sinh sản)

- Mã môn học: **BT353IU**

- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Cell Biology, Human Physiology
- Mô tả nội dung môn học: This course is designed to help future student's understanding of human and animal germ cells, assisted reproductive technologies, development of embryos, embryo differentiation, genomic reprogramming, transgenic animal, cloning animals, chimeric animals, and application of those techniques in regenerative biomedicine. This course also provides students with the skill and knowledge on assisted reproductive technology (ART) and application of ART on infertility treatment in human and bio-organ for xenotransplantation using animal models.

12.63. Practice in Reproductive and Regenerative Biomedicine (Thực hành Y sinh học tái tạo và sinh sản)

- Mã môn học: **BT354IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: song song Y sinh học tái tạo và sinh sản
- Mô tả nội dung môn học: Application of knowledge of reproductive biotechnology and regenerative biomedicine in the treatment of infertility in humans and animals and advanced methods for stem cell therapy and bio-organs for humans. Students will practice technologies such as in vitro growth of small oocyte to full growth oocyte (IVG), in vitro maturation (IVM), intracytoplasmic sperm injection (ICSI), embryo culture for development (IVD), embryo biopsy techniques for preimplantation genome diagnosis (PGD). In addition, students also learn to establish fibroblast cell line and stem cells.

12.64. Stem Cell Biology (Sinh học tế bào gốc)

- Mã môn học: **BT355IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Cell Biology, Human Physiology
- Mô tả nội dung môn học: Stem cell study opens the door to an undiscovered world of biology. Stem cells are undifferentiated cells that are capable of self-renew and have the potential to differentiate into specialized cell types. Stem cells play a principal role in development, reproduction, growth, healing, and maintaining homeostasis. The Stem Cell Biology program encompasses comprehensive research focused on the current state of the stem cell field and its applications in agriculture and regenerative medicine. Through lectures, students will learn the basic concepts of embryonic and adult stem cells and recent discoveries in the rapidly evolving field of stem cell research.

12.65. Practice in Stem Cell Biology (Thực hành Sinh học tế bào gốc)

- Mã môn học: **BT356IU**
- Số tín chỉ: 1 (1 thực hành)

- Điều kiện tiên quyết/Môn học trước: song song Sinh học tế bào gốc
- Mô tả nội dung môn học: Apply knowledge of Stem Cell Biology to make perfect embryo from germ cells to establish embryonic stem cell line and characterization of them. To understand reprogramming somatic cells into stem cells and identifying induced pluripotent stem cells after establishment

12.66. Medical Microbiology (Vi sinh y học)

- Mã môn học: **BT357IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Microbiology
- Mô tả nội dung môn học: This course is designed for undergraduate students who are interested and/or would like to be specialized in medical-related field. It brings students practical and applicable knowledge of medical microbiology whose importance in the human life has made it one of the most complex biological sciences dealing with many diverse biological disciplines including genetics, metabolism, physiology, ecology, infections, disease, diagnostics, therapy, immunology, epidemiology and public health. Medical microbiology will introduce general knowledge of different infectious diseases caused by bacterial, viral and fungal pathogens. It includes the study of microbial pathogenesis, epidemiology, diagnostics and treatments. Besides, pathological and immunological aspect of the infectious diseases will also be discussed in the course.

12.67. Practice in Medical Microbiology (Thực hành Vi sinh y học)

- Mã môn học: **BT358IU**
- Số tín chỉ: 1 (1 thực hành)
- Điều kiện tiên quyết/Môn học trước: song song Medical Microbiology
- Mô tả nội dung môn học: This course is designed for undergraduate students who are interested and/or would like to be specialized in medical-related field. It trains students commonly used techniques in the field of clinical/ medical microbiology

12.68. Microbial Biotechnology (CNSH vi sinh)

- Mã môn học: **BT359IU**
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước: Microbiology
- Mô tả nội dung môn học: This course provides general characteristics of ideal microorganisms used in industries and general procedures for the isolation and screening of such microorganisms from both natural samples and culture collections. A part of the course will introduce students to general methods for microbial culture preservation and steps for producing a microbial product from a stock culture and how to recover and purify the target product from the microbial culture.

12.69. Practice in Microbial Biotechnology (Thực hành CNSH vi sinh)

- Mã môn học: **BT360IU**
- Số tín chỉ: 1 (1 thực hành)
- Điều kiện tiên quyết/Môn học trước: song song Microbial Biotechnology

- Mô tả nội dung môn học: Students will get an opportunity to practice isolating target microbes (ethanol- producing yeasts) from different types of sample sources, then learn how to set up a microbial culture to produce the desired product (ethanol), then learn how to monitor the microbial culture and evaluate the product yield. By the completion of the course, students will master microbial culture techniques and some analytical techniques for the analysis of microbial metabolites.

12.70. Critical Thinking (Tư duy phản biện)

- Mã môn học: PE008IU
- Số tín chỉ: 3 (3 lý thuyết)
- Điều kiện tiên quyết/Môn học trước:

- Mô tả nội dung môn học: This course provides students with the knowledge and practice necessary to sharpen their observation and judgment skills, enabling them to evaluate arguments effectively and construct compelling arguments of their own. Additionally, the course helps students evaluate information from diverse sources to obtain reliable data and avoid fallacies.

12.71. Internship (Thực tập)

- Mã môn học: **BT221IU**
- Số tín chỉ: 2
- Điều kiện tiên quyết/Môn học trước:

- Mô tả nội dung môn học: This course is designed to help 3rd year students of biotechnology major to transition from being a student to beginning your career as a technician in the field of biotechnology. Students will apply the academic and technical competencies that students have learned in the university to real world problems. Students will also develop the employability skills that will assist students in their chosen field for the thesis and the future works. Internship is the most exciting time of students actually experience; the culmination of many hours of hard work as a student and the beginning of many years of satisfying employment or graduate study in the future. Student has to work for 2 months at industry manufactory, hospital, or research institute that relates to one of below categories: Pharmaceutical biotechnology, Plant Biotechnology, Animal Biotechnology, Medical biotechnology, Assisted Reproductive Technology, stem cell technology, Micro-biotechnology, regenerative biomedicine etc.

12.72. Thesis (khóa luận tốt nghiệp)

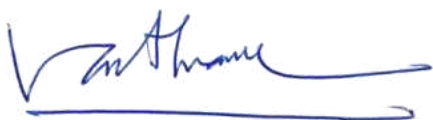
- Mã môn học: **BT367IU**

- Số tín chỉ: 10

- Điều kiện tiên quyết/Môn học trước:

- Mô tả nội dung môn học: The research project is to give students an opportunity to deepen their theoretical knowledge by applying theory into practice. The studies also develop students' analytical skills, project management skills, social skills, and their ability to participate in Research and Development (R&D) work. The aim of the thesis is to provide students with practice on how to undertake original research in the major fields offered by the School of Biotechnology, International University (IU). By the end of the research project, students will have gained experience in conducting independent research and should be capable of it.

TRƯỞNG KHOA



Nguyễn Văn Thuận



**KT. HIỆU TRƯỞNG
PHÓ HIỆU TRƯỞNG**

Đinh Đức Anh Vũ



Phụ lục 1
NỘI DUNG ĐIỀU CHỈNH
CHƯƠNG TRÌNH ĐÀO TẠO NGÀNH CÔNG NGHỆ SINH HỌC
KHÓA 2025 SO VỚI KHÓA 2024

(Kèm theo Quyết định số 1180/QĐ-ĐHQT ngày 04 tháng 9 năm 2025
của Hiệu trưởng Trường Đại học Quốc tế)

1. Các môn học loại bỏ khỏi chương trình đào tạo

STT	Tên môn học	Mã MH	Số tín chỉ	Khối kiến thức
1	Thesis	BT179IU	12	Môn học bắt buộc
2	Biostatistics	BT317IU	2	Môn học bắt buộc
3	Practice in Biostatistics	BT318IU	1	Môn học bắt buộc
4	Physics for Biology	PH058IU	2	Môn học bắt buộc

2. Các môn học bổ sung vào chương trình đào tạo

STT	Tên môn học	Mã MH	Số tín chỉ	Khối kiến thức
1	Entrepreneurship	IT120IU	3	Tự chọn nhóm 1
2	Thesis	BT367IU	10	Bắt buộc

3. Các điều chỉnh khác

- Để đảm bảo kiến thức nhưng giảm tải khối lượng chương trình, các môn học được thay đổi số tín chỉ như sau:

Tên môn học	Mã MH	Số TC cũ	Mã MH mới	Số TC mới
Bioprocess Engineering	BT341IU	3	BT365IU	2
Protein Biotechnology	BT339IU	3	BT366IU	2

- Các môn học xét tương đương:

Tên môn học cũ	Mã MH	Số TC	Tên môn học mới	Mã MH	Số TC
Biostatistics	BT317IU	2	Applied Statistics	MA040IU	2
Practice in Biostatistics	BT318IU	1	Applied Statistics lab	MA041IU	1
Physics for Biology	PH058IU	2	Physics 1	PH013IU	2

- Giảm số tín chỉ nhóm tự chọn 1 từ 6 tín chỉ còn 3 tín chỉ gồm các môn học sau:

Mã MH	Free Elective (3 credits)	Số TC
IS050IU	Project Management (3,0)	3
BA115IU	Introduction to Business Administration (3,0)	3
BA006IU	Business Communications (3,0)	3
BA003IU	Principle of Marketing (3,0)	3
PE008IU	Critical thinking	3
IT120IU	Entrepreneurship	3
PE014IU	Environmental Science (3,0)	3

- Thay đổi vai trò môn học trong chương trình đào tạo:

STT	Tên môn học	Mã MH	Số tín chỉ	Khối kiến thức hiện tại	Khối kiến thức chuyển đổi
1	Critical Thinking	PE008IU	3	Môn học bắt buộc	Môn học tự chọn nhóm 1
2	Environmental Science	PE014IU	3	Môn học bắt buộc	Môn học tự chọn nhóm 1

4. Hướng xử lý cho các sinh viên khóa cũ khi chưa học các môn học bị loại bỏ khỏi chương trình đào tạo

STT	Tên môn học	Mã MH	Số TC	Khối kiến thức	Hướng xử lý
1	Thesis	BT179IU	12	Môn học bắt buộc	Môn học tiếp tục mở cho sinh viên khóa cũ

2	Biostatistics	BT317IU	2	Môn học bắt buộc	Sinh viên học môn học tương đương: Applied Statistics (MA040IU – 2TC)
3	Practice in Biostatistics	BT318IU	1	Môn học bắt buộc	Sinh viên học môn học tương đương: Applied Statistics lab (MA041IU – 1TC)
4	Physics for Biology	PH058IU	2	Môn học bắt buộc	Sinh viên học môn học tương đương: Physics 1 (PH013IU – 2TC)





Phụ lục 2
MỨC ĐỘ ĐÁP ỨNG KHUNG NĂNG LỰC SỐ CỦA CHƯƠNG TRÌNH ĐÀO TẠO
*(Kèm theo Quyết định số 1180/QĐ-ĐHQT ngày 04 tháng 9 năm 2025
của Hiệu trưởng Trường Đại học Quốc tế)*

* Đáp ứng Thông tư 02/2025/TT-BGDĐT ngày 24/01/2025 của Bộ Giáo dục và Đào tạo
Quy định về Khung năng lực số cho người học.

I. Mức độ đáp ứng khung năng lực số của chương trình đào tạo

1. Miền năng lực 1: Khai thác dữ liệu và thông tin

* Đánh giá năng lực thành phần theo 8 bậc của Khung năng lực số (từ bậc 1 đến bậc 8)

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần (NLTP)		
			NLTP 1.1	NLTP 1.2	NLTP 1.3
1	BT150IU	Introduction to Biotechnology	4	4	4
2	BT311IU	Biology	4	4	4
3	BT210IU	Human Physiology	4	4	4
4	BT313IU	Genetics	4	4	4
5	BT010IU	Plant Physiology	4	4	4
6	BT315IU	Analytical Chemistry	4	4	4
7	BT335IU	Immunology	4	4	4
8	BT319IU	Biochemistry	4	4	4
9	BT321IU	Microbiology	4	4	4
10	BT333IU	Molecular Biotechnology	4	4	4

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần (NLTP)		
			NLTP 1.1	NLTP 1.2	NLTP 1.3
11	BT337IU	Bioinformatics	4	4	4
12	BT216IU	Experimental Design	4	4	4
13	BT306IU	Developmental Biology	4	4	4
14	BT361IU	Scientific Writing Workshop	4	4	4
15	BT217IU	Molecular Genetics	4	4	4
16	BT353IU	Reproductive and Regenerative Biomedicine	4	4	4
17	BT366IU	Protein Biotechnology	4	4	4
18	BT345IU	Crop Biotechnology			
19	BT347IU	Techniques in Plant Biotechnology	4	4	4
20	BT349IU	Pharmaceutical Biotechnology	4	4	4
21	BT351IU	Molecular Diagnostics	4	4	4
22	BT359IU	Microbial Biotechnology	4	4	4
23	BT355IU	Stem Cell Biology	4	4	4
24	BT357IU	Medical Microbiology	4	4	4
25	BT367IU	Thesis	4	4	4

2. Miền năng lực 2: Giao tiếp và hợp tác trong môi trường số

* Đánh giá năng lực thành phần theo 8 bậc của Khung năng lực số (từ bậc 1 đến bậc 8)

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần					
			NLTP 2.1	NLTP 2.2	NLTP 2.3	NLTP 2.4	NLTP 2.5	NLTP 2.6
1	BT150IU	Introduction to Biotechnology	4	4		4	4	
2	BT311IU	Biology	4	4		4	4	
3	BT210IU	Human Physiology	4	4		4	4	
4	BT313IU	Genetics	4	4		4	4	4
5	BT010IU	Plant Physiology						
6	BT315IU	Analytical Chemistry	4	4		4	4	
7	BT335IU	Immunology	4	4		4	4	
8	BT319IU	Biochemistry	4	4		4	4	
9	BT321IU	Microbiology	4	4		4	4	
10	BT333IU	Molecular Biotechnology						
11	BT337IU	Bioinformatics	4	4	4	4	4	4
12	BT306IU	Developmental Biology	4	4		4	4	
13	BT361IU	Scientific Writing Workshop	4	4	4	4	4	
14	BT217IU	<i>Molecular Genetics</i>	4	4		4		
15	BT353IU	Reproductive and Regenerative Biomedicine	4	4		4	4	
16	BT216IU	Experimental	4	4		4	4	

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần					
			NLTP 2.1	NLTP 2.2	NLTP 2.3	NLTP 2.4	NLTP 2.5	NLTP 2.6
		Design						
17	BT366IU	Protein Biotechnology	4	4		4	4	
18	BT345IU	Crop Biotechnology	4	4		4	4	
19	BT347IU	Techniques in Plant Biotechnology	4	4		4	4	
20	BT349IU	Pharmaceutical Biotechnology	4	4		4	4	
21	BT351IU	Molecular Diagnostics	4	4		4	4	
22	BT355IU	Stem Cell Biology	4	4		4	4	
23	BT357IU	Medical Microbiology	4	4		4	4	
24	BT367IU	Thesis	4	4	4	4	4	4

3. Miền năng lực 3: Sáng tạo nội dung số

* Đánh giá năng lực thành phần theo 8 bậc của Khung năng lực số (từ bậc 1 đến bậc 8)

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần			
			NLTP 3.1	NLTP 3.2	NLTP 3.3	NLTP 3.4
1	BT150IU	Introduction to Biotechnology	4	4	4	
2	BT311IU	Biology	4	4	4	
3	BT210IU	Human Physiology	4	4	4	
4	BT313IU	Genetics	4	4	4	

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần			
			NLTP 3.1	NLTP 3.2	NLTP 3.3	NLTP 3.4
5	BT010IU	Plant Physiology	4	4	4	
6	BT315IU	Analytical Chemistry	4	4	4	
7	BT335IU	Immunology	4	4	4	
8	BT319IU	Biochemistry	4	4	4	
9	BT321IU	Microbiology	4	4	4	
10	BT333IU	Molecular Biotechnology	4	4	4	
11	BT337IU	Bioinformatics	4	4	4	4
12	BT216IU	Experimental Design	4	4	4	
13	BT306IU	Developmental Biology	4	4	4	
14	BT361IU	Scientific Writing Workshop	4	4	4	
15	BT217IU	Molecular Genetics	4	4	4	4
16	BT353IU	Reproductive and Regenerative Biomedicine	4	4	4	
17	BT366IU	Protein Biotechnology	4	4	4	
18	BT345IU	Crop Biotechnology	4	4	4	
19	BT347IU	Techniques in Plant Biotechnology	4	4	4	
20	BT349IU	Pharmaceutical Biotechnology	4	4	4	
21	BT351IU	Molecular	4	4	4	

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần			
			NLTP 3.1	NLTP 3.2	NLTP 3.3	NLTP 3.4
		Diagnostics				
22	BT359IU	Microbial Biotechnology	4	4	4	
23	BT355IU	Stem Cell Biology	4	4	4	
24	BT357IU	Medical Microbiology	4	4	4	
25	BT367IU	Thesis	4	4	4	4

4. Miền năng lực 4: An toàn

* Đánh giá năng lực thành phần theo 8 bậc của Khung năng lực số (từ bậc 1 đến bậc 8)

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần			
			NLTP 4.1	NLTP 4.2	NLTP 4.3	NLTP 4.4
1	BT150IU	Introduction to Biotechnology	4	4	4	4
2	BT311IU	Biology	4	4	4	
3	BT210IU	Human Physiology	4	4	4	
4	BT313IU	Genetics	4	4	4	
5	BT010IU	Plant Physiology	4	4	4	
6	BT315IU	Analytical Chemistry	4	4	4	
7	BT335IU	Immunology	4	4	4	
8	BT319IU	Biochemistry	4	4	4	
9	BT321IU	Microbiology				
10	BT333IU	Molecular Biotechnology	4	4	4	

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần			
			NLTP 4.1	NLTP 4.2	NLTP 4.3	NLTP 4.4
11	BT337IU	Bioinformatics	4	4	4	
12	BT216IU	Experimental Design	4	4	4	
13	BT306IU	Developmental Biology	4	4	4	
14	BT361IU	Scientific Writing Workshop	4	4	4	
15	BT217IU	Molecular Genetics	4	4	4	
16	BT353IU	Reproductive and Regenerative Biomedicine	4	4	4	4
17	BT366IU	Protein Biotechnology	4	4	4	
18	BT345IU	Crop Biotechnology	4	4	4	
19	BT347IU	Techniques in Plant Biotechnology	4	4	4	
20	BT349IU	Pharmaceutical Biotechnology	4	4	4	
21	BT351IU	Molecular Diagnostics	4	4	4	
22	BT359IU	Microbial Biotechnology	4	4	4	
23	BT355IU	Stem Cell Biology	4	4	4	
24	BT357IU	Medical Microbiology	4	4	4	
25	BT367IU	Thesis	4	4	4	4

5. Miền năng lực 5: Giải quyết vấn đề

* Đánh giá năng lực thành phần theo 8 bậc của Khung năng lực số (từ bậc 1 đến bậc 8)

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần			
			NLTP 5.1	NLTP 5.2	NLTP 5.3	NLTP 5.4
1	BT150IU	Introduction to Biotechnology	4	4	4	
2	BT311IU	Biology	4	4	4	
3	BT210IU	Human Physiology	4	4	4	
4	BT313IU	Genetics	4	4	4	4
5	BT010IU	Plant Physiology	4	4	4	
6	BT315IU	Analytical Chemistry	4	4	4	4
7	BT335IU	Immunology	4	4	4	
8	BT319IU	Biochemistry	4	4	4	
9	BT321IU	Microbiology	4	4	4	
10	BT333IU	Molecular Biotechnology	4	4	4	
11	BT337IU	Bioinformatics	4	4	4	4
12	BT216IU	Experimental Design	4	4	4	
13	BT306IU	Developmental Biology	4	4	4	
14	BT361IU	Scientific Writing Workshop	4	4	4	4
15	BT217IU	Molecular Genetics	4	4	4	4
16	BT353IU	Reproductive and Regenerative Biomedicine	4	4	4	
17	BT366IU	Protein	4	4	4	

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần			
			NLTP 5.1	NLTP 5.2	NLTP 5.3	NLTP 5.4
		Biotechnology				
18	BT345IU	Crop Biotechnology	4	4	4	
19	BT347IU	Techniques in Plant Biotechnology	4	4	4	
20	BT349IU	Pharmaceutical Biotechnology	4	4	4	
21	BT351IU	Molecular Diagnostics	4	4	4	
22	BT359IU	Microbial Biotechnology	4	4	4	
23	BT355IU	Stem Cell Biology	4	4	4	
24	BT357IU	Medical Microbiology	4	4	4	
25	BT221IU	Internship	4	4	4	4
26	BT367IU	Thesis	4	4	4	4

6. Miền năng lực 6: Ứng dụng trí tuệ nhân tạo

** Đánh giá năng lực thành phần theo 8 bậc của Khung năng lực số (từ bậc 1 đến bậc 8)*

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần		
			NLTP 6.1	NLTP 6.2	NLTP 6.3
1	BT150IU	Introduction to Biotechnology	4	4	4
2	BT311IU	Biology	4	4	4
3	BT210IU	Human Physiology	4	4	4
4	BT313IU	Genetics	4	4	4

5	BT010IU	Plant Physiology	4	4	4
6	BT315IU	Analytical Chemistry	4	4	4
7	BT335IU	Immunology	4	4	4
8	BT319IU	Biochemistry	4	4	4
9	BT321IU	Microbiology	4	4	4
10	BT333IU	Molecular Biotechnology	4	4	4
11	BT337IU	Bioinformatics	4	4	4
12	BT216IU	Experimental Design	4	4	4
13	BT306IU	Developmental Biology	4	4	4
14	BT361IU	Scientific Writing Workshop	4	4	4
15	BT217IU	Molecular Genetics	4	4	4
16	BT353IU	Reproductive and Regenerative Biomedicine	4	4	4
17	BT366IU	Protein Biotechnology	4	4	4
18	BT345IU	Crop Biotechnology	4	4	4
19	BT347IU	Techniques in Plant Biotechnology	4	4	4
20	BT349IU	Pharmaceutical Biotechnology	4	4	4
21	BT351IU	Molecular Diagnostics	4	4	4
22	BT359IU	Microbial Biotechnology	4	4	4
23	BT355IU	Stem Cell Biology	4	4	4
24	BT357IU	Medical Microbiology	4	4	4
25	BT221IU	Internship	4	4	4
26	BT367IU	Thesis	4	4	4

II. Phương pháp đánh giá chuẩn đầu ra khung năng lực số

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
1. Khai thác dữ liệu và thông tin	NLTP 1.1	BT150IU - Introduction to Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT311IU - Biology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT210IU - Human Physiology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT313IU - Genetics	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT010IU - Plant Physiology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT315IU - Analytical Chemistry	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT335IU - Immunology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT319IU - Biochemistry	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT321IU - Microbiology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT333IU - Molecular Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT337IU - Bioinformatics	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT216IU - Experimental Design	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT306IU - Developmental Biology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT361IU - Scientific Writing Workshop	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT217IU - Molecular Genetics	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT353IU - Reproductive and Regenerative Biomedicine	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT366IU - Protein Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT345IU - Crop Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT347IU - Techniques in Plant Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT349IU - Pharmaceutical Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT351IU - Molecular Diagnostics	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT359IU - Microbial Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT355IU - Stem Cell Biology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT357IU - Medical Microbiology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT367IU - Thesis	Bài viết Thesis/slides/thuyết trình
	NLTP 1.2	BT150IU - Introduction to Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT311IU - Biology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT210IU - Human Physiology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT313IU - Genetics	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT010IU - Plant Physiology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT315IU - Analytical Chemistry	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT335IU - Immunology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT319IU - Biochemistry	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
			blackboard
		BT321IU - Microbiology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT333IU - Molecular Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT337IU - Bioinformatics	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT216IU - Experimental Design	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT306IU - Developmental Biology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT361IU - Scientific Writing Workshop	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT217IU - Molecular Genetics	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT353IU - Reproductive and Regenerative Biomedicine	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT366IU - Protein Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT345IU - Crop Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT347IU - Techniques in Plant Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT349IU - Pharmaceutical Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT351IU - Molecular Diagnostics	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT359IU - Microbial Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT355IU - Stem Cell Biology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT357IU - Medical Microbiology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT367IU - Thesis	Bài viết Thesis/slides/thuyết trình
	NLTP 1.3	BT150IU - Introduction to Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT311IU - Biology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT210IU - Human Physiology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT313IU - Genetics	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT010IU - Plant Physiology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
			blackboard
		BT315IU - Analytical Chemistry	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT335IU - Immunology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT319IU - Biochemistry	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT321IU - Microbiology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT333IU - Molecular Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT337IU - Bioinformatics	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT216IU - Experimental Design	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT306IU - Developmental Biology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT361IU - Scientific Writing Workshop	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT217IU - Molecular Genetics	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT353IU - Reproductive and	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		Regenerative Biomedicine	blackboard
		BT366IU - Protein Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT345IU - Crop Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT347IU - Techniques in Plant Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT349IU - Pharmaceutical Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT351IU - Molecular Diagnostics	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT359IU - Microbial Biotechnology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT355IU - Stem Cell Biology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT357IU - Medical Microbiology	Tìm kiếm tài liệu khoa học/thuyết trình nhóm/bài tập và tương tác qua blackboard
		BT367IU - Thesis	Bài viết Thesis/slides/thuyết trình
2. Giao tiếp và hợp tác trong môi trường số	NLTP 2.1	BT150IU - Introduction to Biotechnology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT311IU - Biology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT210IU - Human Physiology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT313IU - Genetics	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT010IU - Plant Physiology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT315IU - Analytical Chemistry	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT335IU - Immunology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT319IU - Biochemistry	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT321IU - Microbiology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT333IU - Molecular Biotechnology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT337IU - Bioinformatics	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT216IU - Experimental Design	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT306IU - Developmental Biology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT361IU - Scientific Writing Workshop	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT217IU - Molecular Genetics	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT353IU - Reproductive and Regenerative Biomedicine	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT366IU - Protein Biotechnology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT345IU - Crop Biotechnology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT347IU - Techniques in Plant Biotechnology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT349IU - Pharmaceutical Biotechnology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT351IU - Molecular Diagnostics	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT359IU - Microbial Biotechnology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT355IU - Stem Cell Biology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.
		BT357IU - Medical Microbiology	Giao tiếp giữa giảng viên và sinh viên qua Blackboard/bài tập/thuyết trình.

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT367IU - Thesis	Báo cáo online/chuẩn bị slides/thuyết trình
	NLTP 2.2	BT150IU - Introduction to Biotechnology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT311IU - Biology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT210IU - Human Physiology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT313IU - Genetics	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT010IU - Plant Physiology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT315IU - Analytical Chemistry	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT335IU - Immunology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT319IU - Biochemistry	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT321IU - Microbiology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT333IU - Molecular Biotechnology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT337IU - Bioinformatics	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT216IU - Experimental Design	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT306IU - Developmental Biology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT217IU - Molecular Genetics	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT353IU - Reproductive and Regenerative Biomedicine	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT366IU - Protein Biotechnology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT345IU - Crop Biotechnology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT347IU - Techniques in Plant Biotechnology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT349IU - Pharmaceutical Biotechnology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT351IU - Molecular Diagnostics	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT359IU - Microbial Biotechnology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT355IU - Stem Cell Biology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT357IU - Medical Microbiology	Bài tập nhóm/thuyết trình/ tìm kiếm tài liệu
		BT367IU - Thesis	Thuyết trình/ tìm kiếm tài liệu/Chuẩn bị slides
	NLTP 2.3	BT150IU - Introduction to Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT311IU - Biology	Bài tập nhóm/Thuyết trình nhóm
		BT210IU - Human	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		Physiology	
		BT313IU - Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT010IU - Plant Physiology	Bài tập nhóm/Thuyết trình nhóm
		BT315IU - Analytical Chemistry	Bài tập nhóm/Thuyết trình nhóm
		BT335IU - Immunology	Bài tập nhóm/Thuyết trình nhóm
		BT319IU - Biochemistry	Bài tập nhóm/Thuyết trình nhóm
		BT321IU - Microbiology	Bài tập nhóm/Thuyết trình nhóm
		BT333IU - Molecular Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT306IU - Developmental Biology	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT217IU - Molecular Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT353IU - Reproductive and Regenerative Biomedicine	Bài tập nhóm/Thuyết trình nhóm
		BT366IU - Protein Biotechnology	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT345IU - Crop Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT347IU - Techniques in Plant Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT349IU - Pharmaceutical Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT351IU - Molecular Diagnostics	Bài tập nhóm/Thuyết trình nhóm
		BT359IU - Microbial Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT355IU - Stem Cell Biology	Bài tập nhóm/Thuyết trình nhóm
		BT357IU - Medical Microbiology	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thuyết trình/Slides
	NLTP 2.4	BT150IU - Introduction to Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT311IU - Biology	Bài tập nhóm/Thuyết trình nhóm
		BT210IU - Human Physiology	Bài tập nhóm/Thuyết trình nhóm
		BT313IU - Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT010IU - Plant Physiology	Bài tập nhóm/Thuyết trình nhóm
		BT315IU - Analytical Chemistry	Bài tập nhóm/Thuyết trình nhóm
		BT335IU - Immunology	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT319IU - Biochemistry	Bài tập nhóm/Thuyết trình nhóm
		BT321IU - Microbiology	Bài tập nhóm/Thuyết trình nhóm
		BT333IU - Molecular Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT306IU - Developmental Biology	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT217IU - Molecular Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT353IU - Reproductive and Regenerative Biomedicine	Bài tập nhóm/Thuyết trình nhóm
		BT366IU - Protein Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT345IU - Crop Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT347IU - Techniques in Plant Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT349IU - Pharmaceutical Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT351IU - Molecular Diagnostics	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT359IU - Microbial Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT355IU - Stem Cell Biology	Bài tập nhóm/Thuyết trình nhóm
		BT357IU - Medical Microbiology	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thuyết trình/Slides
	NLTP 2.5	BT150IU - Introduction to Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT311IU - Biology	Bài tập nhóm/Thuyết trình nhóm
		BT210IU - Human Physiology	Bài tập nhóm/Thuyết trình nhóm
		BT313IU - Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT010IU - Plant Physiology	Bài tập nhóm/Thuyết trình nhóm
		BT315IU - Analytical Chemistry	Bài tập nhóm/Thuyết trình nhóm
		BT335IU - Immunology	Bài tập nhóm/Thuyết trình nhóm
		BT319IU - Biochemistry	Bài tập nhóm/Thuyết trình nhóm
		BT321IU - Microbiology	Bài tập nhóm/Thuyết trình nhóm
		BT333IU - Molecular Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT306IU - Developmental Biology	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT217IU - Molecular Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT353IU - Reproductive and Regenerative Biomedicine	Bài tập nhóm/Thuyết trình nhóm
		BT366IU - Protein Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT345IU - Crop Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT347IU - Techniques in Plant Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT349IU - Pharmaceutical Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT351IU - Molecular Diagnostics	Bài tập nhóm/Thuyết trình nhóm
		BT359IU - Microbial Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT355IU - Stem Cell Biology	Bài tập nhóm/Thuyết trình nhóm
		BT357IU - Medical Microbiology	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thuyết trình/Slides
	NLTP 2.6	BT367IU - Thesis	Luận văn/thuyết trình/slides

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
3. Sáng tạo nội dung số	NLTP 3.1.	BT150IU - Introduction to Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT311IU - Biology	Bài tập nhóm/Thuyết trình nhóm
		BT210IU - Human Physiology	Bài tập nhóm/Thuyết trình nhóm
		BT313IU - Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT010IU - Plant Physiology	Bài tập nhóm/Thuyết trình nhóm
		BT315IU - Analytical Chemistry	Bài tập nhóm/Thuyết trình nhóm
		BT335IU - Immunology	Bài tập nhóm/Thuyết trình nhóm
		BT319IU - Biochemistry	Bài tập nhóm/Thuyết trình nhóm
		BT321IU - Microbiology	Bài tập nhóm/Thuyết trình nhóm
		BT333IU - Molecular Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT306IU - Developmental Biology	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT217IU - Molecular Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT353IU -	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		Reproductive and Regenerative Biomedicine	
		BT366IU - Protein Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT345IU - Crop Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT347IU - Techniques in Plant Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT349IU - Pharmaceutical Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT351IU - Molecular Diagnostics	Bài tập nhóm/Thuyết trình nhóm
		BT359IU - Microbial Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT355IU - Stem Cell Biology	Bài tập nhóm/Thuyết trình nhóm
		BT357IU - Medical Microbiology	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/Slides/Thuyết trình
	NLTP 3.2.	BT150IU - Introduction to Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT311IU - Biology	Bài tập nhóm/Thuyết trình nhóm
		BT210IU - Human Physiology	Bài tập nhóm/Thuyết trình nhóm
		BT313IU - Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT010IU - Plant Physiology	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT315IU - Analytical Chemistry	Bài tập nhóm/Thuyết trình nhóm
		BT335IU - Immunology	Bài tập nhóm/Thuyết trình nhóm
		BT319IU - Biochemistry	Bài tập nhóm/Thuyết trình nhóm
		BT321IU - Microbiology	Bài tập nhóm/Thuyết trình nhóm
		BT333IU - Molecular Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT306IU - Developmental Biology	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT217IU - Molecular Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT353IU - Reproductive and Regenerative Biomedicine	Bài tập nhóm/Thuyết trình nhóm
		BT366IU - Protein Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT345IU - Crop Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT347IU - Techniques in Plant Biotechnology	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT349IU - Pharmaceutical Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT351IU - Molecular Diagnostics	Bài tập nhóm/Thuyết trình nhóm
		BT359IU - Microbial Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT355IU - Stem Cell Biology	Bài tập nhóm/Thuyết trình nhóm
		BT357IU - Medical Microbiology	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/Slides/Thuyết trình
	NLTP 3.3.	BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT306IU - Developmental Biology	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/Slides/Thuyết trình
	NLTP 3.4	BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/Slides/Thuyết trình
	NLTP 4.1	BT150IU - Introduction to Biotechnology	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
4. An toàn		BT311IU - Biology	Bài tập nhóm/Thuyết trình nhóm
		BT210IU - Human Physiology	Bài tập nhóm/Thuyết trình nhóm
		BT313IU - Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT010IU - Plant Physiology	Bài tập nhóm/Thuyết trình nhóm
		BT315IU - Analytical Chemistry	Bài tập nhóm/Thuyết trình nhóm
		BT335IU - Immunology	Bài tập nhóm/Thuyết trình nhóm
		BT319IU - Biochemistry	Bài tập nhóm/Thuyết trình nhóm
		BT321IU - Microbiology	Bài tập nhóm/Thuyết trình nhóm
		BT333IU - Molecular Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT306IU - Developmental Biology	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT217IU - Molecular Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT353IU - Reproductive and Regenerative Biomedicine	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT366IU - Protein Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT345IU - Crop Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT347IU - Techniques in Plant Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT349IU - Pharmaceutical Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT351IU - Molecular Diagnostics	Bài tập nhóm/Thuyết trình nhóm
		BT359IU - Microbial Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT355IU - Stem Cell Biology	Bài tập nhóm/Thuyết trình nhóm
		BT357IU - Medical Microbiology	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/Slides/thuyết trình
	NLTP 4.2	BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT217IU - Molecular Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT366IU - Protein Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT349IU - Pharmaceutical	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		Biotechnology	
		BT313IU - Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT321IU - Microbiology	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/slides/thuyết trình
	NLTP 4.3	BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT313IU - Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/slides/thuyết trình
	NLTP 4.4	BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT150IU - Introduction to Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT311IU - Biology	Bài tập nhóm/Thuyết trình nhóm
		BT210IU - Human Physiology	Bài tập nhóm/Thuyết trình nhóm
		BT010IU - Plant Physiology	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT367IU - Thesis	Thesis report/slides/thuyết trình
5. Giải quyết vấn đề	NLTP 5.1	BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT366IU - Protein Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT217IU - Molecular Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT333IU - Molecular Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT353IU - Reproductive and Regenerative Biomedicine	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/slides/thuyết trình
	NLTP 5.2	BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT366IU - Protein Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT217IU - Molecular Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT333IU - Molecular Biotechnology	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT353IU - Reproductive and Regenerative Biomedicine	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/slides/thuyết trình
	NLTP 5.3	BT333IU - Molecular Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT353IU - Reproductive and Regenerative Biomedicine	Bài tập nhóm/Thuyết trình nhóm
		BT366IU - Protein Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT349IU - Pharmaceutical Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT351IU - Molecular Diagnostics	Bài tập nhóm/Thuyết trình nhóm
		BT313IU - Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/slides/thuyết trình
	NLTP 5.4	BT333IU - Molecular Biotechnology	
		BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT353IU - Reproductive and Regenerative Biomedicine	Bài tập nhóm/Thuyết trình nhóm
		BT366IU - Protein Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT349IU - Pharmaceutical Biotechnology	Bài tập nhóm/Thuyết trình nhóm
		BT351IU - Molecular Diagnostics	Bài tập nhóm/Thuyết trình nhóm
		BT313IU - Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT351IU - Molecular Diagnostics	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/slides/thuyết trình
6. Ứng dụng trí tuệ nhân tạo	NLTP 6.1	BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT351IU - Molecular Diagnostics	Bài tập nhóm/Thuyết trình nhóm
		BT313IU - Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/slides/thuyết trình
	NLTP 6.2	BT337IU -	Bài tập nhóm/Thuyết trình nhóm

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
		Bioinformatics	
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT351IU - Molecular Diagnostics	Bài tập nhóm/Thuyết trình nhóm
		BT313IU - Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT306IU - Developmental Biology	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/slides/thuyết trình
	NLTP 6.3	BT337IU - Bioinformatics	Bài tập nhóm/Thuyết trình nhóm
		BT361IU - Scientific Writing Workshop	Bài tập nhóm/Thuyết trình nhóm
		BT216IU - Experimental Design	Bài tập nhóm/Thuyết trình nhóm
		BT351IU - Molecular Diagnostics	Bài tập nhóm/Thuyết trình nhóm
		BT313IU - Genetics	Bài tập nhóm/Thuyết trình nhóm
		BT367IU - Thesis	Thesis report/slides/thuyết trình



ĐẠI HỌC QUỐC GIA
THÀNH PHỐ HỒ CHÍ MINH
TRƯỜNG ĐẠI HỌC QUỐC TẾ

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Phụ lục 3
ĐỀ CƯƠNG CHI TIẾT CÁC MÔN HỌC
*(Kèm theo Quyết định số 1180 /QĐ-ĐHQT ngày 04 tháng 9 năm 2025
của Hiệu trưởng Trường Đại học Quốc tế)*

Đề cương các môn học thuộc chương trình đào tạo:





VIETNAM NATIONAL UNIVERSITY HCMC INTERNATIONAL UNIVERSITY

COURSE SYLLABUS

General Law

PE021IU

1. General information

Department	Office of Academic Affairs
Course classification	Foundation course
Course designation	Face to face
Semester(s) in which the course is taught	All semesters in each academic year
Person responsible for the course	Dr. Vo Tuong Huan LLM. Bui Doan Danh Thao
Language	English
Relation to curriculum	Compulsory
Teaching methods	Student-centred approach
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours Contact hours (lecture, in class discussions): 37.5 hours (=45 periods) Private study including examination preparation, specified in hours ¹ : 90 hours
Credit points	3
Required and recommended prerequisites for joining the course	N/A

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course objectives	The overarching aims of this course are to: • Provide essential knowledge of Vietnamese legal system through integrated technology and real cases for social and cultural sustainability. • Raise awareness of responsibility toward others and how to stand for ending all types of legal violations, especially corruption in various social contexts. • Practice necessary skills to act as an ambassador to ensure social fairness and global equitable rights. • Use integrated online legal resources and communication tools to help the community to identify issues and develop countermeasures.	
Course learning outcomes	Upon the successful completion of this course, students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Apply appropriate legal knowledge in the Vietnamese legal system to solve legal issues in various social contexts for a fair sustainable lifelong being. CLO1.1. Apply general knowledge on state and law to solve legal issues in various social contexts for a fair sustainable lifelong being. CLO1.2. Apply principle legal norms in some law branches such as constitution, civil, criminal, labor and administrative law to solve legal issues in various social contexts for a fair sustainable lifelong being.
	Skill	CLO2. Communicate knowledge in the Vietnamese legal system to encourage people to raise their legal rights aiming for fair social/cultural moves. CLO3. Integrate ICTs to solve legal issues in various social contexts.
	Attitude	CLO4. Detect the responsibility to ensure social and cultural fairness, including ending corruption, in various social contexts through understanding importance of law in social contexts. CLO5. Respond to the base for coexistence in various social contexts.
Content	The course will introduce students to Vietnamese legal systems. In particular, students will understand their rights and obligations in the Constitution, Criminal law, administrative law, civil law, labor law and enterprise law of Vietnam. From this, students will raise awareness towards their responsibility to ensure justice, including ending corruption, in society.	
Examination forms	Multiple choice questions Case-based exams Essay exams Oral exams	

Study and examination requirements

To pass this course, the students must:

- Achieve a composite mark of at least 50; and
- Make a satisfactory attempt at all assessment tasks (see below).

GRADING POLICY

Grades can be based on the following:

Assignment	20%
Midterm examination	30%
Final examination	50%
Total	100%

COURSE POLICIES**Attendance**

Regular and punctual attendance at lectures and seminars is expected in this course. University regulations indicate that if students attend less than eighty percent of scheduled classes they may be refused final assessment. Exemptions may only be made on eligible medical grounds.

Workload

It is expected that the students will spend at least *six* hours per week studying this course. This time should be made up of reading, research, working on exercises and problems, and attending classes. In periods where they need to complete assignments or prepare for examinations, the workload may be greater.

Over-commitment has been a cause of failure for many students. They should take the required workload into account when planning how to balance study with part-time jobs and other activities.

General Conduct and Behaviour

The students are expected to conduct themselves with consideration and respect for the needs of fellow students and teaching staff. Conduct which unduly disrupts or interferes with a class, such as ringing or talking on mobile phones, is not acceptable and students will be asked to leave the class. The use of laptops is also encouraged during law lessons only to search for materials online. More information on student conduct is available on [the university webpage](#).

Keeping informed

The students should take note of all announcements made in lectures or on the course's Blackboard, and another announced mean of communications. From time to time, the university will send important announcements to their university e-mail addresses without providing a paper copy. The students will be deemed to have received this information.

Academic honesty and plagiarism

Plagiarism is the presentation of the thoughts or work of another as one's own. Students are also reminded that careful time management is an important part of the study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and

	the proper referencing of sources in preparing all assessment items. The university regards plagiarism as a form of academic misconduct and has very strict rules regarding plagiarism. Special consideration Requests for special consideration (for final examination only) must be made to the Office of Academic Affairs within one week after the examination. General policy and information on special consideration can be found at the Office of Academic Affairs. Absence on the Mid-term is not allowed, or in special cases approved by Lecturer can be replaced with relevant Assignment. Meeting up with the lecturers after classes Students must make an appointment via emails if they want to meet up with the lecturer after classes and be on time. If there are any changes to the scheduled time, students must inform the lecturer immediately.
Reading list	Please note that it is very important to gain familiarity with the subject matter in the readings and cases available on Blackboard and the internet <i>before</i> attendance in classes. Required Course Texts and Materials <u>Legal Texts:</u> 1. Constitution of Vietnam - 2013 2. Civil Code of Vietnam - 2015 3. Criminal Code of Vietnam – 2015 (amended in 2017) 4. Law on Law on Handling of Administrative Violations 2012 5. Law on Enterprises – 2020 6. Labour Code 2019 7. Law on anti-corruption 2018 Available at https://luatvietnam.vn/ or Blackboard <u>Books:</u> • PGS.TS. Phan Trung Hien, <i>Giáo trình Pháp Luật Đại cương</i>, NXB Chính Trị Quốc Gia Sự Thật 2022. • Mai Hong Quy (Chief Editor) (2nd 2017), <i>Introduction to Vietnamese Law</i>, Hong Duc Publishing House. <u>Additional materials provided in Blackboard</u> The lecturer will attempt to make lecture notes and additional reading available on Blackboard. However, this is not an automatic entitlement for students doing this subject. Note that this is not a distance learning course, and you are expected to attend lectures and take notes. This way, you will get the added benefit of class interaction and demonstration. Optional Course Texts and Materials <u>Recommended Internet sites</u> UNCTAD (United Nations Conference on Trade and Development) WTO (World Trade Organization) MOIT - Vietnam (Official website of Ministry of Industry and Trade) MPI - Vietnam (Official website of Ministry of Planning and Investment)

	<u>Other Resources, Support and Information</u> Additional learning assistance is available for students in this course and will be made available on Blackboard. Academic journal articles are available through connections via the VNU - Central Library. Recommended articles will be duly informed to the students. <u>Books:</u> • Nguyen Phu Trong, <i>Kiên quyết, kiên trì đấu tranh phòng, chống tham nhũng, tiêu cực, góp phần xây dựng đảng và nhà nước ta ngày càng trong sạch, vững mạnh</i>, NXB Chính Trị Quốc Gia Sự Thật 2023. • University of Law Ho Chi Minh City, <i>Giáo trình luật Hiến pháp Việt nam</i>, NXB Hồng Đức 2023. • University of Law Ho Chi Minh City, <i>Giáo trình Luật hành chính</i>, NXB Hồng Đức 2022. • University of Law Ho Chi Minh City, <i>Giáo trình Luật hình sự Việt Nam</i>, NXB Hồng Đức 2022. • University of Law Ho Chi Minh City, <i>Giáo trình Luật dân sự Việt Nam</i>, NXB Hồng Đức 2022. • University of Law Ho Chi Minh City, <i>Giáo trình Luật lao động Việt Nam</i>, NXB Hồng Đức 2022. • University of Law Ho Chi Minh City, <i>Giáo trình pháp luật về chủ thể kinh doanh</i>, NXB Hồng Đức 2022.

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (SLO) (1-5) and Program/Student Learning Outcomes (PLO/SLO) (1 - 10) is shown in the following table:

	PLO/SLO									
SLO	1	2	3	4	5	6	7	8	9	10
1	R,M					R,M	R,M	R,M	R,M	R,M
2			R,M							
3			R,M							
4				R,M						
5					R,M					

R: Reinforced

M: Mastery

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to State • What is State? • Nature of state • Forms of state • Functions of state • Introduction to structure of Vietnamese state	1-5 (level I - introduced)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPT - Introduction to Vietnamese legal system available on Blackboard

2	Introduction to law? • What is law? • Nature of law • Forms of law • Structure of law • Categorization of legal system. • Enforcement • Breach of law and liabilities for breach of law • Introduction to structure of Vietnamese legal system	1-5 (level I - introduced)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPT - Introduction to Vietnamese legal system available on Blackboard
3	Constitutional Law • General introduction on Vietnamese Constitution and its nature and basic principles. • Political, economic and other regimes of Vietnam • Basic rights and responsibilities of citizens. Relationship between citizens and the State. • Structure, functions and duties of Vietnamese state, especially in prevention of corruption	1-5 (Level R - reinforced)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPTs – Constitutional law available on Blackboard Constitution 2013 available on Blackboard
4	Constitutional Law (Cont) • Structure and functions and duties of Vietnamese state • Duties of the state in prevention of corruption	1-5 (Level R - reinforced)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPTs – Constitutional law available on Blackboard Constitution 2013 available on Blackboard
5	Administrative Law • Definition and nature of administrative law • Administrative law violations • Liabilities for breach of administrative law, exemption from the liability	1-5 (Level R - reinforced)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies and law on anti-corruption	PPT– Administrative law available on Blackboard Law on handling administrative violations 2012, and Law on anti-corruption 2018 available on Blackboard
6	Criminal Law • Definition and nature of criminal law	1-5 (Level R - reinforced)	Tests Peer evaluations Class-performance	Discussions Case studies, especially cases related	PPT– Criminal law available on Blackboard

	- Crimes - Punishments		evaluations	to corruption	Criminal code 2015 available on Blackboard
7	Criminal Law (Cont) - Crimes related to corruption - Punishments for corruption	1-5 (Level R - reinforced)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies, especially cases related to corruption	PPT– Criminal law available on Blackboard Criminal code 2015 available on Blackboard
8	Revision for mid-term exam		Quizzes Projects		
9	Civil Law (Part I) - Definition and nature Civil law relationship - Subject of civil law - Property and ownership - Civil transactions	1-5 (Level R - reinforced)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPT– Civil law available on Blackboard Civil code 2015 available on Blackboard
10	Civil Law (Part II) - Contracts - Definitions - Formation of contracts - Validity of contracts - Liability for breach of contracts	1-5 (Level M - Mastery)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPT– Civil law available on Blackboard Civil code 2015 available on Blackboard
11	Civil Law (Part III) - Inheritance - Testamentary inheritance - Intestacy	1-5 (Level M - Mastery)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPT– Civil law available on Blackboard Civil code 2015 available on Blackboard
12	Law on Enterprises - Introduction to law on enterprises - Introduction to forms, features, establishment, reorganization and dissolution of an enterprise	1-5 (Level I - Introduced)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPT– Law on enterprises available on Blackboard Law on enterprises 2020 available on Blackboard
13	Labor Law - Definition, and nature of labour law - Employees and employers - Working time, and resting time - Salary (including salary for overtime working hours)	1-5 (Level M - Mastery)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPT– Labor law available on Blackboard Labor code 2019 available on Blackboard
14	Labour Law (Cont.)	1-5 (Level M -	Tests Peer evaluations	Discussions Case studies	PPT– Labor law available on

	• Employment contracts • Labor disciplines • Dispute settlements	Mastery)	Class-performance evaluations		Blackboard Labor code 2019 available on Blackboard
15	Revision/ Tutoring classes		Quizzes Projects		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
In class evaluation (20%)	70% pass	80% pass	100% pass	100% pass	100% pass
Midterm examination (30%)	70% pass	80% pass	100% pass	100% pass	100% pass
Final examination (50%)	70% pass	80% pass	100% pass	100% pass	100% pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

No.	CLOs	Criteria	COMPLETELY FAIL Below 30%	INADEQUATE 30% – 49%	ADEQUATE 50% - 69%	ABOVE AVERAGE 70% - 89%	EXEMPLARY ≥ 90%
1	CLO 1	Organisation and clarification	No evidence of organization and coherence	Does not organise ideas logically and with clarification Limited evidence of coherence Ideas lack consistence	Generally organised logically, with evidence of progression Occasionally, there may be a lack of focus or ideas may be tangential	Clear organization and progression. Responds appropriately and relevantly, although some ideas are underdeveloped	Response is focused, detailed and non-tangential. Shows a high degree of attention to logic and reasoning of points. Clearly leads the reader to the conclusion and stirs thought regarding the topic
2		Originality and usefulness of the analysis	Shows no ability to identify legal issues or a clear inability to gather the facts	Demonstrates an incomplete grasp of the task. There is no overall sense of creative coherence. Arguments are addressed incompletely.	Shows ability to identify legal issues, gather the facts and develop claims. Argument are addressed well but no links with evidence	Shows strong ability to identify legal issues, gather the fact and develop claims as well as link claims with evidence. Overall, an acceptable solution is offered and explained	Shows strong ability to identify legal issues, gather the facts and develop claims as well as link claims with evidence. Satisfactory solutions are offered and supported
3		Use of data/information	Shows no effort to incorporate information from primary and secondary sources	Shows little information from sources. Poor handling of sources	Shows moderate amount of source information incorporated. Some key points supported by sources. Quotations may be poorly integrated into paragraphs. Some possible problems with source citations	Draws upon sources to support most points. Some evidence may not support arguments or may appear where inappropriate. Quotations integrated well into paragraphs. Sources cited correctly	Draws upon primary and secondary source information in useful and illuminating ways to support key points. Excellent integration of quoted material into paragraphs. Source cited correctly
4	CLO2	Use of frameworks	Shows no effort to structure	Shows limited ability to structure	Shows effort to link problems with the theoretical	Shows ability to structure problems in	Shows ability to structure problems in correspondence to

			problems in correspondence to theoretical frameworks	problems in correspondence to theoretical frameworks	frameworks. There are still some mistakes	correspondence to theoretical frameworks correctly. Minor mistakes in resolving problems	theoretical frameworks correctly. The problems are well resolved
5		Quality of arguments	Shows no effort to construct logical arguments. Fails to support analysis	Shows little attempt to offer support for key claims or to relate evidence to analysis. Reasons offered are irrelevant.	Shows argument of poor quality. Weak, undeveloped reasons are offered to support key claims	Shows clear, relevant and logical arguments.	Shows identifiable, reasonable and sound arguments. Clear reasons are offered to support key claims.

Ho Chi Minh City, May 2023
Head of Office of Academic Affairs

Huỳnh Khả Tú

ĐẠI HỌC QUỐC GIA THÀNH PHỐ HỒ CHÍ MINH
KHOA CHÍNH TRỊ - HÀNH CHÍNH

ĐỀ CƯƠNG CHI TIẾT MÔN HỌC
(Dành cho trường Đại học Quốc Tế)

1. Thông tin tổng quát

- Tên môn học:

+ Tiếng Việt

+ Tiếng Anh

- Mã số môn học: PE015IU

- Thuộc khối kiến thức/kỹ năng:

☒ Kiến thức cơ bản/giáo dục đại cương

☐ Kiến thức chuyên ngành

☐ Môn học chuyên về kỹ năng chung

- Số tín chỉ:

+ Lý thuyết

+ Thực hành (thuyết trình)

- Môn học tiên quyết: Không

- Môn học trước: Không

- Môn học song hành: Không

Triết học Mác-Lênin

Philosophy of Marxism – Leninism

☐ Kiến thức cơ sở ngành

☐ Kiến thức khác

☐ Môn học đồ án/luận văn tốt nghiệp

03

30 (trên lớp)

15 (trên lớp)

90 (về nhà)

2. Mô tả môn học

(vị trí của môn học đối với chương trình đào tạo (CTĐT), những mục đích và nội dung chính yếu của môn học)

Môn học thuộc phần kiến thức giáo dục đại cương thuộc mảng lý luận chính trị, trang bị cho sinh viên những kiến thức cơ bản về triết học Mác-Lênin. Môn học nghiên cứu những quy luật vận động, phát triển chung nhất của tự nhiên, xã hội, tư duy; gồm 3 chương: Triết học và vai trò của triết học trong đời sống xã hội, chủ nghĩa duy vật biện chứng và chủ nghĩa duy vật lịch sử.

3. Tài liệu học tập

(Các giáo trình, tài liệu tham khảo, các phần mềm, không quá 5 cuốn)

Giáo trình:

[1] Bộ Giáo dục và Đào tạo (2021), *Giáo trình Triết học Mác – Lênin*, (dùng cho khối không chuyên ngành lý luận chính trị), Nxb. Chính trị quốc gia, Hà Nội.

[2] Bộ Giáo dục và Đào tạo (2012), *Giáo trình Những Nguyên lý cơ bản của chủ nghĩa Mác – Lênin*, Nxb. Chính trị quốc gia, Hà Nội.

[3] Hội đồng Trung ương (2008), *Giáo trình Triết học Mác-Lênin*, Nxb. Chính trị quốc gia, Hà Nội.

Tài liệu khác:

[1] Triết học Mác-Lênin (Bộ câu hỏi hướng dẫn ôn thi môn triết học), Nxb Sự thật, Hà Nội, 1980

[2] Triết học Mác-Lênin, tập 1 và 2, Nxb Sách giáo khoa Mác - Lênin, Hà Nội, 1995



Phần mềm:

4. Mục tiêu môn học

(các mục tiêu tổng quát của môn học, thể hiện sự liên quan với các chuẩn đầu ra (X.x.x) của CTĐT và trình độ năng lực (TĐNL) được phân bổ cho môn học)

Mục tiêu (1)	Mô tả mục tiêu (2)	CĐR của môn học tương ứng CTĐT (3)	TĐNL tương ứng CTĐT (4)
G1	4.1 Về kiến thức Sinh viên hiểu được vai trò của triết học Mác - Lênin trong đời sống xã hội và những nội dung cơ bản về: Chủ nghĩa duy vật biện chứng và chủ nghĩa duy vật lịch sử.		
G2	4.2. Về kỹ năng Sinh viên vận dụng, phân tích được những tri thức cơ bản của triết học Mác - Lênin về chủ nghĩa duy vật biện chứng và chủ nghĩa duy vật lịch sử vào việc nhận thức, lý giải các hiện tượng, quy luật trong đời sống xã hội Việt Nam và thế giới.		
G3	4.3. Về thái độ/năng lực tự chủ và trách nhiệm Sinh viên đánh giá được giá trị, tính khoa học cách mạng và nhân văn của triết học Mác - Lênin đối với thực tiễn Việt Nam và nhân loại		

(1): Ký hiệu mục tiêu của môn học.

(2): Mô tả các mục tiêu bao gồm các động từ chủ động, các chủ đề CĐR (X.x.x) và bối cảnh áp dụng tổng quát

(3), (4): Ký hiệu CĐR của CTĐT và TĐNL tương ứng được phân bổ cho môn học.

5. Chuẩn đầu ra môn học

(các mục cụ thể hay CĐR của môn học và mức độ giảng dạy I, T, U)

CĐR (1)	Mô tả CĐR (2)	Mức độ giảng dạy (3)
G1.1	Sinh viên hiểu những tri thức cơ bản về triết học nói chung, những điều kiện ra đời của triết học Mác – Lênin. Đồng thời giúp sinh viên phân tích, đánh giá được thực chất cuộc cách mạng trong triết học do C.Mác và Ph.Ăngghen thực hiện và các giai đoạn hình thành, phát triển triết học Mác – Lênin; Vai trò của triết học Mác trong đời sống xã hội và trong thời đại ngày nay.	I, T
G1.2	Sinh viên hiểu được quan điểm của chủ nghĩa duy vật biện chứng về vật chất, các hình thức, phương thức tồn tại của vật chất; nguồn gốc, bản chất của ý thức; mối quan hệ biện chứng giữa vật chất và ý thức.	I.T. U

	Sinh viên hiểu được những nội dung cơ bản của phép biện chứng duy vật; ý nghĩa phương pháp luận trong nhận thức và thực tiễn. Sinh viên hiểu những kiến thức cơ bản về lý luận nhận thức của chủ nghĩa duy vật biện chứng; ý nghĩa phương pháp luận.	
G1.3	Sinh viên hiểu những kiến thức về học thuyết hình thái kinh tế - xã hội; vận dụng ý nghĩa phương pháp luận vào thực tiễn của Việt Nam. Giúp sinh viên hiểu được những quan điểm cơ bản của triết học Mác – Lênin về giai cấp; về nhà nước và cách mạng xã hội; về dân tộc, quan hệ giai cấp - dân tộc – nhân loại; ý nghĩa phương pháp luận trong nhận thức những vấn đề cơ bản của cách mạng Việt Nam. Sinh viên hiểu những quan điểm cơ bản của triết học Mác – Lênin về con người, về ý thức xã hội, sự vận dụng vào cách mạng Việt Nam.	I, T, U
G2.1	Sinh viên phân tích mang tính khái quát hóa để rút ra <i>Từ khóa tri thức</i> đối với mỗi nội dung và tư duy có hệ thống.	U
G2.2	Sinh viên vận dụng trình bày, thuyết minh, phản biện, tranh luận, hùng biện những tri thức lý luận đang học tập, nghiên cứu dựa trên thực tiễn.	U
G2.3	Sinh viên vận dụng trong giao tiếp xã hội, hợp tác và làm việc nhóm, chia sẻ tri thức và kinh nghiệm, khả năng điều hành nhóm làm việc.	U
G3.1	Sinh viên phân tích, đánh giá được những nền tảng khoa học và cách mạng của chủ nghĩa duy vật biện chứng và chủ nghĩa duy vật lịch sử.	U
G3.2	Sinh viên vận dụng lập trường mácxít nhằm đấu tranh chống lại các quan điểm sai trái, xuyên tạc triết học Mác – Lênin.	U

(1): Ký hiệu CDR của môn học

(2): Mô tả CDR, bao gồm các động từ chủ động, các chủ đề CDR ở cấp độ 4 (X.x.x.x) và bối cảnh áp dụng cụ thể.

(3): I (Introduce): giới thiệu; T (Teach): dạy; U (Utilize): sử dụng

6. Đánh giá môn học

(các thành phần, các bài đánh giá, các tiêu chí đánh giá, chuẩn đánh giá, và tỷ lệ đánh giá, thể hiện sự tương quan với các CDR của môn học)

Thành phần đánh giá (1)	Bài đánh giá (2)	CDR môn học (3)	Tỷ lệ % (4)
A1. Đánh giá quá trình	- Chuyên cần (A1.1) - Tham gia học tập trên lớp tích cực, hăng hái phát biểu (A1.2) - Thuyết trình nhóm (A1.3)	G1.1, G1.2- G1.3, G2.1, G2.2- G2.3 G3.1-	30%

		G3.2	
A2. Đánh giá giữa kỳ	Hình thức tự luận hoặc trắc nghiệm (A2.1)	G1.1 G2.1- G2.2, G3.1- G3.2	20%
A3. Đánh giá cuối kỳ	- Hình thức tự luận, sinh viên được sử dụng tài liệu giấy, không sử dụng thiết bị nối mạng khi làm bài thi: 75 phút (A3.1) - Điểm thưởng (tối đa 20% của điểm cuối kỳ)	G1.2- G1.3, G2.1- G2.2, G3.1- G3.2	50%

(1): các thành phần đánh giá của môn học.

(2): các bài đánh giá

(3): các CDR được đánh giá.

(4): tiêu chí đánh giá.

(5): chuẩn đánh giá

(6): Tỷ lệ điểm của các bài đánh giá trong tổng điểm môn học

7. Kế hoạch giảng dạy chi tiết

(các nội dung giảng dạy theo buổi học, thể hiện sự tương quan với các CDR của môn học, các hoạt động dạy và học (ở lớp, ở nhà) và các bài đánh giá của môn học)

Lý thuyết

1	Nội dung (2)	CDR môn học (3)	Hoạt động dạy và học (4)	Bài đánh giá (5)
1/3 tiết	Giới thiệu về môn học Chương 1 TRIẾT HỌC VÀ VAI TRÒ CỦA TRIẾT HỌC TRONG ĐỜI SỐNG XÃ HỘI I. triết học và vấn đề cơ bản của triết học 1. Khái lược về triết học - Nguồn gốc ra đời của triết học 1. Khái lược về triết học	G1.1	Hoạt động dạy: - Giới thiệu đề cương môn học - Giới thiệu nội dung đề tài thuyết trình nhóm) - Trình chiếu, thuyết giảng Hoạt động học: - Chia nhóm - Giới thiệu nhóm học tập - Nghe giảng, phát biểu - Đọc trước mục I, II của chương 1	A1.1, A1.2, A2.1, A3.1
2/3 tiết	Chương 1 TRIẾT HỌC VÀ VAI TRÒ CỦA TRIẾT HỌC TRONG ĐỜI SỐNG XÃ HỘI	G1.1 G2.2 G2.3	Hoạt động dạy: - Trình chiếu, thuyết giảng Hoạt động học:	A1.1, A1.2, A2.1, A3.1

	I. Triết học và vấn đề cơ bản của triết học (tt) 1. Khái lược về triết học - Khái niệm triết học 2. Vấn đề cơ bản của triết học		- Nghe giảng, phát biểu - Phác thảo nội dung thuyết trình nhóm - Đọc trước phần I, mục 3, chương 1.	
3/3 tiết	Chương 1 TRIẾT HỌC VÀ VAI TRÒ CỦA TRIẾT HỌC TRONG ĐỜI SỐNG XÃ HỘI (tiếp theo) I. Triết học và vấn đề cơ bản của triết học (tt) 3. Biện chứng và siêu hình	G1.1 G2.2 G2.3	Hoạt động dạy: - Trình chiếu, thuyết giảng Hoạt động học: - Nghe giảng, phát biểu - Phác thảo nội dung thuyết trình nhóm - Đọc trước phần II chương 1.	A1.1, A1.2, A2.1, A3.1
4/3 tiết	Chương 1 TRIẾT HỌC VÀ VAI TRÒ CỦA TRIẾT HỌC TRONG ĐỜI SỐNG XÃ HỘI (tiếp theo) II. Triết học Mác - Lênin và vai trò của triết học Mác - Lênin trong đời sống xã hội 1. Sự ra đời và phát triển của triết học Mác - Lênin - Giới thiệu nội dung mục 2.3	G1.1 G2.2 G2.3	Hoạt động dạy: - Trình chiếu, thuyết giảng Hoạt động học: - Nghe giảng, phát biểu - Phác thảo nội dung thuyết trình nhóm - Đọc trước phần I chương 1.	A1.1, A1.2, A2.1, A3.1
5/3 tiết	Chương 2 CHỦ NGHĨA DUY VẬT BIỆN CHỨNG I. Vật chất và ý thức 1. Vật chất và các hình thức tồn tại của vật chất 2. Nguồn gốc, bản chất và kết cấu của ý thức	G1.2 G2.1 G2.2 G3.1 G3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng Hoạt động học: - Nghe giảng, phát biểu, làm việc nhóm, thuyết trình. - Đọc trước mục 3 phần I chương 2.	A1.1, A1.2, A2.1, A3.1
6/3 tiết	Chương 2 CHỦ NGHĨA DUY VẬT BIỆN CHỨNG I. Vật chất và ý thức 3. Mối quan hệ giữa vật chất và ý thức II. Phép biện chứng duy vật 1. Hai loại hình biện chứng và phép biện chứng duy vật	G1.2 G2.1 G2.2 G3.1 G3.2 G1.3	- Trình chiếu, thuyết giảng Hoạt động học: - Nghe giảng, phát biểu, làm việc nhóm, thuyết trình. - Đọc trước mục 1,2 phần II chương 2.	A1.1, A1.2, A2.1, A3.1
7/3 tiết	Chương 2 CHỦ NGHĨA DUY VẬT BIỆN	G1.3 G2.1	Hoạt động dạy: - Trình chiếu, thuyết	A1.1, A1.2,



	CHỨNG (tiếp theo) II. Phép biện chứng duy vật 2. Nội dung của phép biện chứng duy vật a. Hai nguyên lý. - Nguyên lý về mối liên hệ phổ biến - Nguyên lý về sự phát triển - Kiểm tra giữa kỳ	G.2.2 G3.1 G3.2	giảng Hoạt động học: - Nghe giảng, phát biểu, làm việc nhóm, thuyết trình. - Đọc trước mục 2 phần II chương 2.	A3.1
8/3 tiết	Chương 2 CHỦ NGHĨA DUY VẬT BIỆN CHỨNG (tiếp theo) II. Phép biện chứng duy vật 2. Nội dung của phép biện chứng duy vật c. Các cặp phạm trù của PBCDV - Phạm trù cái riêng – cái chung - Phạm trù nguyên	G1.3 G2.1 G.2.2 G3.1 G3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng Hoạt động học: - Nghe giảng, phát biểu, làm việc nhóm, thuyết trình. - Đọc trước mục 2 phần II chương 2.	A1.1, A1.2, A3.1
9/3 tiết	Chương 2 CHỦ NGHĨA DUY VẬT BIỆN CHỨNG (tiếp theo) II. Phép biện chứng duy vật 2. Nội dung của phép biện chứng duy vật c. Ba quy luật: - Quy luật Lượng – Chất. - Quy luật thống nhất và đấu tranh của các mặt đối lập	G1.3 G2.1 G.2.2 G3.1 G3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng Hoạt động học: - Nghe giảng, phát biểu, làm việc nhóm, thuyết trình. - Đọc trước phần III chương 2.	A1.1, A1.2, A3.1
10/3 tiết	Chương 2 CHỦ NGHĨA DUY VẬT BIỆN CHỨNG (tiếp theo) III. Lý luận nhận thức 1. Các nguyên tắc của lý luận nhận thức duy vật biện chứng 2. Nguồn gốc, bản chất của nhận thức 3. Thực tiễn và vai trò của thực tiễn đối với nhận thức - Giới thiệu mục 4.5	G1.3 G2.1 G.2.2 G3.1 G3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng Hoạt động học: - Nghe giảng, phát biểu, làm việc nhóm, thuyết trình. - Đọc trước phần I chương 3.	A1.1, A1.2, A3.1
11/3 tiết	Chương 3 CHỦ NGHĨA DUY VẬT LỊCH SỬ I. Học thuyết hình thái kinh tế - xã hội 1. Sản xuất vật chất là cơ sở của sự tồn tại và phát triển xã hội	G1.4 G2.1 G.2.2 G3.1 G3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng Hoạt động học: - Nghe giảng, phát biểu, làm việc nhóm, thuyết trình.	A1.1, A1.2, A3.1

	2. Biện chứng giữa lực lượng sản xuất và quan hệ sản xuất		- Đọc trước mục 3.4 phần I chương 3.	
12/3 tiết	Chương 3 CHỦ NGHĨA DUY VẬT LỊCH SỬ I. Học thuyết hình thái kinh tế - xã hội 3. Biện chứng giữa cơ sở hạ tầng và kiến trúc thượng tầng của xã hội 4. Sự phát triển các hình thái kinh tế - xã hội là một quá trình lịch sử - tự nhiên	G1.4 G2.1 G.2.2 G3.1 G3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng Hoạt động học: - Nghe giảng, phát biểu, làm việc nhóm, thuyết trình. - Đọc trước phần II và phần III chương 3.	A1.1, A1.2, A1.3, A3.1
13/3 tiết	Chương 3 CHỦ NGHĨA DUY VẬT LỊCH SỬ (tiếp theo) -Giới thiệu các khái niệm II. Giai cấp và dân tộc 1. Vấn đề giai cấp và đấu tranh giai cấp 2. Dân tộc 3. Mối quan hệ giai cấp - dân tộc - nhân loại III. Nhà nước và cách mạng xã hội 1. Nhà nước	G1.4 G2.1 G.2.2 G3.1 G3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng Hoạt động học: - Nghe giảng, phát biểu, làm việc nhóm, thuyết trình. - Đọc trước phần IV chương 3.	A1.1, A1.2, A1.3, A3.1
14/3 tiết	Chương 3 CHỦ NGHĨA DUY VẬT LỊCH SỬ (tiếp theo) IV. Ý thức xã hội 1. Khái niệm tồn tại xã hội và các yếu tố cơ bản của tồn tại xã hội 2. Ý thức xã hội và kết cấu của ý thức xã hội	G1.4 G2.1 G.2.2 G3.1 G3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng Hoạt động học: - Nghe giảng, phát biểu, làm việc nhóm, thuyết trình. - Đọc trước phần V chương 3.	A1.1, A1.2, A1.3, A3.1
15/3 tiết	Chương 3 CHỦ NGHĨA DUY VẬT LỊCH SỬ (tiếp theo) V. Triết học về con người 1. Khái niệm con người và bản chất con người - Giới thiệu mục 2.3.4 - Ôn tập thi cuối kỳ	G1.4 G2.1 G.2.2 G3.1 G3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng - Ôn tập thi cuối kỳ Hoạt động học: - Thuyết trình, thảo luận nhóm - Nghe giảng, ôn tập	A1.1, A1.2, A1.3, A3.1

(1): Thông tin về tuần/buổi học.

(2): Liệt kê nội dung giảng dạy theo chương, mục

(3): Liệt kê CDR liên quan của môn học (ghi ký hiệu Gx.x),

(4): Liệt kê các hoạt động dạy và học (ở lớp, ở nhà), bao gồm đọc trước tài liệu

(nếu có yêu cầu)

(5): Liệt kê các bài đánh giá liên quan (ghi ký hiệu Ax.x)

Thực hành

Tuần/Buổi học (1)	Nội dung (2)	CĐR môn học (3)	Hoạt động dạy và học (4)	Bài đánh giá (5)
...	Bài thực hành 1: ...	Gx.x ...	Dạy: ... Học ở lớp: ... Học ở nhà: ...	Ax.x ...

(1): Thông tin về tuần/buổi học. (2): Liệt kê nội dung thực hành theo bài thực hành

(3): Liệt kê CĐR liên quan của môn học (ghi ký hiệu Gx.x),

(4): Liệt kê các hoạt động dạy và học (ở lớp, ở nhà), bao gồm đọc trước tài liệu (nếu có yêu cầu)

(5): Liệt kê các bài đánh giá liên quan (ghi ký hiệu Ax.x)

8. Quy định của môn học

(Các quy định của môn học (nếu có), thí dụ: sinh viên không nộp bài tập và các báo cáo đúng hạn, được coi như không nộp bài; sinh viên vắng 2 buổi thực hành trở lên, không được phép dự thi cuối kỳ ...)

- Quy định về Bài thuyết trình nhóm:

- Thành lập nhóm: Số lượng sinh viên tùy vào sĩ số lớp, do giảng viên quy định. Hạn chót đăng ký đề tài nhóm quản lý trên forum là buổi 2 hoặc trực tiếp nộp cho GV buổi 1.
- Các nhóm thuyết trình theo thứ tự được phân công. Lưu ý các nhóm cần có mặt đủ và mang theo tất cả các tài liệu liên quan khi thuyết trình.
- Hình thức nộp bài: Nộp file và biên bản làm việc nhóm qua mail cho GV

- Quy định về giờ giấc, chuyên cần, kỷ luật trong khóa học: Lên lớp đúng giờ, dự tối thiểu 80% thời gian học trên lớp (chỉ được phép vắng mặt tối đa 20% số tiết học). Nếu vắng quá số tiết quy định thì sẽ bị điểm 0 chuyên cần.

9. Phụ trách môn học

- Khoa/Bộ môn: Bộ môn Lý luận và Khoa học chính trị, Khoa Chính trị - Hành chính

- Địa chỉ và email liên hệ: daotao.spas@vnuhcm.edu.vn

KT. Trưởng Bộ môn
Phó trưởng Bộ môn



TS. Mạc Thị Khánh Trinh

Tp. Hồ Chí Minh, ngày 01 tháng 10 năm 2023

KT. TRƯỞNG KHOA
PHÓ TRƯỞNG KHOA



TS. Nguyễn Đình Quốc Cường

ĐỀ CƯƠNG CHI TIẾT MÔN HỌC

(Dành cho Trường Đại học Quốc tế, ĐHQG-HCM)

1. Thông tin tổng quát

- Tên môn học:

+ Tiếng Việt

+ Tiếng Anh

Kinh tế chính trị Mác - Lênin

Political economics of Marxism and
Leninism

- Mã số môn học:

PE016IU

- Thuộc khối kiến thức/kỹ năng:

☒ Kiến thức cơ bản/giáo dục đại cương

☐ Kiến thức cơ sở ngành

☐ Kiến thức chuyên ngành

☐ Kiến thức khác

☐ Môn học chuyên về kỹ năng chung

☐ Môn học đồ án/luận văn tốt nghiệp

- Số tín chỉ:

02

+ Lý thuyết

21 (trên lớp)

+ Thực hành (thuyết trình)

09 (trên lớp)

60 (về nhà)

- Môn học tiên quyết:

- Môn học trước:

Triết học Mác – Lênin

- Môn học song hành:

2. Mô tả môn học

Môn học này cung cấp cho sinh viên những phân tích của Các Mác về phương thức sản xuất tư bản chủ nghĩa và chỉ ra giới hạn phát triển của phương thức sản xuất này. V.I.Lênin bổ sung học thuyết kinh tế chính trị của Mác trong tình hình mới – giai đoạn chủ nghĩa tư bản độc quyền thống trị. Dựa vào nội dung cơ bản của kinh tế chính trị Mác – Lênin, sinh viên được tìm hiểu về mô hình kinh tế tổng quát của Việt Nam trong thời kỳ quá độ - Kinh tế thị trường định hướng xã hội chủ nghĩa. Bên cạnh đó, môn học này cũng cung cấp cho sinh viên về tính tất yếu phải công nghiệp hóa, hiện đại hóa và hội nhập kinh tế quốc tế trong bối cảnh CMCN lần thứ 4 và toàn cầu hóa diễn ra mạnh mẽ.

3. Tài liệu học tập



3.1. Giáo trình

- [1] Bộ Giáo dục và Đào tạo (2021), *Giáo trình Kinh tế chính trị Mác – Lênin*, (dùng cho khối không chuyên ngành lý luận chính trị) Nxb. Chính trị quốc gia, Hà Nội.
- [2] Bộ Giáo dục và Đào tạo (2012), *Giáo trình Những Nguyên lý cơ bản của chủ nghĩa Mác – Lênin*, Nxb. Chính trị quốc gia, Hà Nội.

3.2. Tài liệu khác

- [3] Các Mác, *Tư bản*, NXB Chính trị quốc gia Sự thật, Hà Nội, 2018
- [4] Klaus Schwab (2018), *Cách mạng công nghiệp lần thứ tư*, NXB Thế giới.
- [5] V.I.Lênin, Toàn tập – tập 27, NXB Chính trị Quốc gia Sự thật, 2005

3.3. Phần mềm: N/A

4. Mục tiêu môn học

(các mục tiêu tổng quát của môn học, thể hiện sự liên quan với các chuẩn đầu ra (X.x.x) của CTĐT và trình độ năng lực (TĐNL) được phân bổ cho môn học)

Mục tiêu (1)	Mô tả mục tiêu (2)	CĐR của môn học tương ứng CTĐT (3)	TĐNL tương ứng CTĐT (4)
G1	4.1 Về kiến thức Sinh viên hiểu được sự vận động và phát triển của phương thức sản xuất tư bản chủ nghĩa và giới hạn của nó theo phân tích của Mác – Lênin. Sinh viên cũng được hiểu rõ về mô hình kinh tế của Việt Nam thời kỳ quá độ lên chủ nghĩa xã hội đó là kinh tế thị trường định hướng xã hội chủ nghĩa. Ngoài ra, sinh viên cũng hiểu rõ về công nghiệp hóa, hiện đại hóa và hội nhập kinh tế quốc tế của Việt Nam.		3.5
G2	4.2. Về kỹ năng Sinh viên vận dụng những kiến thức đã học có thể nhận định, phân tích và đánh giá các vấn đề kinh tế chính trị trong nước và quốc tế. Vận dụng kiến thức kinh tế chính trị Mác – Lênin để		3.0

	đánh giá chủ nghĩa tư bản đương đại cũng như phân tích, đánh giá được mô hình kinh tế của Việt Nam trong thời kỳ quá độ lên chủ nghĩa xã hội. Ngoài ra, sinh viên còn vận dụng kiến thức kinh tế chính trị để phân tích quá trình công nghiệp hóa, hiện đại hóa và hội nhập kinh tế quốc tế của Việt Nam.		
G3	4.3. Về thái độ/năng lực tự chủ và trách nhiệm Vận dụng kiến thức kinh tế chính trị Mác – Lênin để có thái độ tích cực trong việc góp phần vào xây dựng và bảo vệ con đường chủ nghĩa xã hội của Việt Nam. Đấu tranh bác bỏ những luận điệu xuyên tạc, chống phá Chủ nghĩa Mác – Lênin và sự lãnh đạo của Đảng Cộng sản Việt Nam.		4.0

(1): Ký hiệu mục tiêu của môn học. (2): Mô tả các mục tiêu bao gồm các động từ chủ động, các chủ đề CĐR (X.x.x) và bối cảnh áp dụng tổng quát

(3), (4): Ký hiệu CĐR của CTĐT và TĐNL tương ứng được phân bổ cho môn học.

5. Chuẩn đầu ra môn học

CĐR (1)	Mô tả CĐR (2)	Mức độ giảng dạy (3)
G1.1	G1.1.1. Hiểu rõ lịch sử của kinh tế chính trị và kinh tế chính trị Mác – Lênin.	I, T
	G1.1.2. Hiểu rõ về mục tiêu, phương pháp và chức năng của KTCT Mác - Lênin	I.T
G1.2	G1.2.1. Hiểu rõ hai thuộc tính của hàng hóa và cấu trúc của giá trị hàng hóa	I.T.U
	G1.2.2. Hiểu về mặt chất và mặt lượng của giá trị hàng hóa và các nhân tố ảnh hưởng đến mặt lượng giá trị hàng hóa	I, T
	G1.2.3. Hiểu rõ mối quan hệ giữa giá trị hàng hóa và tiền tệ	I, T, U
	G1.2.4. Hiểu về thị trường và các quy luật cơ bản của kinh tế thị trường	I, T, U

G1.3	G1.3.1. Hiểu rõ được công thức chung của tư bản và mâu thuẫn của nó	I, T
	G1.3.2. Hiểu rõ được nguồn gốc của giá trị thặng dư TBCN	I, T
	G1.3.3. Hiểu rõ hàng hóa sức lao động và tính chất đặc biệt của nó	I, T
	G1.3.4. Hiểu được bản chất và các hình thức của tiền công	I, T, U
	G1.3.5. Hiểu được các phương pháp sản xuất giá trị thặng dư TBCN	I, T
	G1.3.6. Hiểu rõ ý nghĩa của tuần hoàn và chu chuyển tư bản	I, T
	G1.3.7. Hiểu được mục đích của tích lũy tư bản	I, T, U
	G1.3.8. Hiểu rõ các hình thức biểu hiện của giá trị thặng dư TBCN là mối quan hệ của chúng	I, T
G1.4	G1.4.1. Hiểu rõ hai giai đoạn phát triển của CNTB	I, T
	G1.4.2. Hiểu được nguyên nhân hình thành CNTB độc quyền	I, T
	G1.4.3. Hiểu được 5 đặc điểm của CNTB độc quyền theo phân tích của V.I. Lênin	I, T
	G1.4.4. Hiểu được những nguyên nhân hình thành và đặc điểm của chủ nghĩa tư bản độc quyền nhà nước.	I, T
G1.5	G1.5.1. Hiểu rõ về mô hình kinh tế thị trường định hướng XHCN và các đặc trưng của nó	I, T
	G1.5.2. Hiểu rõ về vai trò của thể chế kinh tế thị trường định hướng XHCN và tại sao cần phải hoàn thiện nó	I, T
	G1.5.3. Hiểu rõ vai trò của lợi ích kinh tế và các quan hệ lợi ích kinh tế trong nền kinh tế thị trường.	I, T
G1.6	G1.6.1. Hiểu rõ lý do tại sao một quốc gia cần phải tiến hành CNH và các quốc gia CNH thành công tiêu biểu	I, T
	G1.6.2. Hiểu rõ lịch sử và đặc trưng của các cuộc CMCN và mối liên hệ giữa CMCN với CNH	I, T, U
	G1.6.3. Hiểu rõ quá trình CNH, HĐH của Việt Nam	I, T
	G1.6.4. Hiểu được tính tất yếu của Việt Nam phải hội nhập kinh tế quốc tế trong bối cảnh toàn cầu hóa	I, T
	G2.1. Vận dụng phương pháp trừu tượng hóa khoa học để phân tích các vấn đề kinh tế chính trị	U
	G2.2. Vận dụng kiến thức kinh tế chính trị Mác -	

G2	Lênin để đánh giá chủ nghĩa tư bản hiện nay và sự lựa chọn con đường tiến lên CNXH của Việt Nam	U
	G2.3.Vận dụng kiến thức về kinh tế thị trường định hướng XHCN để hiểu rõ con đường đi lên CNXH của Việt Nam từ đó đấu tranh chống lại các thế lực chống phá chủ nghĩa Mác - Lênin	U
	G2.4. Vận dụng kiến thức về CNH, HĐH và hội nhập kinh tế quốc tế để phân tích chiến lược phát triển của Việt Nam trong bối cảnh CMCN 4.0 và toàn cầu hóa diễn ra ngày càng sâu rộng	U
G3	G3.1.Vận dụng kiến thức kinh tế chính trị Mác - Lênin, đóng góp vào công cuộc xây dựng chủ nghĩa xã hội	U
	G3.2.Vận dụng kiến thức kinh tế chính trị Mác – Lênin đấu tranh chống lại các luận điệu xuyên tạc chủ nghĩa Mác – Lênin và con đường đi lên CNXH của Việt Nam	U

(1): Ký hiệu CDR của môn học

(2): Mô tả CDR, bao gồm các động từ chủ động, các chủ đề CDR ở cấp độ 4 (X.x.x.x) và bối cảnh áp dụng cụ thể.

(3): I (Introduce): giới thiệu; T (Teach): dạy; U (Utilize): sử dụng

6. Đánh giá môn học

(các thành phần, các bài đánh giá, các tiêu chí đánh giá, chuẩn đánh giá, và tỷ lệ đánh giá, thể hiện sự tương quan với các CDR của môn học)

Thành phần đánh giá (1)	Bài đánh giá (2)	CDR môn học (3)	Tỷ lệ % (4)
A1. Đánh giá quá trình	- Chuyên cần (A1.1) - Tham gia học tập trên lớp tích cực, hăng hái phát biểu (A1.2) - Thuyết trình nhóm (A1.3)	G1.1- G1.6; G2.1 - G2.4; G3.1- G3.2	30%
A2. Đánh giá giữa kỳ	Kiểm tra tự luận: 60 phút (A2.1)	G1.1, G1.2, G1.3	20%
A3. Đánh giá cuối kỳ	Tự luận sinh viên được sử dụng tài liệu khi làm bài thi: 60 phút (A3.1)	G1.1 - G1.6; G2.1-G2.4	50%

(1): Các thành phần đánh giá của môn học. (2): Các bài đánh giá

(3): Các CDR được đánh giá. (4): Tiêu chí đánh giá. (5): Chuẩn đánh giá

(6): Tỷ lệ điểm của các bài đánh giá trong tổng điểm môn học

7. Kế hoạch giảng dạy chi tiết

Tuần/Buổi học (1)	Nội dung (2)	CDR môn học (3)	Hoạt động dạy và học (4)	Bài đánh giá (5)
1/4 tiết	Giới thiệu về môn học Chương 1 ĐỐI TƯỢNG, PHƯƠNG PHÁP NGHIÊN CỨU VÀ CHỨC NĂNG CỦA KINH TẾ CHÍNH TRỊ MÁC – LÊNIN I. Khái quát về sự hình thành và phát triển của kinh tế chính trị Mác – Lênin. II. Đối tượng, mục đích và phương pháp nghiên cứu của kinh tế chính trị Mác – Lênin III. Chức năng của kinh tế chính trị Mác – Lênin Chương 2 HÀNG HÓA, THỊ TRƯỜNG VÀ VAI TRÒ CỦA CÁC CHỦ THỂ THAM GIA THỊ TRƯỜNG I. Lý luận của C. Mác về sản xuất hàng hóa và hàng hóa 1. Sản xuất hàng hóa 2. Hàng hóa - Khái niệm và thuộc tính của hàng hóa. - Tính hai mặt của lao động sản xuất hàng hóa. - Lượng giá trị và các nhân tố ảnh hưởng đến lượng giá trị của hàng hóa.	G.1.1 G.1.2	Hoạt động dạy: - Giới thiệu về môn học, cơ cấu điểm, cách thức giảng dạy và học tập môn Kinh tế chính trị Mác – Lênin - Giới thiệu nội dung đề tài thuyết trình (nhóm GHW) - Trình chiếu, thuyết giảng chương 1,2 và giải đáp thắc mắc. Hoạt động học: - Chia nhóm - Giới thiệu nhóm học tập - Nghe giảng, phát biểu, nêu thắc mắc - Đọc trước chương 2 và chương 3	A1.1 A1.2 A2.1 A3.1
	Chương 2 HÀNG HÓA, THỊ TRƯỜNG VÀ VAI TRÒ CỦA CÁC CHỦ THỂ THAM GIA THỊ TRƯỜNG (tiếp theo)		Hoạt động dạy: - Trình chiếu, thuyết giảng, giải đáp thắc	A1.1 A1.2

2/4 tiết	3. Tiền tệ 4. Dịch vụ và quan hệ trao đổi trong trường hợp một số yếu tố khác hàng hóa thông thường ở điều kiện ngày nay II. Thị trường và nền kinh tế thị trường. 1. Khái niệm, phân loại và vai trò của thị trường. 2. Nền kinh tế thị trường và một số quy luật chủ yếu của nền kinh tế thị trường - <i>Nền kinh tế thị trường.</i> - <i>Một số quy luật kinh tế chủ yếu của nền kinh tế thị trường.</i> III. Vai trò của một số chủ thể tham gia thị trường. 1. Người sản xuất 2. Người tiêu dùng 3. Các chủ thể trung gian trong thị trường. 4. Nhà nước.	G.1.2 G.2.1	mắc - Tổng kết nội dung thuyết trình nhóm Hoạt động học: - Nghe giảng, thảo luận, phát biểu, nêu thắc mắc. - Thuyết trình nhóm GHW - Đọc trước chương 3.	A1.3 A2.1 A3.1
3/4 tiết	Chương 3 GIÁ TRỊ THẶNG DƯ TRONG NỀN KINH TẾ THỊ TRƯỜNG I. Lý luận của Các Mác về giá trị thặng dư 1. Nguồn gốc của giá trị thặng dư. - <i>Công thức chung của tư bản</i> - <i>Hàng hóa sức lao động</i> - <i>Sự sản xuất giá trị thặng dư</i> - <i>Tư bản bất biến và tư bản khả biến</i> - <i>Tiền công</i> - <i>Tuần hoàn và chu chuyển tư bản</i> 2. Bản chất của giá trị thặng dư 3. Các phương pháp sản xuất giá trị thặng dư	G.1.3 G.2.2 G.3.1 G.3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng, giải đáp thắc mắc - Tổng kết nội dung thuyết trình nhóm Hoạt động học: - Nghe giảng, thảo luận, phát biểu, nêu thắc mắc. - Thuyết trình nhóm GHW	A1.1 A1.2 A1.3 A2.1 A3.1

			- Đọc trước chương 4.	
4/4 tiết	Chương 3 GIÁ TRỊ THẶNG DƯ TRONG NỀN KINH TẾ THỊ TRƯỜNG (tiếp theo) II. Tích lũy tư bản 1. Bản chất của tích lũy tư bản. 2. Những nhân tố ảnh hưởng đến quy mô tích lũy. 3. Một số hệ quả của tích lũy tư bản. III. Các hình thức biểu hiện của giá trị thặng dư trong nền kinh tế thị trường. 1. Lợi nhuận 2. Lợi tức. 3. Địa tô TBCN	G.1.3 G.2.2 G.3.1 G.3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng, giải đáp thắc mắc - Tổng kết nội dung thuyết trình nhóm Hoạt động học: - Nghe giảng, thảo luận, phát biểu, nêu thắc mắc. - Thuyết trình nhóm GHW - Đọc trước chương 4.	A1.1 A1.2 A1.3 A2.1 A3.1
5/4 tiết	Chương 4 CẠNH TRANH VÀ ĐỘC QUYỀN TRONG NỀN KINH TẾ THỊ TRƯỜNG (tiếp theo) 1. Lý luận của V.I. Lê nin về đặc điểm kinh tế của độc quyền (tt). - <i>Xuất khẩu tư bản trở thành phổ biến</i> - <i>Cạnh tranh để phân chia thị trường thế giới là tất yếu giữa các tập đoàn độc quyền.</i> - <i>Lôi kéo, thúc đẩy các chính phủ vào việc phân định khu vực lãnh thổ ảnh hưởng là cách thức để bảo vệ lợi ích độc quyền.</i> 2. Lý luận của V.I. Lênin về đặc điểm kinh tế của độc quyền nhà nước trong CNTB	G.1.4 G.2.2 G.3.1 G.3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng, giải đáp thắc mắc - Tổng kết nội dung thuyết trình nhóm Hoạt động học: - Nghe giảng, thảo luận, phát biểu, nêu thắc mắc. - Thuyết trình nhóm GHW - Đọc trước chương 5.	A1.1 A1.2 A1.3 A3.1

	- Sự kết hợp nhân sự giữa tổ chức độc quyền và nhà nước. - Sự hình thành, phát triển sở hữu nhà nước. - Độc quyền nhà nước trở thành công cụ để nhà nước điều tiết nền kinh tế. III. Biểu hiện mới của độc quyền, độc quyền nhà nước trong điều kiện ngày nay; vai trò lịch sử của CNTB. 1. Biểu hiện mới của độc quyền 2. Biểu hiện mới của độc quyền nhà nước dưới CNTB 3. Vai trò lịch sử của CNTB			
6/4 tiết	Chương 5 KINH TẾ THỊ TRƯỜNG ĐỊNH HƯỚNG XÃ HỘI CHỦ NGHĨA VÀ CÁC QUAN HỆ LỢI ÍCH KINH TẾ Ở VIỆT NAM I. Kinh tế thị trường định hướng xã hội chủ nghĩa ở Việt Nam 1. Khái niệm về kinh tế thị trường định hướng XHCN ở Việt Nam. 2. Tính tất yếu khách quan của việc phát triển kinh tế thị trường định hướng XHCN ở Việt Nam. 3. Đặc trưng của kinh tế thị trường định hướng XHCN ở Việt Nam. II. Hoàn thiện thể chế kinh tế thị trường định hướng XHCN ở Việt Nam 1. Sự cần thiết phải hoàn thiện thể chế kinh tế thị trường định hướng XHCN ở Việt Nam. 2. Nội dung hoàn thiện thể chế kinh tế thị trường định hướng XHCN ở	G.1.5 G.2.3 G.3.1 G.3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng, giải đáp thắc mắc - Tổng kết nội dung thuyết trình nhóm Hoạt động học: - Nghe giảng, thảo luận, phát biểu, nêu thắc mắc. - Thuyết trình nhóm GHW - Đọc trước chương 6.	A1.1 A1.2 A1.3 A3.1



	Việt Nam. III. Các quan hệ lợi ích kinh tế ở Việt Nam. 1. Lợi ích kinh tế và quan hệ lợi ích kinh tế. - <i>Lợi ích kinh tế</i>			
7/4 tiết	Chương 5 KINH TẾ THỊ TRƯỜNG ĐỊNH HƯỚNG XÃ HỘI CHỦ NGHĨA VÀ CÁC QUAN HỆ LỢI ÍCH KINH TẾ Ở VIỆT NAM (tiếp theo) 1. Lợi ích kinh tế và quan hệ lợi ích kinh tế (tt). - <i>Quan hệ lợi ích kinh tế.</i> 2. Vai trò của nhà nước trong đảm bảo hài hòa các quan hệ lợi ích. - Bảo vệ lợi ích hợp pháp, tạo môi trường thuận lợi cho hoạt động tìm kiếm lợi ích của các chủ thể kinh tế. - Điều hòa lợi ích giữa cá nhân – doanh nghiệp – xã hội. - Kiểm soát, ngăn ngừa các quan hệ lợi ích có ảnh hưởng tiêu cực đối với sự phát triển của xã hội. Chương 6 CÔNG NGHIỆP HÓA, HIỆN ĐẠI HÓA VÀ HỘI NHẬP KINH TẾ QUỐC TẾ CỦA VIỆT NAM I. Công nghiệp hóa, hiện đại hóa của Việt Nam. 1. Khái quát về cách mạng công nghiệp và công nghiệp hóa. - Khái quát về cách mạng công nghiệp - Công nghiệp hóa và các mô hình công nghiệp hóa trên thế giới	G.1.5 G.1.6 G.2.3 G.2.4 G.3.1 G.3.2	Hoạt động dạy: - Trình chiếu, thuyết giảng, giải đáp thắc mắc - Tổng kết nội dung thuyết trình nhóm Hoạt động học: - Nghe giảng, thảo luận, phát biểu, nêu thắc mắc. - Thuyết trình nhóm GHW - Đọc trước chương 6.	A1.1 A1.2 A1.3 A3.1
	Chương 6		Hoạt động dạy:	

8/2 tiết	CÔNG NGHIỆP HÓA, HIỆN ĐẠI HÓA VÀ HỘI NHẬP KINH TẾ QUỐC TẾ CỦA VIỆT NAM (tiếp theo)		- Trình chiếu, thuyết giảng, tổng kết nội dung thuyết trình nhóm.	A1.1
	2. Tính tất yếu khách quan và nội dung công nghiệp hóa, hiện đại hóa ở Việt Nam.		- Giải đáp thắc mắc cho sinh viên	A1.2
	- <i>Tính tất yếu của công nghiệp hóa, hiện đại hóa ở Việt Nam.</i>	G.1.6		A1.3
	- <i>Nội dung CNH, HĐH ở Việt Nam</i>	G.2.4	- Công bố điểm quá trình.	A3.1
	II. Hội nhập kinh tế quốc tế của Việt Nam	G.3.1		
	1. Khái niệm và nội dung hội nhập kinh tế quốc tế.	G.3.2	Hoạt động học:	
	2. Tác động của hội nhập kinh tế quốc tế đến quá trình phát triển của Việt Nam		- Nghe giảng	
	3. Phương hướng nâng cao hiệu quả hội nhập kinh tế quốc tế trong phát triển của Việt Nam		- Phát biểu, thảo luận	
	Ôn tập thi cuối kì		- Nêu thắc mắc về môn học.	



(1): Thông tin về tuần/buổi học. (2): Liệt kê nội dung giảng dạy theo chương, mục

(3): Liệt kê CĐR liên quan của môn học (ghi ký hiệu Gx.x),

(4): Liệt kê các hoạt động dạy và học (ở lớp, ở nhà), bao gồm đọc trước tài liệu (nếu có yêu cầu)

(5): Liệt kê các bài đánh giá liên quan (ghi ký hiệu Ax.x)

8. Quy định của môn học

- Quy định về Bài thuyết trình nhóm GHW:

+ Thành lập nhóm: 5 sinh viên/nhóm. Hạn chót đăng ký đề tài nhóm Quản lý trên forum là buổi 1 hoặc trực tiếp nộp cho GV.

+ Tuần 2 (buổi thứ 2) thuyết trình theo thứ tự. Lưu ý các nhóm cần có mặt đủ và mang theo tất cả các tài liệu liên quan đến GHW khi đi thuyết trình.

+ Hình thức nộp bài: Nộp file và biên bản làm việc nhóm qua mail cho GV

- Quy định về giờ giấc, chuyên cần, kỷ luật trong khóa học: Lên lớp đúng giờ, dự tối thiểu 80% thời gian học trên lớp (chỉ được phép vắng mặt tối đa 20% số tiết học). Nếu vắng quá số tiết quy định sẽ bị cấm thi theo quy chế. Có đầy đủ điểm kiểm tra, điểm thi kết thúc học phần & nhiệt tình thảo luận, phát biểu xây dựng bài, nghiêm túc trong giờ học.

9. Phụ trách môn học

- Khoa/Bộ môn: Bộ môn Lý luận và Khoa học chính trị, Khoa Chính trị - Hành chính
- Email liên hệ: daotao.spas@vnuhcm.edu.vn.

KT. Trưởng Bộ môn
Phó trưởng Bộ môn



Lê Văn Thông

TP. Hồ Chí Minh, ngày 01 tháng 10 năm 2023

KT. TRƯỞNG KHOA
PHÓ TRƯỞNG KHOA



The red circular stamp contains the text: "TRƯỜNG ĐẠI HỌC CHÍNH TRỊ - HÀNH CHÍNH", "KHOA", and "TP. HỒ CHÍ MINH".

TS. Nguyễn Đình Quốc Cường

ĐẠI HỌC QUỐC GIA TP. HỒ CHÍ MINH
KHOA CHÍNH TRỊ - HÀNH CHÍNH

ĐỀ CƯƠNG CHI TIẾT MÔN HỌC
(dành cho trường Đại học Quốc Tế)

1. Thông tin tổng quát

Tên môn học:

Tiếng Việt

Tiếng Anh

- Mã số môn học:

Thuộc khối kiến thức/kỹ năng:

☒ Kiến thức cơ bản/giáo dục đại cương

☐ Kiến thức chuyên ngành

☐ Môn học chuyên về kỹ năng chung

- Số tín chỉ:

Lý thuyết

Thực hành

- Môn học tiên quyết:

- Môn học trước:

- Môn học song hành:

Chủ nghĩa xã hội khoa học

Scientific socialism

PA21GEP03

☐ Kiến thức cơ sở ngành

☐ Kiến thức khác

☐ Môn học đồ án/luận văn tốt nghiệp

2 (30 tiết)

30 tiết

Triết học Mác – Lênin

2. Mô tả môn học

(Vị trí của môn học đối với chương trình đào tạo (CTĐT), những mục đích và nội dung chính yếu của môn học)

Môn học thuộc phần kiến thức giáo dục đại cương trong khối kiến thức cơ bản về lý luận chính trị.

Trang bị cho sinh viên những kiến thức cơ bản về chủ nghĩa xã hội khoa học: Đối tượng, phương pháp nghiên cứu, ý nghĩa của việc nghiên cứu chủ nghĩa xã hội khoa học; về sứ mệnh lịch sử của giai cấp công nhân; về chủ nghĩa xã hội và thời kỳ quá độ lên chủ nghĩa xã hội; về dân chủ xã hội chủ nghĩa và nhà nước xã hội chủ nghĩa; về cơ cấu xã hội - giai cấp và liên minh giai cấp, tầng lớp trong thời kỳ quá độ lên chủ nghĩa xã hội; về vấn đề dân tộc và tôn giáo trong thời kỳ quá độ lên chủ nghĩa xã hội.

Môn học có mối quan hệ trực tiếp tới việc giáo dục lập trường, tư tưởng cho sinh viên, cũng như cung cấp kiến thức chuyên sâu cho sinh viên trong cách nhìn nhận các vấn đề chính trị xã hội.

3. Tài liệu học tập

(Các giáo trình, tài liệu tham khảo, các phần mềm, không quá 5 cuốn)

Giáo trình:

- Bộ Giáo dục và Đào tạo (2021), *Giáo trình Chủ nghĩa xã hội khoa học*, (dùng cho



khối không chuyên ngành lý luận chính trị) Nxb. Chính trị quốc gia, Hà Nội.

- Bộ Giáo dục và Đào tạo (2012), *Giáo trình Những Nguyên lý cơ bản của chủ nghĩa Mác – Lênin*, Nxb. Chính trị quốc gia, Hà Nội.

- Hội đồng Trung ương (2008), *Giáo trình Chủ nghĩa xã hội khoa học*, Nxb. Chính trị quốc gia, Hà Nội.

Tài liệu khác:

[1] Tên tác giả (năm xuất bản), *Tên giáo trình*. Nơi xuất bản: Tên nhà xuất bản

Phần mềm:

[..] Tên hãng phần mềm (năm phát hành/phần mềm). *Tên phần mềm...*

4. Mục tiêu môn học

(Các mục tiêu tổng quát của môn học, thể hiện sự liên quan với các chuẩn đầu ra (X.x.x) của CTĐT và trình độ năng lực (TĐNL) được phân bổ cho môn học)

Mục tiêu (1)	Mô tả mục tiêu (2)	CDR của môn học tương ứng CTĐT (3)
G1	Về kiến thức - Sinh viên hiểu một cách có hệ thống những nội dung cơ bản của học phần chủ nghĩa xã hội khoa học. Cùng các môn lý luận chính trị và các môn học khác giúp sinh viên có nhận thức tổng hợp, toàn diện về chủ nghĩa Mác-Lênin, tư tưởng Hồ Chí Minh và con đường đi lên CNXH ở Việt Nam. - Sinh viên hiểu những tri thức khoa học để luận giải sự ra đời tất yếu của chủ nghĩa xã hội, những nhiệm vụ, giải pháp cần thực hiện trong quá trình xây dựng chủ nghĩa xã hội nói chung và ở Việt Nam nói riêng. - Sinh viên hiểu những căn cứ khoa học để chống lại những nhận thức sai lệch và sự chống phá của các thế lực thù địch.	
G2	Về kỹ năng Sinh viên phân tích, đánh giá, giải quyết các vấn đề chính trị xã hội nảy sinh trong thực tiễn. Và vận dụng quan điểm khoa học của chủ nghĩa Mác - Lênin để nhận diện được âm mưu diễn biến hòa bình của các thế lực phản động, thù địch.	
G3	Về thái độ/năng lực tự chủ và trách nhiệm Sinh viên đánh giá được sự cần thiết của việc học tập các môn lý luận chính trị; có niềm tin vào mục tiêu, lý tưởng xã hội chủ nghĩa và con đường đi lên chủ nghĩa xã hội; tin tưởng vào sự thành công của công cuộc đổi mới do Đảng Cộng sản Việt Nam khởi xướng và lãnh đạo.	

(1): Ký hiệu mục tiêu của môn học. (2): Mô tả các mục tiêu bao gồm các động từ chủ động, các chủ đề CDR (X.x.x) và bối cảnh áp dụng tổng quát

(3), (4): Ký hiệu CDR của CTĐT và TDNL tương ứng được phân bổ cho môn học.

5. Chuẩn đầu ra môn học

(Các mục cụ thể hay CDR của môn học và mức độ giảng dạy I, T, U)

CDR (1)	Mô tả CDR (2)	Mức độ giảng dạy (I, T, U) (3)
G1.1	Sinh viên hiểu những kiến thức cơ bản, hệ thống về sự ra đời, các giai đoạn phát triển; đối tượng, phương pháp nghiên cứu và ý nghĩa của việc học tập, nghiên cứu chủ nghĩa xã hội khoa học. Trên cơ sở đó tạo điều kiện để sinh viên nghiên cứu các phạm trù tiếp theo của chủ nghĩa xã hội khoa học.	I, T
G1.2	Sinh viên hiểu những nội dung cơ bản của lý luận về sứ mệnh lịch sử toàn thế giới của giai cấp công nhân, biểu hiện và ý nghĩa của sứ mệnh đó trong bối cảnh hiện nay.	I, T
G1.3	Sinh viên hiểu những kiến thức cơ bản và hệ thống quan điểm của chủ nghĩa Mác - Lênin về hình thái kinh tế - xã hội cộng sản chủ nghĩa, về chủ nghĩa xã hội, thời kỳ quá độ lên chủ nghĩa xã hội và quá độ lên chủ nghĩa xã hội bỏ qua chế độ tư bản chủ nghĩa ở Việt Nam.	T, U
G1.4	Sinh viên hiểu đầy đủ và đúng bản chất của nền dân chủ xã hội chủ nghĩa và nhà nước xã hội chủ nghĩa, quan điểm của Đảng Cộng sản Việt Nam về việc xây dựng và hoàn thiện nền dân chủ và nhà nước xã hội chủ ở Việt Nam hiện nay.	T, U
G1.5	Sinh viên hiểu những kiến thức nền tảng về cơ cấu xã hội - giai cấp và liên minh giai cấp, tầng lớp trong thời kỳ quá độ lên chủ nghĩa xã hội. Giúp sinh viên hiểu rõ vị trí, vai trò của những giai cấp, tầng lớp cơ bản trong quá trình xây dựng đất nước và nội dung của liên minh giai cấp, tầng lớp trong thời kỳ quá độ lên chủ nghĩa xã hội ở Việt Nam.	T, U
G1.6	Sinh viên hiểu quan điểm cơ bản chủ nghĩa Mác-Lênin về vấn đề dân tộc, tôn giáo. Sinh viên nắm được những nội dung cơ bản của chính sách dân tộc, tôn giáo của Đảng và Nhà nước ta.	T, U
G1.7	Sinh viên hiểu những quan điểm cơ bản của chủ nghĩa Mác - Lênin, tư tưởng Hồ Chí Minh và Đảng Cộng sản Việt Nam về gia đình, xây dựng gia đình trong thời kỳ quá độ lên chủ nghĩa xã hội, xây dựng gia đình ở Việt Nam hiện nay.	T, U
G2.1	Sinh viên phân tích lý luận – thực tiễn về các vấn đề đặt ra trong cuộc sống một cách đúng đắn và nhận diện những biến đổi xã hội ở nước ta	U

CĐR (1)	Mô tả CĐR (2)	Mức độ giảng dạy (I, T, U) (3)
	trong thời kỳ quá độ lên chủ nghĩa xã hội.	
G2.2	Sinh viên vận dụng những nội dung trong bài học để phân tích, giải thích những vấn đề trong thực tiễn một cách khách quan, có cơ sở khoa học.	U
G2.3	Sinh viên vận dụng kiến thức môn học để làm việc nhóm, quản lý nhóm	U
G3.1	Xây dựng và củng cố niềm tin vào lý tưởng cộng sản chủ nghĩa, vào con đường đi lên chủ nghĩa xã hội, góp phần xây dựng thành công chủ nghĩa xã hội ở Việt Nam.	T, U
G3.2	Có ý thức chính trị - xã hội, thái độ kiên định về lập trường, tư tưởng, có tinh thần đấu tranh bảo vệ lẽ phải, bảo vệ những quan điểm, chủ trương, chính sách đúng đắn của Đảng và Nhà nước; chống lại biểu hiện thờ ơ về chính trị và những quan điểm sai trái, thù địch cũng như những biểu hiện tiêu cực trong đời sống xã hội.	U
G3.3	Có năng lực dạy học, tự nghiên cứu các vấn đề liên quan đến chủ nghĩa Mác- Lênin, tư tưởng Hồ Chí Minh, đường lối, sách lược của Đảng, Nhà nước.	U

(1): Ký hiệu CĐR của môn học

(2): Mô tả CĐR, bao gồm các động từ chủ động, các chủ đề CĐR ở cấp độ 4 (X.x.x.x) và bối cảnh áp dụng cụ thể.

(3): I (Introduce): giới thiệu; T (Teach): dạy; U (Utilize): sử dụng

6.Đánh giá môn học

(Các thành phần, các bài đánh giá, các tiêu chí đánh giá, chuẩn đánh giá, và tỷ lệ đánh giá, thể hiện sự tương quan với các CĐR của môn học)

Thành phần đánh giá (1)	Bài đánh giá (2)	CĐR môn học (3)	Tỷ lệ % (6)
A1. Đánh giá quá trình	A1.1. Chuyên cần A1.2. Thuyết trình nhóm, bài tập lớn, thu hoạch...	G1.1 - G1.7, G2.1 - G2.3, G3.1- G3.3	30%
A2. Đánh giá giữa kỳ (Quiz)	A2.1. Trắc nghiệm (đề đóng) hoặc tự luận (được tham khảo tài liệu) thời gian làm bài 45 phút	G1.1 - G1.3, G2.1 - G2.3, G3.1- G3.3	20%
A3. Đánh giá cuối kỳ (FEX)	A3.1. Thi đề chung. Đề thi bao quát toàn bộ nội dung môn học bằng hình thức tự luận (đề mở). Thời gian 60 phút.	G1.1 - G1.7, G2.1 - G2.3, G3.1- G3.3	50%

(1): các thành phần đánh giá của môn học. (2): các bài đánh giá
 (3): các CĐR được đánh giá. (4): tiêu chí đánh giá. (5): chuẩn đánh giá
 (6): Tỷ lệ điểm của các bài đánh giá trong tổng điểm môn học

6. Kế hoạch giảng dạy chi tiết

Tuần/Buổi học (1)	Nội dung (2)	Hoạt động dạy và học (3)	CĐRMH (4)
1/ 2 tiết	Giới thiệu về môn học Chương 1: NHẬP MÔN CHỦ NGHĨA XÃ HỘI KHOA HỌC 1. SỰ RA ĐỜI CỦA CHỦ NGHĨA XÃ HỘI KHOA HỌC <i>1.1.. Hoàn cảnh lịch sử sự ra đời của chủ nghĩa xã hội khoa học</i> <i>1.2. Vai trò của C. Mác và Ăngghen</i>	Dạy: - Thông báo quy định giảng dạy, học tập. - Công bố quy định kiểm tra, đánh giá môn học - Giới thiệu nội dung môn học - Giới thiệu nội dung đề tài thuyết trình nhóm, chia nhóm Học ngoài lớp: - Đọc trước tài liệu chương 1. Dạy: thuyết giảng Học ở lớp: Thảo luận và phát biểu trên lớp.	G1.1 G2.1 G2.2 G3.1 G3.1 G3.3
2/2 tiết	Chương 1: NHẬP MÔN CHỦ NGHĨA XÃ HỘI KHOA HỌC 2. CÁC GIAI ĐOẠN PHÁT TRIỂN CƠ BẢN CỦA CHỦ NGHĨA XÃ HỘI KHOA HỌC <i>2.1. C.Mác và Ph.Ăngghen phát triển chủ nghĩa xã hội khoa học</i> <i>2.2. V.I.Lênin vận dụng và phát triển chủ nghĩa xã hội khoa học trong điều kiện mới</i> <i>2.3. Sự vận dụng và phát triển sáng tạo chủ nghĩa xã hội khoa học từ sau khi Lênin qua đời đến nay</i> 3. ĐỐI TƯỢNG, PHƯƠNG PHÁP VÀ Ý NGHĨA CỦA VIỆC NGHIÊN CỨU CHỦ NGHĨA XÃ HỘI KHOA HỌC <i>3.1. Đối tượng nghiên cứu của chủ nghĩa xã hội khoa học</i>	Dạy: thuyết giảng phần 1; 2.1. Hướng dẫn tự đọc phần còn lại. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: - Phác thảo nội dung thuyết trình nhóm GHW - Đọc trước tài liệu chương 2.	G1.1 G2.1 G2.2 G3.1 G3.1 G3.3



	3.2. Phương pháp nghiên cứu của chủ nghĩa xã hội khoa học 3.3. Ý nghĩa của việc nghiên cứu chủ nghĩa xã hội khoa học		
3/ 2 tiết	Chương 2 SỨ MỆNH LỊCH SỬ CỦA GIAI CẤP CÔNG NHÂN 1. Quan điểm cơ bản của chủ nghĩa Mác - Lênin về giai cấp công nhân và sứ mệnh lịch sử thế giới của giai cấp công nhân 1.1. Khái niệm và đặc điểm của giai cấp công nhân 1.2. Nội dung và đặc điểm sứ mệnh lịch sử của giai cấp công nhân 1.3. Những điều kiện quy định sứ mệnh lịch sử của giai cấp công nhân. 2. Giai cấp công nhân và việc thực hiện sứ mệnh lịch sử của giai cấp công nhân hiện nay 2.1. Giai cấp công nhân hiện nay 2.2. Thực hiện sứ mệnh lịch sử của giai cấp công nhân trên thế giới hiện nay	Dạy: thuyết giảng, phát vấn, chấm phần biện. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: - Đọc trước tài liệu mục 3, chương 2	G1.2 G2.1 G2.2 G3.1 G3.1 G3.3
4/ 2 tiết	Chương 2: SỨ MỆNH LỊCH SỬ CỦA GIAI CẤP CÔNG NHÂN (tiếp theo) 3. SỨ MỆNH LỊCH SỬ CỦA GIAI CẤP CÔNG NHÂN VIỆT NAM 3.1. Đặc điểm của giai cấp công nhân Việt Nam 3.2. Nội dung sứ mệnh lịch sử của giai cấp công nhân Việt Nam hiện nay 3.3. Phương hướng và một số giải pháp chủ yếu để xây dựng giai cấp công nhân Việt Nam hiện nay	Dạy: thuyết giảng, phát vấn, chấm phần biện. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: - Đọc trước tài liệu chương 3	G1.2 G2.1 G2.2 G3.1 G3.1 G3.3
5/ 2 tiết	Chương 3: CHỦ NGHĨA XÃ HỘI VÀ THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 1. CHỦ NGHĨA XÃ HỘI 1.1. Chủ nghĩa xã hội, giai đoạn đầu của hình thái kinh tế - xã hội công sản chủ	Dạy: thuyết giảng, phát vấn, chấm phần biện. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp:	G1.3 G2.1 G2.2 G3.1 G3.1 G3.3

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	nghĩa 1.2. Điều kiện ra đời chủ nghĩa xã hội Những đặt trưng cơ bản của chủ nghĩa xã hội 2. THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 2.1. Tính tất yếu khách quan của thời kỳ quá độ lên chủ nghĩa xã hội 2.2. Đặc điểm của thời kỳ quá độ lên chủ nghĩa xã hội	- Đọc trước tài liệu mục 3, chương 3	
6/ 2 tiết	Chương 3: CHỦ NGHĨA XÃ HỘI VÀ THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI (tiếp theo) 3. QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI Ở VIỆT NAM 3.1. Quá độ lên chủ nghĩa xã hội bỏ qua chế độ tư bản chủ nghĩa 3.2. Những đặc trưng cơ bản của chủ nghĩa xã hội và phương hướng xây dựng chủ nghĩa xã hội ở Việt Nam hiện nay	Dạy: thuyết giảng, phát vấn, chấm phần biện. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: - ôn tập, chuẩn bị kiểm tra giữa kỳ	G1.3 G2.1 G2.2 G3.1 G3.1 G3.3
7/ 2 tiết	-Kiểm tra giữa kỳ -Hướng dẫn tự đọc các nội dung của chương 4.5.6	Dạy: Tổ chức kiểm tra giữa kỳ, hướng dẫn tự học Học ở lớp: Làn bài thi Học ngoài lớp: - Đọc trước tài liệu chương 4	G1.1, G1.2, G1.3 G2.1, G2.2, G2.3 G3.1, G3.1, G3.3
8 /2 tiết	Chương 4: DÂN CHỦ XÃ HỘI CHỦ NGHĨA VÀ NHÀ NƯỚC XÃ HỘI CHỦ NGHĨA 1. DÂN CHỦ VÀ DÂN CHỦ XÃ HỘI CHỦ NGHĨA 1.1. Dân chủ và sự ra đời, phát triển của dân chủ 1.2. Dân chủ xã hội chủ nghĩa 2. NHÀ NƯỚC XÃ HỘI CHỦ NGHĨA 2.1. Sự ra đời, bản chất, chức năng của nhà nước xã hội chủ nghĩa 2.2. Mối quan hệ giữa dân chủ xã hội chủ nghĩa và nhà nước xã hội chủ nghĩa	Dạy: thuyết giảng, phát vấn, chấm phần biện. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: Đọc trước tài liệu mục 3, chương 4	G1.4 G2.1 G2.2 G3.1 G3.1 G3.3

9/ 2 tiết	Chương 4: DÂN CHỦ XÃ HỘI CHỦ NGHĨA VÀ NHÀ NƯỚC XÃ HỘI CHỦ NGHĨA (tiếp theo) 3. DÂN CHỦ XÃ HỘI CHỦ NGHĨA VÀ NHÀ NƯỚC PHÁP QUYỀN XÃ HỘI CHỦ NGHĨA Ở VIỆT NAM 3.1. Dân chủ xã hội chủ nghĩa ở Việt Nam 3.2. Nhà nước pháp quyền xã hội chủ nghĩa ở Việt Nam 3.3. Phát huy dân chủ xã hội chủ nghĩa, xây dựng nhà nước pháp quyền xã hội chủ nghĩa ở Việt Nam hiện nay	Dạy: thuyết giảng, phát vấn, chấm phần biện. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: Đọc trước tài liệu chương 5	G1.4 G2.1 G2.2 G3.1 G3.1 G3.3
10/ 2 tiết	Chương 5: CƠ CẤU XÃ HỘI - GIAI CẤP VÀ LIÊN MINH GIAI CẤP, TẦNG LỚP TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 1. CƠ CẤU XÃ HỘI GIAI CẤP TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 1.1. Khái niệm và vị trí của cơ cấu xã hội - giai cấp trong cơ cấu xã hội 1.2. Sự biến đổi có tính quy luật của cơ cấu xã hội - giai cấp trong thời kỳ quá độ lên chủ nghĩa xã hội 2. LIÊN MINH GIAI CẤP, TẦNG LỚP TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 2.1. Tính tất yếu của liên minh giai cấp, tầng lớp trong thời kỳ quá độ lên chủ nghĩa xã hội 2.2. Nội dung của liên minh giai cấp, tầng lớp trong thời kỳ quá độ lên chủ nghĩa xã hội	Dạy: thuyết giảng, phát vấn, chấm phần biện. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: Đọc trước tài liệu mục 3, chương 5	G1.5 G2.1 G2.2 G3.1 G3.1 G3.3
11/ 2 tiết	Chương 5: CƠ CẤU XÃ HỘI - GIAI CẤP VÀ LIÊN MINH GIAI CẤP, TẦNG LỚP TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI (tiếp theo) 3. CƠ CẤU XÃ HỘI - GIAI CẤP VÀ LIÊN MINH GIAI CẤP, TẦNG LỚP	Dạy: thuyết giảng, phát vấn, chấm phần biện. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: Đọc trước tài liệu	G1.5 G2.1 G2.2 G3.1 G3.1 G3.3

	TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI Ở VIỆT NAM 3.1. Cơ cấu xã hội - giai cấp trong thời kỳ quá độ lên chủ nghĩa xã hội ở Việt Nam. 3.2. Liên minh giai cấp, tầng lớp trong thời kỳ quá độ lên chủ nghĩa xã hội ở Việt Nam.	chương 6	
12/ 2 tiết	Chương 6: VẤN ĐỀ DÂN TỘC VÀ TÔN GIÁO TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 1. DÂN TỘC TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 1.1. Chủ nghĩa Mác - Lênin về dân tộc 1.2. Dân tộc và quan hệ dân tộc ở Việt Nam	Dạy: thuyết giảng, phát vấn, chấm phần biện. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: Đọc trước tài liệu mục 2, 3 chương 6	G1.6 G2.1 G2.2 G3.1 G3.1 G3.3
13/ 2 tiết	Chương 6: VẤN ĐỀ DÂN TỘC VÀ TÔN GIÁO TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI (tiếp theo) 2. TÔN GIÁO TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 2.1. Chủ nghĩa Mác - Lênin về tôn giáo. 2.2. Tôn giáo ở Việt Nam và chính sách tôn giáo của Đảng, Nhà nước ta hiện nay 3. QUAN HỆ DÂN TỘC VÀ TÔN GIÁO Ở VIỆT NAM 3.1. Đặc điểm quan hệ dân tộc và tôn giáo ở Việt Nam 3.2. Định hướng giải quyết mối quan hệ dân tộc và tôn giáo ở Việt Nam hiện nay.	Dạy: thuyết giảng, phát vấn, chấm phần biện. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: Đọc trước tài liệu chương 7	G1.6 G2.1 G2.2 G3.1 G3.1 G3.3
14/ 2 tiết	Chương 7: VẤN ĐỀ GIA ĐÌNH TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 1. KHÁI NIỆM, VỊ TRÍ VÀ CHỨC NĂNG CỦA GIA ĐÌNH 1.1. Khái niệm gia đình 1.2. Vị trí của gia đình trong xã hội 1.3. Chức năng cơ bản của gia đình	Dạy: thuyết giảng, phát vấn, chấm phần biện. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: Đọc trước tài liệu mục 3, chương 7	G1.7 G2.1 G2.2 G3.1 G3.1 G3.3



	2. CƠ SỞ XÂY DỰNG GIA ĐÌNH TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 2.1. Cơ sở kinh tế - xã hội 2.2. Cơ sở chính trị - xã hội 2.3. Cơ sở văn hóa		
15/ 2 tiết	Chương 7: VẤN ĐỀ GIA ĐÌNH TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI (tiếp theo) 3. XÂY DỰNG GIA ĐÌNH VIỆT NAM TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 3.1. Sự biến đổi gia đình Việt Nam trong thời kỳ quá độ lên chủ nghĩa xã hội 3.2. Phương hướng cơ bản xây dựng và phát triển gia đình Việt Nam trong thời kỳ quá độ lên chủ nghĩa xã hội. - Ôn tập thi cuối kỳ	Dạy: thuyết giảng, phát vấn, chấm phản biện. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: Ôn tập thi cuối kỳ	G1.7 G2.1 G2.2 G3.1 G3.1 G3.3

(Các nội dung giảng dạy theo buổi học, thể hiện sự tương quan với các CDR của môn học, các hoạt động dạy và học (ở lớp, ở nhà) và các bài đánh giá của môn học)

Lý thuyết

- (1): Thông tin về tuần/buổi học. (2): Liệt kê nội dung giảng dạy theo chương, mục
(3): Liệt kê CDR liên quan của môn học (ghi ký hiệu Gx.x),
(4): Liệt kê các hoạt động dạy và học (ở lớp, ở nhà), bao gồm đọc trước tài liệu (nếu có yêu cầu)
(5): Liệt kê các bài đánh giá liên quan (ghi ký hiệu Ax.x)

Thực hành

Tuần/Buổi học (1)	Nội dung (2)	CDR môn học (3)	Hoạt động dạy và học (4)	Bài đánh giá (5)

- (1): Thông tin về tuần/buổi học. (2): Liệt kê nội dung thực hành theo bài thực hành
(3): Liệt kê CDR liên quan của môn học (ghi ký hiệu Gx.x),
(4): Liệt kê các hoạt động dạy và học (ở lớp, ở nhà), bao gồm đọc trước tài liệu (nếu có yêu cầu)
(5): Liệt kê các bài đánh giá liên quan (ghi ký hiệu Ax.x)

7. Quy định của môn học

- Quy định về Bài thuyết trình nhóm GHW:
- + Thành lập nhóm: Số lượng sinh viên tùy tình hình thực tế của lớp, giảng viên quy định. Hạn chót đăng ký đề tài nhóm Quản lý trên forum là Buổi 2 hoặc trực tiếp nộp cho GV buổi 1.
- + Các nhóm thuyết trình theo thứ tự, giảng viên quy định. Lưu ý các nhóm cần có mặt đủ và mang theo tất cả các tài liệu liên quan đến GHW khi đi thuyết trình.
- + Hình thức nộp bài: Nộp file và biên bản làm việc nhóm qua mail cho GV
- Quy định về giờ giấc, chuyên cần, kỷ luật trong khóa học:
- + Lên lớp đúng giờ, dự tối thiểu 80% thời gian học trên lớp (chỉ được phép vắng mặt tối đa 20% số tiết học). Nếu vắng quá số tiết quy định sẽ bị cấm thi theo quy chế.
- + Có đầy đủ các phần điểm quá trình, điểm kiểm tra giữa kỳ điểm thi kết thúc học phần.
- Khi có các thắc mắc liên quan môn học, sinh viên có thể liên lạc với quản lý Bộ môn Lý luận và khoa học chính trị và Khoa Chính trị - Hành chính qua email: daotao.spas@vnuhcm.edu.vn

8. Phụ trách môn học

- Khoa/Bộ môn: Bộ môn Lý luận và khoa học chính trị - Khoa Chính trị - Hành chính (ĐHQG TP.HCM)
- Địa chỉ và email liên hệ: Tầng 7, nhà Điều hành ĐHQG. Khu phố 1. Phường Linh Trung, TP. Thủ Đức. Đại chỉ mail: daotao.spas@vnuhcm.edu.vn

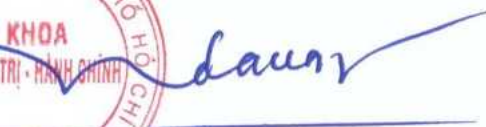
KT. Trưởng Bộ môn
Phó trưởng Bộ môn (phụ trách)



TS. Mạch Thị Khánh Trinh

Tp. Hồ Chí Minh, ngày 04 tháng 10 năm 2023

KT. TRƯỞNG KHOA
PHÓ TRƯỞNG KHOA

TS. Nguyễn Đình Quốc Cường



ĐỀ CƯƠNG CHI TIẾT MÔN HỌC

(DÀNH CHO TRƯỜNG ĐẠI HỌC QUỐC TẾ, ĐHQG-HCM)

1. THÔNG TIN CHUNG (General information)

- Tên môn học:	
+ Tiếng Việt	Lịch sử Đảng Cộng sản Việt Nam
+ Tiếng Anh	History of Vietnamese communist party
- Mã số môn học:	PE018IU
- Thuộc khối kiến thức/kỹ năng:	
☒ Kiến thức cơ bản/giáo dục đại cương	☐ Kiến thức cơ sở ngành
☐ Kiến thức chuyên ngành	☐ Kiến thức khác
☐ Môn học chuyên về kỹ năng chung	☐ Môn học đồ án/luận văn tốt nghiệp
- Số tín chỉ:	02
+ Lý thuyết	20 tiết
+ Thực hành (thuyết trình)	10 tiết (trên lớp) 60 tiết (về nhà)
- Môn học tiên quyết:	
- Môn học trước:	Không
- Môn học song hành:	Không

2. MÔ TẢ MÔN HỌC (Course description)

Môn học nằm trong khối kiến thức giáo dục đại cương thuộc mảng lý luận chính trị. Môn học với những kiến thức cơ bản, hệ thống về Lịch sử Đảng Cộng sản Việt Nam như: sự ra đời của Đảng Cộng sản Việt Nam, sự lãnh đạo của Đảng trong đấu tranh giành chính quyền, giải phóng dân tộc và xây dựng chủ nghĩa xã hội từ năm 1930 đến năm nay.

3. MỤC TIÊU MÔN HỌC (Course Goals)

Mục tiêu (1)	Mô tả mục tiêu (2)	CDR của môn học tương ứng CTĐT (3)
G1	Về kiến thức Sinh viên hiểu được những tri thức cơ bản, có tính hệ thống về sự ra đời của Đảng Cộng sản Việt Nam (1920-1930), sự lãnh đạo của Đảng đối với cách mạng Việt Nam trong thời kỳ đấu tranh giành chính quyền chính quyền (1930-1945), trong hai cuộc kháng chiến chống thực dân	

	Pháp và đế quốc Mỹ xâm lược (1945-1975), trong sự nghiệp xây dựng, bảo vệ Tổ quốc thời kỳ cả nước quá độ lên chủ nghĩa xã hội, tiến hành công cuộc đổi mới (1975 đến nay).	
G2	Về kỹ năng Sinh viên vận dụng phương pháp tư duy khoa học về lịch sử để lựa chọn, khái quát hóa tài liệu nghiên cứu, học tập môn học; đồng thời sinh viên phân tích, đánh giá, vận dụng kiến thức lịch sử vào công tác thực tiễn.	
G3	Về thái độ/năng lực tự chủ và trách nhiệm Sinh viên đánh giá được sự thật khách quan và nâng cao lòng tự hào, niềm tin đối với sự nghiệp lãnh đạo của Đảng và phê phán những quan niệm sai trái về lịch sử của Đảng.	

4. CHUẨN ĐẦU RA MÔN HỌC (Course learning outcomes)

CDR (1)	Mô tả CDR (2)	Mức độ giảng dạy (3)
G1.1	Hiểu được đối tượng, chức năng, nhiệm vụ nội dung và phương pháp nghiên cứu, học tập môn Lịch sử Đảng Cộng sản Việt Nam	I,U
G1.2	Hiểu được quá trình ra đời của Đảng Cộng sản Việt Nam (1920-1930), nội dung cơ bản, giá trị lịch sử của Cương lĩnh chính trị đầu tiên của Đảng và quá trình Đảng lãnh đạo cuộc đấu tranh giành độc lập, giành chính quyền (1930-1945)	I, T,U
G1.3	Hiểu được quá trình lãnh đạo của Đảng đối với hai cuộc kháng chiến chống thực dân Pháp và đế quốc Mỹ xâm lược, hoàn thành giải phóng dân tộc, thống nhất đất nước thời kỳ 1945-1975	I, T,U
G1.4	Hiểu được quá trình phát triển đường lối và sự lãnh đạo của Đảng để đưa cả nước quá độ lên chủ nghĩa xã hội và tiến hành công cuộc đổi mới từ sau ngày thống nhất đất nước năm 1975 đến nay. Những thành tựu và bài học kinh nghiệm trong quá trình lãnh đạo từ năm 1930 đến nay.	I, T,U
G2.1	Vận dụng kiến thức đã học để nhận thức, hành động theo đường lối của Đảng.	U
G2.2	Vận dụng, phân tích với tư duy độc lập trong nghiên cứu nhằm giải quyết các vấn đề khi làm việc theo nhóm và trình bày kết quả nghiên cứu.	U
G3.1	Đánh giá được sự lãnh đạo đúng đắn của Đảng Cộng sản Việt Nam đối với cách mạng nước ta. Quyết tâm phấn đấu thực hiện đường lối cách mạng của Đảng.	U

G3.2	Đánh giá được tầm quan trọng của sự nghiêm túc trong học tập và nghiên cứu, tự rèn luyện bản thân trở thành người có phẩm chất chính trị và đạo đức tốt.	U

5. ĐÁNH GIÁ MÔN HỌC

Thành phần đánh giá (1)	Bài đánh giá (2)	CĐR môn học (3)	Tỷ lệ % (4)
A1. Đánh giá quá trình	- Chuyên cần (A1.1) - Tham gia học tập trên lớp tích cực, hăng hái phát biểu (A1.2) - Thuyết trình nhóm (A1.3)	G1.1, G1.2- G1.3, G2.1, G2.2- G2.3 G3.1-G3.2	30%
A2. Đánh giá giữa kỳ	Kiểm tra giữa kỳ (A2.1)	G1.1 G2.1-G2.2, G3.1-G3.2	20%
A3. Đánh giá cuối kỳ	Thi cuối học kỳ (A3.1)	G1.2-G1.3, G2.1-G2.2, G3.1-G3.2	50%

6. KẾ HOẠCH GIẢNG DẠY CHI TIẾT

Tuần/Buổi học (1)	Nội dung (2)	Hoạt động dạy và học (3)	CĐRMH (4)
1/2 tiết	Chương nhập môn ĐỐI TƯỢNG, CHỨC NĂNG, NHIỆM VỤ, NỘI DUNG VÀ PHƯƠNG PHÁP NGHIÊN CỨU, HỌC TẬP LỊCH SỬ ĐẢNG CỘNG SẢN VIỆT NAM I. Đối tượng nghiên cứu của môn học lịch sử Đảng Cộng sản Việt Nam II. Chức năng, nhiệm vụ của môn học lịch sử Đảng Cộng sản Việt Nam III. Phương Pháp nghiên cứu, học tập môn lịch sử Đảng Cộng sản Việt Nam	Hoạt động dạy: - Giới thiệu đề cương môn học - Giới thiệu nội dung đề tài thuyết trình nhóm) - Trình chiếu, thuyết giảng Hoạt động học: - Chia nhóm - Giới thiệu nhóm học tập - Nghe giảng, phát biểu - Đọc trước mục 1, 2 phần I của chương 1	G1.1 G2.1 G2.2 G3.1 G3.2
	Chương 1 ĐẢNG CỘNG SẢN VIỆT NAM RA ĐỜI VÀ LÃNH ĐẠO	Hoạt động dạy: - Trình chiếu, thuyết giảng mục	

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2/2 tiết	ĐẤU TRANH GIÀNH CHÍNH QUYỀN (1930-1945) I. Đảng cộng sản Việt Nam ra đời và cương lĩnh chính trị đầu tiên của Đảng (tháng 2 – 1930) 1. <i>Bối cảnh lịch sử</i> 2. <i>Nguyễn Ái Quốc chuẩn bị các điều kiện để thành lập Đảng</i>	1,2 phần I của chương 1 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước mục 3,4 phần I của chương 1	G1.2 G2.1 G2.2 G3.1 G3.2
3/2 tiết	Chương 1 (tiếp theo) I. Đảng cộng sản Việt Nam ra đời và cương lĩnh chính trị đầu tiên của Đảng (tháng 2 – 1930) (tt) 3. <i>Thành lập Đảng Cộng sản Việt Nam và Cương lĩnh chính trị đầu tiên của Đảng</i> 4. <i>Ý nghĩa lịch sử của việc thành lập Đảng Cộng sản Việt Nam</i>	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 3,4 phần I của chương 1 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước mục 1, 2 phần II của chương 1	G1.1 G1.2 G2.1 G2.2 G3.1 G3.2
4/2 tiết	Chương 1 (tiếp theo) II. Lãnh đạo đấu tranh giành chính quyền (1930-1945) 1. <i>Phong trào cách mạng 1930-1935 và khôi phục phong trào 1932-1935</i> 2. <i>Phong trào dân chủ 1936-1939</i>	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 1, 2 phần II của chương 1 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước mục 3, 4 phần II của chương 1	G1.2 G2.1 G2.2 G3.1 G3.2

5/2 tiết	II. Lãnh đạo đấu tranh giành chính quyền (1930-1945) (tt) 3. Phong trào giải phóng dân tộc 1939-1945 4. Tính chất, ý nghĩa và kinh nghiệm của Cách mạng Tháng Tám năm 1945	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 3, 4 phần II của chương 1 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước mục 1,2 phần I của chương 2	G1.2 G1.3 G2.1 G2.2 G3.1 G3.2
6/2 tiết	Chương 2 ĐẢNG LÃNH ĐẠO HAI CUỘC KHÁNG CHIẾN, HOÀN THÀNH GIẢI PHÓNG DÂN TỘC, THỐNG NHẤT ĐẤT NƯỚC (1945-1975) I. Lãnh đạo xây dựng, bảo vệ chính quyền cách mạng, kháng chiến chống thực dân Pháp xâm lược 1945-1954 1. Xây dựng và bảo vệ chính quyền cách mạng 1945-1946 2. Đường lối kháng chiến toàn quốc và quá trình tổ chức thực hiện từ năm 1946 đến năm 1950	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 1, 2 phần I của chương 2 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước mục 3, 4 phần I của chương 2	G1.3 G2.1 G2.2 G3.1 G3.2
7/2 tiết	Chương 2 (tiếp theo) I. Lãnh đạo xây dựng, bảo vệ chính quyền cách mạng, kháng chiến chống thực dân Pháp xâm lược 1945-1954 (tt) 3. Đẩy mạnh cuộc kháng chiến đến thắng lợi 1951-1954 4. Ý nghĩa lịch sử và kinh nghiệm của Đảng trong lãnh đạo kháng chiến chống Pháp và can thiệp Mỹ	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 3, 4 phần I của chương 2 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước mục 1 phần II của chương 2	G1.3 G2.1 G2.2 G3.1 G3.2

8/2 tiết	Chương 2 (tiếp theo) II. Lãnh đạo xây dựng chủ nghĩa xã hội ở miền bắc và kháng chiến chống đế quốc Mỹ xâm lược, giải phóng miền nam, thống nhất đất nước (1954-1975) <i>1. Sự lãnh đạo của Đảng đối với cách mạng hai miền Nam – Bắc 1954-1965</i>	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 1 phần II của chương 2 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước mục 2,3 phần II của chương 2	G1.3 G2.1 G2.2 G3.1 G3.2
9/2 tiết	Chương 2 (tiếp theo) II. Lãnh đạo xây dựng chủ nghĩa xã hội ở miền bắc và kháng chiến chống đế quốc Mỹ xâm lược, giải phóng miền nam, thống nhất đất nước (1954-1975) (tt) <i>2. Lãnh đạo cách mạng cả nước giai đoạn 1965-1975</i> <i>3. Ý nghĩa lịch sử và kinh nghiệm lãnh đạo của Đảng thời kỳ 1954-1975</i>	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 2,3 phần II của chương 2 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Ôn tập nội dung chương 1,2	G1.3 G2.1 G2.2 G3.1 G3.2
10/2 tiết	Chương 3 ĐẢNG LÃNH ĐẠO CẢ NƯỚC QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI VÀ TIẾN HÀNH CÔNG CUỘC ĐỔI MỚI (1975 ĐẾN NAY) I. Lãnh đạo cả nước xây dựng chủ nghĩa xã hội và bảo vệ tổ quốc (1975-1986) <i>1. Xây dựng chủ nghĩa xã hội và bảo vệ Tổ quốc 1975-1981</i>	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 1 phần I của chương 3 - Đặt vấn đề và giải quyết vấn đề - Tổ chức kiểm tra giữa kỳ Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Thực hiện kiểm tra giữa kỳ - Đọc trước mục 2	G1.4 G2.1 G2.2 G3.1 G3.2

		phần I của chương 3	
11/2 tiết	Chương 3 (tiếp theo) I. Lãnh đạo cả nước xây dựng chủ nghĩa xã hội và bảo vệ tổ quốc (1975-1986) (tt) <i>1. Xây dựng chủ nghĩa xã hội và bảo vệ Tổ quốc 1975-1981 (tt)</i> <i>2. Đại hội đại biểu toàn quốc lần thứ V của Đảng và các bước đột phá tiếp tục đổi mới kinh tế 1982-1986</i>	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 1 phần I của chương 3 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước mục 1 phần II của chương 3	G1.4 G2.1 G2.2 G3.1 G3.2
12/2 tiết	Chương 3 (tiếp theo) II. Lãnh đạo công cuộc đổi mới, đẩy mạnh công nghiệp hóa, hiện đại hóa và hội nhập quốc tế (1986 đến nay) <i>1. Đổi mới toàn diện, đưa đất nước ra khỏi khủng hoảng kinh tế - xã hội 1986-1996</i>	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 1 phần II của chương 3 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước mục 2 phần II của chương 3	G1.4 G2.1 G2.2 G3.1 G3.2
13/2 tiết	Chương 3 (tiếp theo) II. Lãnh đạo công cuộc đổi mới, đẩy mạnh công nghiệp hóa, hiện đại hóa và hội nhập quốc tế (1986 đến nay) (tt) <i>1. Đổi mới toàn diện, đưa đất nước ra khỏi khủng hoảng kinh tế - xã hội 1986-1996 (tt)</i> <i>2. Tiếp tục công cuộc đổi mới, đẩy mạnh công nghiệp hóa, hiện đại hóa và hội nhập quốc tế 1996 đến nay</i>	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 1, 2 phần II của chương 3 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước mục 3 phần II của chương	G1.4 G2.1 G2.2 G3.1 G3.2

		3	
14/2 tiết	Chương 3 (tiếp theo) II. Lãnh đạo công cuộc đổi mới, đẩy mạnh công nghiệp hóa, hiện đại hóa và hội nhập quốc tế (1986 đến nay) (tt) 2. Tiếp tục công cuộc đổi mới, đẩy mạnh công nghiệp hóa, hiện đại hóa và hội nhập quốc tế 1996 đến nay (tt) 3. Thành tựu, kinh nghiệm của công cuộc đổi mới	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 2,3 phần II của chương 3 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước phần kết luận	G1.4 G2.1 G2.2 G3.1 G3.2
15/2 tiết	KẾT LUẬN 1. Những thắng lợi vĩ đại của cách mạng Việt Nam. 2. Những bài học lớn về sự lãnh đạo của Đảng	Hoạt động dạy: - Hướng dẫn sv tự học - Ôn tập tổng kết môn học - Công bố bảng điểm chi tiết các hoạt động - Giải đáp thắc mắc Hoạt động học: - Nghe giảng, phát biểu - Ôn tập toàn bộ nội dung môn học tại nhà	G1.1 G1.2 G1.3 G1.4 G2.1 G2.2 G3.1 G3.2

7. QUY ĐỊNH CỦA MÔN HỌC (Course requirements and expectations)

- Quy định về Bài thuyết trình nhóm:
 - Thành lập nhóm: Số lượng sinh viên tùy vào sĩ số lớp, do giảng viên quy định. Hạn chót đăng ký đề tài nhóm Quản lý trên forum/Moodle là Buổi 2 hoặc trực tiếp nộp cho GV buổi 1.
 - Các nhóm thuyết trình theo thứ tự được phân công. Lưu ý các nhóm cần có mặt đủ và mang theo tất cả các tài liệu liên quan khi thuyết trình.
 - Hình thức nộp bài: Nộp file và biên bản làm việc nhóm qua mail cho GV
- Quy định về giờ giấc, chuyên cần, kỷ luật trong khóa học: Lên lớp đúng giờ, dự tối thiểu 80% thời gian học trên lớp (chỉ được phép vắng mặt tối đa 20% số tiết học). Nếu vắng quá số tiết quy định sẽ bị điểm 0 chuyên cần.

8. TÀI LIỆU HỌC TẬP, THAM KHẢO (Reference)

Giáo trình:

[1] Bộ Giáo dục và Đào tạo (2021), *Giáo trình Lịch sử Đảng Cộng sản Việt Nam* (dành cho bậc đại học hệ không chuyên lý luận chính trị), NXB. Chính trị Quốc gia Sự Thật, Hà Nội.

Tài liệu khác:

[1] Hội đồng Trung ương chỉ đạo biên soạn giáo trình quốc gia các môn khoa học Mác – Lênin, Tư tưởng Hồ Chí Minh (2019), *Giáo trình Lịch sử Đảng Cộng sản Việt Nam* (tái bản có sửa chữa, bổ sung), Nxb. Chính trị quốc gia, Hà Nội.

[2] Bộ Giáo dục và Đào tạo (2017), *Giáo trình Đường lối cách mạng của Đảng Cộng sản Việt Nam*, Nxb Chính trị quốc gia, Hà Nội.

Tp. Hồ Chí Minh, ngày 01 tháng 01 năm 2023

KT. Trưởng Bộ môn
Phó trưởng Bộ môn



Lê Văn Thông

KT. TRƯỞNG KHOA
PHÓ TRƯỞNG KHOA



TS. Nguyễn Đình Quốc Cường

ĐỀ CƯƠNG CHI TIẾT HỌC PHẦN
(DÀNH CHO TRƯỜNG ĐẠI HỌC QUỐC TẾ)

1. Thông tin về giảng viên (cung cấp cho sinh viên khi giảng dạy)

- Họ và tên:
- Chức danh, học hàm, học vị:
- Đơn vị công tác: **Khoa Chính trị - Hành chính, ĐHQG-HCM**
- Thời gian và địa điểm làm việc:...
- Địa chỉ liên hệ:
- Điện thoại, email:
- Thông tin về trợ giảng (nếu có) (họ và tên, địa chỉ liên hệ, điện thoại, e-mail):

2. Thông tin chung về học phần

- Mã học phần: PE019IU
- Tên học phần: **Tư tưởng Hồ Chí Minh**
- Tên học phần bằng tiếng Anh: **Ho Chi Minh's Thoughts**
- Số tín chỉ: 02 (30 tiết).
- Cấu trúc/cơ cấu học phần:
 - Số tiết lý thuyết: *30 tiết*
 - Số tiết thực hành:
 - Số tiết bài tập:
 - Khác: Số tiết tự học: *60 tiết*
- Loại học phần thuộc khối kiến thức (check vào các ô):
 - Kiến thức đại cương: ☒
 - Kiến thức cơ sở ngành: ☐
 - Kiến thức chuyên ngành: ☐
 - Kiến thức bổ trợ: ☐
 - Khóa luận tốt nghiệp: ☐
 - Đồ án/dự án/seminar tốt nghiệp: ☐
 - Khác:....
- Các học phần tiên quyết: **không** hoặc **có**, nếu **có** thì điền các thông tin sau
- Các học phần học trước học phần này: **không** hoặc **có**, nếu **có** thì điền các thông tin sau
 -
 -
- Học phần song hành: **không** hoặc **có**, nếu **có** thì điền các thông tin sau
 -



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- Các yêu cầu khác (nếu có):.....

- Bộ môn phụ trách học phần: Lý luận và Khoa học chính trị, Khoa Chính trị - Hành chính

3. Mô tả vắn tắt nội dung học phần: (trình bày ngắn gọn vai trò, vị trí học phần/môn học, kiến thức sẽ trang bị cho sinh viên, quan hệ với các học phần/môn học khác trong chương trình đào tạo)

Môn học thuộc phần kiến thức giáo dục đại cương trong khối kiến thức cơ bản về lý luận chính trị. Trang bị cho sinh viên những kiến thức cơ bản về: Đối tượng, phương pháp nghiên cứu và ý nghĩa học tập môn tư tưởng Hồ Chí Minh; về cơ sở, quá trình hình thành và phát triển tư tưởng Hồ Chí Minh; về độc lập dân tộc và chủ nghĩa xã hội; về Đảng Cộng sản và Nhà nước Việt Nam; về đại đoàn kết dân tộc và đoàn kết quốc tế; về văn hóa, đạo đức, con người.

4. Mục tiêu của học phần

- Mục tiêu chung:

+ Sinh viên **hiểu** được những nội dung cơ bản của tư tưởng Hồ Chí Minh về con đường cách mạng Việt Nam; về độc lập dân tộc gắn liền với chủ nghĩa xã hội; về Đảng Cộng sản Việt Nam; về Nhà nước pháp quyền xã hội chủ nghĩa Việt Nam; về đại đoàn kết dân tộc và đoàn kết quốc tế; về văn hóa, đạo đức và con người...

+ Sinh viên **vận dụng** được những kiến thức cơ bản của tư tưởng Hồ Chí Minh vào trong nhận thức và trong hoạt động thực tiễn của bản thân.

+ Sinh viên **phân tích, đánh giá** được giá trị, tính khoa học cách mạng và nhân văn của tư tưởng Hồ Chí Minh đối với thực tiễn Việt Nam và nhân loại.

- Mục tiêu cụ thể:

Ký hiệu mục tiêu của học phần (G)	Mô tả/nội dung mục tiêu học phần	Mức độ năng lực đạt được (theo thang đánh giá Bloom)	Ghi chú
KIẾN THỨC			
G1.1	Sinh viên hiểu những kiến thức cơ bản về khái niệm; cơ sở, quá trình hình thành và phát triển tư tưởng Hồ Chí Minh; tư tưởng Hồ Chí Minh về độc lập dân tộc gắn liền với chủ nghĩa xã hội;	2	
G1.2	Sinh viên hiểu những nội dung cơ bản của tư tưởng Hồ Chí Minh về Đảng Cộng sản Việt Nam; về Nhà nước của nhân dân, do nhân dân, vì nhân dân; về sự vận dụng của Đảng Cộng sản Việt Nam trong cách mạng dân tộc dân chủ và cách mạng xã hội chủ nghĩa, trong công cuộc đổi mới đất nước hiện nay.	2	
G1.3	Sinh viên hiểu những nội dung cơ bản của tư tưởng Hồ Chí Minh về đại đoàn kết dân tộc và đại đoàn kết quốc tế; hiểu những nội dung cơ bản của tư tưởng Hồ Chí Minh về văn hóa, đạo đức và con	2	

	người.		
KỸ NĂNG			
G2.1	Sinh viên vận dụng giá trị của tư tưởng Hồ Chí Minh trong hoạt động lý luận và thực tiễn; Sinh viên phân tích, nhận diện và phân bác những luận điệu xuyên tạc về tư tưởng Hồ Chí Minh về độc lập dân tộc và chủ nghĩa xã hội.	3	
G2.2	Sinh viên phân tích được một cách khoa học những vấn đề về xây dựng Đảng cộng sản Việt Nam và xây dựng Nhà nước pháp quyền xã hội chủ nghĩa của nhân dân, do nhân dân, vì nhân dân trong thời kỳ đổi mới đất nước.	4	
G2.3	Sinh viên vận dụng tư tưởng Hồ Chí Minh về đại đoàn kết dân tộc và đoàn kết quốc tế trong giai đoạn hiện nay; Sinh viên vận dụng được phương pháp tư duy mới trong học tập, nghiên cứu; tự mình biết đào sâu lý luận gắn với thực tiễn với tinh thần độc lập, sáng tạo.	3	
THÁI ĐỘ			
G3.1	Sinh viên vận dụng, học tập và làm theo tư tưởng, đạo đức, phong cách Hồ Chí Minh trong học tập và cuộc sống hằng ngày.	3	
G3.2	Sinh viên đánh giá được bản chất khoa học và cách mạng của tư tưởng Hồ Chí Minh, từ đó có bản lĩnh chính trị vững vàng, có lòng yêu nước nồng nàn, trung thành với mục tiêu lý tưởng của Đảng, của dân tộc. Trung thực, thẳng thắn, xây dựng tập thể đoàn kết. Trân trọng, giữ gìn và phát huy di sản tư tưởng của Hồ Chí Minh trong hoạt động thực tiễn.	5	
G3.3	Sinh viên vận dụng bản chất khoa học và cách mạng của tư tưởng Hồ Chí Minh trong việc đấu tranh chống lại các âm mưu xuyên tạc tư tưởng Hồ Chí Minh, chủ trương, đường lối của Đảng. Có hành vi đạo đức chuẩn mực. Có năng lực học tập, tự nghiên cứu các vấn đề chuyên môn.	3	

(*) 1. Ghi nhớ (Remembering), 2. Hiểu (Understanding), 3. Vận dụng (Applying), 4. Phân tích (Analyzing), 5. Đánh giá (Evaluating), 6. Sáng tạo (Creating).

5. Chuẩn đầu ra (CDR) của học phần

Thứ tự các	Ký hiệu CDR	Mô tả/nội dung CDR học phần	Mức độ giảng dạy	Liên kết giữa CDR	Liên kết giữa CDR học

CDR	học phần (CHP)		(I, T, U) *	học phần và mục tiêu học phần	phần và CDR chương trình đào tạo
KIẾN THỨC					
1	CHP1	Hiểu được khái niệm, đối tượng, phương pháp nghiên cứu và ý nghĩa học tập môn tư tưởng Hồ Chí Minh.	I	G1.1	
2	CHP2	Hiểu được cơ sở, quá trình hình thành và phát triển tư tưởng Hồ Chí Minh.	I, T, U	G1.1	
3	CHP3	Hiểu được kiến thức cơ bản tư tưởng Hồ Chí Minh về độc lập dân tộc và chủ nghĩa xã hội. Sự vận dụng của Đảng vào trong sự nghiệp cách mạng hiện nay.	I, T,U	G1.1	
4	CHP4	Hiểu được kiến thức cơ bản tư tưởng Hồ Chí Minh về Đảng Cộng Sản Việt Nam và Nhà nước của nhân dân, do nhân dân, vì nhân dân. Sự vận dụng tư tưởng Hồ Chí Minh vào công tác xây dựng Đảng và xây dựng Nhà nước.	I, T,U	G1.2	
5	CHP5	Hiểu được kiến thức cơ bản tư tưởng Hồ Chí Minh về đại đoàn kết toàn dân tộc và đoàn kết quốc tế. Sự vận dụng của Đảng vào trong sự nghiệp cách mạng hiện nay;	I, T,U	G1.3	
6	CHP6	Hiểu được kiến thức cơ bản tư tưởng Hồ Chí Minh về văn hóa, đạo đức, con người. Sự vận dụng tư tưởng Hồ Chí Minh trong việc xây dựng văn hóa, đạo đức, con người Việt Nam hiện nay.	I, T,U	G1.3	
KỸ NĂNG					
7	CHP7	Phân tích mang tính khái quát hóa để rút ra <i>Từ khóa tri thức</i> đối với mỗi nội dung và tư duy có hệ thống.	T, U	G2.1; G2.2; G2.3	
8	CHP8	Vận dụng kiến thức học phần để trình bày, thuyết	U	G2.1; G2.2;	

		minh, phản biện, tranh luận, hùng biện những tri thức lý luận đang học tập, nghiên cứu dựa trên thực tiễn.		G2.3	
9	CHP9	Vận dụng kiến thức học phần để giao tiếp xã hội, hợp tác và làm việc nhóm, chia sẻ tri thức và kinh nghiệm, khả năng điều hành nhóm làm việc.	U	G2.1; G2.2; G2.3	
THÁI ĐỘ					
10	CHP10	Phân tích, đánh giá và có ý thức trách nhiệm bảo vệ tính khoa học, cách mạng, nhân văn của tư tưởng Hồ Chí Minh.	T, U	G3.1 G3.2 G3.3	
11	CHP11	Vận dụng kiến thức đã học gắn với trách nhiệm cá nhân đối với tập thể, cộng đồng.	U	G3.1 G3.2 G3.3	
12	CHP12	Phân tích, đánh giá được sự cần thiết của việc học tập, nghiên cứu suốt đời và vận dụng tư tưởng Hồ Chí Minh trong cuộc sống.	T, U	G3.1 G3.2 G3.3	

(*) I (Introduce): giới thiệu; T (Teach): dạy; U (Utilize): sử dụng

6. Hình thức, phương pháp và trọng số đánh giá kết quả học phần

Hình thức đánh giá	Nội dung chi tiết	Phương pháp đánh giá (đánh dấu X)				Ký hiệu bài đánh giá	Trọng số đánh giá	Ghi chú
		Viết	Trắc nghiệm	Vấn đáp	Khác			
Đánh giá quá trình	- Chuyên cần - Tham gia học tập trên lớp tích cực, hăng hái phát biểu. -Thuyết trình nhóm					ĐG1 (tổng điểm từ ĐG1.1 đến ĐG1.6)	30%	
Điểm kiểm tra giữa kỳ		X	X	X		ĐG1.1	20%	

Đánh giá tổng kết	Điểm cuối học kỳ	X				ĐG2	50%	Điểm bài thi + điểm thường (tối đa 20%=2 điểm)

7. Thang điểm đánh giá: theo thang điểm 100.

8. Kế hoạch giảng dạy chi tiết của học phần : Ghi chi tiết đến 2 cấp (chương và bài).

STT Buổi (3 tiết/ buổi)	Tên bài giảng của học phần (Ghi chi tiết tên chương và bài giảng của mỗi chương)	Liên kết với CDR học phần	Hoạt động dạy và học						Phương pháp dạy học (thuyết trình; thảo luận; các phương pháp dạy học tích cực/lấy người học làm trung tâm...)	Bài đánh giá
			Số tiết lên lớp				SV tự nghiên cứu, tự học			
			Lý thuyết	Thực hành/ thực tập	Bài tập	Thảo luận/ khác	Số tiết	Ghi chú (nếu có)		
1/2	Chương 1. Khái niệm, đối tượng, phương pháp nghiên cứu và ý nghĩa học tập môn tư tưởng Hồ Chí Minh		02						Thuyết trình	ĐG1.1; ĐG1.6; ĐG2
2/2	Chương 2. Cơ sở, quá trình hình thành và phát triển tư tưởng Hồ Chí Minh		02						Thuyết trình, thảo luận nhóm	ĐG1.1; ĐG1.3; ĐG1.5; ĐG1.6; ĐG2
3/2	Chương 2 (tiếp)		01			01			Thuyết trình, thảo luận nhóm	ĐG1.1; ĐG1.3; ĐG1.5; ĐG1.6; ĐG2
4/2	Chương 2 (tiếp)		02						Thuyết trình, thảo luận nhóm	ĐG1.1; ĐG1.3; ĐG1.5; ĐG1.6; ĐG2
5/2	Chương 3. Tư tưởng Hồ Chí								Thuyết trình,	ĐG1.1; ĐG1.3;

	Minh về độc lập dân tộc và chủ nghĩa xã hội		02					thảo luận nhóm	ĐG1.5; ĐG1.6; ĐG2
6/2	Chương 3(tiếp)		01			01		Thuyết trình, thảo luận nhóm	ĐG1.1; ĐG1.3; ĐG1.5; ĐG1.6; ĐG2
7/2	Chương 3(tiếp)		01			01			
8/2	Chương 4. Tư tưởng Hồ Chí Minh về Đảng Cộng sản Việt Nam và Nhà nước của nhân dân, do nhân dân và vì nhân dân		02					Thuyết trình, thảo luận nhóm	ĐG1.1; ĐG1.3; ĐG1.5; ĐG1.6; ĐG2
9/2	Chương 4 (tiếp)		02					Thuyết trình, thảo luận nhóm	ĐG1.1; ĐG1.3; ĐG1.5; ĐG1.6; ĐG2
10/2	Chương 4 (tiếp)					02		Thuyết trình, thảo luận nhóm	ĐG1.1; ĐG1.3; ĐG1.5; ĐG1.6; ĐG2
11/2	Chương 5. Tư tưởng Hồ Chí Minh về đại đoàn kết toàn dân tộc và đoàn kết quốc tế		02					Thuyết trình, thảo luận nhóm	ĐG1.1; ĐG1.3; ĐG1.5; ĐG1.6; ĐG2
12/2	Chương 5 (tiếp)		01			01		Thuyết trình, thảo luận nhóm	ĐG1.1; ĐG1.3; ĐG1.5; ĐG1.6; ĐG2
13/2	Chương 6. Tư tưởng Hồ Chí Minh về văn hóa, đạo đức, con người		02					Thuyết trình, thảo luận nhóm	ĐG1.1; ĐG1.3; ĐG1.5; ĐG1.6; ĐG2
14/2	Chương 6 (tiếp)		02					Thuyết trình, thảo luận nhóm	ĐG1.1; ĐG1.3; ĐG1.5; ĐG1.6; ĐG2
15/2	Chương 6 (tiếp)					02		Thuyết trình, thảo	ĐG1.1; ĐG1.3; ĐG1.5;

									luận nhóm	ĐG1.6; ĐG2
	Tổng cộng số tiết		22	...	...	08	...	...		

9. Tài liệu học tập

STT	Tên tác giả	Năm xuất bản	Tên giáo trình	Tên Nhà xuất bản	Giáo trình chính/Tài liệu tham khảo/Khác	Nơi có thể có tài liệu/trang web
1	Bộ Giáo dục và Đào tạo	2021	<i>Giáo trình Tư tưởng Hồ Chí Minh</i>	Nxb. Chính trị quốc gia Sự thật, Hà Nội.	Giáo trình chính	
2	Hồ Chí Minh	2011	<i>Toàn tập</i>	Nxb. Chính trị quốc gia Sự thật, Hà Nội.	Tài liệu tham khảo	Báo điện tử Đảng Cộng sản Việt Nam, https://hochiminh.vn/tac-pham-cua-ho-chi-minh/ho-chi-minh-toan-tap
3	Hồ Chí Minh	2016	<i>Biên niên tiểu sử</i>	Nxb. Chính trị quốc gia Sự thật, Hà Nội.	Tài liệu tham khảo	

10. Quy định của môn học

- Khi có các thắc mắc liên quan môn học, sinh viên có thể liên lạc với quản lý Bộ môn Lý luận và Khoa học chính trị và Khoa Chính trị - Hành chính qua email: daotao.spas@vnuhcm.edu.vn
- Quy định về Bài thuyết trình nhóm:
 - + Thành lập nhóm: Theo tình hình thực tế của lớp học.
 - + Hạn chót đăng ký đề tài nhóm Quản lý trên forum là Buổi 2.
 - + Bắt đầu từ tuần 4 thuyết trình theo thứ tự. Lưu ý các nhóm cần có mặt đủ và mang theo tất cả các tài liệu liên quan đến bài tập khi đi thuyết trình.
 - + Hình thức nộp bài: Nộp file và biên bản làm việc nhóm qua mail cho GV
- Quy định về đánh giá môn học: theo Quy định về việc giảng dạy và học tập các môn Lý luận chính trị của khoa Chính trị - Hành chính.

KT. Trưởng Bộ môn
Phó trưởng Bộ môn



Lê Văn Thông

Tp. Hồ Chí Minh, ngày 01 tháng 10 năm 2023

KT. TRƯỞNG KHOA
PHÓ TRƯỞNG KHOA



TS. Nguyễn Đình Quốc Cường



VIETNAM NATIONAL UNIVERSITY HCMC INTERNATIONAL UNIVERSITY

School of Languages

COURSE SYLLABUS

Course Name: Writing AE1

Course Code: EN007IU

1. General information

Course name	- (in English) WRITING AE1 (Academic Writing) - (in Vietnamese) <i>Viết học thuật</i>
Course designation	<i>This course provides students with comprehensive instructions and practice in essay writing, including transforming ideas into different functions of writing such as process, cause-effect, comparison-contrast, and argumentative essays.</i>
Semester(s) in which the course is taught	1, 2, 3
Person responsible for the course	Lecturers of School of Languages
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, project
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 90 Contact hours (lecture, exercise): 30 Private study including examination preparation, specified in hours ¹ : 60
Credit points	2 credits (Theory: 2 + Practice: 0) 3.08 ECTS (<i>optional</i>)
Required and recommended prerequisites for joining the course	None

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course objectives	Throughout the whole course, students are required to read university-level texts to develop the ability to read critically and to respond accurately, coherently and academically in writing. Through providing them with crucial writing skills such as brainstorming, paraphrasing, idea developing, revising, and editing, this course prepares the students for research paper writing in the next level of AE2 writing.		
Course learning outcomes	Upon the successful completion of this course, students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Follow different steps in the writing process to produce a complete essay	
	Skill	CLO2. Use signal language that are specific for different functions (describe a process, discuss the causes and effects, compare and contrast, and make arguments) CLO3. Construct a complete essay including appropriately written thesis statement, topic sentences, and restatement CLO4. Provide a counter-argument and a rebuttal in an argumentative essay.	
	Attitude	CLO5. Display discipline, responsibilities, and ethical practices as an individual and a team member in attending class regularly and actively participating in class activities	
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (2 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	The process of Academic Writing	1	I, T, U
	Using Outside Sources	3	T, U
	From Paragraph to Essay	4	T, U
	Process Essays	4	T, U
	Cause/Effect Essays	4	T, U
	Comparison/ Contrast Essays	4	T, U
	Argumentative Essays	6	T, U
	Summarizing	2	U
	Review & Correction	2	U

Examination forms	Essay writing
Study and examination requirements	<i>Attendance</i> Regular on-time attendance in this course is expected. A student will be allowed no more than three absences. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination. <i>Missed Tests</i> Students are not allowed to miss any of the tests (both Mid-term and Final). There are very few exceptions. Only with extremely reasonable excuses (eg. certified paper from doctors), students may re-take the examination. <i>Class Behaviors</i> Students are required to treat their studying in college as a full-time job and spend an adequate amount of time for this Writing AEI course with approximately 8-10 hours per week (both in class and self-study). Accordingly, students are supposed to follow the obligations below: - Prepare thoroughly for each class in accordance with the course syllabus and complete home assignments as the instructor's request. - Participate fully and constructively in all course activities and discussions (if any). - Display appropriate courtesy to all involved in the class. - Provide constructive feedback to faculty members regarding their performance. <i>Plagiarism</i> Students are warned not to copy from other books or from their peers for all assessment tasks. Committing plagiarism will result in 0 point for the task. Students who plagiarize twice will be prohibited from sitting the final examination. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	[1] Oshima, A., & Hogue, A. (2017). <i>Longman Academic Writing Series, Level 4: Essays</i> (5th ed.). New Jersey, NJ: Pearson Longman. [2] Oshima, A., & Hogue, A. (2006). <i>Longman Academic Writing Series, Level 4: Essays</i> (4th ed.). New Jersey, NJ: Pearson Longman.

2. Learning Outcomes Matrix (optional)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	The process of Academic Writing Step 1: Creating (Prewriting) Step 2: Planning (Outlining) Step 3: Writing Step 4: Polishing Using Outside Sources Paraphrasing Plagiarism and how to avoid plagiarism	1, 5	Lecture Group work Individual writing	Ongoing assessment & Midterm exam	[2] pp. 265-279 [1] pp. 58- 65
2	Using Outside Sources (Cont'd) Strategies for writing a successful summary	5	Lecture Group work Individual writing	Ongoing assessment & Midterm exam	[1] pp. 58 -72
3 & 4	Review/ Correction: Lecturer gives feedback to one or two students' writings in class. From Paragraph to Essay The introductory paragraph: ● General statements & Introductory techniques ● Thesis statements & Logical division of ideas Body paragraphs: ● Topic sentences The concluding paragraph: ● Restatement Final thoughts Outlines of essays	1,3,5	Lecture Group work Individual writing	Ongoing assessment & Midterm exam	[1] pp. 74– 100
5	Process Essays Introduction Analyzing the models Thesis statements for process essays Transitional signals	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Midterm exam	[1] pp. 101-115
6	Process Essays (Cont'd) Review/ Correction: Lecturer gives feedback to one or two students' writings in class. <u>In-class Assignment:</u> Write a process essay about one of these topics or a topic of the	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Midterm exam	[1] pp. 101-115

Week	Topic	CLO	Learning activities	Assessments	Resources
	lecturer's choice: ● How to cook a favorite food ● How to do a favorite hobby ● How to succeed in your major area or professional field ● How to accomplish an academic task (register for classes, apply for a scholarship, pass an exam, etc.)				
7	Cause/ Effect Essays Introduction Analyzing the models Organization Signal words and phrases	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Midterm exam	[1] pp. 116-132
8	Cause/ Effect Essays (Cont'd) Review/ Correction: Lecturer gives feedback to one or two students' writings in class. <u>In-class Writing:</u> Write the introduction, ONE body paragraph and the conclusion on one of the two topics left (except for the ones that has been worked on in class and assigned as homework) or a topic of the lecturer's choice: ● The cause of obesity ● The effects of involvement in sports on young children ● The causes of stress in college students ● The effects of regular reading on students' lives	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Midterm exam	[1] pp. 116 - 132
MIDTERM EXAMINATION					
9	Comparison/ Contrast Essays Introduction Analyzing the models Organization: ● Points of comparison	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Final exam	[1] pp. 133-151

Week	Topic	CLO	Learning activities	Assessments	Resources
	- Point-by-point organization - Block organization Comparison and Contrast signal words				
10	Comparison/ Contrast Essays (Cont'd) Review/ Correction: Lecturer gives feedback to one or two students' writings in class. <u>In-class Assignment:</u> Write a compare and contrast essay on the topic left or a topic of the lecturer's choice: - Compare and contrast the relationship between parents and children in two different cultures - Compare and contrast the university cultures in two different countries - Compare and contrast the cultures of a small town and a big city	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Final exam	[1] pp. 133-151
10	Comparison/ Contrast Essays (Cont'd) Review/ Correction: Lecturer gives feedback to one or two students' writings in class. <u>In-class Assignment:</u> Write a compare and contrast essay on the topic left or a topic of the lecturer's choice: - Compare and contrast the relationship between parents and children in two different cultures - Compare and contrast the university cultures in two different countries - Compare and contrast the cultures of a small town and a big city	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Final exam	[1] pp. 133-151

Week	Topic	CLO	Learning activities	Assessments	Resources
11 & 12	Argumentative Essays Introduction Analyzing the model Organization: Block vs. Point-by-point pattern The elements of an argumentative essay: • An explanation of the issue • A clear thesis statement • A summary of the opposing arguments • Rebuttals to the opposing arguments • Your own arguments The introductory paragraph: Thesis Statement Statistics as support	2,3,4,5	Lecture Group work Individual writing	Ongoing assessment & Final exam	[1] pp. 152-168
13 & 14	Argumentative Essays (Cont'd) Review/ Correction: Lecturer gives feedback to one or two students' writings in class. In-class Writing: Write an argumentative essay on the topic left or a topic of the lecturer's choice: • Can same-sex parenting negatively influence a child's mentality? • Do famous artists have an innate talent, or do they put in great effort to improve their skills? • Is homework helpful?	2,3,4,5	Lecture Group work Individual writing	Ongoing assessment & Final exam	[1] pp. 152-168
15	Sample final examination	2,3,4,5	Individual writing	Ongoing assessment & Final exam	

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Ongoing assessment (30%)	60% Pass	60% Pass	60% Pass	60% Pass	60% Pass
Midterm exam (30%)	60% Pass	60% Pass	60% Pass		

Final exam (40%)	60% Pass	60% Pass	60% Pass	60% Pass	

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

5.1. Midterm exam rubrics (100 points)

TASK 1: Write 3 topic sentences and the restatement from a thesis statement: 40 points

Parts/ Points	Answers/ Criteria	CLO
Topic sentence 1 10 pts	○ The topic sentence introduces the topic and the controlling idea (1), starting with a transition signal*.	CLO 3
Topic sentence 2 10 pts	○ The topic sentence introduces the topic and the controlling idea (2), starting with a transition signal*.	CLO 3
Topic sentence 3 10 pts	○ The topic sentence introduces the topic and the controlling idea (3), starting with a transition signal*.	CLO 3
Restatement 10 pts	○ The 3 subtopics are well paraphrased: different words and structures while the meaning kept the same.	CLO 3

Notes:

*The students are supposed to use **a variety of connecting devices (single word, phrase, clause, or sentence)** to show their flexibility and expertise in writing.

TASK 2: Write a Cause/Effect essay: 60 points

Answers/ Criteria	Parts/ Points	CLO
Language use and Mechanics A wide variety of sentence patterns and vocabulary are presented correctly. Language used for <i>Cause-Effect Essay</i> is good and Meaning is clear. Spelling, capitalization, punctuation are correct.	10	CLO 2
Content The essay fulfills the requirements of the assignment & the topic is fully addressed. (15) The essay is interesting to read and originally written by the student. (5)	20	CLO 3
Organization Introduction: The introduction ends with a thesis statement. (10) Body: Each paragraph discusses a particular point and begins with a clear topic sentence. (5) Each paragraph has specific supporting details (fact, examples, etc.) (5) Each paragraph has cohesion and coherence. (5) Conclusion: The conclusion summarizes the main points/paraphrases the thesis statement, begins with a conclusion signal, and leaves the readers with the writer's thoughts on the topic. (5)	30	CLO 1,3,5
Total	60	

5.2. Final exam rubrics: Write an argumentative essay: 100 points

Criteria/ word count	300-350 words (100%)	CLO
Language use and mechanics (20) A wide variety of sentence patterns and vocabulary are presented correctly. Language control is good, and meaning is clear. Spelling, capitalization and punctuation are correct.	20	CLO 2
Content: (20) The essay fulfills the task requirements, and the topic is fully addressed. The content is originally created by the students.	20	CLO 3
Organization: (60) <i>Introduction:</i> The introduction has a thesis statement. (10) <i>Body:</i> At least one paragraph discusses the counter-arguments. (10) Each paragraph discusses a particular point and begins with a clear topic sentence. (10) Each paragraph has specific supporting details (fact, examples, etc.). There are no sentences that are off-topic. (10) Each paragraph has cohesion and coherence. There are transition signals to show the relationship among ideas and to link paragraphs. (10) <i>Conclusion:</i> The conclusion summarizes the main points and paraphrases the thesis statement, begins with a conclusion signal, and leaves the readers with the writer's final thought on the topic. (10)	10 10 10 10 10 10	CLO 1,3,4
Total	100	

Date revised: 19 May, 2025

Ho Chi Minh City, 19 May, 2025
Vice Dean of School of Languages
(Signature)

[Signature]

Dr. Vu Hoa Ngan



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
Department of English

COURSE SYLLABUS

Course Name: Listening AE1 (Listening & Note-taking)

Course Code: EN008IU

1. General information

Course designation	<i>The course is designed to prepare students for effective listening and note-taking skills, so that they can pursue the courses in their majors without considerable difficulty. The course is therefore lecture-based in that the teaching and learning procedure is built up on lectures on a variety of topics such as business, science, and humanities.</i>
Semester(s) in which the course is taught	1, 2, 3
Person responsible for the course	Lecturers of Department of English
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 85 h Contact hours (lecture, exercise): 25 h Private study including examination preparation, specified in hours ⁴³ : 60 h
Credit points	2 credits (theory) ~ (3.1 ECTS)
Required and recommended prerequisites for joining the course	Students must fulfil ONE of the following requirements to attend this course: • hold TOEFL iBT certificate with score ≥ 61 • hold IELTS certificate with score ≥ 5.5 • complete IE2 course

⁴³ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course objectives	There are a number of objectives embedded in various teaching activities in Listening AE1 course: Pre-listening activities: aim to activate students' current knowledge of the topic, and to provide them with lecture language and effective strategies in listening and note-taking to prepare themselves for the coming lecture. These activities include reading (this can be done before class meetings), discussing and reviewing what they have learned from the reading. While-listening and post-listening activities: aim to enable students to put their newly activated knowledge and acquired strategies into work by taking notes on the lecture, using the outline given by the teacher or prepared by themselves. They are later on asked to assess their understanding based on their notes and discuss them with their classmates. Finally, as an optional activity, depending on time and students' needs, students are asked to summarize the lecture. Follow-up activities: students are required to discuss the lecture topic and to prepare arguments for or against the topic in the debate. The purpose is to enhance students' comprehension of the lecture, and to allow them to put their acquired academic language into practice, and to experience the atmosphere of a university lecture class.								
Course learning outcomes	Upon the successful completion of this course, students will be able to: <table border="1"> <thead> <tr> <th>Competency level</th><th>Course learning outcome (CLO)</th></tr> </thead> <tbody> <tr> <td>Knowledge</td><td> CLO1. Remember different strategies and techniques in listening to academic lectures and taking notes. CLO2. Improve their specialized knowledge of academic lectures </td></tr> <tr> <td>Skill</td><td> CLO3. Respond to academic lectures with appropriate strategies CLO4. Communicate effectively with their classmates and professors. </td></tr> <tr> <td>Attitude</td><td>CLO5. Respond to academic lectures with confidence</td></tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Remember different strategies and techniques in listening to academic lectures and taking notes. CLO2. Improve their specialized knowledge of academic lectures	Skill	CLO3. Respond to academic lectures with appropriate strategies CLO4. Communicate effectively with their classmates and professors.	Attitude	CLO5. Respond to academic lectures with confidence
Competency level	Course learning outcome (CLO)								
Knowledge	CLO1. Remember different strategies and techniques in listening to academic lectures and taking notes. CLO2. Improve their specialized knowledge of academic lectures								
Skill	CLO3. Respond to academic lectures with appropriate strategies CLO4. Communicate effectively with their classmates and professors.								
Attitude	CLO5. Respond to academic lectures with confidence								

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (2 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Orientation & Introduction of strategies and techniques in note-taking</td><td>2</td><td>I, T, U</td></tr><tr><td>Chapter 1: New Trends in Marketing Research</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 2: Business Ethics</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 3: Trends in Children’s Media Use</td><td>2</td><td>T, U</td></tr><tr><td>Chapter 4: The Changing Music Industry</td><td>2</td><td>T, U</td></tr><tr><td>Chapter 5: The Placebo Effect</td><td>2</td><td>T, U</td></tr><tr><td>Midterm Sample Test & Review</td><td>2</td><td>T, U</td></tr><tr><td>Chapter 6: Intelligent Machines</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 7: Sibling Relationships</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 8: Multiple Intelligences</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 9: The Art of Graffiti</td><td>3</td><td>T, U</td></tr><tr><td>Final Sample Test & Review</td><td>2</td><td>T, U</td></tr></table>	Topic	Weight	Level	Orientation & Introduction of strategies and techniques in note-taking	2	I, T, U	Chapter 1: New Trends in Marketing Research	3	T, U	Chapter 2: Business Ethics	3	T, U	Chapter 3: Trends in Children’s Media Use	2	T, U	Chapter 4: The Changing Music Industry	2	T, U	Chapter 5: The Placebo Effect	2	T, U	Midterm Sample Test & Review	2	T, U	Chapter 6: Intelligent Machines	3	T, U	Chapter 7: Sibling Relationships	3	T, U	Chapter 8: Multiple Intelligences	3	T, U	Chapter 9: The Art of Graffiti	3	T, U	Final Sample Test & Review	2	T, U
Topic	Weight	Level																																						
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Chapter 8: Multiple Intelligences	3	T, U																																						
Chapter 9: The Art of Graffiti	3	T, U																																						
Final Sample Test & Review	2	T, U																																						
Examination forms	Paper and pen tests: Correct the mistakes, Fill in the blanks, Write short answers, Write a summary paragraph.																																							
Study and examination requirements	<i>Attendance</i> Regular on-time attendance in this course is expected. It is compulsory that students attend atleast 80% of the course to be eligible for the final examination. <i>Missed tests</i> Students are not allowed to miss any of the tests (both on-going assessment and final test). There are very few exceptions. (Only with extremely reasonable excuses, e.g. certified paper from doctors, may students re-take the tests.) <i>Class behavior</i> Students are supposed to: prepare thoroughly for each class in accordance with the syllabus and complete all assignments upon the instructor’s request participate fully and constructively in all class activities (and discussions if any) display appropriate courtesy to all involved in the class provide constructive feedback to faculty members regarding their performance																																							

Reading list	[1] Frazie, L., & Leeming, S. (2013). <i>Lecture ready 3</i>. Oxford: Oxford University Press. References: [2] Frazie, L., & Leeming, S. (2013). <i>Lecture ready 1, 2</i>. Oxford: Oxford University Press.

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Program/Student Learning Outcomes (SLO) (1-6) is shown in the following table:

	SLO					
CLO	1	2	3	4	5	6
1						
2						
3						
4						

3. Planned learning activities and teaching methods

WEEK	P.	Chapter	Listening oriented activities	Speaking oriented activities
WEEK 1	2	ORIENTATION		
WEEK 2	2	<u>Chapter 1</u> New Trends in Marketing Research	Recognizing topic introducing and lectureplan presenting expressions Organizing ideas by outlining	Expressing ideas during a discussion
WEEK 3	2	<u>Chapter 2</u> Business Ethics	Recognizing transitionexpressions Using symbols and abbreviations	Asking for clarification and elaboration during a discussion
WEEK 4	2	REVIEW		
WEEK 5	2	<u>Chapter 3</u> Trends in Children's Media Use	Recognizing generalization and support expressions	Giving opinions and asking for opinions during a discussion
WEEK 6	2	<u>Chapter 4</u> The Changing Music Industry	Recognizing expressions for clarification or emphasis Organizing notes byusing a split-page format	Expressing interest and asking for elaboration during a discussion

WEEK 7	2	<u>Chapter 5</u> The Placebo Effect	Recognizing cause and effect expressions Noting causes and effects	Agreeing and disagreeing during a discussion
WEEK 8	2	Sample test correction WRAP-UP AND REVIEW		
MID-TERM EXAMINATION				
WEEK 9	2	<u>Chapter 6</u> Intelligent Machines	Recognizing expressions used to predict causes and effects Using arrows to show the relationship between causes and effects	Learning to compromise and reach a consensus during a discussion
WEEK 10	2	REVIEW		
WEEK 11	2	<u>Chapter 7</u> Sibling Relationships	Recognizing expressions of comparison and contrast Noting comparison and contrast	Expanding on ideas during a discussion
WEEK 12	2	<u>Chapter 8</u> Multiple Intelligences	Recognizing non-verbal signals indicating important information Representing information in list form	Keeping the discussion on topic
WEEK 13	2	REVIEW		
WEEK 14	2	<u>Chapter 9</u> The Art of Graffiti	Recognizing expressions of definition Reviewing and practicing all note taking strategies	Indicating to other when preparing to speak or pausing to collect thoughts
WEEK 15	2	WRAP-UP AND REVIEW		
FINAL EXAMINATION				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
On-going assessment (30%) (participation, individual work, group work, assignments, etc.)	80% Pass	80% Pass	80% Pass	80% Pass	80% Pass
Midterm exam (30%)	80% Pass		80% Pass		
Final exam (40%)	80% Pass		80% Pass		

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

Date revised: 15 August, 2022

Ho Chi Minh City, 15 August 2022
Head of Department
(Signature)

Nguyễn Huy Cường



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Languages

COURSE SYLLABUS
Course Name: Writing AE2
Course Code: **EN011IU**

1. General information

Course name	- (in English) WRITING AE2 (Research Paper Writing) - (in Vietnamese) <i>Viết AE2 (Viết bài nghiên cứu)</i>
Course designation	<i>This course introduces basic concepts in research paper writing, especially the role of generalizations, definitions, classifications, and the structure of a research paper to students who attend English- medium college or university. It also provides them with methods of developing and presenting an argument, a comparison or a contrast.</i>
Semester(s) in which the course is taught	1, 2, 3
Person responsible for the course	Lecturers of School of Languages
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, project
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 90 Contact hours (lecture, exercise): 30 Private study including examination preparation, specified in hours ¹ : 60
Credit points	2 credits (Theory: 2 + Practice: 0) 3.08 ECTS (optional)
Required and recommended prerequisites for joining the course	Previous course: Writing AE1 (EN007IU)

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course objectives	Upon completion of the course, students are able to: - Be familiarized with research paper/ academic literature in their majors ranging from natural sciences such as biology to social sciences and humanities like education, linguistics and psychology. - Read and critically respond to texts of a variety of topics ranging from natural sciences such as biology to social sciences and humanities like education, linguistics and psychology.		
Course learning outcomes	Upon the successful completion of this course, students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. State the structure of a research paper and employ appropriate academic language in writing a research paper	
	Skill	CLO2. Read critically, analyze, and annotate academic articles and journals CLO3. Employ the research writing skills obtained to work on their own paper in their major study.	
	Attitude	CLO4. Reason around ethical issues in writing research paper and avoid committing plagiarism CLO5. Attend class regularly and actively participate in class activities	
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (2 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Unit 1: The Academic Writing Process Introduction	4	I, T, U
	Unit 2: Researching and Writing	2	T, U
	Unit 3: Fundamentals & Feedback	2	T, U
	Unit 4: Definitions, Vocabulary & Clarity	2	T, U
	Unit 5: Generalizations, Facts and Honesty	4	T, U
	Unit 6: Seeing Ideas and Sharing Texts	2	T, U
	Unit 7: Description, Methods & Reality	2	T, U
	Unit 8: Results, Discussion & Relevance	2	T, U
	Unit 9: The Whole Academic Text	2	T, U
	Unit 10: Creating the Whole Text	4	T, U
	Course Review	2	U
	Examination forms	Open-ended questions; Essay writing	

Study and examination requirements	<i>Attendance</i> Regular on-time attendance in this course is expected. A student will be allowed no more than three absences. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination. <i>Assignment (Literature review)</i> Purpose: Students will use the knowledge of paraphrasing, summarising, developing arguments, and APA styles to write a 1,000-word literature review on a research scope of their choice. Task: – Follow guidelines on how to write a literature review. – Use relevant academic writing skills such as paraphrasing, summarising, developing arguments, and APA 7th Style Guidelines – see https://www.apastyle.org/ – Develop arguments in relation to the research scope and identify the research gap Notes: All papers should be typed, double-spaced, in 13-pt font, and with 1-inch margins. All papers must be original for this class. Criterion-referenced grading is used in this course. <i>Missed Tests</i> Students are not allowed to miss any of the tests (both Mid-term and Final). There are very few exceptions. Only with extremely reasonable excuses (eg. certified paper from doctors), students may re-take the examination. <i>Class Behaviors</i> Students are required to treat their studying in college as a full-time job and spend an adequate amount of time for this Writing AE2 course with approximately 8-10 hours per week (both in class and self-study). Accordingly, students are supposed to follow the obligations below: - Prepare thoroughly for each class in accordance with the course syllabus and complete home assignments as the instructor's request. - Participate fully and constructively in all course activities and discussions (if any). - Display appropriate courtesy to all involved in the class. - Provide constructive feedback to faculty members regarding their performance. <i>Plagiarism</i> All forms of plagiarism and unauthorised collusion are seriously regarded and could result in penalties. Plagiarism occurs when students copy or reproduce people's words or ideas and then present them as students' own work without proper acknowledgement, including when students copy the work of their fellow students. Plagiarism in student submissions can be detected by: • some web-based programs such as SafeAssign or Turnitin, or • examiner's judgments with evidence of originals

	The rater will review the paper to check if citations or references are provided properly. Penalties due to improper citations or references include: <table border="1"> <tr> <th>Degree of magnitude</th><th>Description</th></tr> <tr> <td>Below 15%</td><td>Marked as it is.</td></tr> <tr> <td>15% - 25%</td><td>The score is deducted by 25%.</td></tr> <tr> <td>25% - 40%</td><td>The score is deducted by 50%</td></tr> <tr> <td>Over 40%</td><td>The score is 0.</td></tr> </table> Notes: Part of the test is marked as it is if no plagiarism is detected. Students who plagiarize over 40% <u>twice</u> will be prohibited from sitting the final examination. <i>Assignments/Examination:</i> Students must have more than 50/100 points overall to pass this course.	Degree of magnitude	Description	Below 15%	Marked as it is.	15% - 25%	The score is deducted by 25% .	25% - 40%	The score is deducted by 50%	Over 40%	The score is 0 .
Degree of magnitude	Description										
Below 15%	Marked as it is.										
15% - 25%	The score is deducted by 25% .										
25% - 40%	The score is deducted by 50%										
Over 40%	The score is 0 .										
Reading list	[1] Hamp-Lyons, L., & Heasley, B. (2006). <i>Study Writing</i>. Cambridge, UK: Cambridge University Press [2] Articles and Essays taken from <i>The Allyn and Bacon Guide to Writing</i> by Ramage et al (2009), Pearson Longman. [3] Cormack, J. & Slaughter, J. (2009). <i>English for academic study: Extended writing and research skills</i>. Cambridge: Cambridge University Press. Garnet Education [4] Folse, K. S. & Pugh, T. (2010). <i>Great writing 5: Greater essays</i>. Boston: Heinle, Cengage Learning. [5] Keezer, S. (Ed.) (2003). <i>Write your research report: A real-time guide</i>. New Jersey: Pearson Learning Group. [6] Kumar, R. (2019). <i>Research methodology: A step-by-step guide for beginners</i>. Sage Publications										

2. Learning Outcomes Matrix (optional)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Orientation of the Course Unit 1: The Academic Writing Process Introduction	1, 3	Lecture Group work Individual task	Ongoing assessment & Midterm exam	[1] pp. 15
2	Unit 1: The Academic Writing Process (Cont.) Thinking about writing processes	1, 3	Lecture Group work	Ongoing assessment	[1] pp. 15-22

Week	Topic	CLO	Learning activities	Assessments	Resources
	Distinguishing between academic and personal styles of writing Grammar of academic discourse		Individual task	& Midterm exam	
3	Unit 2: Researching and Writing Recognizing categories and classification The language of classification The structure of a research paper	1, 3	Lecture Group work Individual task	Ongoing assessment & Midterm exam	[1] pp. 25-31
4	Unit 3: Fundamentals & Feedback Exploring comparison and contrast structures The language of comparison and contrast Using comparisons and contrasts to evaluate and recommend	1, 3	Lecture Group work Individual task	Ongoing assessment & Midterm exam	[1] pp. 35-44
5	Unit 3: Fundamentals & Feedback (Cont.) The research paper Identifying a research gap The writing process	1, 3	Lecture Group work Individual task	Ongoing assessment & Midterm exam	[1] pp. 45-49
6	Unit 4: Definitions, Vocabulary & Clarity The clarity principle The language of definition The place of definition in academic text The writing process	1, 2, 3	Lecture Group work Individual task	Ongoing assessment & Midterm exam	[1] pp. 50-59
7	Unit 5: Generalizations, Facts and Honesty Honesty principle The language of generalization	1, 2, 3	Lecture Group work Individual task	Ongoing assessment & Midterm exam	[1] pp. 60-68
8	Unit 5: Generalizations, Facts and Honesty (Cont.) Writing a literature review The writing process Brainstorming and clustering APA 7th Style Guidelines – see https://www.apastyle.org/ Sample midterm exam + Correction	1, 2, 3		Ongoing assessment & Midterm exam	[1] pp. 69-74
MID-TERM EXAMINATION					
9	Unit 6: Seeing Ideas and Sharing Texts	1, 3	Lecture	Ongoing assessment	[1] pp. 75-88

Week	Topic	CLO	Learning activities	Assessments	Resources
	Writing about events in time Connecting events Reading and writing about visuals Learning about peer reviews		Group work Individual task	& Final exam	
10	Unit 7: Description, Methods & Reality Describing processes and products The language for writing about processes Writing the Methods section Giving and getting formal peer feedback	1, 3	Lecture Group work Individual task	Ongoing assessment & Final exam	[1] pp. 89-103
11	Unit 8: Results, Discussion & Relevance What is an argument? The language of argument The Results and Discussion sections Finding an academic voice	1, 3	Lecture Group work Individual task	Ongoing assessment & Final exam	[1] pp. 104-118
12	Unit 9: The Whole Academic Text S-P-S-E: Focus on structure S-P-S-E in the introduction The language of coherence and connection Teacher evaluation	1, 2, 3	Lecture Group work Individual task	Ongoing assessment & Final exam	[1] pp. 119-133
13	Unit 10: Creating the Whole Text Structure of the research paper Creating your own research	1, 2, 3	Lecture Group work Individual task	Ongoing assessment & Final exam	[1] pp. 134-139
14	Unit 10: Creating the Whole Text Plagiarism Creating citations Paraphrase and summary Authorial identity	1-4	Lecture Group work Individual task	Ongoing assessment & Final exam	[1] pp. 140-148
15	<u>Sample final exam + Correction</u>	1-4		Ongoing assessment & Final exam	
FINAL EXAMINATION					

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Class participation and Assignments (30%)	60% Pass	60% Pass	60% Pass		60% Pass
Midterm exam (30%)	60% Pass		60% Pass	60% Pass	
Final exam (40%)	60% Pass		60% Pass	60% Pass	

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

Date revised: 19 May, 2025

Ho Chi Minh City, 19 May, 2025
Vice Dean of School of Languages
(Signature)



Dr. Vu Hoa Ngan



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
Department of English

COURSE SYLLABUS

Course Name: Speaking AE2 (Effective Presentations)

Course Code: EN012IU

1. General information

Course designation	<i>Giving presentations today becomes a vital skill for students to succeed not only in university but also at work in the future. Speaking AE2, therefore, provides students with the knowledge and skills needed to deliver effective presentations (informative and persuasive presentations).</i>
Semester(s) in which the course is taught	1, 2, 3
Person responsible for the course	Lecturers of Department of English
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, mini presentations
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 85 h Contact hours (lecture, exercise): 25 h Private study including examination preparation, specified in hours ⁴⁶ : 60 h
Credit points	2 credits (theory) ~ (3.1 ECTS)
Required and recommended prerequisites for joining the course	Students must complete AE1 courses

⁴⁶ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course objectives	Speaking AE2 aims at introducing an training students many aspects of giving a presentation: building up confidence, preparing and planning, using the appropriate language, applying effective visual aids, applying delivery techniques, dealing with questions and responding, performing body language, and so on.	
Course learning outcomes	Upon the successful completion of this course, students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understand many aspects of giving a presentation: building up confidence, preparing and planning, using the appropriate language, applying effective visual aids, applying delivery techniques, dealing with questions and responding, performing body language
	Skill	CLO2. Prepare and deliver effective, formal, structured presentations that are appropriate to the specific environment and audience.
	Attitude	CLO3. Deliver both informative and persuasive speech with confidence

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (2 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Orientation & Introduction Needs analysis	2	I, T, U
	Building up confidence	2	T, U
	The first few minutes	2	T, U
	Organizing what you want to say	2	T, U
	Summarizing and concluding	2	T, U
	Using equipment	2	T, U
	Delivery techniques: Putting it all together	2	T, U
	Group presentations for the instructor's evaluation and advice	2	U
	Introduction to persuasive speeches	2	T, U
	Methods of persuasion	2	T, U
	Maintaining interest	2	T, U
	Dealing with problems and questions	2	T, U
	Body language	2	T, U
	Individual presentations for the instructor's evaluation and advice	4	U
Examination forms	Oral Presentations		

Study and examination requirements	<i>Attendance</i> Regular on-time attendance in this course is expected. A student will be allowed no more than three absences. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination. <i>Missed Tests</i> Students are not allowed to miss any of the tests (both Mid-term and Final). There are very few exceptions. Only with extremely reasonable excuses (e.g. certified paper from doctors), students may re-take the examination. <i>Class Behaviors</i> Students are required to treat their studying in college as a full-time job and spend an adequate amount of time for this Speaking AE2 course with approximately 8-10 hours per week (both in class and self-study). Accordingly, students are supposed to follow the obligations below: • Prepare thoroughly for each class in accordance with the course syllabus and complete home assignments as the instructor's request. • Participate fully and constructively in all course activities and discussions (if any). • Display appropriate courtesy to all involved in the class. • Provide constructive feedback to faculty members regarding their performance. <i>Plagiarism</i> Students are warned not to copy from other books or from their peers for all assessment tasks. Committing plagiarism will result in 0 point for the task. Students who plagiarize twice will be prohibited from sitting the final examination.
Reading list	[1] Lowe, S, & Pile, L. (2010). <i>Presenting</i>. Singapore: Cengage Learning [2] Comfort, J. (1997). <i>Effective presentations</i>. Oxford: Oxford University Press [3] Lucas, S. (2014). <i>The art of public speaking</i> (12th edition). New York: McGraw-Hill Education. [4] Harrington, D., & Lebeau, C. (2009). <i>Speaking of speech</i>. Macmillan

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Program/Student Learning Outcomes (SLO) (1-6) is shown in the following table:

	SLO					
CLO	1	2	3	4	5	6
1						
2						

3						
4						

3. Planned learning activities and teaching methods

WEEK	Content	MATERIAL(S) COVERED	ACTIVITIES
WEEK 1	• Orientation & Introduction • Needs analysis	[1] <i>Presenting</i> , p. 5	Students will: • receive an introduction to effective presentation • think about their strength and weaknesses in presenting in English • identify and prioritize their immediate and future needs for presenting • share tips on improving weaknesses
WEEK 2	Building up confidence		Student will: - give a short speech about themselves to help them overcome initial shyness of standing up and speaking in public
WEEK 3	Unit 1: The first few minutes	• <i>Presenting</i>, pp. 8-13 • <i>Effective Presentations</i>: p.7 + video clip; p.13+ videoclip	Students will: • learn the importance of making a good first impression • learn useful phrases for greeting the audience, introducing themselves and others, and giving the purpose of their presentation
WEEK 4	Unit 3: Organizing what you want to say	• <i>Presenting</i>, pp. 22-27) • <i>Effective Presentations</i>: p.19 +video clip	Students will: • look at the importance of structuring their presentation • learn the useful phrases for outlining their presentation, organizing ideas and moving between different sections of their presentation

WEEK 5	Unit 6: Summarizing and concluding	• <i>Presenting</i>, pp. 40-45 • <i>Effective Presentations</i>: p.41 +video clip	Students will: • look at ways of finishing a presentation effectively • learn useful phrases for ending their presentation, summarizing, handing over and thanking
WEEK 6	Unit 2: Using equipment	• <i>Presenting</i>, pp. 14-21) • <i>Effective Presentations</i>: p.31 +video clip	Students will: • use equipment and visuals to support their presentation • learn useful phrases for referring to visuals, ensuring their audience can see and expanding on notes
WEEK 7	Delivery techniques: Putting it all together	[2] <i>Effective Presentations</i> : p.50 + video clip Assignment: Topic(s) for group presentation)	Students will: • watch a model presentation and discuss do's and don'ts for effective delivery • pick group members and plan their presentations for Week 8
WEEK 8	Group presentations for the instructor's evaluation and advice		Students will: • take turn to deliver a presentation on the topic(s) assigned by the instructor • consult the instructor for advice on the mid-term exam preparation
MIDTERM EXAMINATION Students will give a five-to-six minute informative presentation on a topic to be determined.			
WEEK 9	Introduction to persuasive speeches	[3] <i>The art of public speaking</i> , Chapter 15 (Handout given by the instructor)	Students will: • know types of persuasive speeches • know typical organizations of a persuasive speech
WEEK 10	Methods of persuasion	[3] <i>The art of public speaking</i> , Chapter 16 (Handout given by the instructor)	Students will learn to persuade the audience by: • building credibility • using evidence • reasoning • appealing to emotions

WEEK 11	Unit 4: Maintaining interest	• <i>Presenting</i>: pp. 28-33) • <i>Effective Presentations</i>: p.25 +video clip)	Students will: • look at maintaining interest through effective delivery • learn useful phrases for clarifying what you mean, checking if the audience is following and involving the audience
WEEK 12	Unit 5: Dealing with problems and questions	○ <i>Presenting</i>: pp. 34-39) ○ <i>Effective Presentations</i>: p.44(Question time)	Students will: • learn strategies for coping in unexpected situations • learn useful phrases for dealing with problems and questions
WEEK 13	Unit 6: Body language	[2] <i>Effective Presentations</i> : pp.36-39	Students will: • practise using language and body language to communicate the message clearly and persuasively • watch video clips about body language • learn how to control posture, eye contact, gestures and voice inflection
WEEK 14	Practice	(to be determined by the instructor)	Students will: - deliver individual or group presentations (assigned by the instructor)
WEEK 15	Wrap-up and advice	(to be determined by the instructor)	Students will: • consult the instructor for advice on the final exam preparation • continue to deliver individual or group presentations (if any)
FINAL EXAMINATION Students will deliver a seven-to-eight-minute persuasive presentation on a topic to be determined			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
On-going Assessment (30%) (discussion, group presentation, individual presentation,	80% Pass	80% Pass	80% Pass

	Very Poor	Poor	Average	Good	Excellent
Pronunciation, Voice Techniques (Pauses, Volume, Speed Change, Stress, Tone, Etc)	- Mumbles, often mispronounces, very difficult to understand. - Dead person talking, voice to text software does better	- Slurred speech, mispronounces some words. Difficult to understand. - Quiet, monotone, sing/song, little or no expression, boring.	- Clear voice, few pronunciation errors. Some slurring. Most can understand the presentation - Some use of voice to show interest	- Crisp, clear voice, correct, precise pronunciation, all can understand. - proper volume, steady rate, enthusiasm, confidence	Native like
Grammar & Vocabulary (Usage And Appropriateness For Audience)	- Frequent grammar or spelling errors - Inappropriate level for the audience. Misuse vocabulary	- Noticeable Errors - Often too simple or sophisticated, inconsistent. Some vocabulary incorrectly used	- Minor errors - Generally appropriate, little variation or creativity	- No errors, but simple language - Always appropriate for the audience. Excellent use of vocabulary	- No errors. Excellent use of grammar to support ideas - Creative use of language
Body Language, Gestures, Eye Contact (Turns back to audience and reads screen – 0)	- Dead person on stage - Almost no eye contact, reads notes/screen	- Excessive movement or many distracting gestures - Occasionally eye contact, mostly reads notes/screen	- Some distracting gestures, and some movement and useful gestures - Generally maintains eye contact frequently reads notes/screen	- No distracting gestures. Body language supports speech - Excellent eye contact, seldom uses notes	- Excellent use of body language - Constant eye contact, no use of notes
Organization: Intro, Main, Ending, Coherence (see RATING CHECKLIST)	Difficult to follow as disorganized	Generally follows outline, poor introduction or conclusion.	Follows outline, material generally well organized. Some use of transitions and linkage of ideas. Conclusion acceptable	- Follows outline, material well organized. - Ideas clearly linked. Some use of transitions	- Excellent, clear linkage of ideas. - Good transitions Arouses interest in Introduction, and summarizes clearly main points in conclusion
Content: Relevant/ Interesting/ Accurate	Several errors or lacks critical information	Some errors and has irrelevant information	Information is generally accurate, minor errors, generally meets needs of the audience	Accurate information, related to needs of audience	No errors, answers all needs of the audience
Visual Aids: Appropriate, Clear (Movies, sound – 0)	- Slides consist of full paragraphs of text, no or superfluous graphics - Tiny font	Slides have full sentences and occasional superfluous graphics. Difficult to read	Slides have short phrases, Graphics relate to text and presentation. Easily read	Attractive, informative graphics, only key words, easily understood, Good use of masking	Professional quality. Excellent use of visual, no unrelated graphics, easily read, supports presentation
Overall effectiveness	Ineffective, alienated audience	Little positive effect or exchange of info. Audience bored	Audience learned something, no change in attitude	Audience generally positive and learned from presentation	Audience was kept interested and would remember key points

and so on) (It is requested that lecturers collect students' scripts or any type of evidence of their participation for possible fact check).			
Midterm exam (30%) (Students will give a five-to-six-minute informative presentation on a topic to be determined)	80% Pass	80% Pass	80% Pass
Final exam (40%) (Students will deliver a seven-to-eight-minute persuasive presentation on a topic to be determined.)	80% Pass	80% Pass	80% Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics & Marksheets

a. Midterm exam rubrics and marksheets



ACADEMIC YEAR 2021 - 2022

DATE: _____

Student name : _____

Student ID : _____

Topic : _____

Wtg.	Criteria	Very poor	Poor	Average	Good	Excellent	Comments
15	Pronunciation & Voice Techniques (Pause, Volume, Speed Change, Stress, Tone, etc.)	(1-3)	(4-6)	(7-9)	(10-12)	(13-15)	
15	Language use: Grammar & Vocabulary (usage and appropriateness for audience)	(1-3)	(4-6)	(7-9)	(10-12)	(13-15)	
10	Body Language: Gestures, Eye contact, Facial expressions (turns back to the audience and reads from screen: 0 pt)	(1-2)	(3-4)	(5-6)	(7-8)	(9-10)	
20	Organization: Intro, Body, Ending, Coherence (see below)	(1-4)	(5-8)	(9-12)	(13-16)	(17-20)	
20	Content: Relevance, Accuracy	(1-4)	(5-8)	(9-12)	(13-16)	(17-20)	
10	Visual aids: Appropriateness, Clarity (Movies, sound: 0 pt)	(1-2)	(3-4)	(5-6)	(7-8)	(9-10)	
10	Overall effectiveness	(1-2)	(3-4)	(5-6)	(7-8)	(9-10)	
FINAL SCORE: /100							

Negative points: ✦ **Timing:** <3m: -15pts 3m - 3m29: -10pts 3m30 - 3m59: -5pts 4m - 6m: OK >6m: -5pts

Organization:

A. Introduction

- Greeting, name, position (*Good morning ladies and gentlemen. My name is __. I'm a __*)
- Purpose/ Objective (*The purpose of this talk is to __*)
- Connect with the audience (*I can see that all of you love to __*)
- Outline/ Main part (*I've divided my presentation into __ parts*)
- Questions (*Should you have any questions, please save them until the end of my presentation*)

B. Body (*Transitions: Let's start with __/ That brings me to __/ Firstly, Secondly, Next, Lastly*)

C. Ending

- Signaling the end (*That brings me to the end of my presentation*)
- Summary (*Let me just run over the key points again*)
- Closing (*Thank you very much for your attention*)
- Inviting questions (*I'd be glad to answer any questions you might have*)

Yes No

☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐

Examiner :

b. Final exam rubrics and marksheets

	Very Poor	Poor	Average	Good	Excellent
Pronunciation, Voice Techniques (Pauses, Volume, Speed Change, Stress, Tone, etc.)	- Mumbles, often mispronounces, very difficult to understand. - Dead person talking, voice to text software does better	- Slurred speech mispronounces some words. Difficult to understand. - Quiet, monotone, sing-song, little or no expression, boring.	- Clear voice, few pronunciation errors. Some slurring. Most can understand the presentation - Some use of voice to show interest	- Crisp, clear voice, correct, precise pronunciation, all can understand. - Proper volume, steady rate, enthusiasm, confidence	Native like
Grammar & Vocabulary (Usage and Appropriateness for Audience)	- Frequent grammar or spelling errors - Inappropriate level, for the audience, Misuse vocabulary	- Noticeable Errors - Often too simple or sophisticated, inconsistent. Some vocabulary incorrectly used	- Minor errors - Generally appropriate, little variation or creativity	- No errors, but simple language - Always appropriate for the audience. Excellent use of vocabulary	- No errors. Excellent use of grammar to support ideas - Creative use of language
Body Language: Posture, Gestures, Eye contact, Facial expression (Turns back to audience and reads screen – 0)	- Dead person on stage - Almost no eye contact, reads notes/screen	- Excessive movement or many distracting gestures - Occasionally eye contact, mostly reads notes/screen	- Some distracting gestures, and some movement and useful gestures - Generally maintains eye contact frequently reads notes/screen	- No distracting gestures. Body language supports speech - Excellent eye contact, seldom uses notes	- Excellent use of body language - Constant eye contact, no use of notes
Organization: Intro, Main, Ending, Coherence (see RATING CHECKLIST)	Difficult to follow as disorganized	Generally follows outline, poor introduction or conclusion.	- Follows outline, material generally well organized. Some use of transitions and linkage of ideas. - Conclusion acceptable	- Follows outline, material well organized. - Ideas clearly linked. Some use of transitions	- Excellent, clear linkage of ideas. - Good transitions. Arouses interest in Introduction, and summarizes clearly main points in conclusion
Content: Relevant/Accurate, Informative and Persuasive	Several errors or lacks critical information	- Some errors and has irrelevant information - Just focus on giving information	- Information is generally accurate, minor errors - Give reasons with little or no emphasis on persuasion	- Accurate information, related to needs of audience - Give frequent emphasis on persuasion	- No errors, answers all needs of the audience - Persuade the audience well
Visual Aids: Appropriateness, Clarity (Use of video clip exceeding 20 seconds – 0)	- Slides consist of full paragraphs of text, no or superfluous graphics - Tiny font	- Slides have full sentences and occasional superfluous graphics. - Difficult to read	Slides have short phrases. Graphics relate to text and presentation. Easily read	Attractive, informative graphics, only key words, easily understood, good use of masking	Professional quality. Excellent use of visual, no unrelated graphics, easily read, supports presentation
Question response	Welcomes the question	Listens carefully, doesn't interrupt	- Thinks before answering - Clarifies, rephrases as needed	Answers correctly and briefly	Checks to see if questioner is satisfied



ACADEMIC YEAR 2021 - 2022

DATE: _____

Student name : _____
Topic : _____

Student ID : _____

Wtg.	Criteria	Very poor	Poor	Average	Good	Excellent	Comments
15	Pronunciation & Voice Techniques (Pause, Volume, Speed Change, Stress, Tone, etc.)	(1-3)	(4-6)	(7-9)	(10-12)	(13-15)	
10	Language use: Grammar & Vocabulary (usage and appropriateness for audience)	(1-2)	(3-4)	(5-6)	(7-8)	(9-10)	
15	Body Language: Posture, Gestures, Eye contact, Facial expression (turns back to the audience and reads from screen: 0 pt)	(1-3)	(4-6)	(7-9)	(10-12)	(13-15)	
15	Organization: Intro, Body, Ending, Coherence (see below)	(1-3)	(4-6)	(7-9)	(10-12)	(13-15)	
20	Content: Relevant, Accurate, Informative and Persuasive	(1-4)	(5-8)	(9-12)	(13-16)	(17-20)	
15	Visual aids: Appropriateness, Clarity (Movies, sound: 0 pt)	(1-3)	(4-6)	(7-9)	(10-12)	(13-15)	
10	Question response	(1-2)	(3-4)	(5-6)	(7-8)	(9-10)	
SCORE (max.100): _____		BONUS (max.10): _____			TOTAL SCORE (max.100): _____		

Deduction points: ♦ No references: -10 ♦ Timing: <5m: -15pts 5m - 5m29: -10pts 5m30 - 5m59: -5pts >8m: -5pts

Bonus points: Up to 10pts for creativity, which involves PowerPoint design, Organization of information, Presentation style ...

Organization:

A. Introduction

- Greeting, name, position (Good morning, ladies and gentlemen. My name is ___. I'm a ___)
- Connect with the audience (I can see that all of you love to ___)
- Purpose/ Objective (The purpose of this talk is to ___)
- Time length (My presentation should last for ___)
- Outline/ Main part (I've divided my presentation into ___ parts)
- Questions (Should you have any questions, please save them until the end of my presentation)

B. Body (Transitions: Let's start with ___/ That brings me to ___/ Firstly, Secondly, Next, Lastly)

C. Ending

- Signaling the end (That brings me to the end of my presentation)
- Summary (Let me just run over the key points again)
- Closing (Thank you very much for your attention)
- Inviting questions (I'd be glad to answer any questions you might have)

Yes No

☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐

Examiner : _____

Date revised: 15 August, 2022

Ho Chi Minh City, 15 August 2022

Head of Department

(Signature)

Nguyễn Huy Cường



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department of Mathematics

COURSE SYLLABUS

Course Name: Calculus 1

Course Code: MA001IU

1. General information

Course designation	This course equips students with basic concepts of calculus: limits, continuity, differentiation, and integration. Applications of these concepts are extensively discussed.
Semester(s) in which the course is taught	1, 2
Person responsible for the course	<i>Lecturer of Department of Mathematics</i>
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lectures, assignments
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 170 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 50 h (lectures) Private study including examination preparation, specified in hours ¹ : 120 h
Credit points	4 credits (theory) ~ (6.2 ECTS)

¹ When calculating contact time, each contact hour is counted as a full hour because the organization of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Required and recommended prerequisites for joining the course	None								
Course objectives	1. To provide students with the main ideas and techniques of calculus. These include limits, continuity, differentiation, and integration. 2. To introduce practical applications of these ideas and techniques, through practical examples taken from many areas of engineering, business, and life sciences. 3. To develop skills in mathematical modeling and problem solving, ability to think logically, and adapt these skills creatively to new situations								
Course learning outcomes	Upon the successful completion of this course students will be able to: <table> <tr> <th>Competency level</th><th>Course learning outcome (CLO)</th></tr> <tr> <td>Knowledge</td><td> CLO1. Have basic knowledge of limits and derivatives (Program outcomes: a) CLO2. Have basic knowledge of definite/indefinite integrals (Program outcomes: a) </td></tr> <tr> <td>Skill</td><td> CLO3. Can compute often used limits, can define and compute derivatives (Program outcomes: a, j) CLO4. Can compute standard types of integrals. Use integrals in practical situations (Program outcomes: a, j) </td></tr> <tr> <td>Attitude</td><td> CLO5. Confident when dealing with derivatives and integrals. Comfortable with using derivatives and integrals in practical situations. (Program outcome: j, k) </td></tr> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Have basic knowledge of limits and derivatives (Program outcomes: a) CLO2. Have basic knowledge of definite/indefinite integrals (Program outcomes: a)	Skill	CLO3. Can compute often used limits, can define and compute derivatives (Program outcomes: a, j) CLO4. Can compute standard types of integrals. Use integrals in practical situations (Program outcomes: a, j)	Attitude	CLO5. Confident when dealing with derivatives and integrals. Comfortable with using derivatives and integrals in practical situations. (Program outcome: j, k)
Competency level	Course learning outcome (CLO)								
Knowledge	CLO1. Have basic knowledge of limits and derivatives (Program outcomes: a) CLO2. Have basic knowledge of definite/indefinite integrals (Program outcomes: a)								
Skill	CLO3. Can compute often used limits, can define and compute derivatives (Program outcomes: a, j) CLO4. Can compute standard types of integrals. Use integrals in practical situations (Program outcomes: a, j)								
Attitude	CLO5. Confident when dealing with derivatives and integrals. Comfortable with using derivatives and integrals in practical situations. (Program outcome: j, k)								

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (4 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)																																																		
	<table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Functions and Graphs, Inverse Functions, Exponential and Logarithmic Functions</td><td>1</td><td>I, T</td></tr><tr><td>Parametric Curves, Limit. One-sided Limits, Laws of Limits</td><td>1</td><td>I, T</td></tr><tr><td>Evaluating Limits. The Squeeze Theorem. Continuity. The Intermediate Value Theorem</td><td>1</td><td>T, U</td></tr><tr><td>Tangent Lines and Velocity Problems. Rates of Change, Derivative.</td><td>1</td><td>T, U</td></tr><tr><td>Higher-Order Derivatives, Rules of Differentiation. Rates of Change in the Natural and Social Sciences</td><td>1</td><td>T, U</td></tr><tr><td>Implicit Differentiation, Differentiation of Inverse Functions,</td><td>1</td><td>T, U</td></tr><tr><td>Logarithmic Differentiation, Linear Approximations. Differentials.</td><td>1</td><td>T, U</td></tr><tr><td>Related Rates, Maxima and Minima. Critical Point, The Mean Value Theorem.</td><td>1</td><td>T, U</td></tr><tr><td>The First and Second Derivative Test, Concavity. Shapes of Curves, Curve Sketching</td><td>1</td><td>T, U</td></tr><tr><td>Indeterminate Forms and l'Hôpital's Rules, Maxima and Minima Problems, Newton's Method</td><td>1</td><td>T, U</td></tr><tr><td>Antiderivatives and Indefinite Integrals, The Definite Integral</td><td>1</td><td>I, T</td></tr><tr><td>Properties of the Definite Integral. The Fundamental Theorem of Calculus, Integration by Substitution</td><td>1</td><td>I, T, U</td></tr><tr><td>Integration by Parts, Partial Fractions, Numerical Integration,</td><td>1</td><td>T, U</td></tr><tr><td>Improper Integrals, Areas between Curves Areas Enclosed by Parametric Curves</td><td>1</td><td>T, U</td></tr><tr><td>Volumes, Arc Length, Applications to Engineering, Economics and Science</td><td>1</td><td>T, U</td></tr></table>	Topic	Weight	Level	Functions and Graphs, Inverse Functions, Exponential and Logarithmic Functions	1	I, T	Parametric Curves, Limit. One-sided Limits, Laws of Limits	1	I, T	Evaluating Limits. The Squeeze Theorem. Continuity. The Intermediate Value Theorem	1	T, U	Tangent Lines and Velocity Problems. Rates of Change, Derivative.	1	T, U	Higher-Order Derivatives, Rules of Differentiation. Rates of Change in the Natural and Social Sciences	1	T, U	Implicit Differentiation, Differentiation of Inverse Functions,	1	T, U	Logarithmic Differentiation, Linear Approximations. Differentials.	1	T, U	Related Rates, Maxima and Minima. Critical Point, The Mean Value Theorem.	1	T, U	The First and Second Derivative Test, Concavity. Shapes of Curves, Curve Sketching	1	T, U	Indeterminate Forms and l'Hôpital's Rules, Maxima and Minima Problems, Newton's Method	1	T, U	Antiderivatives and Indefinite Integrals, The Definite Integral	1	I, T	Properties of the Definite Integral. The Fundamental Theorem of Calculus, Integration by Substitution	1	I, T, U	Integration by Parts, Partial Fractions, Numerical Integration,	1	T, U	Improper Integrals, Areas between Curves Areas Enclosed by Parametric Curves	1	T, U	Volumes, Arc Length, Applications to Engineering, Economics and Science	1	T, U		
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Volumes, Arc Length, Applications to Engineering, Economics and Science	1	T, U																																																	
Examination forms	Written examination																																																		

Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	J. Stewart, <i>Calculus</i> , Thomson Learning, 7 th edition, 2012.

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-5) and Intended Learning Outcomes (ILOs) (1-8) and level of contribution of CLO to ILO (Low – Medium – High) is shown in the following table:

CLO	ILOs							
	1	2	3	4	5	6	7	8
1	L							
2	L							
3		M						
4		M						
5				M				

3. Planned learning activities and teaching methods

Week	Topics	CLO	Assessment	Teaching and Learning activities
1	Functions and Graphs, Inverse Functions, Exponential and Logarithmic Functions	1,3		Lecture
2	Parametric Curves, Limit. One-sided Limits, Laws of Limits.	1,3	Quiz	Lectures and Quiz
3	Evaluating Limits. The Squeeze Theorem. Continuity. The Intermediate Value Theorem	3, 5	Quiz	Lectures and Quiz
4	The Tangent and Velocity Problems. Rates of Change, The Derivative.	3, 5	HW1	Lectures and HW
5	Higher-Order Derivatives, Rules of Differentiation. Rates of Change in the Natural and Social Sciences	3, 5	Quiz	Lectures and Quiz
6	Implicit Differentiation, Differentiation of Inverse Functions,	3, 5	HW2	Lectures and HW
7	Logarithmic Differentiation, Linear Approximations. Differentials.	3, 5	Quiz	Lectures and Quiz

8	Related Rates, Maxima and Minima. Critical Point, The Mean Value Theorem.	3, 5	HW3	Lectures and HW
Midterm Exam				
9	The First and Second Derivative Test, Concavity. Shapes of Curves, Curve Sketching	2, 4	Quiz	Lectures and Quiz
10	Indeterminate Forms and l'Hôpital's Rules, Maxima and Minima Problems, Newton's Method	2, 4	Quiz	Lectures and Quiz
11	Antiderivatives and Indefinite Integrals, The Definite Integral	4, 5	HW4	Lectures and HW
12	Properties of the Definite Integral. The Fundamental Theorem of Calculus, Integration by Substitution	2, 4	Quiz	Lectures and Quiz
13	Integration by Parts, Partial Fractions, Numerical Integration,	4, 5	Quiz	Lectures and Quiz
14	Improper Integrals, Areas between Curves Areas Enclosed by Parametric Curves	2, 4, 5	HW5	Lectures and HW
15	Volumes, Arc Length, Applications to Engineering, Economics and Science	1, 2, 3, 4, 5	Exercises	
Final Exam		1, 2, 3, 4, 5		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
In-class exercises/ quizzes (10%)	Qz1->Qz4 80% Pass	Qz5->Qz8 80%Pass	Qz1->Qz4 80% Pass	Qz5->Qz8 80% Pass	Qz2, 4, 6, 8 70% Pass
Homework exercises (10%)	HW1->H3 70% Pass	HW4, HW5 70%	HW1->HW3 70% Pass	HW4, HW5 70%	HW1->HW5 60% Pass
Midterm exam (30%)	Q1, Q2 80% Pass		Q3, Q4 70% Pass		Q5 50%
Final exam (50%)		Q1, Q2 80%Pass		Q3, Q4 70%Pass	Q5 50%

Note: %Pass: Target that 60% of students having scores greater than 60 out of 100.

5. Date revised: May, 2023



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
Department of Physics

COURSE SYLLABUS

Course Name: Physics 1 (General Mechanics)

Course Code: PH013IU

1. General information

Course designation	<i>This subject will provide an introduction to mechanics including: concepts and principles of kinetics, dynamics, energetics of motion of a particle and a rigid body.</i>
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Assos. Prof. Phan Bảo Ngọc Dr. Phan Hiền Vũ
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, assignment.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 90 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): lecture: 30 Private study including examination preparation, specified in hours ¹ : 60
Credit points	2
Required and recommended prerequisites for joining the course	None

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course objectives	This course will provide students with: 1. The basic knowledge of general Mechanics Physics 2. Skills to solve problems in engineering environment by applying both theoretical and experimental techniques 3. Understanding and skills needed to use physical laws governing real process and to solve them in the engineering environment 4. Confidence and fluency in discussing physics in English.																										
Course learning outcomes	Upon the successful completion of this course students will be able to: <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO1. Understand basic knowledge of kinematics, dynamics, and laws of conservation of a mechanical system. CLO2. Apply knowledge of physics to solving problems in science and engineering</td></tr><tr><td>Skill</td><td>CLO3. Apply skills to analyzing and solving problems in science and engineering</td></tr><tr><td>Attitude</td><td>CLO4. Communicate effectively in writing manner</td></tr></table>			Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Understand basic knowledge of kinematics, dynamics, and laws of conservation of a mechanical system. CLO2. Apply knowledge of physics to solving problems in science and engineering	Skill	CLO3. Apply skills to analyzing and solving problems in science and engineering	Attitude	CLO4. Communicate effectively in writing manner																
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Skill	CLO3. Apply skills to analyzing and solving problems in science and engineering																										
Attitude	CLO4. Communicate effectively in writing manner																										
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (2 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Chapter 1: Bases of Kinematics</td><td>2</td><td>I, T,U</td></tr><tr><td>Chapter 2: The Law of Motion</td><td>2</td><td>I, T,U</td></tr><tr><td>Chapter 3: Work and Mechanical Energy</td><td>3</td><td>I, T,U</td></tr><tr><td>Chapter 4: Linear Momentum and Collisions</td><td>2</td><td>I, T,U</td></tr><tr><td>Chapter 5: Rotation of a Rigid Object About a Fixed Axis</td><td>2</td><td>I, T,U</td></tr><tr><td>Chapter 6: Equilibrium and Elasticity</td><td>2</td><td>I</td></tr><tr><td>Chapter 7: Universal Gravitation</td><td>2</td><td>I</td></tr></table>			Topic	Weight	Level	Chapter 1: Bases of Kinematics	2	I, T,U	Chapter 2: The Law of Motion	2	I, T,U	Chapter 3: Work and Mechanical Energy	3	I, T,U	Chapter 4: Linear Momentum and Collisions	2	I, T,U	Chapter 5: Rotation of a Rigid Object About a Fixed Axis	2	I, T,U	Chapter 6: Equilibrium and Elasticity	2	I	Chapter 7: Universal Gravitation	2	I
Topic	Weight	Level																									
Chapter 1: Bases of Kinematics	2	I, T,U																									
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Chapter 5: Rotation of a Rigid Object About a Fixed Axis	2	I, T,U																									
Chapter 6: Equilibrium and Elasticity	2	I																									
Chapter 7: Universal Gravitation	2	I																									
Examination forms	Short-answer questions																										
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																										

Reading list	[1] Lecture Notes [2] Halliday D., Resnick R. and Walker, J. (2011) <i>Principles of Physics</i> , 9 th edition, John Wiley and Sons, Inc. [3] Alonso M. and Finn E.J. (1992) <i>Physics</i> , Addison-Wesley Publishing Company. [4] Faughn/Serway (2006) <i>Serway's College Physics</i> , Thomson Brooks/Cole.

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Program/Intended Learning Outcomes (ILO) (1-10) is shown in the following table:

	ILO									
CLO	1	2	3	4	5	6	7	8	9	10
1	x									
2	x									
3										
4										

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1-3	Chapter 1: Basis of Kinematics Motion in One Dimension: - Position, Velocity, and Acceleration - One-Dimensional Motion with Constant Acceleration - Freely Falling Objects Motion in Two Dimensions: - Position, Velocity, and Acceleration Vectors - Two-Dimensional Motion with Constant Acceleration. Projectile Motion - Circular Motion. Tangential and Radial Acceleration - Relative Velocity and Relative Acceleration	1	Assignment/Quiz Midterm	Lecture, Discussion, Inclass-Quiz	[1] 1 [2] 1, 2, 3, 4
4-7	Chapter 2: Laws of Motion - Newton's First Law and Inertial Frames - Newton's Second Law - Newton's Third Law	1	Assignment//Quiz Midterm	Lecture, Discussion, Inclass-Quiz	[1] 2 [2] 5, 6

	Some Applications of Newton's Laws: - Gravitational Force and Weight - Forces of Friction - Uniform Circular Motion and Non-uniform Circular Motion - Motion in the Presence of Resistive Forces - Motion in Accelerated Frames				
8	Chapter 3: Work and Mechanical Energy - Work Done by Force. Power - Kinetic Energy and Work. Kinetic Energy Theorem	3	Assignment//Quiz Final	Lecture, Discussion, Inclass-Quiz	[1] 3 [2] 7, 8
	Midterm				
9	- Potential Energy of a System - Conservation of Mechanical Energy - Conservative and Non-conservative Forces - Changes in Mechanical Energy for Non-conservative Forces - Relationship Between Conservative Forces and Potential Energy			Lecture, Discussion, Inclass-Quiz	
10-11	Chapter 4: Linear Momentum and Collisions - Linear Momentum and Its Conservation - Impulse and Momentum - Collisions in One Dimension and Two Dimensions		Assignment//Quiz Final	Lecture, Discussion, Inclass-Quiz	[1] 4 [2] 9
12-14	Chapter 5: Rotation of a Rigid Object About a Fixed Axis - Rotational Kinematics. Rotational Motion with Constant Angular Acceleration - Torque and Angular Acceleration - Moments of Inertia - Rotational Kinetic Energy - Rolling Motion of a Rigid Object - Angular Momentum of a Rotating Rigid Object - Conservation of Angular Momentum	3	Assignment//Quiz Final	Lecture, Discussion, Inclass-Quiz	[1] 5 [2] 10, 11
15	Chapter 6: Equilibrium and Elasticity The Conditions for Equilibrium The Center of Gravity Chapter 7: Universal Gravitation Newton's Law of Gravitation Kepler's Laws and the Motion of Planets The Gravitational Field and Gravitational and Potential Energy	3	Assignment//Quiz Final	Lecture, Discussion, Inclass-Quiz	[1] 6, 7 [2] 12, 13
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class exercises/quizzes (10%)	Qz1 60%Pass	Qz2 60%Pass		Qz3 60%Pass
Homework exercises (20%)	HW2 50%Pass		HW1, HW3, HW4 50%Pass	
Midterm exam (30%)		Q3 50%Pass	Q1, Q2 50%Pass	
Final exam (40%)	Part I 50%Pass		Part II.1,2 50%Pass	Part II.3 50%Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.

3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone 4	Milestone 3 2		Benchmark 1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone 4	Milestone 3 2		Benchmark 1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

6. Date revised: December 27, 2022

Ho Chi Minh City, 27/12/2022
Chair of Department of Physics

Phan Bảo Ngọc



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Industrial Engineering and Management**

COURSE SYLLABUS

Course Name: Project Management

Course Code: IS050IU

1. General information

Course name	- <i>(in English)</i> Project Management - <i>(in Vietnamese)</i> Quản lý dự án
Course designation	This course is developed to provide the principal concept on project management which was characterized by the project management body of knowledge guide (PMBOK Guide). This guide emphasizes the five project process groups of initiating, planning, executing, controlling and closing, and the nine knowledge areas of project integration, scope, time, cost, quality, human resources, communication, risk, and procurement management.
Semester(s) in which the course is taught	4
Person responsible for the course	Tran Van Ly
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, homework.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (please specify whether lecture, exercise, etc.): 37.5 h Private study including examination preparation, specified in hours ¹ : 90 h
Credit points	3 credits (theory) ~ (4.6 ECTS)

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Required and recommended prerequisites for joining the course	None	
Course objectives	Students will be provided with knowledge and skills of constructing the network (AON & AOA), GANNT Chart, solving the network; Resource allocation, resource loading & levelling; Project budgeting & cost estimation, risk management; Project quality management; Project human resource management; Project procurement management; Project executing, monitoring & control to closing the project	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Able to align the project to the organization's strategic plans and business justification throughout its lifecycle; to identify project goals, constraints, deliverables, performance criteria, control needs, and resource requirements in consultation with stakeholders. CLO2. Able to manage the scope, cost, timing, and quality of the project, at all times focused on project success as defined by project stakeholders Able to Implement general business concepts, practices, and tools to facilitate project success.
	Skill	CLO3. Work effectively in group project in a specific context; combining the techniques to conduct practical cases. Respond to the needs of community and industrial sectors
	Attitude	CLO4. Able to Apply appropriate legal and ethical standards. Adapt project management practices to meet the needs of stakeholders from multiple sectors of the economy (i.e. consulting, government, arts, media, and charity organizations); Identify and follow strictly ethical disciplines in project management

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Lecture 1: Introduction to Project Management	1	I, T
	Lecture 2: Project management processes for a project	1	I, T
	Lecture 3: Work breakdown structure	1	I, T
	Lecture 4: Project scheduling	1	I, T
	Lecture 5: Resource allocation	1	I, T
	Lecture 6: Logical Framework	2	I, T
	Lecture 7: Project cost management	1	I, T
	Lecture 8: Project risk management	1	I, T
	Lecture 9: Project quality management	1	I, T
	Lecture 10: Project human resource management	1	I, T
	Lecture 11: Project procurement management	1	I, T
	Lecture 12: Project executing, monitoring & control.	1	I, T
	Lecture 13: Project closing	1	I, T
Examination forms	Short-answer questions, exercises		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	[1] Book name: A Guide to the project management body of knowledge (PMBOK® Guide). 5th Edition, Newtown Square, Pa. : Project Management Institute, Inc. [2] Project management: A managerial approach / Jack R. Meredith, Samuel J. Mantel. 7th Edition, Hoboken, N.J. : Wiley ; Chichester : John Wiley [distributor], 2009. [3] The project management life cycle/ Jason West land. Kogan Page Limited, 2006		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Program/Student Learning Outcomes (SLO) (1-7) is shown in the following table:

	SLO						
CLO	1	2	3	4	5	6	7
1		x					
2		x					
3						x	
4				x			

3. Planned learning activities and teaching methods

We ek	Topic	CLO	Assessm ents	Learning activities	Resour ces
1	Lecture 1: Introduction to Project Management, project life cycle and organization	1		Lecture, Group work	[1].
2	Lecture 2: Project management processes for a project - Common project management process interactions. - Project management process groups. - Initiating process group - Planning process group	1	HW 1	Lecture, Group work	[1].
3	Lecture 3: Work breakdown structure	1,3, 4	HW 2	Lecture, Group work	[1].
4	Lecture 4: Project scheduling. - Constructing the network: AON & AOA - Gantt chart - Solving the network - Using Microsoft Project software	1,3, 4	HW 3	Lecture, Group work	[1].
5	Lecture 5: Resource allocation - Critical path method – Crashing a project - Resource allocation problem - Resource loading - Resource leveling - Constrained resource scheduling	1,3, 4	HW 4	Lecture, Group work	[1].
6&7	Lecture 6: Logical Framework Approach (LFA)	3		Lecture, Group work	[1].
8	Review for Midterm				
	Midterm				

9	Lecture 7: Project cost management Project budgeting & Cost estimation - Top-Down budgeting - Bottom-Up budgeting - Improving the process of cost estimation	2, 3, 4	HW 5	Lecture, Group work	[1].
10	Lecture 8: Risk management. - Risk management planning - Risk identification - Risk analysis - Risk monitoring and control - Using Crystal Ball software		HW 6	Lecture, Group work	
11	Lecture 9: Project quality management - Plan quality - Perform quality assurance - Perform quality control	2, 3, 4	HW 7	Lecture, Group work	[1].
12	Lecture 10: Project human resource management - Develop human resource plan - Acquire project team - Develop project team - Manage project team	2, 3, 4	HW 8	Lecture, Group work	[1].
13	Lecture 11: Project procurement management - Plan procurements - Conduct procurements - Administer procurements - Close procurements	2, 3, 4	HW 9	Lecture, Group work	[1].
14	Lecture 12: Project executing, monitoring & control.	2, 3, 4	HW 10	Lecture, Group work	[1].
15	Lecture 13: Project closing Project Presentation Review for Final Exam	2, 3, 4		Problems solving Group work	[1].
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Homework exercises (30%)	HW1-2 50%Pass	HW4, HW5, HW6 50%Pass	HW7-8 50%Pass	HW9-10 50%Pass
Midterm exam (30%)	Q1 50%Pass	Q2 50%Pass	Q3, Q4 50%Pass	

Final exam (40%)	Q1 50%Pass	Q2 50%Pass	Q3, Q4 50%Pass	

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

a. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

b. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

c. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence Selecting and	Information is taken from source(s) with	Information is taken from source(s) with	Information is taken from source(s) with	Information is taken from source(s) without

<i>using information to investigate a point of view or conclusion</i>	enough interpretation/evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	enough interpretation/evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	some interpretation/evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	any interpretation/evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and	Language choices are thoughtful and generally support the effectiveness of the	Language choices are mundane and commonplace and partially support the	Language choices are unclear and minimally support the effectiveness of the

	enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	presentation. Language in presentation is appropriate to audience.	effectiveness of the presentation. Language in presentation is appropriate to audience.	presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

6. Date revised: March 23, 2022

SYLLABUS

INTRODUCTION TO BUSINESS ADMINISTRATION

1. General information

Module designation	Employing the interactive learning and problem-based teaching approach, this course emphasizes the interaction between lecturers and students. The lecture materials will be uploaded in Blackboard to help the students to preview the materials and to concentrate on listening and critical thinking during the lecture. This will help students to interact with the lecturer during the classroom. The sessions for presentations and discussions comprise company case studies as well as answering some theoretical and conceptual questions, which help the students to see how the concepts are applied in the real business context. Students will present the case to the class and discuss with the peers. Guest speakers are invited to talk about selected topics or real-life experiences.
Semester(s) in which the module is taught	Semester 2 (3rd year)
Person responsible for the module	Lecturers of School of Business
Language	English
Relation to curriculum	Elective (BT programme)
Teaching methods	Lecture, Group Presentation and Report Submission
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 h Self-study includes examination preparation, specified in hours ¹ : 90 h
Credit points	03 credits (theory) ~ (4.6 ECTS)
Required and recommended prerequisites for joining the module	None

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Module objectives	This course is designed to provide the student with the below objectives - To provide knowledge of functional areas of business management and the integration among them. - To give students a strong awareness of global issues, including an understanding of approaches to business ethics, business environment and multinational issues. - To develop students' basic research, analysis, writing, teaming, and presentation skills. - To develop students' applied critical thinking skills and communication through the development of a portfolio of a firm in an industry in which they are interested.
Module intended learning outcomes	LO1. Explain how rapidly the business world is changing and the importance of lifelong learning. LO2. Explain how global issues influence business entities. LO3. Understanding forms of business of ownership. LO4. Develop a high level of familiarity with four function of business management. LO5. Understanding basic characteristic of production and operation management. LO6. Explain theories about motivation. LO7. Understanding basic characteristic of HRM in an organization. LO8. Understanding basic characteristic of marketing mix.

Content

Content	Learning Outcomes	Category
Chapter 1: Managing Within The Dynamic Business Environment: Taking Risks And Making Profits	LO1, LO2	Lecture
Chapter 2: How Economics Affects Business: the Creation and Distribution of Wealth <i>Short essay</i>	LO1, LO2	Lecture
Chapter 3: Choosing a Form of Business Ownership	LO3	Lecture
Chapter 4: Management, Leadership, And Employee Empowerment <i>Short essay</i>	LO4	Lecture
Chapter 5 Adapting Organizations To Today's Markets	LO4	Lecture
Review for midterm	LO 1-4	
Chapter 6 Producing World-Class Goods and Services	LO5	Lecture
Chapter 7 Motivating Employees And Building Self-Managed Teams	LO6	Lecture
Chapter 8 HRM: Finding and Keeping the Best Employees	LO7	Lecture
Chapter 9 Marketing: Building Customer Relationships	LO8	Lecture
Chapter 10 Developing and Pricing Products and Services	LO8	Lecture
Chapter 11 Distributing Products Quickly and Efficiently	LO7	Lecture

	Content	Learning Outcomes	Category
	Chapter 12 Using Effective Promotional Techniques	LO7	Lecture
	COURSE REVIEW	LO1-8	
	GROUP PRESENTATION AND REPORT SUBMISSION	LO1-8	Group Presentation and Report Submission
Examination forms	1. Homework/ assignments/ presentation; 30% ; 2. Midterm exam: 30%; 3. Final Exam; 40%		
Study and examination requirements	1. Attend more than 80% of contact hours in order to be accepted to the final examination 2. Actively participate in class activities. 3. Fulfill tasks given by instructor after class. 4. Use their own laptop in class only for learning purpose. 5. Read the textbook in advance. 6. Access the Blackboard for up-to-date information and material of the course, for online supports from teachers and other students and for practicing and assessment.		
Reading list	Main textbooks: William G. Nickels, James M. McHugh, Susan M. McHugh – Understanding Business, 11th edition , McGraw-Hill		
	IM, Video, PPT, Test bank		

APPENDIX 1

Session	Content	Learning Outcomes	Bloom's Taxonomy	Category	Teacher's Material	Student Homework's Material
1	Chapter 1: Managing Within The Dynamic Business Environment: Taking Risks	LO1, LO2	KN, AN	Lecture	Instructor Manual, Teacher's Resource	Student's book

	And Making Profits					
2	Chapter 2: How Economics Affects Business: the Creation and Distribution of Wealth <i>Short essay</i>	LO1, LO2	KN, AN, AP	Lecture	Instructor Manual, Teacher's Resource	Student's book
3	Chapter 5: Choosing a Form of Business Ownership	LO3	KN, AP	Lecture	Instructor Manual, Teacher's Resource	Student's book
3	Chapter 7: Management, Leadership, And Employee Empowerment <i>Short essay</i>	LO4	KN, AP, AN	Lecture	Instructor Manual, Teacher's Resource	Student's book Casestudy
4	Chapter 8 Adapting Organizations To Today's Markets	LO4	KN, AP, AN	Lecture	Instructor Manual, Teacher's Resource	Student's book Casestudy
4	Review for midterm	LO 1-5	AN,SY			
5	Chapter 9 Producing World-Class Goods and Services	LO5	KN	Lecture	Instructor Manual, Teacher's Resource	Student's book
6	Chapter 10 Motivating Employees And Building Self-Managed Teams	LO6	KN, AP, AN	Lecture	Case-study, Teacher's Resource	Case-study, Student's book
5	Chapter 11 HRM: Finding and Keeping the Best Employees	LO7	KN, AP, AN, EV	Lecture	Instructor Manual, Teacher's Resource	Student's book

7	Chapter 13 Marketing: Building Customer Relationships	LO8	AN,KN	Lecture	Instructor Manual, Teacher's Resource	Student's book
8	Chapter14 Developing and Pricing Products and Services	LO8	KN,AN, SY, AP	Lecture	Instructor Manual, Teacher's Resource	Student's book
6	Chapter 15 Distributing Products Quickly and Efficiently	LO7	KN,AN, SY, AP	Lecture	Instructor Manual, Teacher's Resource	Student's book
9	Chapter 16 Using Effective Promotional Techniques	LO7	KN,AN, SY, AP	Lecture	Instructor Manual, Teacher's Resource	Student's book
10	COURSE REVIEW	LO1-7	AN,SY		Instructor Manual, Teacher's Resource	Student's book
7	GROUP PRESENTATION AND REPORT SUBMISSION	LO1-7	AP, EV	Group Presentation and Report Submission		

APPENDIX 2

Evaluation structure

Evaluation Category	Weight	Duration	Learning outcomes	Type of questions	Number of questions	Scope of knowledge and skill of questions	How?	Note
2 short essays	15%		LO1,2,4	Individual students will be given topics relating to chapters to write about. By using references from the textbook and other sources, students will outline the key aspects of this topic, identify a real-world example, and discuss how theories can be applied to produce a positive outcome.	Maximum length of the individual assignment should be 5 pages excluding appendices	Based on topics of studied units	Individual assignment submitted in class	All assignments should be typed and double-spaced with 11-point font, and must be submitted in both soft and hard copy. <u>A deduction of 10% of the assignment mark will be applied for each day of late submission</u>
Class participation and preparation	5%							Participation grade will be given based on students' preparation, quantity as well as quality of participation in classroom; quality of participation is demonstrated through asking relevant questions, making statements that add to and facilitate class discussion, and

								builds upon others' comments.
Group report	10%		LO1-7	A group of four or five students will choose a real company to write on marketing mix of that company under the light of theories in the textbooks.	Minimum length of the group assignment should be 10 pages excluding appendices	Based on topics of studied units	Group report submission and Group presentation in class room	All assignments should be typed and double-spaced with 11-point font, and must be submitted in both soft and hard copy. <u>A deduction of 10% of the assignment mark will be applied for each day of late submission</u> Evaluation will be based on both presentation (40%) and written report (60%). Specific contacts of interviews including phone number, addresses, websites must be provided in the appendix of the report.
Mid-term Exam	30%	90'	LO3,5,6,7	Close questions		The question will cover the lectures, class discussions, activities, exercises,	Class room	

						and textbook.		
Final exam	40%	90'-120'	LO1-7	Multiple choice, apr. 40 questions. Other types of questions may be included.		The question will cover the lectures, class discussions, activities, exercises, and textbook.	Exam room	Not allow to use any document/information in any form in exam room
Total	100%							

APPENDIX 3

Matching the Program's Expected Learning Outcomes and the Course Learning Outcomes

	Program Expected Learning Outcomes	Course Learning Outcome
a.	<i>Business Knowledge</i>	
	a1.Students possess extended, updated knowledge about business management which is based on the platform of the knowledge that has been taught at the undergraduate level: knowledge of management functions, statistics in business, business finance, accounting, strategic management, international business management, human resource management, supply chain management, management information system, production and operation management, economics and organizational behavior.	LO1-7
	a2. Students gain knowledge of scientific research methods to become capable researchers in Business Administration field. With the acquired knowledge, they can continue to learn Doctoral program in Business Administration.	LO8
	a3. Students have deep knowledge about current economic issues in Vietnam as well as in the world economy. They understand micro and macro environmental factors that can affect company business performance and success. They know about various models used to analyze strength, weakness, threats and opportunities for strategic planning and forecasting purpose.	LO1,2,3
b.	<i>Skills</i>	
	b1. Students master up-to-date scientific research methods and tools in the field of economics and management. They can recognize practical business problems, do researches and propose measures to solve the problems.	LO4

	<i>b2. Students acquire skills of critical thinking, analyzing, researching, evaluating, comparing, synthesizing, which they can use to find out and solve business problems and make relevant business decisions. The students master communication skills and social skills, which help them work successfully in an international multicultural environment.</i>	CLO4
c.	<i>Abilities</i>	
	<i>c1. Students are able to take management positions of all levels at domestic and foreign companies in various sectors of an economy. They can perform well management functions of planning, organizing, coordinating, motivating, leading, and controlling. They are able to make appropriate decisions in fast changing market conditions. They are able to design and develop strategic plans and policies for companies.</i>	LO4; LO6, LO7
d.	<i>Virtue</i>	
	<i>d1. Students possess professional ethics, moral, and proper understanding of integrity, responsibility, accountability. Students are aware of unethical and illegal behavior and actions. They stand against bribery and corruption.</i>	LO5
e.	<i>Language and computer skills</i>	
	<i>e1. Students master English skills that they use effectively in an international working environment. They can work well with foreign partners and colleagues. They can use English well in negotiation and networking, communication and reporting.</i>	LO1; LO2; LO3; LO4, LO5, LO6; LO7; LO8
	<i>e2. Students have good computer skills they can use for their management purpose. They can use some computer software to do research, process data and perform statistical analysis.</i>	LO5



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Business**

COURSE SYLLABUS

Course Name: Business Communication

Course Code: BA006IU

1. General information

Course designation	This course is designed to provide students with a strong foundation in communicating at the workplace, focusing on: (1) communicating in the digital-age workplace, (2) developing business writing skills, (3) embracing professionalism at work, (2) developing business presentation skills, (4) preparing for successful job search, resumes, cover letters, and job interviews.
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Nguyen Vu Anh Tram
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, project, presentation.

Workload (incl. contact hours, selfstudy hours)	(Estimated) Total workload: 135 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 Self-study includes examination preparation, specified in hours ¹ : 90

Credit points	3	
Required and recommended prerequisites for joining the course	None	
Course objectives	This course is designed to give students a comprehensive view of communication, its scope and importance in business, and the role of communication in establishing a favourable outside the firm environment, as well as an effective internal communications program. The various types of business communication media are covered. This course also develops an awareness of the importance of succinct written expression to modern business communication.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	R	LO1. Identify the role and process of communication, as well as different communication methods (listening, speaking, writing)
	R	LO2. Discuss contemporary trends, opportunities and challenges of communication in the digital-age workplace

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

	M	LO3. Effectively perform different types of business communication, including business writings, oral presentation and employment correspondence

Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I = Introduced, R = Reinforced and opportunity to practice, M = Mastery		
	Topic	Weight	Level
	Communicating in the Digital-Age Workplace	1	I
	Professionalism at Work: Business Etiquette, Ethics, Teamwork, and Meetings	1	R
	Business Presentations	1	R, M
	Planning Business Messages	0.5	I, R
	Organizing and Drafting Business Messages	0.5	I, R
	Revising Business Messages	0.5	I, R
	Short Workplace Messages and Digital Media	0.5	I, R
	Positive Messages	1	R, M
	Negative Messages	1	R, M
	Persuasive and Sales Messages	1	R, M
	Informal Reports	1	R, M
	Proposals and Formal Reports	1	I, R
	The Job Search and Resumes in the Digital Age	1	R, M
	Interviewing and Following Up	1	R, M

Examination forms	Short-answer questions, Messages writing questions
Study and examination requirements	Attend more than 80% of class meetings in order to take the final exam (Your name will be called randomly to answer questions during class discussion. If you do not show up to answer the question, you will be marked as absent for that class.) . Show respect to the instructor and classmates. . Actively participate in class activities . Fulfil tasks given by instructor after class . Access Blackboard for announcements, assignments, and materials of the course
Reading list	Main textbooks: Mary Ellen Guffey & Dana Loewy, Essentials of Business Communication, 11th edition, Thompson South Western.

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-3) and Program Learning Outcomes (PLO) (1-6) is shown in the following table:

	PLO					
CLO	1	2	3	4	5	6
1			X		X	X
2			X		X	X
3			X		X	X

3. Planned learning activities and teaching methods

We ek	Topic	CLO	Assessments	Learning activities	Resources
1	Chapter 1: Communicating in the Digital-Age Workplace	2		Lecture	Textbook, Blackboard
2	Chapter 11: Professionalism at Work: Business Etiquette, Ethics, Teamwork, and Meetings	1, 2	Assignment 1	Lecture	Textbook, Blackboard

3	Chapter 12: Business Presentations	1 - 3		Lecture	Textbook, Blackboard
4	Chapter 2: Planning Business Messages Chapter 3: Organizing and Drafting Business Messages	1 - 3		Lecture	Textbook, Blackboard
5	Chapter 4: Revising Business Messages Chapter 5: Short Workplace Messages and Digital Media	1 - 3		Lecture	Textbook, Blackboard
6	Chapter 6: Positive Messages	1 - 3	Assignment 2	Lecture	Textbook, Blackboard
7	Chapter 7: Negative Messages	1 - 3		Lecture	Textbook, Blackboard
8	Midterm Review	1 - 3	Presentation	Tutorial	
9	Midterm		Examination		
10	Chapter 8: Persuasive and Sales Messages	3	Assignment 3 Presentation	Lecture	Textbook, Blackboard
11	Chapter 9: Informal Reports	3	Presentation	Lecture	Textbook, Blackboard
12	Chapter 10: Proposals and Formal Reports	3	Presentation	Lecture	Textbook, Blackboard
13	Chapter 13: The Job Search and Resumes in the Digital Age	1 - 3	Presentation	Lecture	Textbook, Blackboard
14	Chapter 14: Interviewing and Following Up	3	Presentation	Lecture	Textbook, Blackboard
15	Group Presentation	1 - 3	Presentation		
16	Group Presentation	1 - 3	Presentation		
17	Final exam		Examination		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Presentation (50%)	A1 65%Pass	A1 65%Pass	A2 65%Pass
Midterm exam (20%)		Q1 65%Pass	Q2 65%Pass
Final exam (30%)		65%Pass	65%Pass

Note: %Pass: Target that % of students having scores greater than 70 out of 100 in the rubric.

5. Rubrics (marking criteria)

6. Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1

Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.

Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.

Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

7. *Source: Association of American Colleges and Universities*

8. Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1

Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.

	observable and is skillful and makes the content of the presentation cohesive.	observable within the presentation.	within the presentation.	
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and

	polished and confident.	speaker appears comfortable.	appears tentative.	speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the
	significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	supports the presentation or establishes the presenter's credibility/ authority on the topic.	supports the presentation or establishes the presenter's credibility/ authority on the topic.	presentation or establishes the presenter's credibility/ authority on the topic.

Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

9. Source: Association of American Colleges and Universities

10. Date revised: May 01, 2023

	<i>Ho Chi Minh City, dd/mm/yyyy</i> <i>Head/Dean of Department/School</i> <i>(Signature)</i> <Full Name>

GRADING RUBRIC FOR WRITTEN COURSEWORK

BA006IU – Business Communication

Criteria	COMPLETELY FAIL Below 30%	INADEQUATE 30% – 49%	ADEQUATE 50% - 69%	ABOVE AVERAGE 70% - 89%	EXEMPLARY ≥ 90%
Organisation and clarification	No evidence of organization and coherence	Does not organise ideas logically and with clarification Limited evidence of coherence Ideas lack consistence	Generally organised logically, with evidence of progression Occasionally, there may be a lack of focus or ideas may be tangential	Clear organization and progression. Responds appropriately and relevantly, although some ideas are underdeveloped	Response is focused, detailed and nontangential. Shows a high degree of attention to logic and reasoning of points. Clearly leads the reader to the conclusion and stirs thought regarding the topic
Originality and usefulness of the analysis	Shows no ability to identify issues or a clear inability to gather the facts	Demonstrates an incomplete grasp of the task. There is no overall sense of creative coherence. Arguments are addressed incompletely.	Shows ability to identify issues, gather the facts and develop claims. Argument are addressed well but no links with evidence	Shows strong ability to identify issues, gather the fact and develop claims as well as link claims with evidence. Overall, an acceptable solution is offered and explained	Shows strong ability to identify issues, gather the facts and develop claims as well as link claims with evidence. Satisfactory solutions are offered and supported

Use of data/information	Shows no effort to incorporate information from primary and secondary sources	Shows little information from sources. Poor handling of sources	Shows moderate amount of source information incorporated. Some key points supported by sources. Quotations may be poorly integrated into	Draws upon sources to support most points. Some evidence may not support arguments or may appear where inappropriate. Quotations integrated well into paragraphs.	Draws upon primary and secondary source information in useful and illuminating ways to support key points. Excellent integration of quoted material into paragraphs. Source cited

1

			paragraphs. Some possible problems with source citations	Sources cited correctly	correctly
Use of frameworks	Shows no effort to structure problems in correspondence to theoretical frameworks	Shows limited ability to structure problems in correspondence to theoretical frameworks	Shows effort to link problems with the theoretical frameworks. There are still some mistakes	Shows ability to structure problems in correspondence to theoretical frameworks correctly. Minor mistakes in resolving problems	Shows ability to structure problems in correspondence to theoretical frameworks correctly. The problems are well resolved

Quality of arguments	Shows no effort to construct logical arguments. Fails to support analysis	Shows little attempt to offer support for key claims or to relate evidence to analysis. Reasons offered are irrelevant.	Shows argument of poor quality. Weak, undeveloped reasons are offered to support key claims	Shows clear, relevant and logical arguments.	Shows identifiable, reasonable and sound arguments. Clear reasons are offered to support key claims.



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Business

COURSE SYLLABUS

Course Name: Principles of Marketing

Course Code: **BA003IU**

1. General information

Course designation	The course named “Principles of Marketing” provides the students with necessary information on the basic concepts of marketing and its principles. It focuses on the understanding of Market Demand and Customers Behaviors as well as Marketing strategies developed by firms in terms of Pricing, Product, Place, Promotion, etc. The course also mentions various methods to market research and environmental factors that affect the marketing activities.
Semester(s) in which the course is taught	1, 2
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lectures, projects, quizzes, examinations.
Workload (incl. contact hours,	(Estimated) Total workload: 128 Contact hours: 38 (15 classes, 1 class = 3 periods, 1 period = 50 minutes)

selfstudy hours)	Private study including examination preparation, specified in hours: 90
Credit points	03

Required and recommended prerequisites for joining the course	None		
Course objectives	This course is an introduction to the field of marketing. In this course, the students will start to examine the most basic concepts in marketing – customer needs, wants, and demand to understand the marketplace. Next, main steps in designing a customer-driven marketing strategy are also explored. This course specially focuses on constructing an integrated marketing program that delivers superior value by using the marketing mix (the four Ps) – product/service design, pricing, distribution, and promotion. At last, other new contents of modern marketing, such as customer relationship management and partner relationship management are also briefly mentioned.		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Describe marketing terminology and concepts and the principles used in developing marketing programs in a firm. CLO2. Identify wants, environmental factors and personal factors that shape marketing activities for certain target markets. CLO3. Explain the different types of goods, services, pricing, distribution and promotion in marketing strategies.	

	Skill	CLO4. Describe different research methodologies in developing marketing plans. CLO5. Identify the components that help to organize and assign individuals or groups to work together in the planning, implementation and control of marketing activities
	Attitude	CLO6. State the ethical requirements of marketing activities

Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Learning level: I (Introduced); R (Reinforced); M (Mastered)		
	Topic	Weight	Level
	Chapter 1: Creating and Capturing Customer Value	1	I, R
	Chapter 2: Company and Marketing Strategy- Partnering to Build Customer Engagement, Value, and Relationships	1	I, R
	Chapter 3: Analyzing the marketing environment	1	I, R
	Chapter 5: Understanding consumer buyer behavior	2	I, R
	Chapter 6: Business Markets and Business Buying Behavior	1	I, R
	Chapter 7: Customer-Driven Marketing Strategy: Creating Value for Target Customers	2	I, R
	Chapter 8: Product, Services, and Brands: Building Customer Value	2	I, R
	Chapter 10: Pricing: Understanding and Capturing Customer Value	1	I, R

	Chapter 12: Marketing Channels: Delivering Customer Value	1	I, R
	Chapter 14: Communicating Customer Value: Integrated Marketing Communications Strategy	1	I, R
	Chapter 15: Advertising and Public Relations	1	I, R
Examination forms	Multiple-choice questions, Short-answer questions, Case analysis		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	[1] Textbook: Philip Kotler and Gary Armstrong (2015), Principles of Marketing, 16th Edition, Prentice Hall, Upper Saddle River, New Jersey [2] Slides and other materials are provided in the Blackboard		

2. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Chapter 1: Creating and Capturing Customer Value	1	Case MCQs; analysis	Lecture, Discussion Group's project guidelines	[1], [2]
2	Chapter 2: Company and Marketing Strategy- Partnering to Build Customer Engagement, Value, and Relationships	1,2	Case MCQs; analysis	Lecture, Discussion	[1], [2]

3	Chapter 3: Analyzing the marketing environment	1,2	MCQs; analysis Case	Lecture, Discussion	[1], [2]
4, 5	Chapter 5: Understanding consumer buyer behavior	1,2,3	MCQs; analysis Case	Lecture, Discussion	[1], [2]
6	Chapter 6: Business Markets and Business Buying Behavior	1,2,3	MCQs; analysis Case	Lecture, Discussion	[1], [2]
7, 8	Chapter 7: Customer-Driven Marketing Strategy: Creating Value for Target Customers	1,2,3	MCQs; analysis Case	Lecture, Discussion	[1], [2]
9	Midterm	1,2,3, 6	Short-answer questions; MCQs; Case analysis		
			70%*		
10, 11	Chapter 8: Product, Services, and Brands: Building Customer Value	1,2,3	MCQs; analysis Case	Lecture, Discussion	[1], [2]
12	Chapter 10: Pricing: Understanding and Capturing Customer Value	1,2,3	MCQs; analysis Case	Lecture, Discussion	[1], [2]
13	Chapter 12: Marketing Channels: Delivering Customer Value	1,2,3	Quiz 70%*	Lecture, Discussion	[1], [2]
14	Chapter 14: Communicating Customer Value: Integrated Marketing Communications Strategy	1,3	MCQs; analysis Case	Lecture, Discussion	[1], [2]
15	Chapter 15: Advertising and Public Relations	1,3	MCQs; analysis Case	Lecture, Discussion	[1], [2]
16	Oral group project presentation	4,5	Oral Presentation 70%*	Q&A	

17	Final exam	1,2,3, 4,6	Short- answer questions; MCQs; Case analysis 70%*		

*Note: * Target that 70% of students having scores greater than 70 out of 100.*

3. Date revised: April 10th, 2023

	<i>Ho Chi Minh City, 10/4/2023</i> <i>Dean of School of Business</i>

GRADING RUBRIC FOR WRITTEN COURSEWORK
PRINCIPLES OF MARKETING (BA003IU)

Criteria	COMPLETELY FAIL Below 30%	INADEQUATE 30% – 49%	ADEQUATE 50% - 69%	ABOVE AVERAGE 70% - 89%	EXEMPLARY ≥ 90%
Organization and clarification	No evidence of organization and coherence	Does not organize ideas logically and with clarification Limited evidence of coherence Ideas lack consistency	Generally organized logically, with evidence of progression Occasionally, there may be a lack of focus or ideas may be tangential	Clear organization and progression. Responds appropriately and relevantly, although some ideas are underdeveloped	Response is focused, detailed and nontangential. Shows a high degree of attention to logic and reasoning of points. Clearly leads the reader to the conclusion and stirs thought regarding the topic
Originality and usefulness of the analysis	Shows no ability to identify issues or a clear inability to gather the facts	Demonstrates an incomplete grasp of the task. There is no overall sense of creative coherence. Arguments are addressed incompletely.	Shows ability to identify issues, gather the facts and develop claims. Arguments are addressed well but no links with evidence	Shows strong ability to identify issues, gather the facts and develop claims as well as link claims with evidence. Overall, an acceptable solution is offered and explained	Shows strong ability to identify issues, gather the facts and develop claims as well as link claims with evidence. Satisfactory solutions are offered and supported

Use of data/information	Shows no effort to incorporate information from primary and secondary sources	Shows little information from sources. Poor handling of sources	Shows moderate amount of source information incorporated. Some key points supported by sources. Quotations may be poorly integrated into paragraphs. Some possible problems with source citations	Draws upon sources to support most points. Some evidence may not support arguments or may appear where inappropriate. Quotations integrated well into paragraphs. Sources cited correctly	Draws upon primary and secondary source information in useful and illuminating ways to support key points. Excellent integration of quoted material into paragraphs. Source cited correctly
Use of frameworks	Shows no effort to structure problems in correspondence to theoretical frameworks	Shows limited ability to structure problems in correspondence to theoretical frameworks	Shows effort to link problems with the theoretical frameworks. There are still some mistakes	Shows ability to structure problems in correspondence to theoretical frameworks correctly. Minor mistakes in resolving problems	Shows ability to structure problems in correspondence to theoretical frameworks correctly. The problems are well resolved

Quality of arguments	Shows no effort to construct logical arguments. Fails to support analysis	Shows little attempt to offer support for key claims or to relate evidence to analysis. Reasons offered are irrelevant.	Shows arguments of poor quality. Weak, undeveloped reasons are offered to support key claims	Shows clear, relevant and logical arguments.	Shows identifiable, reasonable and sound arguments. Clear reasons are offered to support key claims.





VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Biology

Course Code: BT311IU

1. General information

Course name	- <i>Biology</i> - <i>Sinh Học Đại Cương</i>
Course designation	<i>The key concepts in the course are organized into units on biochemistry, molecular biology, cell biology, genetics, evolution, and ecology. Basic principles and theories of biology addressed in the course include: the chemical basis of life; cell theory; energy flow and management; gene and gene products (including inheritance and gene expression); evolution, especially by means of natural selection; and studies of ecological populations and their interactions with living and non-living aspects of their environment.</i>
Course type	☒ <i>General knowledge</i> ☐ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Assoc. Prof. Bui Hong Thuy. Email: bhthuy@hcmiu.edu.vn MBT Hoang Thi Lan Xuan. Email: htlx@hcmiu.edu.vn
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, Presentation, Quiz, Homework.

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 h Private study including examination preparation, specified in hours ¹ : 90 h	
Credit points	3 credits (Theory) 4.6 ECTS	
Number of periods	Theory: 45	
Required and recommended prerequisites for joining the course	None	
Course objectives	The principal objective of this course is for students to develop a fundamental understanding of the key concepts, principles, and theories of modern biology. This objective will provide the foundation necessary for subsequent courses in biological sciences. How natural selection ultimately underpins all biological processes and how evolution has generated biological diversity.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: Understanding of foundation in basic biological principles, theories of modern biology and interactions between organisms and their environments. CLO2: To develop ideas of the uniqueness and diversity of life and the interrelationships among living organisms.
	Skill	CLO3: Applying elementary mathematics, chemistry to biology. Acquire skills in formulating hypotheses, designing, and conducting simple experiments to test them.
	Attitude	CLO4: To develop a working knowledge of study which is necessary for a proper understanding of biological concepts and record evidence of their verbal, written and graphic communication skills.

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to Biology and Course outline	1	I, T
	The Chemistry of Life-The Chemical Context of Life	1	I, T
	A Tour of the Cell- Membrane Structure and Function- Cellular Energy- Cell Communication	2	I, T
	Cell Cycle-Genetic Basis of Life- Regulation of Gene expression	2.5	I, T
	Gene Activity and Biotechnology	1.5	T, U
	The Evolutionary History of Biological Diversity, The Evolution of Populations; The Origin of Species	2	I, T
	Animal Form and Function- Basic principles- Endocrine system; Reproduction and Development; Nervous system; Sensory & motor mechanisms.	2	T, U
	Structure and Function of Plants: Structure, Reproduction and Development	1	T, U
Ecology: Interactions between organisms and the environment	1	T, U	
Summary-Review	1	T, U	
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	Textbook: [1] Reece, J.B., Urry, L.A., Cain, M.L., Wasserman, S.A., Minorsky, P.V., Jackson, R.B., 2014. Campbell Biology. 10 th Edition, Benjamin Cummings. Book Reference: [2] Gilbert, S.F., Barresi, M.J. F., 2016. Developmental Biology, 11th Edition. Sinauer Associates, Inc. MA Gilbert, S.F., Barresi, M.J. F., 2016. Developmental Biology, 11th Edition. Sinauer Associates, Inc. MA. Article References: [3] To be provided (Note: Articles will be updated every year)		

2. Learning Outcomes Matrix (optional)

The intended learning outcomes (ILOs) of Biotechnology Program and three levels of contribution are defined using Bloom's taxonomy (Low [L]: Remember and Understand; Medium [M]: Apply and Analyze; High [H]: Evaluate and Create).

The relationship between Course Learning Outcomes (CLOs) (1-4) and ILOs (1-8) and the level of contribution of CLOs to ILOs is shown in the following table:

	ILOs							
CLOs	1	2	3	4	5	6	7	8
1	L							
2		L-M						
3			L-M					
4					H			

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to Biology- Course outline	1	Lecture, Discussion, In Class-Quiz	Quizzes	1, 2, 3
2	The Chemistry of Life-The Chemical Context of Life	1	Lecture, Discussion, In Class-Quiz		1, 2
3	A Tour of the Cell-Membrane Structure and Function.	1	Lecture, Presentation		1, 2
4	Cellular Energy-Cellular Respiration Photosynthesis-Cell Communication	1	Lecture, Presentation	HW1	1, 2
5	The Cell Cycle- Genetic Basis of Life Mendel and the Gene Idea.	1, 2	Lecture, Presentation		1, 2
6	The Molecular Basis of Inheritance- From Gene to Protein-Regulation of Gene Expression.	1, 2	Lecture, Presentation	HW2	1, 3
7	Meiosis-Gamete and Sexual Life Cycles	1, 3	Lecture, Presentation		1, 2, 3
8	Gene Activity and Biotechnology Midterm Test	1, 4 1, 3, 4	Lecture, Discussion, In Class-Quiz		1, 3
9	Introduction to Evolution of Biodiversity: A Darwinian View of Life-The Evolution of Populations-The Origin of Species	1, 2	Lecture, Discussion, In Class-Quiz		1
10	The Evolutionary History of Biological Diversity-Phylogeny and the Tree of Life.	1, 2	Lecture, Discussion, Presentation		1
11	Basic principles of animal form and function-Animal Nutrition-Circulation-Immune system-Osmoregulation.	3, 4	Lecture Discussion Presentation	HW3	1, 2, 3

12	Hormones and the Endocrine System- Reproduction and development Nervous system- Sensory and motor mechanisms.	3, 4	Lecture, Discussion, Presentation		1, 2, 3
13	Plant Structure, Reproduction and Development-Transport in Vascular Plants-Plant Nutrition- Plant Responses to Signals.	3, 4	Lecture, Discussion, Presentation	HW4	1
14	Ecology: Interactions between organisms and the environment limit the distribution of species.	2, 4	Lecture, Discussion, Presentation		1
15	Summary-Revision		Review-Test		
16 - 17	Final exam	2, 3, 4			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class Presentation/ quizzes (15%)			Presentation/ 70%Pass	Quiz/ Part. 70%Pass
Homework exercises (15%)	HW1 70%Pass	HW2 70%Pass	HW3 70%Pass	HW4 70%Pass
Midterm exam (30%)	MCQs 50% Pass		MC-Written Questions 50% Pass	Written Questions 50% Pass
Final exam (40%)		MCQs 50% Pass	MC-Written Questions 50% Pass	MC-Written Questions 50% Pass

Note: %Pass (Exam): % students have scores greater than 50 out of 100.

%Pass (Presentation/ Assignment): % students have scores greater than 70 out of 100.

Multiple Choice Questions (MCQ); Homework (HW)

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			

Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: This rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

****Oral communication value rubric for evaluating presentation tasks:***

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score
Presentation content	Content Organization: The presentation is delivered in logical order and has a clear structure, including an introduction and a conclusion.	15	
	Information: The presentation contains accurate information and is cited from appropriate external resources.	15	
	Language usage: Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	Visual aids: The presentation includes suitable and effective visual aids that capture the audience's attention.	15	
Presentation delivery	Time management: The Length of the presentation is within the assigned time limits.	10	
	Presentation Skill: The speaker maintains good eye contact with the audience, and speaks confidently with a good voice, fluid speech, and appropriate pronunciation.)	10	
	Question and Answer: The speaker addresses and answers all questions from the audience following the presentation.	20	
Score	Total Points	100	

****Critical thinking value rubric for evaluating questions in exams:***

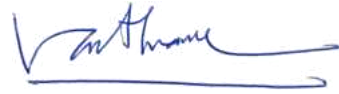
	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

6. Date revised: June 2025

7. Course coordinator/Lecturer

- Department: Biotechnology
- Email: bhthuy@hcmiu.edu.vn

Ho Chi Minh City, dd/mm/yyyy
DEAN OF DEPARTMENT/SCHOOL
(Signature)

A handwritten signature in blue ink, appearing to read 'Van Thuan', with a long horizontal stroke extending to the right.

Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Biology

Course Code: **BT312IU**

1. General information

Course name	- Practice in Biology - Thực hành sinh học
Course designation	This course demonstrates the basic practice works with biological samples and reactions. Students will be introduced with sample preparation, observation, and analysis.
Course type	☒ General knowledge ☐ Fundamental Specialized ☐ Specialized Knowledge ☐ Internship/Project/Thesis ☐ Others
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Dr. Pham Hong Diep
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, lesson, lab works
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 55 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 25 h Private study including examination preparation, specified in hours ² : 30 h
Credit points	1 credit (Practice Lab) ~ (2 ECTS)
Number of periods	Practice: 30

² When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Required and recommended prerequisites for joining the course	Prerequisites : Biology (BT311IU)		
Course objectives	Students will be instructed with the common works in biotechnology including observation of plant and animal cells, observation of cellular change in different osmosis, detection of main compositions of the cells, enzyme reactions, photosynthesis, water evaporation, and cell division. Through this unit, students will become acquainted with the basic techniques in biology and gain an appreciation of the foundational skills necessary to apply biology in different fields of applied sciences.		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Describe the cell structures, differences between plant and animal cells; events occur in photosynthesis and transpiration; enzyme characteristics; and events during cell cycles. CLO2. Explain the interaction of cells and biological substances with the specific chemicals indicator and how we can recognize them.	
	Skill	CLO3. Analyze and evaluate the cellular change in difference osmosis conditions, activity of enzyme, the process of photosynthesis, water evaporation in different conditions of practice and observe the differences of the cell between mitosis and meiosis.	
	Attitude	CLO4. Understand the reasons around safety and privacy when using sample, tissue, and organism handling, conduct and apply ethical practices.	
Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (5 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weigh	Level
	Microscopy and Cell observation	1	T, U
	Organic composition of the cell	1	T, U
	Photosynthesis and transpiration	1	T, U
	Osmosis and leaf stomata	1	T, U
	Enzymes	1	T, U
	Cell division – Mitosis and Meiosis	1	T, U

Examination forms	Multiple-choice questions, short-answer questions, problem-solving questions, report, experiment performance.
Study and examination requirements	Attendance: Attendance is compulsory for all class sessions. Students will be assessed based on their class participation and lab work performance. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	[1] Lab manual, School of Biotechnology [2] S. Burran, D. Desrochers, 2015. Principles of Biology I Lab Manual, University system of Georgia [3] D. S. Vondopich, R. Moore, 2017. Biology Laboratory manual, 7 th edition, McGrawHill Education. [4] YouTube videos

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Program/Student Learning Outcomes (SLO) (a-m) is shown in the following table:

	PLO							
CLO	1	2	3	4	5	6	7	8
1	M							
2								
3		M		H			M	
4					H			

**Use Bloom's Taxonomy*

The program learning outcomes (PLOs) are detailed below:

- (1) An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)
- (2) An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)
- (3) An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)
- (4) An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)
- (5) An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)
- (6) An ability to apply modern techniques to produce biotechnological products. (Application)
- (7) An ability to analyze and interpret results in biotechnological process, product manufacturing. (Lifelong learning)
- (8) An ability to be well aware of professional development for a career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Microscopy and Cell observation	1,2,3,4	Prelab, Lab work, report1	Discussion, Instruction, lab work	1-4
2	Organic composition of the cell	2,3	Prelab, Lab work, report2	Discussion, Instruction, lab work	1-4
3	Photosynthesis and transpiration	2, 3	Prelab, Lab work, report3	Discussion, Instruction, lab work	1-4
4	Osmosis and leaf stomata	2, 3	Prelab, Lab work, report4	Discussion, Instruction, lab work	1-4
5	Enzymes	1, 3, 4	Prelab, Lab work, report5	Discussion, Instruction, lab work	1-4
6	Cell division – Mitosis and Meiosis	1, 3	Prelab, Lab work, report6	Discussion, Instruction, lab work	1-4
7	Final exam	1,2,3	Short questions and practical skill	Written exam	

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Prelab (30%)	Prelab2-6 Pass 70%	Prelab2-6 Pass 70%		
Report (40%)			Report1-6 60%Pass	Report1-6 60%Pass
Final exam (30%)	Question 1-5 60 %Pass	Question 6-10 60%Pass	Question 11-15 60%Pass	Question 16-20 60%Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1 Grading checklist

Grading checklist for Written Reports

Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)			
	10		
TOTAL SCORE		100*	

* The total score will be converted into 40% (percentage of Report for whole course score).

5.2 Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

**Critical thinking value rubric for evaluating questions in exams:*

	Capstone	Milestone		Benchmark
	4	3	2	1

Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.

Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 11, 2025

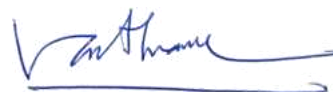
7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: phdiep@hcmiu.edu.vn

Ho Chi Minh City, 11/6/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)



Nguyen Van Thuan



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology**

COURSE SYLLABUS

Course Name: Chemistry for Engineers

Course Code: CH011IU

1. General information

Course name	- <i>(in English)</i> Chemistry for Engineers - <i>(in Vietnamese)</i> Hóa đại cương
Course designation	This one-semester course is designed for students who are pursuing an engineering degree (e.g., information technology, biotechnology, civil, biomedical, electronic, and telecommunication engineering) and chemistry-related ones (e.g., applied chemistry and chemical engineering). The course will introduce the basic principles of chemistry and connect those principles to issues in the engineering profession. The related lab work is not included in this course.
Semester(s) in which the course is taught	1, 2, and summer (optional)
Person responsible for the course	Assoc.Prof. Dr. Huynh Kim Lam Dr. Vũ Bảo Khánh Dr. Phùng Thanh Khoa
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, project, and seminar (optional).
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 135 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 hrs for lectures Private study including examination preparation, specified in hours ¹ : 90 hrs

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Credit points	3 credits (Theory: 3 + Practice: 0) 4.6 ECTS
Number of periods	Theory: 45 Practice: 0
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name): None - Corequisites: (Course code – Course name): None - Previous course (Course code – Course name): None
Course objectives	Upon successful completion of this course, the students should be able to demonstrate knowledge of: ● The role of chemistry for engineers ● Measurements in chemistry ● Matter and state of matter ● Structure of atoms, molecules and ions ● Periodicity ● Chemical bonds ● Intermolecular forces, liquid and solid ● Gases, liquids, solids and their properties ● Types and rates of chemical reactions ● Chemical equilibrium ● Electrolytes, acid-base, <i>pH</i>, buffer ● Thermochemistry and thermodynamics
Course learning outcomes	CLO1: Be able to apply mathematics and science knowledge to solve chemistry-related problems and explain many aspects of everyday life using chemistry concepts. CLO2: Be able to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. CLO3: Be able to acquire and apply new knowledge as needed, using appropriate learning strategies.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to General Chemistry for Engineers	0.2	I, T
	Introduction to Matter	0.3	I, T
	Measurements in Chemistry	0.5	I, T
	Atoms, Molecules and Ions	1	I, T
	Periodicity	1	I, T
	Chemical Bonds	2	I, T
	Intermolecular Forces	1	I, T
	Gases and Their Properties	0.5	I, T
	Solutions and Their Properties	0.5	I, T
	Solids and Their Properties	0.5	I, T
	Chemical Reactions	0.5	I, T
	Chemical Kinetics	1	I, T
	Chemical Equilibrium	1	I, T
	Electrolytes, Acid- Base, pH and Buffer	2	I, T
	Thermochemistry and Thermodynamics	2	I, T
Examination forms	Multiple-choice questions, written test		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	[1] “Chemistry: A Molecular Approach” by Nivaldo J. Tro (2 nd Ed., 2008). Pearson. [2] “General Chemistry” by Darrell Ebbing and Steven D. Gammon (9th Ed., 2010). Brooks/Cole, USA. [3] “Chemistry for Engineers – An Applied Approach” by Mary Jane Shultz (2007). Houghton Mifflin. [4] “Chemistry, Principles and Reactions” by Masterton and Hurley (6th Ed., 2009). Cengage learning, USA.		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-3) and Program/Student Learning Outcomes (PLO) (1-8) is shown in the following table:

	PLO							
CLO	1	2	3	4	5	6	7	8
1	x							
2							x	

3		x						

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities
1	Introduction to General Chemistry for Engineers Introduction to Matter Measurements in Chemistry	1		- Lecture - Class discussion
2	Atoms, Molecules and Ions	1,7	Homework/ Quiz	- Lecture - Class discussion
3	Periodicity	1,7	Homework/ Quiz	- Lecture - Class discussion
4, 5	Chemical Bonds	1,7	Homework/ Quiz	- Lecture - Class discussion
6	Intermolecular Forces	2,7	Homework/ Quiz	- Lecture - Class discussion
7	Gases and Their Properties Solutions and Their Properties	2,7	Homework/ Quiz	- Lecture - Class discussion
8	Solids and Their Properties Chemical Reactions	1,2,7	Homework/ Quiz	- Lecture - Class discussion
9-10	Midterm			
11, 12	Chemical Kinetics and Chemical Equilibrium	1,2,7	Homework/ Quiz	- Lecture - Class discussion
13, 14	Electrolytes, Acid-Base, <i>pH</i> and Buffer	1,2,7	Homework/ Quiz	- Lecture - Class discussion
15, 16	Thermochemistry and Thermodynamics	1,2,7	Homework/ Quiz	- Lecture - Class discussion
17	Revision	1,2,7	Homework/ Quiz	- Class discussion
18-20	Final exam			

4. Assessment plan

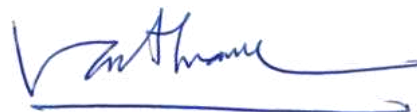
Assessment Type	CLO1	CLO2	CLO3
In-class exercises/ homework/quizzes (30%)	Qz1, 2, 3, 4, 5 50%Pass	Qz1, 2, 3, 4, 5 50%Pass	Homework 50%Pass
Midterm exam (30%)	Part I 50%Pass	Part II.1 50%Pass	Part II.2 50%Pass
Final exam (40%)	Part I 50%Pass	Part II.1 50%Pass	Part II.2 50%Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Date revised: August 10, 2022

Ho Chi Minh City, .../.../2025

Dean of School of Biotechnology



Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of Biotechnology

COURSE SYLLABUS

Course Name: Introduction to biotechnology

Course Code: BT150IU

1. General information

Course name	- (in English) <i>INTRODUCTION TO BIOTECHNOLOGY</i> - (in Vietnamese) <i>NHẬP MÔN CÔNG NGHỆ SINH HỌC</i>
Course designation	<i>The course Introduction to Biotechnology is designed as an initial course to immerse the students in the techniques, applications and social issues that focus on molecular biotechnology, genetic engineering, assisted reproductive technology, stem cell and regenerative biomedicine, pharmaceutical biotechnology, micro-biotechnology and plant biotechnology. The course also equips students with bioethical issues in biotechnology.</i>
Course type	☐ General knowledge ☒ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	2
Person responsible for the course	Assoc. Prof. Nguyen Van Thuan, MSc. Tong Thi Hang, Assoc. Prof. Nguyen Hoang Khue Tu, Assoc. Prof. Nguyen Phuong Thảo
Language	English
Relation to curriculum	☒ Compulsory
Teaching methods	<i>Lecture, lesson, seminar, discussion</i>

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 90 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 30 Private study including examination preparation, specified in hours ¹ : 60		
Credit points	2 credits (Theory: 2 + Practice: 0) 3.1. ECTS		
Number of periods	30 periods (50 min/period)		
Required and recommended prerequisites for joining the course	None		
Course objectives	This course will introduce students to the fundamentals of biotechnology such as cellular and molecular engineering, molecular biotechnology, and applications in medicine; pharmaceutical biotechnology, assisted reproductive biotechnology; stem cells and cell reprogramming, transgenic and application of transgenic for biomedicine, plant biotechnology and agriculture, environment protection. Through this course, students will become acquainted with the challenges of contemporary biotechnology problems and ethical aspects while applying biotechnology in applicable areas.		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Describe the fundamental concepts of biotechnology CLO2. Explain the importance and applications of biotechnology in various fields of applied sciences.	
	Skill	CLO3. Analyze and evaluate the products of biotechnology; recognize the methods for generating these products for medical, agricultural and environmental applications.	
	Attitude	CLO4. Understand the bioethical reasons about privacy and life protection when using biological samples; understand the professional study for career development; conduct and apply ethical practices.	

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (2 teaching hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to Biotechnology and Bioethics	1	I
	Cell and molecular biotechnology	2	I, T
	Genetics and Genomics	1	I, T
	Plant biotechnology and applications	3	T, U
Examination forms	Biotechnology in Pharmaceutical Development		
	Animal biotechnology and applications		
Examination forms	Quiz (Multiple-choice questions, True/False questions, short-answer questions), Assignment, Examination (problem-solving questions, essay)		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.		
Reading list	1. Susan R. Barnum, 2005, <i>Biotechnology, an introduction</i> , 2nd Ed., Thomson-Brooks/Cole. 2. A. J. Nair (2007), <i>Introduction to biotechnology and genetic engineering</i> . Infinity science press llc. 3. Lecture slides via Backboard 4. Principles of Cloning (Second Edition, ELSEVIER Book 2013) ISBN: 978-0-12-386541-0		

2. Learning Outcomes Matrix (optional)

3. The relationship between Course Learning Outcomes (CLOs) (1-5) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L: Remember and understand; Medium/M: Apply and analyze, High/H: Evaluate and create) is shown in the following table*:

	PLO							
CLO	1	2	3	4	5	6	7	8
1	M		M					
2		M						
3								
4					M			M

*Use Bloom's Taxonomy

4. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to Biotechnology, Ethics	1,2, 4	Lecture, Discussion, In-class quiz	Quiz and class activities	1,2,3
2	Molecular biology and applications	1,2,3	Lecture, Discussion		1,2,3
3	Molecular biology and application (continuous)	1,2,3	Lecture, Discussion		1,2,3
4	Genetics and Genomics	1,2,4	Lecture, Discussion		1,2,3
5	Introduction to Assisted Reproductive Technology and Regenerative Biomedicine	1,2,4	Lecture, Discussion	Quiz and class activities	3
6	Transgenic Animals and chimeric animals, application in biomedicine and in agriculture	1,2,3,4	Lecture, Discussion		3
7	Stem cell and regenerative biomedicine	1,2,3,4	Lecture, Discussion		3,4
8	Cell reprogramming and applications MIDTERM EXAMS	1,2,3,4	Lecture, Discussion		3.4
9	Introduction to microorganisms	1,2,3	Lecture, Discussion	Class activities	1,2,3
10	Introduction to Pharmaceutical Biotechnology	1,2,3	Lecture, Discussion		1,2,3
11	Microbial applications in biotechnology	1,2,3	Lecture, Discussion		1,2,3
12	Biotechnology in Pharmaceutical development	1,2,3,4	Lecture, Discussion		[3]
13	Applications in Plant Biotechnology	1,2,4	Lecture, Discussion	Class activities	[1]
14	Plant Biotechnology Products	1,2,4	Lecture, Discussion		[1]
15	How do you make transgenic plants?	1,2,4	Lecture, Discussion		[1]
16,17	FINAL EXAM				

5. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Assignment (20%)	Assignment, Quiz, Performance 60%Pass	Assignment, Quiz, Performance 60%Pass	Assignment, performance 60%Pass	Assignment, Quiz, Performance 60%Pass
Midterm exam (40%)	Introduction 80 %Pass	Explanation 60%Pass	Discussion 60%Pass	Conclusion 60%Pass
Final exam (40%)	Introduction 80 %Pass	Explanation 60%Pass	Discussion 60%Pass	Conclusion 60%Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

6. Rubrics

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical contents (70%)	70		
Abstract clearly identifies purpose and summarizes principal contents	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	10		
Analysis and discussion demonstrate good subject mastery	40		
Summary and conclusions appropriate and complete	10		
Organization (10%)	10		
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (10%)	10		
Correct spelling, grammar	5		
Clear and easy to read	5		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

7. **Date revised:** June 11th, 2025

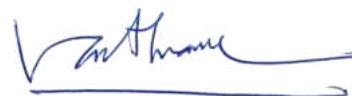
8. **Course Lecturer: Tong Thi Hang**

- School/Department: Biotechnology
- Email: tthang@hcmiu.edu.vn

Ho Chi Minh City 09, June 2025

DEAN OF SCHOOL

(Signature)



NGUYEN VAN THUAN



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of ...

COURSE SYLLABUS
Course Name: GENETICS
Course Code: **BT313IU**

1. General information

Course name	- (in English) <i>GENETICS</i> - (in Vietnamese) <i>DI TRUYỀN HỌC</i>
Course designation	<i>This course introduces the mechanisms of inheritance and gene action from molecular to population levels. Topics include Mendelian principles; Extension of Mendelian principles; Genetic materials and gene expression; Quantitative genetics and population genetics. .</i>
Course type	☐ General knowledge ☒ x Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	3
Person responsible for the course	<i>Tong Thi Hang, MSc</i>
Language	English
Relation to curriculum	☐ x Compulsory ☐ Elective
Teaching methods	<i>Lecture, lesson, project, seminar, discussion</i>

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 135 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 Private study including examination preparation, specified in hours ¹ : 90	
Credit points	3 credits (Theory: 3 + Practice: 0) ECTS (<i>optional</i>)	
Number of periods	Theory: 45 Practice:	
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name) Biology – BT311IU	
Course objectives	Students will be introduced to the fundamentals of classical and modern genetics such as Mendel inheritance and molecular genetics, be provided with the skills of using cells and molecular techniques and be exposed to the cases in genetics. Through this unit, students will become acquainted with the challenges of contemporary genetic problems in different organisms and gain an appreciation of the foundational skills necessary to apply genetics in different fields of applied sciences.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Describe the fundamental concepts of Genetics and principles of using cell and molecular techniques. CLO2. Explain the importance of Genetics in various fields of applied sciences.
	Skill	CLO3. Analyze and evaluate the genetic characteristics in different organisms and applications in medicines, agriculture and environment studies.
	Attitude	CLO4. Understand the reasons around privacy when using genetic information and organism handling, conduct and apply ethical practices.

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 teaching hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to Genetics	1	I, T
	Cell reproduction: mitosis and meiosis	1	T, U
	Mendelian inheritance principles	1	T, U
	Extension of Mendelian inheritance	1	I, T
	Linkage, Recombination and gene mapping	1	T, U
	Genetic materials, chromosome structure and variation	1	I, T
	Replication, Transcription	1	T, U
	RNA processing	1	T, U
	Genetic codes and Translation	1	I, T
	Regulation of gene expression	1	T, U
	Recombinant DNA technology, mutation and genomics	1	U
Extracellular chromosomes	1	I, T	
Quantitative genetics	2	T, U	
Population genetics	1	T, U	
Examination forms	Quiz (Multiple-choice questions, True/False questions, short-answer questions), Assignment, Examination (problem-solving questions)		
Study and examination requirements	Attendance: A minimum attendance of 80 percents is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.		

Reading list	Textbook [1] Pierce, B.A., 2008. <i>Genetics: A Conceptual Approach</i>, 3rd Edition. W.H. Freeman and Comp., New York. Other reading materials [2] Brooker, R.J., 2009. <i>Genetics: Analysis & Principles</i>, 3rd Edition. McGraw-Hill, New York. [3] Hartwell, L.H., Hood, L., Goldberg, M.L., Reynolds, A.E., Silver, L.M. & Veres, R.C., 2004. <i>Genetics: From Genes to Genomes</i>, 2nd Edition. McGraw-Hill, NY. [4] Mertens, T.R. & Hammersmith, R.L., 2001. <i>Genetics: Laboratory Investigations</i>, 12th edition. Prentice Hall, Inc., [5] Snudtad, D.P., & Simmons, M.J., 2009. <i>Principles of Genetics</i>, 5th Edition. John Wiley & Sons, Inc., USA.

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) and Program/Student Learning Outcomes (PLO) is shown in the following table:

	PLO							
CLO	1	2	3	4	5	6	7	8
1	H							
2			M					
3		L					M	
4					H			H

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to Genetics	1,4	Lecture, Discussion		[1], [5]
2	Cell reproduction: mitosis and meiosis	1,2,3	Lecture, Discussion	Quiz 1, Midterm Exam	[1], [5]
3	Mendelian inheritance principles	2,3	Lecture, Discussion, Homework	Quiz 2, Midterm Exam	[1], [2], [5]
4	Extension of Mendelian inheritance	2,3	Lecture, Discussion, Homework		[1], [2], [5]
5	Linkage, Recombination, and gene mapping	2,3	Lecture, Discussion, Homework		[1], [2], [5]
6	Genetic materials, chromosome structure and variation	1,2,3, 4	Lecture, Discussion, Group work	Quiz3, Midterm Exam	[1], [2], [4], [5]

7	Replication, Transcription	1,2,3	Lecture, Discussion		[1], [3], [4], [5]
8	RNA processing Midterm examination	1,2,3 1,2,4	Lecture, group work IN-CLASS EXAM		[1], [3], [4], [5]
9	Genetic codes and Translation	1,2,3	Lecture, Discussion	Quiz4, Final Exam	[1], [3], [4], [5]
10	Regulation of gene expression	1,2,3	Lecture, Discussion		[1], [3], [5]
11	Recombinant DNA technology, mutation and genomics	1,2,3, 4	Lecture, Discussion, Homework		[1], [2], [4]
12	Extracellular chromosomes	1,2,3, 4	Lecture, Discussion	Quiz5, Final Exam	[1], [5]
13,14	Quantitative genetics	1,2,3, 4	Lecture, Discussion		[1], [5]
15	Population genetics	1,2,3, 4	Lecture, Discussion, Homework		[1], [5]
16,17	Final examination	1,2,4			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Quiz (30%)	Quiz1,2,3,4 60%Pass	Quiz2,3 60%Pass	Quiz5 50%Pass	Quiz4 60%Pass
Midterm exams (30%)	Question 1,2 50 %Pass	Question 3 50%Pass	Question 4 50%Pass	Question5 50%Pass
Final exams (40%)	Question 1,2 50 %Pass	Question 3 50%Pass	Question 4 50%Pass	Question5 50%Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.

Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

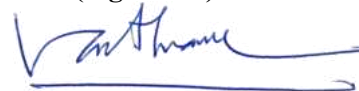
6. **Date revised:** June 11th, 2025

7. **Course Lecturer: Tong Thi Hang**

- School/Department: Biotechnology
- Email: tthang@hcmu.edu.vn

DEAN OF SCHOOL OF BIOTECHNOLOGY

(Signature)



Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of ...

COURSE SYLLABUS
Course Name: PRACTICE IN GENETICS
Course Code: **BT314IU**

1. General information

Course name	- (in English) <i>PRACTICE IN GENETICS</i> - (in Vietnamese) <i>THỰC HÀNH DI TRUYỀN HỌC</i>
Course designation	<i>This course introduces the basic practice works with genetic materials such as reproducing cells, DNAs and fruit flies. This includes preparing flies for genetic analysis, preparing DNA and preparing cells.</i>
Course type	☐ General knowledge ☐ x Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	3
Person responsible for the course	<i>Tong Thi Hang, MSc</i>
Language	English
Relation to curriculum	☐ x Compulsory ☐ Elective
Teaching methods	<i>Lecture, lesson, project, discussion, lab works</i>
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 60 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 30 Private study including examination preparation, specified in hours ¹ : 30

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Credit points	1 credits (Theory: 3 + Practice: 0) ECTS (<i>optional</i>)	
Number of periods	Theory: 6 Practice:	
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name) Biology – BT311IU - Corequisites: (Course code – Course name) - Previous course (Course code – Course name)	
Course objectives	Students will be instructed with the compulsory works in Genetics including DNA extraction and visualization, cell fixation and stain, analysis the characteristics of the fly population; be provided with the skills of using microscope to analyse cells, Gel electrophoresis and GelDoc to visualize DNA. Through this unit, students will become acquainted with the techniques that broadly used in contemporary genetic research and gain an appreciation of the foundational skills necessary to apply genetics in different fields of applied sciences.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Describe the events that occur during cell cycle, the structure and properties of DNAs, anatomy and population of fruit flies. CLO2. Explain the interaction of cells, DNA with the specific indicator chemicals and how we can recognize them;
	Skill	CLO3. Analyze and evaluate the genetic subjects in different conditions of practice.
	Attitude	CLO4. Understand the reasons around safety and privacy when using genetic information, tissue and organism handling, conduct and apply ethical practices.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (5 teaching hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Cell reproduction - Mitosis	1	T, U
	Cell reproduction - Meiosis	1	T, U
	Genomic DNA extraction	1	T, U
	Plasmid DNA extraction	1	T,U
	Agarose Gel electrophoresis	1	T, U
	Fruit fly characteristics, mating and population genetic analysis	1	T, U
Examination forms	Multiple-choice questions, short-answer questions, problem-solving questions, project report, interview		
Study and examination requirements	Attendance: A minimum attendance of 80 percents is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.		
Reading list	1. Laboratory manual, Hang Tong, School of Biotechnology, 2. Brooker. R.J., 2009. <i>Genetics: Analysis & Principles</i> , 3 rd Edition. McGraw-Hill, New York. 3. Mertens, T.R. & Hammersmith, R.L., 2001. <i>Genetics: Laboratory Investigations</i> , 12 th edition. Prentice Hall, Inc., 4. Pierce, B.A., 2008. <i>Genetics: A Conceptual Approach</i> , 3rd Edition. W.H. Freeman and Comp., New York.		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) and Program/Student Learning Outcomes (PLO) is shown in the following table:

	PLO							
CLO	1	2	3	4	5	6	7	8
1	H							
2		M						
3				M			M	
4					H			

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Cell reproduction - Mitosis	1,2,3	Performance assessment1, Lab work report 1	Discussion, Instruction, Laboratory Performance	1,3,4
2	Cell reproduction - Meiosis	1,2,3		Discussion, Instruction, Laboratory Performance	1,3,4
3	Genomic DNA extraction	1,2,3,4	Performance assessment2, Lab work report 2	Discussion, Instruction, Laboratory Performance	1,2, 3
4	Plasmid DNA extraction	1,2,3,4		Discussion, Instruction, Laboratory Performance	1,2, 3
5	Agarose Gel electrophoresis	1,2,3,4		Discussion, Instruction, Laboratory Performance	1,2, 3
6	Fruit fly mating and population genetic analysis	1,2,3,4	Performance assessment3, Lab work report 3	Discussion, Instruction, Laboratory Performance	1, 4
7	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Lab performance (20%)	Performance 1,2,3 60%Pass	Performance 1,2 60%Pass	Performance 1,2,3 60%Pass	Performance 2,3 60%Pass
Report (50%)	Report 1,2,3 Pass 70%	Report 1,2 70%Pass	Report 1,2,3 70%Pass	Report 2,3 70%Pass
Final exam (30%)	Question 1-3 50%Pass	Question 4-6 50%Pass	Question 7-10 50%Pass	Question 11-15 50%Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical contents (70%)	70		
Abstract clearly identifies purpose and summarizes principal contents	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	10		
Analysis and discussion demonstrate good subject mastery	40		

Summary and conclusions appropriate and complete	10		
Organization (10%)	10		
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (10%)	10		
Correct spelling, grammar	5		
Clear and easy to read	5		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

6. Date revised: June 11th, 2025

- 7. Course Lecturer: Tong Thi Hang**
- Shool/Department: Biotechnology
 - Email: tthang@hcmiu.edu.vn

DEAN OF SCHOOL OF BIOTECHNOLOGY
(Signature)

A handwritten signature in blue ink, appearing to read 'N. Van Thuan', with a long horizontal stroke extending to the right.

Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
 School of Biotechnology
 Department of Biotechnology

COURSE SYLLABUS

Course Name: Plant Physiology

Course Code: **BT010IU**

1. General information

Course name	- Plant Physiology - Sinh lý Thực vật
Course designation	Plant physiology is a foundation course for more advanced ones in Plant Biotechnology. This course covers a wide range of knowledge regarding plant physiology such as plant metabolism, development and essential conditions for development, environmental stresses and secondary metabolites and engineered plants in plant biotechnology.
Course type	☐ General knowledge ☒ Fundamental Specialized ☐ Specialized Knowledge ☐ Internship/Project/Thesis ☐ Others: Professional elective
Semester(s) in which the course is taught	3, 4
Person responsible for the course	A/Prof. Tran Van Minh
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, lesson, project, seminar
Workload (incl. contact hours, self-study hours)	Total workload: 127.5 h Contact hours (lecture): 37.5 h Self-study: 90 h
Credit points	3 credits (theory) ~ (4.6 ECTS)
Number of periods	Theory : 45

Required and recommended prerequisites for joining the course	Prerequisite: Biology, Organic Chemistry
Course objectives	To provide information on plant physiological background; the cell in growth, development and stress environment; plant growth regulators; the synthesis pathways of biotransformation and secondary metabolites production; and plant biotechnology application with a good balance between traditional plant physiology and modern topics

Course learning outcomes	Upon the successful completion of this course students will be able to:			
	Competency level	Course learning outcome (CLO)		
	Knowledge	CLO1: Various important physiological processes in higher plants to acquire energy and nutrients, including photosynthesis, nutrient and water uptake, and gaseous exchange, and explore the implications for their structure and function. Explain the structure, processes and importance of internal communication, control, reproduction and development in plants Design a stress tolerant strategy for use in plant biotechnology based on stress physiology CLO2. Explain the process and the limit in plant growth and development.		
	Skill	CLO3. Describe and explain principles, structure, function and adaptation related to various physiological processes in a high degree of accuracy and thoroughness and understanding of the impacts of stress on plant physiology and explain the potential in plant biotechnology with appropriate justifications. Demonstrates ability to integrate theories and practical results, and gives clear oral and written communication		
	Attitude	CLO4. Issues and ethical practices in application		
Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)			
	Topic		Weight	Level
	Chapter 1: Bioenergetics and ATP Synthesis -The Dual Role of Sunlight: Energy and Information. -Energy Conservation in Photosynthesis: CO2 Assimilation		3	I, T, U

Chapter 2: Cellular Respiration: -Unlocking the Energy Stored in Photo-Assimilation. -Nitrogen Assimilation	3	T, U
Chapter 3: Allocation, Translocation, and Partitioning of Photo-Assimilates -Carbon Assimilation and Productivity. -Plant Cells and Water. Hypothesis Testing and Statistical Inference	3	T, U
Chapter 4: Whole Plant Water Relations. -Plants and Inorganic Nutrients. -Roots, Soils and Nutrients Uptake	3	T, U
Chapter 5: Plant Stem Cell: Meristem Cell	3	T, U
Chapter 6: Patterns in Plant Growth and Development.	3	T, U
Chapter 7: The Plant Hormones: Biochemistry and Metabolism	3	T, U
Chapter 8: The Plant Hormones: Control of Growth and Development	3	T, U
Chapter 9: Photomorphogenesis: Responding to Light.	3	T, U
Chapter 10: Plant Movements – Orientation in Space	3	T, U
Chapter 11: Measuring Time: The Control of Development by Photoperiod and Endogenous Clocks.	3	T, U
Chapter 12: Temperature: Plant Development and Distribution	3	T, U
Chapter 13: Plant Environment and Stress Physiology	3	T, U
Chapter 14: Plant Metabolites Physiology -Primary Plant Metabolites -Secondary Plant Metabolites	3	T, U
Chapter 15: Biotechnology: Plants Engineering for the Future	3	T, U

Examination forms	Short-answer questions
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	[1] William G. Hopkins, Norman P. A. Hüner, Introduction to Plant Physiology, 3rd Edition, 2003, Publisher : Wiley [2] American Society of Plant Physiology, Plant Physiology (Journal) (http://intl.plantphysiol.org/) [3] American Society of Plant Physiology, The Plant Cell (Journal) (http://intl.plantcell.org/)

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Program/Student Learning Outcomes (SLO) (1-6) is shown in the following table:

CLO	SLO							
	1	2	3	4	5	6	7	8
1	M							
2	M							
3						M		
4				M			M	M

**Use Bloom's Taxonomy*

The program learning outcomes (PLOs) are detailed below:

- (1) An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)
- (2) An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)
- (3) An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)
- (4) An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)
- (5) An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)
- (6) An ability to apply modern techniques to produce biotechnological products. (Application)
- (7) An ability to analyze and interpret results in biotechnological process, product manufacturing. (Lifelong learning)
- (8) An ability to be well aware of professional development for a career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources

1	Chapter 1: Bioenergetics and ATP Synthesis -The Dual Role of Sunlight: Energy and Information. -Energy Conservation in Photosynthesis: CO ₂ Assimilation	1,2,3	Progress, exam	Lecture, Discussion,	[1][2][3]
2	Chapter 2: Cellular Respiration: -Unlocking the Energy Stored in Photo-Assimilation. -Nitrogen Assimilation	1,2,3	Progress, exam	Lecture, Discussion,	[1][2][3]
3	Chapter 3: Allocation, Translocation, and Partitioning of Photo-Assimilates -Carbon Assimilation and Productivity. -Plant Cells and Water. Hypothesis Testing and Statistical Inference	1,2,3	Progress, exam	Lecture, Discussion,	[1][2][3]
4	Chapter 4: Whole Plant Water Relations. -Plants and Inorganic Nutrients. -Roots, Soils and Nutrients Uptake	1,2,3	Progress, exam	Lecture, Discussion,	[1][2][3]
5	Chapter 5: Plant Stem Cell: Meristem Cell	1,2,3	Progress, exam	Lecture Discussion,	[1][2][3]
6	Chapter 6: Patterns in Plant Growth and Development	1,2,3	Progress, exam	Discussion,	[1][2][3]
7	Chapter 7: The Plant Hormones: Biochemistry and Metabolism	1,2,3	Progress, exam	Lecture, Discussion,	[1][2][3]
8	Chapter 8: The Plant Hormones: Control of Growth and Development Midterm exam	1,2,3 1,2,3	Progress, exam	Lecture, Discussion,	[1][2][3]
9	Chapter 9: Photomorphogenesis: Responding to Light	1,2,3	Progress, exam	Lecture, Discussion,	[1][2][3]
10	Chapter 10: Plant Movements – Orientation in Space	1,2,3	Progress, exam	Lecture, Discussion,	[1][2][3]
11	Chapter 11: Measuring Time: The Control of Development by Photoperiod and Endogenous Clocks	1,2,3	Progress, exam	Lecture, Discussion,	[1][2][3]
12	Chapter 12: Temperature: Plant Development and Distribution	1,2,3	Progress, exam	Lecture, Discussion,	[1][2][3]
13	Chapter 13: Plant Environment and Stress Physiology	1,2,3	Progress, exam	Lecture, Discussion,	[1][2][3]
14	Chapter 14: Plant Metabolites Physiology -Primary Plant Metabolites -Secondary Plant Metabolites	1,2,3	Progress, exam	Lecture, Discussion,	[1][2][3]
15	Chapter 15: Biotechnology: Plants Engineering for the Future	4	Progress, exam	Lecture, Discussion,	[1][2][3]
16-17	Final exam	1,2,3			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Homework exercises (30%)	50%pass	50%pass	50%pass	50%pass
Midterm exam (30%)	50%pass	50%pass	50%pass	50%pass
Final exam (40%)	50%pass	50%pass	50%pass	50%pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1 Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100*		

* The total score will be converted into 40% (percentage of Report for whole course score).

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included
3	Demonstrates partial understanding of the problem. Most requirements of task are included

2	Demonstrates little understanding of the problem. Many requirements of task are missing
1	Demonstrates no understanding of the problem
0	No response/task not attempted

Note: This rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

***Critical thinking value rubric for evaluating questions in exams:**

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence Selecting and using information to investigate a point of view or conclusion	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.

Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 11, 2025

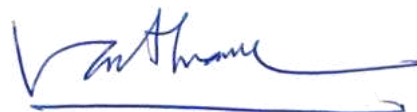
7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: tvminh@hcmiu.edu.vn

Ho Chi Minh City, 11/6/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)



Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology

COURSE SYLLABUS

Course Name: ANALYTICAL CHEMISTRY

Course Code: BT315IU

1. General information

Course name	- <i>(in English) Analytical Chemistry</i> - <i>(in Vietnamese) Hóa Phân Tích</i>
Course designation	This course covers the basic principle, practice and methodology of chemical and biochemical analysis. The course also introduces the modern analytical chemistry and instrumental techniques with emphases on techniques relevant to biochemical analyses. Some applications for bioanalytical techniques will also be discussed.
Course type	☐ <i>General knowledge</i> ☒ <i>Fundamental Specialized</i> ☐ <i>knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	3
Person responsible for the course	Dr. Nguyen Thao Trang
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, lesson

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 70 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 Private study including examination preparation, specified in hours ¹ : 25	
Credit points	3 credits (Theory: 3 + Practice: 0) ECTS (<i>optional</i>)	
Number of periods	Theory: 45 Practice: 0	
Required and recommended prerequisites for joining the course	- Prerequisites: CH011IU - Chemistry for Engineers - Corequisites: BT316IU - Practice in Analytical Chemistry - Previous course: None	
Course objectives	The students will be provided with the ranges and uses of analytical methods in qualitative and quantitative analysis and also with statistical methods in assessment of analytical measurement data quality and interpretation of their significance, validation of analytical methods and results. Students will develop skills in procedures and instrumental methods applied in analysis tasks, critical thinking and problem-solving skills. Students will understand the professional and safety responsibilities residing in working on chemical analysis.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Be able to describe the ranges and uses of analytical methods in qualitative and quantitative analysis.
	Skill	CLO2. Be able to conduct qualitative and quantitative chemical analysis and utilize statistical methods in assessment of measurement data and interpretation of their significance, validation of analytical methods and results.
	Attitude	CLO3. Be able to understand the professional and safety responsibilities residing in working on chemical analysis.

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to analytical chemistry	1	I, T, U
	Statistics in analytical chemistry	3	I, T, U
	Acid-base equilibria, pH, buffer Acid-base titration	2	I, T, U
	Electrochemistry & Redox titration	2	I, T, U
	Spectroscopic methods of analysis	3	I, T, U
	Chromatographic methods: Introduction to chromatography Thin layer chromatography Liquid chromatography	2	I, T, U
Mass spectrometry	1	I, T	
Biosensors and modern analytical methods	1	I, T	
Examination forms	Written exam		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	[1] Douglas A. Skoog, Donald M. West and F. James Holler, Fundamentals of analytical chemistry, Saunders College Publishing, 6th Edition. [2] Daniel Harris, Quantitative chemical analysis. W. H. Freeman and Company, New York, 8th Edition.		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) and Program/Student Learning Outcomes (PLO) is shown in the following table:

	ILOs							
CLOs	1	2	3	4	5	6	7	8
1	L	M			M			
2				L		L		
3							L	L

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to analytical chemistry Basic tools of analytical chemistry	1, 3	- Lecture - Class discussion	Quiz	
2,3,4	Statistics in analytical chemistry: Errors in chemical analysis, Statistical treatment of errors, Use of statistics in data evaluation	1, 2	- Lecture - Class discussion	Homework	
5,6	Acid-base equilibria, pH, buffer Acid-base titration	1, 2	- Lecture - Class discussion	Homework	
7,8	Electrochemistry & Redox titration Midterm exam	1, 2	- Lecture - Class discussion	Homework Written exam	
9,10,11	Spectroscopic methods of analysis: Principles of spectrometric methods Instruments for optical spectroscopy Application of spectroscopic methods	1, 2	- Lecture - Class discussion	Homework	
12,13	Chromatographic methods: Introduction to chromatography Thin layer chromatography Liquid chromatography	1, 2	- Lecture - Class discussion	Homework	
14	Mass spectrometry	1, 2	- Lecture - Class discussion	Homework	
15	Biosensors and modern analytical methods	1, 2	- Lecture - Class discussion	Quiz	
16	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Homework, Quiz (30%)	Homework 1,2,3, 4 50%Pass	Homework 1,2,3, 4 50%Pass	Quiz 50 %Pass
Midterm exam (30%)	Q1, Q2 50%Pass	Q3, Q4 50%Pass	Part 1 50 %Pass
Final exam (40%) • Part 1: Theory (30%) • Part 2: Practice (0%)	Q1, Q2 50 % Pass	Q3, Q4 50 % Pass	Part 1 50 %Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical contents (70%)			
Abstract clearly identifies purpose and summarizes principal contents	10		

Introduction demonstrates thorough knowledge of relevant background and prior work	10		
Analysis and discussion demonstrate good subject mastery	40		
Summary and conclusions appropriate and complete	10		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (10%)			
Correct spelling, grammar	5		
Clear and easy to read	5		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.

Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.

	credibility/ authority on the topic.			
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

6. Date revised: 10 June 2025

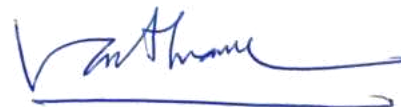
7. Course coordinator/Lecturer

- Name: Dr. Nguyen Thao Trang
- Shool/Department: Biotechnology
- Email: nttrang@hcmiu.edu.vn

Ho Chi Minh City, 10/06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY

(Signature)



Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology

COURSE SYLLABUS

Course Name: PRACTICE IN ANALYTICAL CHEMISTRY

Course Code: BT316IU

1. General information

Course name	- (in English) <i>Practice in Analytical Chemistry</i> - (in Vietnamese) <i>Thực hành Hóa Phân Tích</i>
Course designation	<i>This course is designed to provide students with practical skills in different common techniques that are used in chemical analysis. Students will also learn how to use equipment, analysis machines, analyze data and interpret results.</i>
Course type	☐ General knowledge ☒ Fundamental Specialized ☐ knowledge ☐ Internship/Project/Thesis ☐ Others:.....
Semester(s) in which the course is taught	Semester 3
Person responsible for the course	PhD. Vo Thi Minh Thu MAppSc. Bui Xuan Anh Dao
Language	English
Relation to curriculum	☒ Compulsory
Teaching methods	Laboratory session
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 60 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 35 hours of laboratory session Private study including examination preparation, specified in hours ¹ : 25 hours
Credit points	1 credit (Theory: 0 + Practice: 1) 2 ECTS (optional)

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Number of periods	Theory: 12 Practice: 18		
Required and recommended prerequisites for joining the course	- Corequisites: BT315IU - Analytical Chemistry - Previous course: CH011IU- Chemistry for Engineers		
Course objectives	The students should be familiar with classical techniques in analytical chemistry. In addition, the students should gain competence in data analysis and preparation of basic laboratory reports and knowledge of laboratory safety and good laboratory practices.		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1: Be able to understand the principles of qualitative and quantitative methods in analytical chemistry. CLO2: Be able to recognize appropriate techniques, equipment and chemicals in each analytical method.	
	Skill	CLO3: Be able to conduct appropriate techniques in analytical chemistry. CLO4: Be able to analyze and interpret data, recognize errors and use critical judgment to draw conclusions. CLO5: Be able to work effectively in a team.	
	Attitude	CLO6: Appreciate safety knowledge in working in chemistry laboratory.	
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session and laboratory (30 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Orientation	2	I
	Calibration of Volumetric Glassware	3	I, T, U
	Acid-Base Titration	5	I, T, U
	Redox Titration	5	I, T, U
	Spectrophotometric Analysis	5	I, T, U
	Liquid-Liquid Extraction	5	I, T, U
	Thin Layer Chromatography	5	I, T, U
	Examination forms	Quiz/PreLab; Written reports; Written exam (include multiple choice, short-answer questions and laboratory session);	

• Class participation (5%) • Quiz/ Prelab (5%) • Reports (60%)	Prelab Report 80% Pass	Prelab Report 80% Pass	Prelab Report 80% Pass	Prelab Report 80% Pass	Prelab Report 80% Pass	Prelab Report 80% Pass
Final exam 30% • Theory part (10%) • Practice part (20%)	Part 1 70% Pass	Part 1 70% Pass	Part 2 70% Pass	Part 2 70% Pass		Part 2 70% Pass

Note: % Pass: Target that % of students have scores greater than 50 out of 100.

5. Rubric

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical contents (70%)			
Abstract clearly identifies purpose and summarizes principal contents	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	10		
Analysis and discussion demonstrate good subject mastery	40		
Summary and conclusions appropriate and complete	10		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (10%)			
Correct spelling, grammar	5		
Clear and easy to read	5		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
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3	Demonstrates partial understanding of the problem. Most task requirements are included.
2	Demonstrates little understanding of the problem. Many task requirements are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone 4	Milestone 3 2		Benchmark 1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

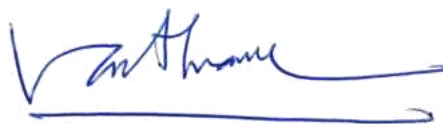
6. Date revised: 10/06/2025

7. Course coordinator/Lecturer

- Name: PhD. Vo Thi Minh Thu & MAppSc. Bui Xuan Anh Dao
- School/Department: Biotechnology
- Email: vtmthu@hcmiu.edu.vn & bxadao@hcmiu.edu.vn

Ho Chi Minh City, 10/06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Nguyễn Văn Thuận



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
Department of Mathematics

COURSE SYLLABUS

Course Name: Applied Statistics

Course Code: MA040IU

1. General information

Course designation	This course is designed for students pursuing a degree in chemical/environmental engineering and provides knowledge on statistical data, plotting data, descriptive statistics, probability and distribution, hypothesis test, T-test, analysis of variance (ANOVA), time series analysis and forecasting.																																																
Semester(s) in which the course is taught	2																																																
Person responsible for the course	Dr. Tran Thanh Tu, ttu@hcmiu.edu.vn																																																
Language	English																																																
Relation to curriculum	☐ General ☒ Fundamental ☐ Specialization ☐ Project/Internship/Thesis				☒ Compulsory ☐ Elective																																												
Teaching methods	Lecture, lesson																																																
Workload	<table><tr><td></td><td></td><td>Lecture</td><td>Lab</td><td>Project</td><td>Internshi</td><td>Thesis</td></tr><tr><td><i>Credit</i></td><td>2</td><td>2</td><td></td><td></td><td></td><td></td></tr><tr><td><i>ECTS</i></td><td>3.09</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Contact hours</td><td>25</td><td>25</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>Self-Study hou</td><td>60</td><td>60</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>Total workload</td><td>85</td><td>85</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table>									Lecture	Lab	Project	Internshi	Thesis	<i>Credit</i>	2	2					<i>ECTS</i>	3.09						Contact hours	25	25	0	0	0	0	Self-Study hou	60	60	0	0	0	0	Total workload	85	85	0	0	0	0
		Lecture	Lab	Project	Internshi	Thesis																																											
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Total workload	85	85	0	0	0	0																																											
Credits/ECTS	2 credits/ 3.09 ECTS																																																
Requirements for taking the course	☐ None ☐ Prerequisite course ☒ Parallel course: MA040IU Applied Statistics																																																
Course objectives	Students will be provided with the knowledge about statistical data, plotting data, descriptive statistics, probability and distribution, hypothesis test, T-test, analysis of variance (ANOVA), time series analysis and forecasting.																																																

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level¹	Course learning outcome (CLO)
	Knowledge	CLO1. Interpret the principles of data and statistics, plotting and smoothing data, descriptive statistics; discrete probability distributions, continuous probability distributions, sampling and sampling distributions in chemical/environmental statistical analyses. <i>[2-Understanding]</i> CLO2. Apply hypothesis testing and decision making, paired t-Test and independent t-Test, Analysis of Variance (ANOVA) as well as time series analysis and forecasting in chemical/environmental statistical analyses. <i>[3-Applying]</i>
	Skill	CLO3. Proceed exercises related to data plotting and smoothing, descriptive statistics, probability distributions in chemical/environmental statistical analyses. <i>[2-Set]</i> CLO4. Show the difference of hypothesis tests, the importance of ANOVA, time series analysis and forecasting in chemical/environmental statistical analyses. <i>[2-Set]</i>
	Attitude	CLO5. Follow the ethical guidelines in chemical/environmental statistical practices. <i>[3-Valuing]</i>

¹Level of competence according to Bloom's Taxonomy:

Level 1
 Level 2
 Level 3
 Level 4
 Level 5
 Level 6
 Level 7
Knowledge
 Remembering
 Understanding
 Applying
 Analyzing
 Evaluating
 Creating
 x
Skills
 Perception
 Set
 Guided Response
 Mechanism
 Complex Overt Response
 Adaptation
 Origination
Attitudes
 Receiving Phenomena
 Responding to Phenomena
 Valuing
 Organization
 Internalizing values
 x
 x

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (2.5 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)																																						
	<table><thead><tr><th>No.</th><th>Topic</th><th>Weight</th><th>Level</th></tr></thead><tbody><tr><td>1.</td><td>Introduction to Data and Statistics</td><td>1</td><td>T,U</td></tr><tr><td>2.</td><td>Plotting and Smoothing data</td><td>1</td><td>T,U</td></tr><tr><td>3.</td><td>Descriptive statistics</td><td>1</td><td>T,U</td></tr><tr><td>4.</td><td>Probability and Distribution</td><td>1</td><td>I,T</td></tr><tr><td>5.</td><td>Hypothesis tests</td><td>1</td><td>I,T</td></tr><tr><td>6.</td><td>t-Tests</td><td>1</td><td>I,T</td></tr><tr><td>7.</td><td>Analysis of Variance (ANOVA)</td><td>2</td><td>I,T</td></tr><tr><td>8.</td><td>Time series analysis and forecasting</td><td>2</td><td>I,T</td></tr></tbody></table>	No.	Topic	Weight	Level	1.	Introduction to Data and Statistics	1	T,U	2.	Plotting and Smoothing data	1	T,U	3.	Descriptive statistics	1	T,U	4.	Probability and Distribution	1	I,T	5.	Hypothesis tests	1	I,T	6.	t-Tests	1	I,T	7.	Analysis of Variance (ANOVA)	2	I,T	8.	Time series analysis and forecasting	2	I,T		
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8.	Time series analysis and forecasting	2	I,T																																				
Examination forms	☒ Multiple-choice questions ☐ Report ☐ Presentation ☒ Assignments	☐ Oral examination ☒ Written examination ☐ Others, please specify																																					
Other requirements	Attendance: A minimum attendance of 80 percent is compulsory for the theory session and 100 percent is compulsory for the labwork session. Students will be assessed based on their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																																						
Reading list	[1] Paul Mac Berthouex, Linfield C. Brown, <i>Statistics for Environmental Engineers, 2nd Edition</i> . Lewis Publishers, 2002. [2] Nathabandu T. Kottegoda and Renzo Rosso, <i>Applied Statistics for Civil and Environmental Engineers, 2nd Edition</i> . Blackwell publishing, 2008. [3] Yuri A.W.Shardt, <i>Statistics for Chemical and Process Engineers: A Modern Approach</i> , Springer, 2015. [4] David R. Anderson, Dennis J. Sweeney, Thomas A. Williams, Jeffrey D. Camm, James J. Cochran, <i>Statistics for Business & Economics, 13th Edition</i> . Cengage Learning, USA, 2017.																																						

2. Learning Outcomes Matrix

The relationship between Course Learning Outcomes (CLO) (1-5) and Intended Learning Outcomes (ILO) is shown in the following table:

CLOs	ILOs							
	1	2	3	4	5	6	7	8
1	M	M						
2			M					
3		H						
4			M					
5					L			

* L (Low); M (Medium); H (High)

3. Planned learning activities and teaching methods

No.	Week	Topic	CLO	Assessments	Learning activities	Resources
1.	1	Introduction to Data and Statistics	1,5	Quiz1	Lecture, Discussion, Quiz	[1] Chapter 1,2 [4] Chapter 1
2.	2	Plotting and Smoothing data	1,3	HW1	Lecture, Discussion, Homework	[1] Chapter 3,4 [3] Chapter 1 [4] Chapter 2
3.	3	Descriptive statistics	1,3		Lecture, Discussion	[1] Chapter 5,6 [3] Chapter 1 [4] Chapter 3
4.	4	Probability and Distribution	1,3	HW2	Lecture, Discussion, Homework	[2] Chapter 2,3,4 [4] Chapter 4,5,6
5.	5	Hypothesis tests	2,4	Quiz2	Lecture, Discussion, Quiz	[1] Chapter 16 [2] Chapter 5 [3] Chapter 2 [4] Chapter 9
6.	6	t-Tests	2,4	HW3	Lecture, Discussion, Homework	[1] Chapter 17,18 [4] Chapter 9
7.	7	Analysis of Variance (ANOVA) (part 1)	2,4		Lecture, Discussion	[1] Chapter 24 [2] Chapter 6 [4] Chapter 13
8.	8	Analysis of Variance (ANOVA) (part 2) Midterm exam.	2,4	HW3 A1	Lecture, Discussion, Homework	[1] Chapter 25 [4] Chapter 13
9.	9	Time series analysis and forecasting (part 1)	2,4		Lecture, Discussion	[1] Chapter 53 [3] Chapter 5 [4] Chapter 17
10.	10	Time series analysis and forecasting (part 2)	2,4	HW4	Lecture, Discussion, Homework	[1] Chapter 53 [3] Chapter 5 [4] Chapter 17
		No class				
		Reserved week				
		Final exam.		A2		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
In-class Quiz and homework (HW) (30%)	HW1 Quiz1 60%Pass (R5.1)	HW3 Quiz2 60%Pass (R5.1)	HW2 60%Pass (R5.1)	HW4 60%Pass (R5.1)	Quiz1 60%Pass (R5.1)
Midterm exam (A1) (30%)	A1. Part I 60%Pass (R5.2)		A1. Part II 60%Pass (R5.2)		
Final exam (A2) (40%)		A2. Part I 60%Pass (R5.2)		A2. Part II 60%Pass (R5.2)	

Note: %Pass: Target that 60% of students having scores greater than 50 out of 100.

5. Rubrics

5.1 Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.2 Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence Selecting and using information to investigate a point of view or conclusion	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.

	Capstone	Milestone		Benchmark
	4	3	2	1
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 05, 2025

Ho Chi Minh City, 06/2025
HEAD OF DEPARTMENT OF MATHEMATICS

For administrative purposes

RECORD OF REVISIONS

No.	Session/Page	Content of revision	Date of revision	Revised by
1	General Information	Reduce the credit of course to 2 (theory only) due to the separating of Lab works to a new course	May 26th, 2023	Dr. Tran Thanh Tu
2	General Information	Add Parallel course: ENEE1020IU Applied Statistics Lab		
3	Assessment plan	Revise assessment plan according to the changes in CLOs.		
4	Rubrics	Add rubric for presentation assessment		
5	Course learning outcomes	Add detail of Bloom taxonomy	June 13th, 2023	Dr. Tran Thanh Tu
6	Learning Outcomes Matrix	Change Learning Outcomes Matrix		
7	Rubrics	Change rubrics		
8	All	Moved midterm exam. from week 9 to week 8	June 05th, 2025	Dr. Tran Thanh Tu



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department of Mathematics

COURSE SYLLABUS

Course Name: Applied Statistics Lab

Course Code: MA041IU

1. General information

Course designation	This course is designed for students pursuing a degree in chemical/environmental engineering and provides knowledge and skills in using Python/R software for plotting data, descriptive statistics, hypothesis test, T-test, analysis of variance (ANOVA), time series analysis and forecasting.																																																
Semester(s) in which the course is taught	2																																																
Person responsible for the course	Dr. Tran Thanh Tu, ttu@hcmiu.edu.vn																																																
Language	English																																																
Relation to curriculum	☐ General ☒ Fundamental ☐ Specialization ☐ Project/Internship/Thesis				☒ Compulsory ☐ Elective																																												
Teaching methods	Lecture, lesson, lab works																																																
Workload	<table><tr><td></td><td></td><td>Lecture</td><td>Lab</td><td>Project</td><td>Internshi</td><td>Thesis</td></tr><tr><td><i>Credit</i></td><td>1</td><td>0</td><td>1</td><td></td><td></td><td></td></tr><tr><td><i>ECTS</i></td><td>2.00</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Contact hours</td><td>25</td><td>0</td><td>25</td><td>0</td><td>0</td><td>0</td></tr><tr><td>Self-Study hou</td><td>30</td><td>0</td><td>30</td><td>0</td><td>0</td><td>0</td></tr><tr><td>Total workload</td><td>55</td><td>0</td><td>55</td><td>0</td><td>0</td><td>0</td></tr></table>									Lecture	Lab	Project	Internshi	Thesis	<i>Credit</i>	1	0	1				<i>ECTS</i>	2.00						Contact hours	25	0	25	0	0	0	Self-Study hou	30	0	30	0	0	0	Total workload	55	0	55	0	0	0
		Lecture	Lab	Project	Internshi	Thesis																																											
<i>Credit</i>	1	0	1																																														
<i>ECTS</i>	2.00																																																
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Self-Study hou	30	0	30	0	0	0																																											
Total workload	55	0	55	0	0	0																																											
Credits/ECTS	1 credits/ 2.00 ECTS																																																
Required and recommended prerequisites for joining the course	☐ None ☐ Prerequisite course ☒ Parallel course: MA040IU - Applied Statistics																																																
Course objectives	Students will be provided with the knowledge and skills about using Python/R software to analyze chemical/environmental statistical data, plotting data, test																																																

	hypothesis, conduct analysis of variance (ANOVA), time series analysis and forecasting.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level ¹	Course learning outcome (CLO)
	Knowledge	CLO1. Explain the application of Python/R software in plotting, smoothing, analyzing chemical/environmental data. [2-Understanding] CLO2. Use Python/R software in chemical/environmental hypothesis tests and time series data analysis. [3-Applying]
	Skill	CLO3. Display codes in Python/R to plot, smooth data and show descriptive statistics of chemical/environmental data. [2-Set] CLO4. Proceed programming in Python/R for chemical/environmental hypothesis tests and time series data analysis. [2-Set]
	Attitude	CLO5. Follow the ethical integrity in Python/R programming. [3-Valuing]
Content	The description of the contents should clearly indicate the weighting of the content and the level.	

¹Level of competence according to Bloom's Taxonomy:

Level 1
Level 2
Level 3
Level 4
Level 5
Level 6
Level 7
Knowledge
Remembering
Understanding
Applying
Analyzing
Evaluating
Creating
x
Skills
Perception
Set
Guided Response
Mechanism
Complex Overt Response
Adaptation
Origination
Attitudes
Receiving Phenomena
Responding to Phenomena
Valuing
Organization
Internalizing values
x
x

	Weight: lecture session (4.17 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	No.	Topic	Weight
			Level
	1.	Data with Python/R	1
	2.	Graphics with Python/R	1
	3.	Statistical analyses with Python/R (part 1)	1
	4.	Statistical analyses with Python/R (part 2)	1
	5.	Programming with Python/R in practice (Hypothesis tests)	1
	6.	Programming with Python/R in practice (Regression models)	1
Examination forms	☒ Multiple-choice questions ☐ Report ☐ Presentation ☒ Assignments		
	☐ Oral examination ☐ Written examination ☒ Others, please specify: Lab work (coding)		
Other requirements	Attendance: A minimum attendance of 80 percent is compulsory for the theory session and 100 percent is compulsory for the labwork session. Students will be assessed based on their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	[1] Yosef Cohen and Jeremiah Y. Cohen, <i>Statistics and data with R - An applied approach through examples</i>. John Wiley & Sons, 2008. [2] C. Reimann, P. Filzmoser, R. G. Garrett, R. Dutter, <i>Statistical Data Analysis Explained: Applied Environmental Statistics with R</i>. John Wiley & Sons, 2008. [3] Thomas Haslwanter, <i>An Introduction to Statistics with Python with Applications in the Life Sciences</i>, Springer, 2016. Software: [1] The R Foundation for Statistical Computing (2019), <i>R 3.5.3</i>. (https://cran.r-project.org/) [2] https://www.python.org/		

2. Learning Outcomes Matrix

The relationship between Course Learning Outcomes (CLO) (1-5) and Intended Learning Outcomes (ILO) is shown in the following table:

CLOs	ILOs							
	1	2	3	4	5	6	7	8
1	M							
2		M						
3		H						
4			M					
5					L			

* L (Low); M (Medium); H (High)

3. Planned learning activities and teaching methods

No.	Week	Topic	CLO	Assessments	Learning activities	Resources
1.	9	Data with Python/R	1,3		Discussion, Coding	[1] Chapter 1,2 [2] Chapter 2 [3] Chapter 3
2.	10	Graphics with Python/R	1,3	Quiz1	Discussion, Coding, Quiz	[1] Chapter 3 [2] Chapter 3 [3] Chapter 4
3.	11	Statistical analyses with Python/R (part 1)	1,3	CE1	Discussion, Coding, Quiz	[1] Chapter 4,5,6 [2] Chapter 4 [3] Chapter 6
4.	12	Statistical analyses with Python/R (part 2)	2,4	Quiz2	Discussion, Coding, Quiz	[1] Chapter 10 [2] Chapter 9 [3] Chapter 7
5.	13	Programming with Python/R in practice (Hypothesis tests)	2,4		Discussion, Coding	[1] Chapter 14,15 [2] Chapter 16 [3] Chapter 11
6.	14	Programming with Python/R in practice (Regression models)	2,4,5	CE2	Discussion, Coding	CE1,2
7.	15	Final exam		A		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
In-class Quiz (20%)	Quiz1 (R5.1) 60%Pass	Quiz2 (R5.1) 60%Pass	Quiz1 (R5.1) 60%Pass	Quiz2 (R5.1) 60%Pass	
Coding exercise (CE) (40%)	CE1 (R5.2) 60%Pass	CE2 (R5.2) 60%Pass	CE1 (R5.2) 60%Pass	CE2 (R5.2) 60%Pass	CE2 (R5.2) 60%Pass
Final exam (A) (40%)		A (R5.3) 60%Pass			A (R5.3) 60%Pass

Note: %Pass: Target that 60% of students having scores greater than 50 out of 100.

5. Rubrics

5.1.Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.2. Rubric for lab work assessment

Criteria	% contribute	Level					
		Excellent	Very good	Good	Fair	Average	Weak
		90 ≤ ≤100	80 ≤ <90	70 ≤ <80	60 ≤ <70	50 ≤ <60	<50
1. Attendance	10	Participate (100)					Be late ≥15 min
2. Preparation for the lab	5	Prepare well, answer all questions correctly					Not prepare well, could not answer correctly 50% questions
3. Follow the guide, be active	5	Strictly follow, active					Not follow, inactive
4. Coding skills during the classes (arrange the data, correct commands, fix bugs, etc.)	70	Correct in procedures for data input, write command, fix bugs					Incorrect in procedures for data input, write command, fix bugs
5. Code submission (after the classes)	10	On time					No submission
Total	100						

5.3. Critical thinking value rubric for evaluating questions in exams

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence Selecting and using information to investigate a point of view or conclusion	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.

	Capstone	Milestone		Benchmark
	4	3	2	1
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 05, 2025

Ho Chi Minh City, 06/2025
Department of Mathematics

For administrative purposes

RECORD OF REVISIONS

No.	Session/Page	Content of revision	Date of revision	Revised by
1	All	Create new course (due to the separating of Lab works from course: ENEE1019IU Applied Statistics)	May 26th, 2023	Dr. Tran Thanh Tu
2	Course learning outcomes	Add detail of Bloom taxonomy	June 13th, 2023	Dr. Tran Thanh Tu
3	Learning Outcomes Matrix	Change Learning Outcomes Matrix		
4	Rubrics	Change rubrics		
5	All	Adjusted timeline accordingly	June 05th, 2025	Dr. Tran Thanh Tu



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Biochemistry

Course Code: **BT319IU**

1. General information

Course designation	<i>This subject will provide students the knowledges of four major molecules, enzymes, and the skills in the lab-works.</i>
Semester(s) in which the module is taught	1, 2
Person responsible for the module	Assoc. Prof. Le Hong Phu (Ph.D.)
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, assignment
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 h Private study including examination preparation, specified in hours ¹¹ : 90 h
Credit points	3 credits (theory) ~ (4.6 ECTS)
Required and recommended prerequisites for joining the module	Biology, Organic Chemistry

¹¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course objectives	The course provides students with the knowledges of hour major molecules, enzymes, and the skills in the labworks.
Course learning outcomes	1. To understand the structures and functions of 4 important biological molecules including carbohydrates, lipids, amino acids, and nucleotides. 2. To understand enzymes: the strategies and how they are regulated: -The importance of the citric acid cycle in the generation of cellular energy and precursors used for biosynthesis of cellular building block molecules -The oxidative phosphorylation and electron transport chain: how electrons are transferred to oxygen to generate energy in the form of ATP -Photosynthesis: products of light reactions, the function of the Calvin cycle, and how the light reactions and the Calvin cycle are coordinated. -Metabolisms of carbohydrates, lipids, and amino acids: Degration pathways: starting and ending products, reaction steps, enzymes, and cofactors used in the pathways 3. To apply knowledge of science in producing biomass, in producing enzymes, and fermentation for a specific product. 4. To design and conduct experiments, analyze, and compare results and give the best analytical solution. 5. To know and design a small project at the lab scale from sample preparations to do the reactions. 6. To know methods being used in many labs. 7. To know the basic experimental techniques in determining soluble sugars, soluble protein, metal ion (Ca^{2+}), and methods to determine enzyme activity. 8. To know how to design and identify the changes of the kinetics of an enzyme (Michealis Menten equation). 9. To improve skills in the lab for life-long learning and especially for thesis doing. Development of their critical thinking and problem-solving skills. 10. Ethical responsibility, many toxic chemicals, hot water, and microbes are used, students are warned to follow the lab rules and protect the environment. 11. Student have to prepare sample and reagent solutions by themselves, many steps as extraction, dilution, building standard curves, and running reaction need the skills of teamwork. 12. Students have to do at least 2 big assignments and a project. They will work and adapt to new members.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (4 hours) Teaching levels: I (Introduce); T (teach); U (Utilize)			
	Topic	Weight (theory)	Weight (lab)	Level
	Introduction to the course Enzymes: Basic Concepts and Kinetics Definition & properties; Kinetics; Catalytic mechanisms; Roles of cofactors; Effects of temperature & pH; Enzyme regulations: allosteric and covalent modification.	2	2	I, U
	Metabolism: Basic Concepts & Design Metabolism is composed of many coupled, interconnecting reactions; Oxidation of carbon fuels is an important source of cellular energy; Metabolic pathways contain many recurring motif.	1		T, U
	Carbohydrate-Glycolysis-Glyconeogenesis Monosaccharides are aldehydes or ketones with multiple hydroxyl groups; Complex carbohydrates are formed by linkage of monosaccharides; Glycolysis is an energy conversion pathway in many organisms; enzymes in glycolysis; Diverse fates of pyruvate: ethanol, lactate or acetyl coenzyme A; Glyconeogenesis is not a reversal of glycolysis; glyconeogenesis & glycolysis are reciprocally regulated; Lactate & alanine formed by contracting muscle are converted into glucose by liver (the Cori cycle).	2	2	T, U
	The Citric Acid Cycle (CAC) Review of oxidation-reduction reactions; Formation of acetyl CoA from pyruvate; 8 reactions of the CAC; Fates of carbon atom in CAC; The CAC is both catabolic & anabolic.	1		T, U

	Oxidative Phosphorylation Electron transport and its components; Electron transport inhibitors; Oxidative phosphorylation; Control of oxidative phosphorylation; Oxidative stress (reactive oxygen species, antioxidant enzyme system); ATP synthase.			
	Review	1		T, U
	Photosynthesis - The Light Reaction & The Calvin Cycle Photosynthesis occurs in chloroplasts in eukaryotes; Two photosystems generate a proton gradient and NADPH in oxygenic photosynthesis; The Calvin cycle synthesizes hexoses from CO ₂ and H ₂ O; Activity of the Calvin cycle depends on environmental conditions. Pentose phosphate pathway (PPP)-Glycogen metabolism Overview of PPP and glycogen pathway.	2		T, U
	Introduction to Lipid Classes and Fatty Acids Degradation Fatty acid activation, Steps of β -oxidation, Energy yielded from fatty acid oxidation; Certain fatty acids (unsaturated, odd chain, long chain) require additional steps for degradation; Fatty acids are synthesized and degraded by different pathways.	2	2	T, U
	Amino Acid Catabolism Desamination; The urea cycle; Control of the urea cycle; Amino acid degradation to form pyruvate, acetyl CoA, acetoacetyl CoA, α -ketoglutarate, succinyl CoA, fumarate and oxaloacetate; Coenzyme folic acid in amino acid metabolism; Tetrahydrofolate derivatives; Two reactions using vitamin B12; nucleotide degradation (purin-pyrimidine catabolism); Heme biotransformation.	2	2	T
	Seminar	1		T, U
	Review	1		T, U
Examination forms	Written test			

Study and examination requirements	Attendance: University regulations indicate that students may be refused to take final assessment if they attend less than 80% of scheduled classes or be absent in one lab section. Regular attendance is essential for successful performance and learning in this course, particular in the view of the interactive teaching and learning approach adopted. Assignments/Examination: Students must have more than 50/100 points overall to pass this module.
Reading list	Textbook: - Jeremy M. Berg, John L. Tymoczko and Lubert Strayer, Biochemistry, 7th edition, 2010. - David L. Nelson and Michael M. Cox, Lehninger, Principles of Biochemistry, 5th edition, 2008.

2. Learning Outcomes Matrix

The relationship between Course Learning Outcomes (1-12) and Program Learning Outcomes (1-8) is shown in the following table:

	PLO							
CLO	1	2	3	4	5	6	7	8
1				X				
2						X		
3						X		
4				X				
5				X				
6						X		
7						X		
8					X			
9				X				
10			X					
11			X					
12		X						

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities
1-2	Introduction to the course Enzymes: Basic Concepts and Kinetics Definition & properties; Kinetics; Catalytic mechanisms; Roles of cofactors; Effects of temperature & pH; Enzyme regulations: allosteric and covalent modification.	4, 6	Lab report, exercise, homework	Lecture, discussion
3	Metabolism: Basic Concepts & Design	4, 6	exercise homework	Lecture, discussion

Week	Topic	CLO	Assessments	Learning activities
	Metabolism is composed of many coupled, interconnecting reactions; Oxidation of carbon fuels is an important source of cellular energy; Metabolic pathways contain many recurring motif.			
4-5	Carbohydrate-Glycolysis-Glyconeogenesis Monosaccharides are aldehydes or ketones with multiple hydroxyl groups; Complex carbohydrates are formed by linkage of monosaccharides; Glycolysis is an energy conversion pathway in many organisms; enzymes in glycolysis; Diverse fates of pyruvate: ethanol, lactate or acetyl coenzyme A; Glyconeogenesis is not a reversal of glycolysis; glyconeogenesis & glycolysis are reciprocally regulated; Lactate & alanine formed by contracting muscle are converted into glucose by liver (the Cori cycle).	4, 6	Lab report Exercise, homework	Lecture, discussion
6-7	The Citric Acid Cycle (CAC) Review of oxidation-reduction reactions; Formation of acetyl CoA from pyruvate; 8 reactions of the CAC; Fates of carbon atom in CAC; The CAC is both catabolic & anabolic.	4, 6	Lab report, lecture, homework	Lecture, discussion
8	Oxidative Phosphorylation Electron transport and its components; Electron transport inhibitors; Oxidative phosphorylation; Control of oxidative phosphorylation; Oxidative stress (reactive oxygen species, antioxidant enzyme system); ATP synthase.	4, 6	Exercise, homework	Lecture, discussion
9	Midterm			
10	Photosynthesis - The Light Reaction & The Calvin Cycle Photosynthesis occurs in chloroplasts in eukaryotes; Two photosystems generate a proton gradient and NADPH in oxygenic photosynthesis; The Calvin cycle synthesizes hexoses from CO ₂ and H ₂ O; Activity of the Calvin cycle depends on environmental conditions.	4, 6	Exercise, homework	Lecture, discussion
11	Pentose phosphate pathway (PPP)-Glycogen metabolism Overview of PPP and glycogen pathway.	4, 6	Lab report, Exercise homework	Lecture, discussion
12-13	Introduction to Lipid Classes and Fatty Acids Degradation Fatty acid activation, Steps of β -oxidation, Energy yielded from fatty acid oxidation; Certain fatty acids (unsaturated, odd chain, long chain) require additional steps for degradation; Fatty acids are synthesized and degraded by different pathways.	4, 6	Lab report, exercise, homework	Lecture, discussion

Week	Topic	CLO	Assessments	Learning activities
14-15	Amino Acid Catabolism Desamination; The urea cycle; Control of the urea cycle; Amino acid degradation to form pyruvate, acetyl CoA, acetoacetyl CoA, α -ketoglutarate, succinyl CoA, fumarate and oxaloacetate; Coenzyme folic acid in amino acid metabolism; Tetrahydrofolate derivatives; Two reactions using vitamin B12; nucleotide degradation (purin-pyrimidine catabolism); Heme biotransformation.	4, 6	Lab report, exercise, homework	Lecture, discussion
16	Seminar	3, 5		Presentation, Q&A
17	Reserve week			
18	Final exam			

4. Assessment plan

Course assessment policy

Methods	Frequency	(%)
Assignment/Homework/Lab report	2/14/4	30
Mid-term exam	1	30
Final exam	1	40

Course assessment plan

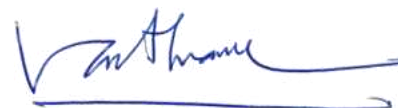
Assessment Type	CLO3	CLO4	CLO5	CLO6
Lab report/presentation (30%)	Report 75%Pass		Report 75%Pass	
Midterm exam (30%)		Midterm exam 60%Pass		Midterm exam 60%Pass
Final exam (40%)		Final exam 60%Pass		Final exam 60%Pass

Note: %Pass (Assignment, homework, exam): % students have scores greater than 60 out of 100.

%Pass (lab report): % students have scores greater than 75 out of 100.

5. Date revised: August, 2022

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof. NGUYEN VAN THUAN



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Biochemistry

Course Code: **BT320IU**

1. General information

Course name	- Practice in Biochemistry - Thực hành Sinh Hóa
Course designation	This Practice in Biochemistry course will provide students with lab skills, lab techniques, and training of analytic equipment regarding the analysis of major molecules and enzymes in biochemistry. In addition, students will also be trained in data analysis, data interpretation, together with lab safety and ethical responsibility in laboratories.
Course type	☐ General knowledge ☒ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:.....
Semester(s) in which the course is taught	4
Person responsible for the course	Le Nguyen Thien Phuc (M.Sc.)
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lab lecture, Lab works, Assignments, Presentation, Examination
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 60 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 30 Private study including examination preparation, specified in hours ¹ : 30

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Credit points	01 credits (Practice: 01) 2 ECTS (<i>optional</i>)	
Number of periods	Practice: 30	
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name): + BT311IU - Biology + BT312IU - Practice in Biology	
Course objectives	This course aims to provide students with the following objectives: + Being able to master master basic/advanced lab skills and techniques regarding the analysis of major molecules and enzymes in biochemistry, together with being able to master the use of analytic equipment in biochemistry. + Being able to understand the extraction principle, quantification, and activity assessment of major molecules and enzymes. + Being able to carry out data analysis and interpretation. + Being able to understand and well-execute lab safety procedures and teamwork in the laboratories	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: Understanding of knowledge regarding the analysis of major molecules and enzymes in biochemistry.
	Skill	CLO2: Mastering of basic lab skills and techniques in biochemistry lab, e.g. samples and reagents preparation, extraction, dilution, standard curves building, together with teamworking and lab safety procedures. CLO3: Mastering of advanced experimental techniques in determining soluble sugars, soluble protein, metal ion (Ca^{2+}), and methods to determine enzyme activity. CLO4: Developing of critical thinking and problem-solving skills in data analysis and data interpretation.
	Attitude	CLO5: Awareness of ethical responsibility in running scientific research.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Week 1: Orientation, chemical preparation, lab rules and safety	1	I, T, U
	Week 2: Protein quantification applying Hartree-Lowry assay	1	I, T, U
	Week 3: Exploring the enzymatic activity of bromelain	1	I, T, U
	Week 4: Soluble carbohydrate quantification applying Anthrone assay	1	I, T, U
	Week 5: Quantitative determination of calcium in powdered milk	1	I, T, U
	Week 6: Data analysis, data interpretation, and presentation	1	I, T, U
	Week 7: Final examination	1	U
Examination forms	Practical test		
Study and examination requirements	+ Attendance: University regulations indicate that students will be refused to take the final examination if they are absent in one lab section. Regular attendance is essential for successful performance and learning in this course, particular in the view of the interactive teaching and learning approach adopted. + Assignments/Examination: Students must have more than 50/100 points overall to pass this module.		
Reading list	Textbook: [1] Jeremy M. Berg, John L. Tymoczko and Lubert Strayer, Biochemistry, 7th edition, 2010. [2] David L. Nelson and Michael M. Cox, Lehninger, Principles of Biochemistry, 5th edition, 2008.		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) and Program/Student Learning Outcomes (PLO) is shown in the following table:

CLO	PLO							
	1	2	3	4	5	6	7	8
1	M							
2				M				
3							M	
4		H						
5					M			

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Orientation, chemical preparation, lab rules and safety	1, 5	+ Lecture + Labworks	+ Prelab assignment	[1], [2]
2	Protein quantification applying Hartree-Lowry assay	1 - 5	+ Lecture + Labworks	+ Prelab assignment + Lab report	[1], [2]
3	Exploring the enzymatic activity of bromelain	1 - 5	+ Lecture + Labworks	+ Prelab assignment + Lab report	[1], [2]
4	Soluble carbohydrate quantification applying Anthrone assay	1 - 5	+ Lecture + Labworks	+ Prelab assignment + Lab report	[1], [2]
5	Quantitative determination of calcium in powdered milk	1 - 5	+ Lecture + Labworks	+ Prelab assignment + Lab report	[1], [2]
6	Data analysis, data interpretation, and presentation	1 - 5	+ Lecture + Presentation	+ Presentation	[1], [2]
7	Final examination	2 - 4	+ Practical exam	+ Practical exam	

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Prelab assignment (5%)		60 %Pass	60 %Pass	60 %Pass	
Group report (35%)		60 %Pass	60 %Pass		
Individual report (15%)	60 %Pass				60 %Pass
Presentation (15%)	60 %Pass	60 %Pass	60 %Pass	60 %Pass	
Final exam (30%)		60 %Pass	60 %Pass	60 %Pass	

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical contents (70%)			
Abstract clearly identifies purpose and summarizes principal contents	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	10		
Analysis and discussion demonstrate good subject mastery	40		

Summary and conclusions appropriate and complete	10		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (10%)			
Correct spelling, grammar	5		
Clear and easy to read	5		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some

				contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.

Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

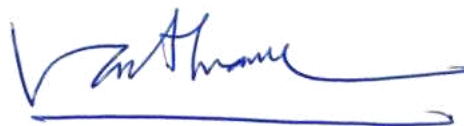
6. Date revised: June 10, 2025

7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: lntphuc@hcmiu.edu.vn

Ho Chi Minh City, 10/06/2025

**HEAD/DEAN OF DEPARTMENT/SCHOOL
(Signature)**



Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Microbiology

Course Code: BT321IU

1. General information

Course name	▪ Microbiology ▪ Vi sinh
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☐ <i>specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:.....</i>
Course designation	This microbiology course is designed for the biotechnology/foodtechnology/biochemistry major interested in learning about the microbial world. In this course, students will study the fundamental structural and metabolic characteristics of microorganisms, the interactions between them and their environments; and basic microbial culture techniques. The course also offers introductory information on the applications of microorganisms in a number of different fields.
Semester(s) in which the course is taught	I, II
Person responsible for the course	Assoc. Prof. Tran Thi My Hanh E-mail: ttmhanh@hcmiu.edu.vn
Language	English
Relation to curriculum	Compulsory

Teaching methods	Lecture, paper discussion, quiz, assignment, and presentation
Workload (incl. Number of periods	<i>(Estimated) Total workload: 127.5 h</i> <i>Contact hours (lecture, paper discussion, and presentation): 37.5 h Private study including examination preparation, specified in hours¹²: 90 h</i> 45

¹² When calculating contact time, each contact hour is counted as a full hour because the organization of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Credit points	3 credits (theory) ~ (4.6 ECTS)									
Required and recommended prerequisites for joining the course	Biology									
Course objectives	On completion of this course, students will be able to: 1) Describe microbial cell structures and their physiological functions and associate this knowledge with drug/vaccine designs 2) Differentiate different types of media used for microbial cultures and major processes of microbial metabolisms 3) Explain the principles of the common methods used for microbial growth measurements and evaluate the advantage(s) and disadvantage (s) of each method 4) Illustrate gene structures, genetic flows and regulations in microorganisms; Describe possible approaches for microbial genetic manipulations 5) Differentiate viruses, algae, fungi and protozoa from each other and explain the methods used for their classification, then, describe their potential/actual applications based on their major characteristics including cell structures, distribution, modes of nutrition, ect. 6) Analyze the roles of microorganisms in ecosystems and describe their applications in bioremediation (wastewater treatment, bioleaching ores) 7) Categorize microbial flora in humans into different groups and propose how to control or maintain a normal human microbial flora 8) Assess the applications of microorganisms in different fields including agriculture, food industry, and environmental management and design procedure for producing a microbial product of interest									
Course learning outcomes	Upon the successful completion of this course students will be able to: <table><tr><td>Competency level</td><td>Course learning outcome (CLO)</td></tr><tr><td>Knowledge</td><td>CLO1. Differentiating different groups of microorganisms from each other CLO2. Acquiring and mastering microbial culture techniques and be aware of the applications of microbes in different fields</td></tr><tr><td>Skill</td><td>CLO3. Mastering communication, and teamwork and problem-solving skills</td></tr><tr><td>Attitude</td><td>CLO4. Applying safety and ethical practices</td></tr></table>		Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Differentiating different groups of microorganisms from each other CLO2. Acquiring and mastering microbial culture techniques and be aware of the applications of microbes in different fields	Skill	CLO3. Mastering communication, and teamwork and problem-solving skills	Attitude	CLO4. Applying safety and ethical practices
Competency level	Course learning outcome (CLO)									
Knowledge	CLO1. Differentiating different groups of microorganisms from each other CLO2. Acquiring and mastering microbial culture techniques and be aware of the applications of microbes in different fields									
Skill	CLO3. Mastering communication, and teamwork and problem-solving skills									
Attitude	CLO4. Applying safety and ethical practices									

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Course outline, and overview of microbial life</td><td>1.5</td><td>I, T</td></tr><tr><td>Cell structure and function in Bacteria and Archaea</td><td>2.0</td><td>I, T</td></tr><tr><td>Nutrition, laboratory culture, and metabolism of microorganisms</td><td>1.5</td><td>I, T</td></tr><tr><td>Microbial growth Revision for midterm exam</td><td>2.0</td><td>T, U</td></tr><tr><td>Midterm exam</td><td></td><td></td></tr><tr><td>Bacterial genetics</td><td>1.5</td><td></td></tr><tr><td>Eukaryotic microorganism and viruses</td><td>3</td><td>T, U</td></tr><tr><td>Microbial Ecology</td><td>1</td><td>T, U</td></tr><tr><td>Human microbial flora</td><td>0.5</td><td>T, U</td></tr><tr><td>Industrial Microbiology Revision for final exam</td><td>2</td><td>T, U</td></tr><tr><td>Final Exam</td><td></td><td></td></tr></table>	Topic	Weight	Level	Course outline, and overview of microbial life	1.5	I, T	Cell structure and function in Bacteria and Archaea	2.0	I, T	Nutrition, laboratory culture, and metabolism of microorganisms	1.5	I, T	Microbial growth Revision for midterm exam	2.0	T, U	Midterm exam			Bacterial genetics	1.5		Eukaryotic microorganism and viruses	3	T, U	Microbial Ecology	1	T, U	Human microbial flora	0.5	T, U	Industrial Microbiology Revision for final exam	2	T, U	Final Exam		
Topic	Weight	Level																																			
Course outline, and overview of microbial life	1.5	I, T																																			
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Microbial Ecology	1	T, U																																			
Human microbial flora	0.5	T, U																																			
Industrial Microbiology Revision for final exam	2	T, U																																			
Final Exam																																					
Examination forms	Written exam, presentation, and report																																				
Study and examination requirements	Attendance: A minimum attendance of 80 percent of the class sessions is compulsory. Student participation will be assessed on a regular basis. Questions and comments are strongly encouraged. Assignments/Examination: Students must obtain more at least 50/100 points in total to pass this course.																																				
Reading list	Textbooks 1. Madigan, M.T., Martinko, J.M., Dunlap, P.V., Clark, D.P. (2005). Brock Biology of Microorganisms, 11th Ed, Benjamin Cummings. Article References 2. To be provided (Note: Articles will be updated every year) Other 3. YouTube https://www.youtube.com/channel/UCoZgEu3kaRDan1Mvf5I6EcQ channel:																																				

2. Learning Outcomes Matrix

The relationship between Course Learning Outcomes (CLO 1-4) and the Intended Learning Outcomes (ILOs) (1-8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table.

The intended learning outcomes (ILOs) of the Biotechnology Program and three levels of contribution are defined using Bloom's taxonomy (Low [L]: Remember and Understand; Medium [M]: Apply and Analyze; High [H]: Evaluate and Create).

	SLOs							
CLOs	1	2	3	4	5	6	7	8
1	M							
2			M					
3		M, H						
4					H			

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1-2	Course outline, and overview of microbial life	1	Quizzes	Lecture, Discussion, In-class Quiz	1,3
2-3	Cell structure and function in Bacteria and Archaea	1	Quizzes	Lecture, Discussion, In-class-Quiz	1,3
4-5	Nutrition, laboratory culture, and metabolism of microorganisms	1	Quizzes	Lecture, Discussion, In-class Quiz	1
6-7	Microbial growth	1	Quizzes	Lecture, Discussion, In-class Quiz	1,3
8	Midterm				
9	Bacterial genetics	1,2	Quizzes	Lecture, Discussion, In-class Quiz	1
10-11	Eukaryotic microorganism and viruses	1,2	Quizzes	Lecture, Discussion, In-class Quiz	1
12-13	Microbial Ecology	1,2	Quizzes	Lecture, Discussion, In-class Quiz	1
14	Human microbial flora	1,2	Quizzes	Lecture, Discussion, In-class Quiz	1

15	Industrial Microbiology	1,2	Quizzes	Lecture, Discussion, In-class Quiz	1,2
16	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Assignment (30%)			P/R 90%Pass	
Midterm exam (30%)	Q 70%Pass	Q 70%Pass		
Final exam (40%)		Q 70%Pass		Q 70%Pass

Note: %Pass: % of students having scores equal to or greater than 50% out of the total score(s)

Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Part 1 Technical content (70 %)	70		
Criterion 1: Clear statement of the concerned issue(s)	10		
Criterion 2: Providing relevant information to address the issue(s)	50		
Criterion 3: Clear justification of the chosen information	10		
Part 2 Presentation (20 %)	20		
Criterion 1: Flow of the contents	10		
Criterion 1: Writing skills: precise, correct use of technical terms	10		
Part 3 References used (10%)	10		
Criterion 1: The information provided should be reliable	05		
Criterion 2: Citation of references	05		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	demonstrating a complete understanding of the problem. All requirements are well addressed
4	demonstrating a considerable understanding of the problem. The majority of the requirements are addressed
3	demonstrating a partial understanding of the problem. Some requirements are properly addressed
2	demonstrating a little understanding of the problem. Only a part of the requirements is addressed
1	demonstrating a poor understanding of the problem.
0	no response or providing irrelevant statement

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1

Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

Date revised:

Ho Chi Minh City, 16/06/2025

Dean of School of Biotechnology

(Signature)

Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Microbiology

Course Code: BT322IU

1. General information

Course name	- <i>Practice in Microbiology.</i> - <i>Thực hành Vi sinh vật học</i>
Course designation	<i>This course is designed for undergraduate students to acquire basic knowledge and techniques in microbiology research. Students will be introduced and practice with basic techniques and procedure such as media preparation; aseptic and subculturing technique; setup conditions for microbial growth; Gram staining and analysis using microscope, as well as bacterial enumeration. In addition, students will be also engaged partially with process of characterizing an unknown microbial species.</i>
Course type	☐ General knowledge ☒ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	4
Person responsible for the course	Assoc. Prof. Tran Thi My Hanh Dr. Tran Thi Hai Yen MBT. Hoang Thi Lan Xuan
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lectures, discussion, demonstration, labworks

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 55 h Contact hours (Lecture, laboratory session, discussion): 25 h Private study including examination preparation, specified in hours ¹ : 30 h
Credit points	1 credit (Practice Lab) (~2 ETCS)
Number of periods	Practice: 30
Required and recommended prerequisites for joining the course	- Prerequisites: Biology (BT311IU), Practice in Biology (BT312IU) - Corequisites: Microbiology (BT321IU)
Course objectives	The course will: ● Provide learners fundamental knowledge in culturing, working and analyzing microorganisms ● Familiarize learners with media preparation; aseptic techniques, establishment of optimal culturing conditions, bacterial cell enumeration technique, Gram staining procedure, preparation of bacterial slides and general observation of bacterial cells and colonies, process of characterizing an unknown microbe

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Learn considerations in culturing a microorganism of interest and care of microbial culture. CLO2. Understand principles of basic techniques and procedures in the field of microbiology, such as medium preparation; aseptic and culture techniques, Gram staining, serial dilution, standard plate count, analyzing characters of microorganisms based on growth display on various medium, oxygen demand, temperature effects and biochemical tests.
	Skill	CLO3. Know how to prepare relevant culturing medium for microorganisms, sterilize medium and storing medium. CLO4. Perform aseptic technique and culture technique using liquid and solid media. CLO5. Perform Gram staining and wet mount slide preparation, observe and analyze morphology of cells under microscope. CLO6. Classify a microorganism into a group based on oxygen effect and temperature range for growth and how to care stock cultures. CLO7. Perform standard plate count method to enumerate viable cells in a particular bacterial culture. CLO8. Characterize unknown bacteria based on growth on blood agar, MacConkey agar and catalase test.
	Attitude	CLO9. Seriousness and care regarding safety issues when working with microorganisms - how to protect samples, protect worker and protect environment. CLO10. Set up experiment, analyze and interpret data.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (4 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Allocation of laboratory place; Introduction to the course; Medium preparation	1	I, T, U
	Aseptic technique; Culture technique; subculture	1	I, T, U
	Use of the microscope; wet mount preparation; smear preparation; Gram staining	1	I, T, U
	Effects of different factors on microbial growth; preparation and care of stock culture	1	I, T, U
	Bacterial population counts	1	I, T, U
	Bacterial identification process	1	I, T, U
Lab review and Examination	1	I, T, U	
Examination forms	Lab performance and reports; written and practical exam		
Study and examination requirements	<i>Attendance: A minimum attendance of 80% is compulsory for the class sessions. Students will be assessed on the basis of their participation. Questions and comments are strongly encouraged.</i> <i>Assignments/Examination: Students must have more than 50/100 points overall to pass this course</i>		
Reading list	<i>[1] Laboratory Manual for Microbiology Practical class, School of Biotechnology, International University [Internal Use]</i>		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) and Program/Student Learning Outcomes (PLO) is shown in the following table:

	PLOs							
CLOs	1	2	3	4	5	6	7	8
1			M		H			
2			M					
3				H				
4				H				
5				H				
6				H				
7				H				
8				H				
9					H			
10							M	

**Use Bloom's Taxonomy*

The program learning outcomes (PLOs) are detailed below:

- (1) An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)
- (2) An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)
- (3) An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)
- (4) An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)
- (5) An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)
- (6) An ability to apply modern techniques to produce biotechnological products. (Application)
- (7) An ability to analyze and interpret results in biotechnological process, product manufacturing. (Lifelong learning)
- (8) An ability to be well aware of professional development for a career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	- Allocation of laboratory place - Introduction to the course - LB preparation: broth, agar slant, agar plate	1,2,9, 10	Lecture, Discussion, Practice	Progress, Report, Exam	[1]
2	- Aseptic technique - Culture technique to broth and solid medium - Subculture	1,2,3, 4,9, 10	Lecture, Discussion, Practice	Progress, Report, Exam	[1]
3	- Use of the microscope - Wet mount preparation - Smear preparation - Gram staining	2,4,5, 9, 10	Lecture, Discussion, Practice	Progress, Report, Exam	[1]
4	- Effects of temperature and/or oxygen on microbial growth - Turbidity measurement - Preparation and care of stock culture	2,4,6, 9, 10	Lecture, Discussion, Practice	Progress, Report, Exam	[1]
5	- Bacterial population counts (standard plate count) - Preparation of unknown sample	2,4,7, 9, 10	Lecture, Discussion, Practice	Progress, Report, Exam	[1]
6	Introduction to Bacterial identification process: - Character analyses for growth on thioglycolate, MacConkey, Blood agar and LB agar - Gram stain - Cell shape - Catalase test	2,4,8, 9, 10	Lecture, Discussion, Practice	Progress, Report, Exam	[1]
7	Exam	1-10			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8	CLO9	CLO10
Progress (20%)	x	x	x	x	x	x	x	x	x	x
Lab report (50%)	x	x	x	x	x	x	x	x	x	x
Exam (30%)	x	x	x	x	x	x	x	x	x	x

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1. Grading checklist for Progress assessment

Item	Maximal Score (%)
<i>Fully attend</i>	30
<i>Be on-time</i>	20
<i>Produce satisfied performance</i>	50
Total	100*

** The total score will be converted into 20% (percentage of Progress for whole course score).*

5.2. Grading checklist for Lab report

Item	Maximal Score (%)
<i>Sufficient result description</i>	25
<i>Images with adequate annotation and calculation</i>	10
<i>Logic and clear result interpretation and discussion, recommendation for improvement</i>	25
<i>Correct answers for theoretical questions relating to labwork</i>	40
Total	100*

** The total score will be converted into 50% (percentage of Report for whole course score).*

5.3. Grading checklist for Exam

Item	Maximal Score (%)
<i>Writing (Give the correct answers for two questions)</i>	40
<i>Performance (satisfied performance for the assigned task)</i>	60
Total	100*

** The total score will be converted into 30% (percentage of Exam for whole course score).*

6. Date revised: June 11, 2025

7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: htlxuan@hcmiu.edu.vn

Ho Chi Minh City, 11/06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)

A handwritten signature in blue ink, appearing to read 'Van Thuan', with a long horizontal flourish extending to the right.

Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology

Department of Biotechnology

COURSE SYLLABUS

Course Name: Cell biology

Course Code: BT009IU

1. General information

Course name	- Cell Biology - Sinh học tế bào
Course designation	<i>Cell is a fundamental unit of life. So molecular cell biology is a foundation of life science. Regardless of the extreme diversity of the living forms on the Earth, this course will provide the firm definition of the living cell, cell classification, in which more focus into the eukaryote class. The course concentrates on describing two parts of a cell: the structure and the work of the cell. All organelles and macromolecules within the cell will be described, then, discusses about the role of each in cell growth, cell divide, cell transport, and cell signaling. For each activity of the cell, the mechanisms will be described to explain how the cell plays their work in the organism. Besides, the basic knowledge the course also provides information about the genetic mutation which is fundamental of the evolution and human genetic diseases as well as the cancer and the related molecular context.</i>
Course type	☐ General knowledge ☐ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	5, 6, 7
Person responsible for the course	Dr. Minh Thong LE Email: lmthong@hcmiu.edu.vn
Language	English
Relation to curriculum	Foundation

Teaching methods	Classroom activities: Lecturing, presentation, question – answer, discussion Self-learning: Reading, homework	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 135 Contact hours (please specify whether lecture, exercise, session, etc.): Lecture – 45 Private study including examination preparation, specified in hours ¹ : 90	
Credit points	3 credits (theory) 4.6 ECTS	
Number of periods	Theory: 45.	
Required and recommended prerequisites for joining the course	Biology Organic Chemistry General chemistry	
Course objectives	Upon complete this course the successful students will be able to: - Understand the foundation of life science through basic cell study. - Explain the mechanism of disease based on the knowledge of cell and develop idea for other applications using cell in biotechnology and medical science.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Have a solid understand of the basic principles of cell biology as a foundation of life. CLO2. Have a general concept of cell classification, cell components and molecular activities inside and outside of the cells.
	Skill	CLO3. Presenting a scientific issue, explain and answer the scientific questions relating to cell activities and subsequence outcomes such as diseases.
	Attitude	CLO4. Discerning the importance, and related issues in cell biology research.

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	1 – Introduction of cell biology	1	I
	2 - Techniques for studying cell and features of the cell	1	I, T
	3 - Cell classification and cell organelles	1	I, T
	4 - Energy, catalysis and Biosynthesis of the cell	1	
	5 - Protein structure and functions	1	I, T
	6 - Chromosome, DNA, DNA replication, repair and recombination	1	I, T
	7 - From DNA to protein: How cells read the genome	1	I, T
	8 - Control of gene expression	1	I, T
	9 - Membrane structure – and transport across cell membranes	1	I, T
	10 - Intracellular compartments and protein transport	1	I, T
	11 - Cell Signaling	1	I, T
	12 – Cell cytoskeleton	1	I, T
	13 - The Cell-Division Cycle	1	I, T
14 - Sexual Reproduction and the Power of Genetics	1	I, T	
15 - Cell Communities: tissues, Stem Cells, and Cancer			
Examination forms	Multiple choice, essay writing		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	Textbook(s) <i>Lodish, Harvey, Arnold Berk, Paul Matsudaira, Chris A. Kaiser, Monty Krieger, Matthew P. Scott, Lawrence Zipursky, and James Darnell. Molecular Cell Biology. Fifth edition. New York: W. H. Freeman, 2003.</i>		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Program/Student Learning Outcomes (SLO) (1-6) is shown in the following table:

	SLO							
CLO	1	2	3	4	5	6	7	8
1	H							
2		H						
3			M					
4								M

- 1. An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)*
- 2. An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)*
- 3. An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)*
- 4. An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)*
- 5. An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)*
- 6. An ability to apply modern techniques to produce biotechnological products. (Application)*
- 7. An ability to analyse and interpret results in biotechnological process, product manufacturing. (Life-long learning)*
- 8. An ability to be well aware of professional development for career. (Development)*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	1 – Introduction of cell biology	1,2		Lecture, Discussion,	[1], 1
2	2 - Techniques for studying cell and features of the cell	1,2,3	Presentation	Lecture, Discussion,	[1], 2
3	3 - Cell classification and cell organelles	1,2	Presentation Quiz1	Lecture, Discussion,	[1], 3
4	4 - Energy, catalysis and Biosynthesis of the cell	1,2	Presentation	Lecture, Discussion,	[1], 4
5	5 - Protein structure and functions	1,2	Presentation	Lecture, Discussion,	[1], 5
6	6 - Chromosome, DNA, DNA replication, repair and recombination	1,2,3	Presentation Quiz2	Lecture, Discussion,	[1], 6
7	7 - From DNA to protein: How cells read the genome	1,2	Presentation	Lecture, Discussion,	[1], 7
8	8 - Control of gene expression MIDTERM EXAMINATION	1,2,3	Presentation	Lecture, Discussion,	[1], 8
10	9 - Membrane structure – and transport across cell membranes	1,2,3,4	Presentation	Lecture, Discussion,	[1], 8

11	10 - Intracellular compartments and protein transport	1,2,3,4	Presentation Quiz3	Lecture, Discussion,	[1], 9
12	11 - Cell Signaling	1,2,3	Presentation	Lecture, Discussion,	[1], 10
13	12 – Cell cytoskeleton	1,2,3	Presentation	Lecture, Discussion,	[1], 11
14	13 - The Cell-Division Cycle	1,2,3	Presentation Quiz4	Lecture, Discussion,	[1], 12
15	14 - Sexual Reproduction and the Power of Genetics	1,2,3	Presentation	Lecture, Discussion,	[1], 13
16	15 - Cell Communities: tissues, Stem Cells, and Cancer	1,2,3,4	Presentation	Lecture, Discussion,	[1], 14
17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class quizzes/presentation (30%)	Qz1 70 % Pass		Presentation 70 % Pass	
Midterm & assay writing (30%)	60 % Pass	60 % Pass	60 % Pass	
Final & assay writing (40%)	60 % Pass	60 % Pass	60 % Pass	60 % Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

1. Grading checklist

Grading checklist for Written Reports			
Student (or group):		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal contents	10		
Introduction demonstrates knowledge of relevant backgrounds and the context of the present work	15		
Analysis and discussion demonstrate good understanding, explanation, and theory development	30		

Summary and conclusions appropriate and complete to the content	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Oral communication value rubric for evaluating presentation tasks:

Individual:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score
Presentation content	Content Organization: The presentation is delivered in logical order and has a clear structure including introduction and conclusion.	15	

	Information: The presentation contains accurate information and cited from appropriate external resources.	15	
	Language usage: Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	Visual aids: The presentation contains appropriate and effective visual aids which can grab the attention of audiences.	15	
Presentation delivery	Time management: Length of presentation is within the assigned time limits.	10	
	Presentation Skill: The speaker maintains good eye contact with audiences, and speaks confidently with good voice, fluid speech, and appropriate pronunciation.)	10	
	Question and Answer: The speaker is able to answer all questions from the audiences after the presentation.	20	
Score	Total Points	100	

***Critical thinking value rubric for evaluating questions in exams:**

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.

Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

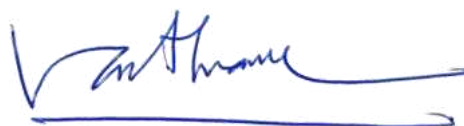
6. Date revised: July 11, 2025

7. Course coordinator/Lecturer

Department: Biotechnology

Email: lmthong@hcmiu.edu.vn

Dean of School of Biotechnology



Assoc. Prof. NGUYEN VAN THUAN



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Human Physiology

Course Code: BT210IU

1. General information

Course name	Human Physiology (Sinh lý học người)
Course designation	This course is designed to help further student's understanding of the physiology function of human, particularly from cells to body systems. The principal goal is to learn about the function & regulation of the human body and physiological integration of the organ systems to maintain homeostasis. Students examine the mechanisms of body function, organized around the central theme of homeostasis – how the body meets changing demands while maintaining the internal constancy necessary for all cells and organs to function. Course content will include neural & hormonal homeostatic control mechanisms, as well as study of the cell physiology, plasma membrane and membrane potential, circulatory, respiratory, urinary, immune, reproductive physiology, and endocrine organ systems. The lecture also provides to students the applications of human physiology on advanced research for regenerative biomedicine, cell therapy and assisted reproductive for human.
Course type	☐ General knowledge ☒ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	3,4,5
Person responsible for the course	Assoc. Prof. Nguyen Van Thuan Email: nvthuan@hcmiu.edu.vn
Language	English
Relation to curriculum	☒ Compulsory
Teaching methods	Lecture, Quiz, Homework.

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 h Private study including examination preparation, specified in hours: 90 h	
Credit points	3 credits (Theory) ~ 4.6 ECTS	
Number of periods	45 periods (50 min/period)	
Required and recommended prerequisites for joining the course	Introduction to Biotechnology	
Course objectives	The course provides students with basic understanding and advanced concepts of human physiology for applications in stem cell therapy, assisted reproductive technology, and regenerative biomedicine for human.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understanding functions and mechanisms of the cells. CLO2. Understanding of the fundamental physiological processes of homeostasis, nervous system, urinary system, respiratory system, circulatory system, reproductive system, and endocrine organ systems.
	Skill	CLO3. Protect body from environmental change, applications of assisted reproductive technology and cell therapy for human. Developed and understanding of the structure and function of the primary body systems indicated. CLO4. Have the ability to deeply understand and apply knowledge of human physiology, especially cell physiology and reproductive physiology, to applications in the fields of modern biotechnology and biomedicine
	Attitude	CLO5. have developed a curiosity and wonder of the complexity of the human body and the confidence to continue learning and questioning. Have demonstrated self-direction and initiative in their learning

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction of human physiology and homeostasis – Course outline	1	I, T
	Cell physiology: Principles of the cell theory - General cell structure - Organelles of cells – Embryo development – Applications of cell physiology on the field of biotechnology and biomedicine	3	I, T, U
	Telomeres and aging: Applications	2	I, T, U
	The plasma membrane and membrane potential	1	I, T, U
	The central nervous system and neural - hormonal communication	2	I, T, U
	The Peripheral Nervous System	1	I, T
	Cardiac physiology and the urinary system	2	I, T
	Principles of endocrinology	1	I, T, U
	The reproductive physiology	3	I, T, U
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	Textbook: [1] Human Physiology: From Cells to Systems (Lauralee Sherwood), 9th edition. Book Reference: [1] Animal Physiology: from Genes to Organisms (Lauralee Sherwood, Hillar Klandorf, and Paul H. Yancey); 2nd edition. Article References: [3] Lecture slides (receive from instructor) via Backboard		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-5) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L: Remember and understand; Medium/M: Apply and analyze, High/H: Evaluate and create) is shown in the following table*:

PLO								
CLO	1	2	3	4	5	6	7	8
1	L							
2		H						
3			M					
4				H				
5						H		

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to human physiology – Course outline	1-5	Lecture, Discussion, In Class-Quiz		1, 2, 3
2	Cell physiology: - Cell physiology - Embryology: the basic events during preimplantation development - The cell cycle and applications	1-5	Lecture, Discussion, In Class-Quiz		1, 2, 3
3	Telomeres and aging	1-3	Lecture, Discussion, In Class-Quiz		1, 2, 3
4	The plasma membrane and membrane potential	1-3	Lecture, Discussion,		1, 2, 3
5	Neural and hormonal communication	1-2	Lecture, Discussion,		1, 2, 3
6	The central nervous system	1-2	Lecture, Discussion,		1, 2, 3
7	The peripheral nervous system:		Lecture, Discussion,		1, 2, 3
8	- The eye: Vision Midterm examination	1-3	Lecture, Discussion,		1, 2, 3
9	Circulation system and the urinary system	1-2	Lecture, Discussion,		1, 2, 3
10	Principles of endocrinology: - The central endocrine glands - The peripheral endocrine glands	1-2	Lecture, Discussion, In Class-Quiz		1, 2, 3
11	The reproductive system: Male & female reproductive physiology, functions and organs	1-5	Lecture, Discussion, In Class-Quiz		1, 2, 3
12	The reproductive system: Spermatogenesis and oogenesis	1-5	Lecture, Discussion, In Class-Quiz		1, 2, 3
13	The reproductive system: Hypothalamic & pituitary control on testicular and ovarian function	1-5	Lecture, Discussion, In Class-Quiz		1, 2, 3
14	Assisted reproductive technology	1-5	Lecture, Discussion, In Class-Quiz		1, 2, 3

15	Summary				1, 2, 3
16-17	Final Examination				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
In-class Participation/ quizzes (10%)	Quiz/Part. 80%Pass	Quiz/ Part. 80%Pass	Quiz/ Part. 80%Pass	Quiz/ Part. 80%Pass	Quiz/ Part. 80%Pass
Homework exercises (10%)	Quiz/Part. 80%Pass		Quiz/Part. 80%Pass		
Midterm exam (30%)	60% Pass	• MQ: 60% • WQ:40%			• MQ: 60% WQ:40%
Final exam (50%)		• MQ: 60% • WQ:40%	• MQ: 60% • WQ:40%	• MQ: 60% • WQ:40%	• MQ: 60% • WQ:40%

- *Note: %Pass: Target that % of students having scores greater than 50 out of 100. Multiple choice questions (MQ), Writing questions and developing thinking (WQ)*
Writing questions and developing thinking (40%)

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates extensive knowledge of relevant background and prior work	20		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	10		
Develop new ideas on the basis of acquired knowledge of the subject	10		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description

5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: This rubric is also used to evaluate questions in an exam.

5.3. Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding of the subject.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown relative to the subject.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others'	Shows an emerging awareness of present assumptions (sometimes labels assertions as

	when presenting a position.		assumptions than one's own (or vice versa).	assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: 09 June 2025.

7. Course coordinator/Lecturer

- School/Department: Department of Biotechnology
- Email: nvthuan@hcmiu.edu.vn

Ho Chi Minh City June 9, 2025

DEAN OF SCHOOL

(Signature)

NGUYEN VAN THUAN



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of ...

COURSE SYLLABUS
Course Name: Molecular Biotechnology
Course Code: BT345IU

1. General information

Course name	- <i>Molecular Biotechnology</i> - <i>Công nghệ sinh học phân tử</i>
Course designation	This course introduces students to molecular biotechnology, a scientific discipline arises from the combination of recombinant DNA technology and biotechnology.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	Semester V
Person responsible for the course	Assoc. Prof. Nguyen Phuong Thao (PhD)
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lecture, seminar, presentation, quiz
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 hours Private study including examination preparation, specified in hours ¹ : 90

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Credit points	3 credits (Theory: 3 + Practice: 0)		
Number of periods	Theory: 45 Practice: 0		
Required and recommended prerequisites for joining the course	- Prerequisites: - Corequisites: - Previous course (Course code – Course name)		
Course objectives	Students will learn the key recombinant DNA techniques, which including polymerase chain reaction, DNA cloning and sequencing, the principles of expression of recombinant proteins in prokaryotic and eukaryotic systems, in particular strategies to improve the yield of recombinant products in prokaryotic systems. Molecular biotechnology has great contribution in many aspects of our life, ranging from human health care to agriculture and environment. Selected examples of these applications will be studied in this course. In addition, various ethical issues related to the exploitation of molecular biotechnology will be considered.		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1.Understand the development of molecular biotechnology and its applications CLO2. Explore methods and applications of recombinant DNA techniques. CLO3. Understand the manipulation of gene expression in prokaryote and common eukaryotic expression systems. CLO4. Regulatory issues and ethical concerns related to the applications of molecular biotechnology	
	Skill	CLO5. Development of their critical thinking and problem-solving skills CLO6. Scientific English writing and speaking skill	
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to molecular biotechnology	2	I, T
	Regulation of the gene expression in biological systems	4	T, U
	Basic techniques in DNA technology	3	T, U
	Recombinant DNA technology	3	T, U
	Genome editing and CRISPR technology	2	T, U
	Regulatory and ethical issues	1	T, U

Examination forms	Multiple-choice questions, short-answer questions, essay questions
Study and examination requirements	Students must attend at least 80% of the classes in order to qualify for sitting the midterm and final exams Questions and comments are strongly encouraged Overall score: Students must have more than 50/100 points overall to pass this course.
Reading list	[1] Cheryl L. Patten, Bernard R. Glick (2017) Molecular Biotechnology: Principles and Applications of Recombinant DNA, 5th Edition. ASM Press: Washington, D.C.

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-4) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	PLO							
CLO	1	2	3	4	5	6	7	8
1	L		L					
2			M			L	L	L
3			M		L	L	M	L
4			L		L			
5				M			M	L
6								

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to molecular biotechnology	1,5,6	Midterm exam	Teaching, discussion	
2	Gene expression	3,5, 6	In-class exercises/quiz zes, Midterm exam	Teaching, discussion	
3	Regulation of the gene expression in biological systems - Promoter and 5', 3' UTR	3,5,6	In-class exercises/quiz zes, Midterm exam	Teaching, discussion	
4	Regulation of the gene expression in biological systems – Prokaryotic system	3,5,6	In-class exercises/quiz zes, Midterm exam	Teaching, discussion	

5-6	Regulation of the gene expression in biological systems - Eukaryotic system	3,5,6	In-class exercises/quizzes, Midterm exam	Teaching, discussion, presentation	
7	Regulation of the gene expression in biological systems - Cancers	1,3,5,6	In-class exercises/quizzes, Midterm exam	Teaching, discussion, seminar	
8	Basic techniques in molecular biotechnology Midterm exam		In-class exercises/quizzes, Midterm exam	Teaching, discussion Quiz	
9-10	Basic techniques in molecular biotechnology	1,2,5,6	In-class exercises/quizzes, Final exam	Teaching, discussion, presentation	[1]
11-13	Recombinant DNA technology – techniques and applications	1,2,5,6	In-class exercises/quizzes, Final exam	Teaching, discussion, presentation	[1]
14	Genome editing and CRISPR technology	1,2,5,6	In-class exercises/quizzes, Final exam	Teaching, discussion	
15	Regulatory and ethical issues	4,5,6	In-class exercises/quizzes, Final exam	Teaching, discussion,	
16	Revision			Revision	
17-18	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
In-class exercises/quizzes (20%)	80% attended				100% attended	
Seminar/Presentation (20%)	Presentation 80% pass					
Midterm (30%)	75-80% Pass					
Final (30%)	75-80% Pass					

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

In-class Exercises/ Quizzes (20%)

Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Unsatisfactory (1)
Understanding of Concepts	Answers demonstrate complete and deep understanding	Mostly correct answers with minor misunderstandings	Basic understanding with several inaccuracies	Major errors or lack of understanding
Application of Knowledge	Applies theory to practical/novel cases effectively	Applies theory to common cases	Limited application shown	No application or irrelevant answers
Timeliness & Participation	Always on time and actively participates	Mostly punctual and participates	Occasionally participates	Frequently absent or non-participative

Seminar/Presentation (20%)

Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Unsatisfactory (1)
Content Depth & Accuracy	Thorough and up-to-date, insightful and well-researched	Good content with sufficient depth	Covers basic ideas, some inaccuracies	Lacks key points, outdated or incorrect content
Presentation Skills	Confident, clear, well-paced, engaging	Generally clear, some hesitation or minor issues	Basic delivery, may read slides or lack eye contact	Poor clarity, monotone, or no audience engagement
Visual Aids (slides, charts, etc.)	Professionally designed, enhances presentation	Clear and supportive	Acceptable, may lack consistency	Poor or no visual aids used
Question Handling	Answers are accurate and insightful	Reasonable responses	Attempts answers but lacks confidence	Cannot answer or evades questions

Midterm exam and final exam

Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Unsatisfactory (1)
Knowledge Integration	Integrates multiple concepts to solve complex problems	Applies major concepts adequately	Basic application with limited integration	No integration, isolated facts
Problem Solving	Insightful approach to open-ended questions	Attempts problem-solving with logic	Limited strategy or unclear answers	No strategy, guesses
Critical Thinking	Demonstrates independent evaluation of issues (ethics, regulation, etc.)	Some critical insight shown	Minimal critique or one-sided answers	No critical thinking, generic response

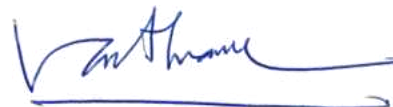
6. Date revised: 11/06/2025

7. Course coordinator/Lecturer

- School/Department: School of Biotechnology
- Email: npthao@hcmiu.edu.vn

....., dd/mm/yyyy

HEAD/DEAN OF DEPARTMENT/SCHOOL



Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

Department/School of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Molecular Biotechnology

Course Code: BT334IU

1. General information

Course name	- <i>Practice in Molecular Biotechnology.</i> - <i>Thực hành Công nghệ Sinh học phân tử</i>
Course designation	<i>This course introduces students to practical procedure in cloning a gene of interest. Students will learn about the fundamental theory of the process and practice techniques regarding DNA extraction procedure, DNA gel electrophoresis, DNA quantification, PCR, PCR product purification, ligation, bacterial transformation and identification of putative transformants.</i>
Course type	☐ General knowledge ☒ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	5
Person responsible for the course	MBT. Hoang Thi Lan Xuan
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lectures, discussion, demonstration, labworks

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 55 h Contact hours (Lecture, laboratory session, discussion): 25 h Private study including examination preparation, specified in hours ¹ : 30 h
Credit points	1 credit (Practice Lab) (~2 ETCS)
Number of periods	Practice: 30
Required and recommended prerequisites for joining the course	- Prerequisites: Biology (BT311IU), Genetics (BT313IU), Biochemistry (BT319IU) - Corequisites: Molecular Biotechnology (BT333IU)
Course objectives	● Students will learn about the principles of gene cloning process, including DNA extraction, establishment of a recombinant vector, bacterial transformation and transformant selection. ● Students will be able to prepare solution/medium/buffer required for DNA extraction, DNA gel electrophoresis, bacterial culture and selection. ● Students will be able to perform important techniques such as DNA extraction, DNA gel electrophoresis, Polymerase chain reaction (PCR), PCR product purification, ligation and transformation

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Understand the general procedure of gene cloning and identification of putative bacterial transformant. CLO2. Understand the principle of employed technique used at each step of the gene cloning process and required calculations.	
	Skill	CLO3. Be able to perform DNA extraction and know how to analyse DNA quality and quantity. CLO4. Be able to perform DNA gel electrophoresis and interpret the results. CLO5. Be able to set up PCR reactions and interpret the results. CLO6. Be able to perform PCR product purification, set up and perform ligation reaction. CLO7. Be able to perform bacterial transformation and identify putative transformant.	
	Attitude	CLO8. Seriousness and care regarding lab safety, personal protection, DNA protection and contamination issues.	
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (4 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	DNA extraction from animal cells	1	I, T, U
	DNA agarose gel electrophoresis	1	I, T, U
	Polymerase chain reaction	1	I, T, U
	PCR product purification and Ligation	1	I, T, U
	Bacterial transformation	1	I, T, U
	Identification and confirmation of putative transformant	1	I, T, U
	Examination	1	U
	Examination forms	Lab performance and reports; written and practical exam	

Study and examination requirements	<i>Attendance: A minimum attendance of 80% is compulsory for the class sessions. Students will be assessed on the basis of their participation.</i> <i>Questions and comments are strongly encouraged.</i> <i>Assignments/Examination: Students must have more than 50/100 points overall to pass this course</i>
Reading list	<i>[1] Lab Manual for Molecular Biotechnology Practical Class, School of Biotechnology, International University [internal use].</i>

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) and Program/Student Learning Outcomes (PLO) is shown in the following table:

CLOs	PLOs							
	1	2	3	4	5	6	7	8
1			M			M		
2			M			M		
3				H				
4				H				
5				H				
6				H				
7				H				
8					H			

**Use Bloom's Taxonomy*

The program learning outcomes (PLOs) are detailed below:

- (1) An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)
- (2) An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)
- (3) An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)
- (4) An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)
- (5) An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)
- (6) An ability to apply modern techniques to produce biotechnological products. (Application)
- (7) An ability to analyze and interpret results in biotechnological process, product manufacturing. (Lifelong learning)
- (8) An ability to be well aware of professional development for a career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	- Preparation of lysis buffer and salt solutions for DNA extraction - DNA extraction from cheek cells	1,2,3,8	Lecture, Discussion, Practice	Progress, Report	[1]

2	- Prepare running buffer for gel electrophoresis - Cast agarose gel - DNA gel electrophoresis	1,2,4,8	Lecture, Discussion, Practice	Progress, Report, Exam	[1]
3	- Polymerase chain reaction	1,2,4,5,8	Lecture, Discussion, Practice	Progress, Report, Exam	[1]
4	- PCR product purification - PCR product quantification - Ligation	1,2,6,8	Lecture, Discussion, Practice	Progress, Report, Exam	[1]
5	- Bacterial transformation by heat-shock method - Prepare selective medium	1,2,6,7,8	Lecture, Discussion, Practice	Progress, Report, Exam	[1]
6	- Identification of transformants by selective medium and X-gal/IPTG - Confirmation of transformants by colony PCR	1,2,6,7,8	Lecture, Discussion, Practice	Progress, Report, Exam	[1]
7	Exam	1-8			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Progress (10%)	x	x	x	x	x	x	x	x
Lab report (60%)	x	x	x	x	x	x	x	x
Exam (30%)	x	x	x	x	x	x	x	x

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1. Grading checklist for Progress assessment

Item	Maximal Score (%)
<i>Fully attend</i>	30
<i>Be on-time</i>	20
<i>Produce satisfied performance</i>	50
Total	100*

** The total score will be converted into 10% (percentage of Progress for whole course score).*

5.2. Grading checklist for Lab report

Item	Maximal Score (%)
<i>Sufficient result description</i>	15
<i>Images with adequate annotation and calculation</i>	10
<i>Logic and clear result interpretation and discussion, recommendation for improvement</i>	15
<i>Correct answers for theoretical questions relating to labwork</i>	60
Total	100*

** The total score will be converted into 60% (percentage of Report for whole course score).*

5.3. Grading checklist for Exam

Item	Maximal Score (%)
<i>Writing (Give the correct answers for four questions)</i>	<i>50</i>
<i>Performance (satisfied performance for the assigned task)</i>	<i>50</i>
Total	100*

** The total score will be converted into 30% (percentage of Exam for whole course score).*

6. Date revised: June 11, 2025

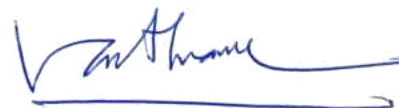
7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: htlxuan@hcmiu.edu.vn

Ho Chi Minh City, 11/06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)



Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Immunology

Course Code: BT335IU

1. General information

Course name	- Immunology - Miễn dịch học
Course designation	<i>This subject will provide a general introduction to basic knowledge on immune system and its application: the components and functions of the immune system, mechanisms of innate and adaptive immunity at different levels and to different invading microorganisms such as fungi, bacteria, protozoa, worms and viruses; applications of Immunology in vaccine production, blood transfusion, allergy treatment, autoimmune diseases, cancer, monoclonal antibody, and in tissue or organ transplantation.</i>
Course type	☐ General knowledge ☐ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	4
Person responsible for the course	Assoc. Prof. Nguyen Thi Thu Hoai Email: ntthoai@hcmiu.edu.vn
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, Presentation, Quiz, Homework (Scientific Writing).

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 h Private study including examination preparation, specified in hours : 90 h	
Credit points	3 credits (Theory) 4.6 ECTS	
Number of periods	Theory: 45.	
Required and recommended prerequisites for joining the course	- Prerequisites: *BT311IU- Biology	
Course objectives	This subject will provide a general introduction to basic knowledge on immune system and its application: the components and functions of the immune system, mechanisms of innate and adaptive immunity at different levels and to different invading microorganisms such as fungi, bacteria, protozoa, worms and viruses; applications of Immunology in vaccine production, blood transfusion, allergy treatment, autoimmune diseases, cancer, monoclonal antibody, and in tissue or organ transplantation.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understanding on what Immunology is and the skill sets needed to be an immunologist. CLO2. Understanding the immune system components and how they function together. CLO3. Understanding on the basic applications of Immunology
	Skill	CLO4. Critical Thinking, Teamworking, Scientific writing.
	Attitude	CLO5. Seriousness, Care, Hardworking, Activeness, Patience.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction to the course, Immunology and Immune System: History, General Concepts and Application</td><td>1</td><td>I, U</td></tr><tr><td>Structure of the Immune System: Cells of the immune system: Tissues and organs of the immune system</td><td>2</td><td>I, T</td></tr><tr><td>Weapons of the immune system and related applications: Antibodies, Complements, Blood transfusion and hemostasis</td><td>2</td><td>T, U</td></tr><tr><td>Means of the Immune System: TCR and MHC</td><td>2</td><td>T, U</td></tr><tr><td>Mode of the Immune Responses-1: Development of Adaptive Immune Response- Antigen processing and presentation, Result of Antigen presentation- Cell-mediated and humoral immune responses</td><td>2</td><td>T, U</td></tr><tr><td>Mode of the Immune Response-2: Innate Immunity, Inflammation, AMPs</td><td>1</td><td>T</td></tr><tr><td>Immune Regulation</td><td>1</td><td>T, U</td></tr><tr><td>Immune Responses to Microbes and Tumors</td><td>2</td><td>T, U</td></tr><tr><td>Abnormal Immune Responses: Autoimmunity, Hypersensitivity, Congenital and Acquired Immunodeficiency</td><td>2</td><td>T, U</td></tr><tr><td>SUM</td><td>15</td><td></td></tr></table>			Topic	Weight	Level	Introduction to the course, Immunology and Immune System: History, General Concepts and Application	1	I, U	Structure of the Immune System: Cells of the immune system: Tissues and organs of the immune system	2	I, T	Weapons of the immune system and related applications: Antibodies, Complements, Blood transfusion and hemostasis	2	T, U	Means of the Immune System: TCR and MHC	2	T, U	Mode of the Immune Responses-1: Development of Adaptive Immune Response- Antigen processing and presentation, Result of Antigen presentation- Cell-mediated and humoral immune responses	2	T, U	Mode of the Immune Response-2: Innate Immunity, Inflammation, AMPs	1	T	Immune Regulation	1	T, U	Immune Responses to Microbes and Tumors	2	T, U	Abnormal Immune Responses: Autoimmunity, Hypersensitivity, Congenital and Acquired Immunodeficiency	2	T, U	SUM	15	
Topic	Weight	Level																																		
Introduction to the course, Immunology and Immune System: History, General Concepts and Application	1	I, U																																		
Structure of the Immune System: Cells of the immune system: Tissues and organs of the immune system	2	I, T																																		
Weapons of the immune system and related applications: Antibodies, Complements, Blood transfusion and hemostasis	2	T, U																																		
Means of the Immune System: TCR and MHC	2	T, U																																		
Mode of the Immune Responses-1: Development of Adaptive Immune Response- Antigen processing and presentation, Result of Antigen presentation- Cell-mediated and humoral immune responses	2	T, U																																		
Mode of the Immune Response-2: Innate Immunity, Inflammation, AMPs	1	T																																		
Immune Regulation	1	T, U																																		
Immune Responses to Microbes and Tumors	2	T, U																																		
Abnormal Immune Responses: Autoimmunity, Hypersensitivity, Congenital and Acquired Immunodeficiency	2	T, U																																		
SUM	15																																			
Examination forms	Multiple-choice questions, short-answer questions																																			
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																																			

Reading list	Textbook: [1] Immunology / David Male; 8th Edition; Mosby/ Elsevier, 2013 [2] Kuby Immunology/ Jenni Punt; 8th Edition; Maximillian Learning/ New York, 2018 Article References: [3] To be provided (Note: Articles will be updated every year)

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-5) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	ILOs							
CLOs	1	2	3	4	5	6	7	8
1	M							
2	M							
3						M		
4				M				
5						M		

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to the course, Immunology and Immune System: History, General Concepts and Application	1, 4,5	Lecture, Discussion, In Class-Quiz**	Progress and bonus score**	1, 2, 3
2-3	Structure of the Immune System: Cells of the immune system: Tissues and organs of the immune system	2,4,5	Lecture, Discussion, In Class-Quiz	Progress and bonus score	1, 2
4-5	Weapons of the immune system and related applications: Antibodies, Complements, Blood transfusion and hemostasis	2,4,5	Lecture, Discussion, In Class-Quiz	Progress and bonus score	1, 2
6-7	Means of the Immune System: TCR and MHC	2,4,5	Lecture, Discussion, In Class-Quiz	Progress and bonus score	1, 2
8-9	Mode of the Immune Responses-1: Development of Adaptive Immune Response- Antigen processing and presentation, Result of Antigen presentation- Cell-mediated and humoral immune responses Midterm Test (2,4,5)	2,4,5	Lecture, Discussion, In Class-Quiz	Midterm Exam	1, 3
10	Mode of the Immune Response-2: Innate Immunity, Inflammation, AMPs	2,4,5	Lecture, Discussion, In Class-Quiz	Progress and bonus score	1, 3

11	Immune Regulation	2,4,5	Lecture, Discussion, In Class-Quiz	Progress and bonus score	1, 3
12-13	Immune Responses to Microbes and Tumors	2,4,5	Lecture, Discussion, In Class-Quiz	Progress and bonus score	1,3
14-15	Abnormal Immune Responses: Autoimmunity, Hypersensitivity, Congenital and Acquired Immunodeficiency	2,4,5	Lecture, Discussion, Presentation	Presentation and Scientific Writing	1, 3
16-17	Final Exam	3, 4, 5		Final exam	

**In-Class-quizzes are converted into bonus score which are added directly to the Exam scores with no bigger than 20 points/100 points.

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Attendance/progress (5%)					Checking / 80%Pass
Scientific Writing/ Presentation (25%)	70%Pass	70%Pass	70%Pass	70%Pass	70%Pass
Midterm exam (35%)	MCQs/SAQ s. 60% Pass	MCQs/SAQ s 60% Pass	MCQs/SAQ s 60% Pass		
Final exam (35%)		MCQs/SAQ s. 60% Pass	MCQs/SAQ s 60% Pass	MCQs/SAQ s 60% Pass	

Note: %Pass (Exam): % students have scores greater than 50 out of 100.

%Pass (Presentation/ Assignment): % students have scores greater than 70 out of 100.

5. Rubrics

5.1.Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		

Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: This rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

**Oral communication value rubric for evaluating presentation tasks:*

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score
Presentation content	<i>Content Organization:</i> The presentation is delivered in logical order and has a clear structure, including an introduction and a conclusion.	15	
	<i>Information:</i> The presentation contains accurate information and is cited from appropriate external resources.	15	
	<i>Language usage:</i> Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	<i>Visual aids:</i> The presentation includes suitable and effective visual aids that capture the audience's attention.	15	
Presentation delivery	<i>Time management:</i> The Length of the presentation is within the assigned time limits.	10	
	<i>Presentation Skill:</i> The speaker maintains good eye contact with the audience, and speaks confidently with a good voice, fluid speech, and appropriate pronunciation.)	10	
	<i>Question and Answer:</i> The speaker addresses and answers all questions from the audience following the presentation.	20	
Score	Total Points	100	

****Critical thinking value rubric for evaluating questions in exams:***

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 2025

7. Course coordinator/Lecturer

- Department: Biotechnology
- Email: ntthoai@hcmu.edu.vn

Ho Chi Minh City, dd/mm/2025

DEAN OF DEPARTMENT/SCHOOL

(Signature)

A handwritten signature in blue ink, appearing to read 'Nguyễn Văn Thuận', with a long horizontal flourish extending to the right.

Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Immunology

Course Code: **BT336IU**

1. General information

Course name	- <i>Practice in Immunology</i> - <i>Thực hành Miễn dịch</i>
Course designation	<i>The course will introduce students to various methods used in immunological field. It will equip students with skills on immunological techniques and complement the information gained in lecture. This includes determining types of immune cells, blood types, detecting specificity of antigen and antibody, separating different blood components, ELISA.</i>
Course type	☐ General knowledge ☒ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	4
Person responsible for the course	Dr. Tran Thi Hai Yen
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lectures, discussion, demonstrations, labworks.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 60 h Contact hours (Lecture, laboratory session, discussion): 30 h Private study including examination preparation, specified in hours ¹ : 30 h

Credit points	1 credit (Practice Lab) ~ (2 ECTS)	
Number of periods	Practice: 30	
Required and recommended prerequisites for joining the course	- Prerequisites: Biology (BT311IU) Practice in Biology (BT312IU) - Corequisites: Immunology (BT335IU)	
Course objectives	The course will provide the students: ▪ Knowledge: Mechanisms and applications of immunological techniques, not only in human health's diagnosis, but also in other species. ▪ Skill: Practice on immunological tests to analyze human health problems and other species. ▪ Competences: Ability to design and conduct experiments, as well as to analyze and interpret data.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understand mechanisms and applications of immunological techniques
	Skill	CLO2. Identify the cells of immune systems and determine the relative number of them. CLO3. Demonstrate the specific interaction between Antibody and antigen by different methods. CLO4. Determine blood type and Separating blood components CLO5. Practice on ELISA.
	Attitude	CLO6. Set up experiment, analyze and interpret data

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (4 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Cells of the Immune System ▪ Identify the leucocytes (white cells) ▪ Determine the relative numbers of the types of leukocytes	1	I, T, U
	Heamagglutination ▪ Demonstrate the specific interaction between antibody and antigen ▪ Determine ABO blood groups ▪ Coombs test	1	I, T, U
	Immunoprecipitation: ▪ Radial immunodiffusion ▪ Immuno-double diffusion	1	I, T, U
	Immunoelectrophoresis ▪ Countercurrent electrophoresis ▪ Rocket electrophoresis	1	I, T, U
	Blood component separation ▪ Separate the different blood components ▪ Practice counting and compare to previous techniques	1	I, T, U
	Enzyme-linked immunosorbent assay (ELISA) <i>Detection of hepatitis B surface antigen (HBsAg)</i>	1	I, T, U
Lab review and Examination of immunological labwork	1	I, T, U	
Examination forms	Lab reports; Multiple-choice questions, short-answer questions		
Study and examination requirements	<i>Attendance: A minimum attendance of 80% is compulsory for the class sessions. Students will be assessed based on their participations. Questions and comments are strongly encouraged.</i> <i>Assignments/Examination: Students must get more than 50/100 points overall to pass this module.</i>		

Reading list	1. <i>Animal Tissue Techniques</i>. WH Freeman and Co. Gretchen L.H. 2. <i>Cellular and Molecular Immunology</i>, 8th Edition. 2015. Abul K. Abbas, Andrew H. Lichtman. Saunders/ Elsevier. 3. <i>Bio-Rad Laboratories: Antibody to Hepatitis B surface antigen</i>. 2014. Redmond, USA. 4. <i>HiPer® Immunodiffusion and Immuno-electrophoresis Teaching kits</i>. 2012. HiMedia Laboratories, India 5. <i>Humason's Animal Tissue Techniques</i>. The Johns Hopkins University Press. Jance K.P. and Martin P.S. 6. <i>Lab-manual for Immunology Practical Class</i>. School of Biotechnology, International University [Internal Use]

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-6) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	ILO							
CLO	1	2	3	4	5	6	7	8
1			H		H			
2				H				
3				H				
4				H				
5				H				
6							M	

The intended learning outcomes (ILOs) are detailed below:

- (1) An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)
- (2) An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)
- (3) An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)
- (4) An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)
- (5) An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)
- (6) An ability to apply modern techniques to produce biotechnological products. (Application)
- (7) An ability to analyze and interpret results in biotechnological process, product manufacturing. (Lifelong learning)
- (8) An ability to be well aware of professional development for a career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	<i>Cells of the Immune System</i> - Identify the leucocytes (white cells) - Determine the relative numbers of the types of leukocytes	1, 2, 6	Progress, Report	Lecture, Discussion, Practice	2, 6
2	<i>Heamagglutination</i> - Demonstrate the specific interaction between antibody and antigen - Determine ABO blood groups - Coombs test	1, 3, 4, 6	Progress, Report	Lecture, Discussion, Practice	2, 6
3	<i>Immunoprecipitation:</i> - Radial immunodiffusion - Immuno-double diffusion	1, 3, 6	Progress, Report	Lecture, Discussion, Practice	2, 4, 6
4	<i>Immuno-electrophoresis</i> - Countercurrent electrophoresis - Rocket electrophoresis	1, 3, 6	Progress, Report	Lecture, Discussion, Practice	2, 4, 6
5	<i>Blood component separation</i> - Separate the different blood components - Practice counting and compare to previous techniques	1, 4, 6	Progress, Report	Lecture, Discussion, Practice	2, 4, 6
6	<i>Enzyme-linked immunosorbent assay (ELISA)</i> Detection of Hepatitis B surface antigen (HBsAg)	1, 5, 6	Progress, Report	Lecture, Discussion, Practice	5, 6
7	<i>Final exam</i>	1-6			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Progress (40%)	x	x	x	x	x	x
Lab report (30%)	x	x	x	x	x	x
Exam (30%)	x	x	x	x	x	x

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

Grading checklist:

Grading checklist for Progress			
Student:		Evaluator:	
Date:			
	Max.	Score	Comments

Attendance (20%)			
Fully attend	10		
Be on-time	10		
Participation (20%)			
Actively engaged in lecture discussion	10		
Actively engaged in lab activity	10		
TOTAL SCORE	40		

Grading checklist for Written Reports			
Student:	Report:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (70%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100*		

* The total score will be converted into 30% (percentage of Report for whole course score).

Grading checklist for Final exam			
Student:	Evaluator:		
Date:			
	Max.	Score	Comments
Multiple-choice questions (50%)			
Pick-up correct answer	50		

Short-answer questions (50%)			
Give the correct answer	25		
Explanation for answer	25		
TOTAL SCORE	100*		

* The total score will be converted into 30% (percentage of Final exam for whole course score).

6. Date revised: June 10, 2025

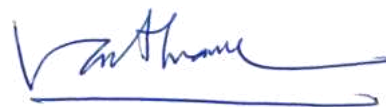
7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: tthyen@hcmiu.edu.vn

Ho Chi Minh City, 10/6/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)



Nguyen Van Thuan



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biotechnology

COURSE SYLLABUS

Course Name: BIOPROCESS ENGINEERING

Course Code:

1. General information

Course name	▪ Bioprocess Engineering ▪ Kỹ Thuật Quy Trình Sinh Học
Course type	☐ <i>General knowledge</i> <i>Fundamental</i> ☐ ☐ <i>Specialized knowledge</i> <i>Internship/Project/Thesis</i> <i>Others:</i>
Course designation	This Bioprocess Engineering course is designed for Biotechnology majors and related disciplines who have little or no engineering background but want to understand and be able to strategically manipulate the processes for manufacturing commercial bio-products, mostly derived from, but not restricted to microorganisms. The course provides students with a fundamental understanding of different stages of a bioprocess including upstream (material and equipment preparation, fermentation, and downstream (product recovery, purification and packaging). The first few lectures will review relevant knowledge in microbiology, chemistry, and molecular biology, which influences product accumulation in the producers (e.g. microbes). Steps for setting up a microbial/cell culture from lab to industrial scale and the selection and preparation of the substrate used will be guided. In addition, types of fermentation and components of a typical fermentor will be discussed. A part of the course will introduce students to major kinetic and mass transfer principles that can help control and monitor process performance and process scale-up. Statistical methods for optimization of bioprocesses will also be included. Additionally, major methods for product recovery and purification will be discussed at the end of the course.
Semester(s) in which the course is taught	I, II

Person responsible for the course	Assoc. Prof. Tran Thi My Hanh E-mail: ttmhanh@hcmiu.edu.vn
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, paper discussion, quiz, assignment, and presentation
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 85</i> <i>Contact hours (lecture, paper discussion, and presentation): 25</i> <i>Private study including examination preparation, specified in hours¹: 60</i>
Credit points	02 credits 3.09 ECTS
Number of period	30
Required and recommended prerequisites for joining the course	Microbiology
Course objectives	On completion of this course, students will be able to: 1. Summarize the overall steps in manufacturing a bio-product using microbial or cell cultures 2. Describe important characteristics of industrial microbes 3. Categorize different types of microbial metabolites 4. Explain the principles of upstream and downstream processes 5. Analyze the possible factors affecting the production of microbial products or cell culture products 6. Propose effective strategies for enhancement of desired products 7. Apply the knowledge and skill to solve out a certain issue in bioprocess engineering/produce a certain product from a microbe 8. Practise and master group working and presentation skills

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Acquiring and mastering the techniques used in upstream and downstream steps for production of conventional and advanced fermented products. COL2. Being able to come up with strategy to optimize the upstream and downstream processes	
	Skill	CLO3. Mastering presentation, communication, writing, and teamwork skills	
	Attitude	CLO4. Life-long learning and critical thinking skills	
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (2 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction of Bioprocess: history of development and steps (upstream, fermentation, and downstream)	2	I, T
	Overviews on important physiological characteristics of microbes and aseptic techniques; Properties of industrial microbes	1	I, T
	Components of a typical fermentor, and types of fermentors	1	I, T
	Fermentation types and steps for scaling up a culture	2	T, U
	Microbial kinetics in batch, continuous and fed-batch processes	2	T, U
	Statistical methods for fermentation optimization	2	T, U
	Recovery and purification of industrial fermentation products	2	T, U
	Paper discussion	1	I, U
	Group presentation	2	I, U
	Examination forms	Written exam, oral presentation, and report	
Study and examination requirements	Attendance: A minimum attendance of 80 percent of the class sessions is compulsory. Student participation will be assessed on a regular basis. Questions and comments are strongly encouraged. Assignments/Examination: Students must obtain at least 50/100 points in total to pass this course.		

Reading list	Textbook 1. Kim Gail Clarke, Bioprocess Engineering: An Introductory Engineering and Life Science Approach, (2013), Woodhead Publishing 2. Shijie Liu, Bioprocess Engineering: Kinetics, Sustainability, and Reactor Design, Second Edition (2017), Elsevier Article References 3. To be provided (Note: Articles will be updated every year) Other 4. YouTube channel: https://www.youtube.com/channel/UCoZgEu3kaRDan1Mvf5l6EcQ

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO 1-4) and the Intended Learning Outcomes (ILOs) (1-8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table.

The intended learning outcomes (ILOs) of the Biotechnology Program and three levels of contribution are defined using Bloom's taxonomy (Low [L]: Remember and Understand; Medium [M]: Apply and Analyze; High [H]: Evaluate and Create).

	SLOs							
CLOs	1	2	3	4	5	6	7	8
1	L							
2	H							
3						M		
4				H				

3. Planned learning activities and teaching methods

Wee k	Topic	CLO	Assessment s	Learning activities	Resources
1-2	Introduction of Bioprocess: history of development and steps (upstream, fermentation, and downstream)	1	Quizzes	Lecture, Discussion, In-class Quiz	2,3
3	Overviews on important physiological characteristics of microbes and aseptic techniques; Properties of industrial microbes	1	Quizzes	Lecture, Discussion, In-class-Quiz	2,4
4	Components of a typical fermentor, and types of fermentor	1	Quizzes	Lecture, Discussion, In-class-Quiz	1,2
5	Fermentation types and bioprocess of scaling up	1,2,3	Quizzes	Lecture, Discussion, In-class Quiz	1,2,3

6-7	Microbial kinetics in batch, continuous and fed-batch processes	1,2,4	Quizzes	Lecture, Discussion, In-class Quiz	1,2,3
8	Midterm				
9-10	Statistical methods for fermentation optimization	1,2,3,4	Assignment	Lecture, Discussion, Assignment	1,3
11-12	Recovery and purification of industrial fermentation products	1,2,3,4	Presentation	Lecture, Discussion, Videos	1,2,3
13	Paper discussion				
14-15	Group presentation				
11	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Assignment (25%)			HW 70%Passes	
Midterm exam (35%)	Q 50%Passes	Q 50%Pass		
Final exam (40%)		Q 50%Pass		Q 50%Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Part 1 Technical content (70 %)	70		
Criterion 1: Clear statement of the concerned issue(s)	10		
Criterion 2: Providing relevant information to address the issue(s)	50		
Criterion 3: Clear justification of the chosen information	10		
Part 2 Presentation (20 %)	20		
Criterion 1: Flow of the contents	10		
Criterion 1: Writing skills: precise, correct use of technical terms	10		
Part 3 References used (10%)	10		

Criterion 1: The information provided should be reliable	05		
Criterion 2: Citation of references	05		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrating a complete understanding of the problem. All requirements are well addressed
4	Demonstrating a considerable understanding of the problem. The majority of the requirements are addressed
3	Demonstrating a partial understanding of the problem. Some requirements are properly addressed
2	Demonstrating a little understanding of the problem. Only a part of the requirements is addressed
1	Demonstrating a poor understanding of the problem.
0	No response or providing irrelevant statement

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.

Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.

Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

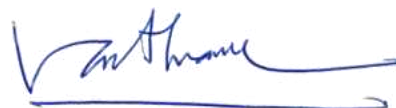
Source: Association of American Colleges and Universities

6. Date revised:

Ho Chi Minh City, 11/06/2025

Head/Dean of Department/School

(Signature)



Nguyễn Văn Thuận



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biotechnology

COURSE SYLLABUS

Course Name: **PRACTICE IN BIOPROCESS ENGINEERING**

Course Code: BT342IU

1. General information

Course name	▪ Practice in Bioprocess Engineering ▪ Thực Hành Kỹ Thuật Quy Trình Sinh Học
Course type	☐ <i>General knowledge</i> <i>Fundamental</i> ☐ ☐ <i>Specialized knowledge</i> <i>Internship/Project/Thesis</i> <i>Others:</i> ☐ ☐
Course designation	This course gives students an opportunity to use Bioprocess Engineering theoretical knowledge to statistically design experiments for enhancing a target microbial product and analyze the obtained data
Semester(s) in which the course is taught	I, II
Person responsible for the course	Assoc. Prof. Tran Thi My Hanh E-mail: ttmhanh@hcmiu.edu.vn
Language	English
Relation to curriculum	Compulsory

Teaching methods	Experiment, paper discussion, lab report, oral examination	
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 55</i> <i>Contact hours (lecture, paper discussion, and presentation): 25</i> <i>Private study including examination preparation, specified in hours¹: 30</i>	
Credit points	01 credits 2.0 ECTS	
Number of period	15	
Required and recommended prerequisites for joining the course	Microbiology (BT321IU)	
Course objectives	On completion of this course, students will be able to: 1. Apply the obtained knowledge to optimize relevant conditions for enhancing a microbial product 2. Statistically analyze the obtained data and evaluate the formulated model 3. Effectively write a lab report 4. Master group working skills and work ethics	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Bioprocess optimization by RSM COL2. Data analysis using design expert software
	Skill	CLO3. lab report writing skills, critical thinking skills
	Attitude	CLO4. Master group working skills and work ethics

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (2 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Activation of fungal stock culture</td><td>1</td><td>I, T</td></tr><tr><td>RSM experimental design, inoculum and medium preparation</td><td>1</td><td>I, T</td></tr><tr><td>Carrying out the experiments</td><td>2</td><td>I, T</td></tr><tr><td>Harvesting the product and data input</td><td>1</td><td>T, U</td></tr><tr><td>Data analysis and model evaluation</td><td>1</td><td>T, U</td></tr></table>	Topic	Weight	Level	Activation of fungal stock culture	1	I, T	RSM experimental design, inoculum and medium preparation	1	I, T	Carrying out the experiments	2	I, T	Harvesting the product and data input	1	T, U	Data analysis and model evaluation	1	T, U
Topic	Weight	Level																	
Activation of fungal stock culture	1	I, T																	
RSM experimental design, inoculum and medium preparation	1	I, T																	
Carrying out the experiments	2	I, T																	
Harvesting the product and data input	1	T, U																	
Data analysis and model evaluation	1	T, U																	
Examination forms	lab report and oral examination																		
Study and examination requirements	Attendance: students must attend all the classes. In case of emergency, notice must be sent to the instructor within a reasonable timeframe to arrange for a make-up class Assignments/Examination: Students must obtain at least 50/100 points in total to pass this course.																		
Reading list	Lab manual: to be uploaded on BB prior to the class start date Article References: to be provided (Note: Articles will be updated every year) Other: https://www.statease.com/software/design-expert/																		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO 1-4) and the Intended Learning Outcomes (ILOs) (1-8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table.

The intended learning outcomes (ILOs) of the Biotechnology Program and three levels of contribution are defined using Bloom's taxonomy (Low [L]: Remember and Understand; Medium [M]: Apply and Analyze; High [H]: Evaluate and Create).

	ILOs							
CLOs	1	2	3	4	5	6	7	8
1						H		
2							M	
3					M			
4							H	

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Activation of fungal stock culture)	1	Quizzes, Lab report	Experiment Discussion, In-class Quiz	1
2	RSM experimental design, inoculum and medium preparation	1	Quizzes, Lab report	Experiment Discussion, In-class-Quiz	1,2,3
3-4	Carrying out the experiments	1	Quizzes, Lab report	Experiment, Discussion, In-class-Quiz	1,2,3
5	Harvesting the product and data input	1,2,3	Quizzes, Lab report	Experiment, Discussion, In-class Quiz	1,2,3
6	Data analysis and model evaluation	1,2,4	Quizzes, Lab report	Experiment, Discussion, In-class Quiz	1,2,3
7	Exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Lab-report (50%)	HW 70%Pass	HW 70%Pass	HW 70%Pass	HW 70%Pass
Oral exam (50%)	Q 50%Pass	Q 50%Pass		

Note: %Pass: The percentage of students **who have** scores greater than 50 out of 100

5. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Part 1 Technical content (70 %)	70		
Criterion 1: Clear statement of the concerned issue(s)	10		
Criterion 2: Providing relevant information to address the issue(s)	50		
Criterion 3: Clear justification of the chosen information	10		
Part 2 Presentation (20 %)	20		
Criterion 1: Flow of the contents	10		

Criterion 1: Writing skills: precise, correct use of technical terms	10		
Part 3 References used (10%)	10		
Criterion 1: The information provided should be reliable	05		
Criterion 2: Citation of references	05		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrating a complete understanding of the problem. All requirements are well addressed
4	Demonstrating a considerable understanding of the problem. The majority of the requirements are addressed
3	Demonstrating a partial understanding of the problem. Some requirements are properly addressed
2	Demonstrating a little understanding of the problem. Only a part of the requirements is addressed
1	Demonstrating a poor understanding of the problem.
0	No response or providing irrelevant statement

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.

Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.

Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

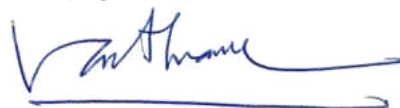
Source: Association of American Colleges and Universities

6. Date revised:

Ho Chi Minh City, 11/06/2025

Head/Dean of Department/School

(Signature)



Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology

COURSE SYLLABUS

Course Name: Bioinformatics

Course Code: BT337IU

1. General information

Course name	- (in English) Bioinformatics - (in Vietnamese) Tin sinh học
Course designation	<i>The basics of bioinformatics are explained, followed by discussions of the state-of-the-art computational tools available to solve biological research problems. All key areas of bioinformatics are covered including biological databases, next-generation sequencing, sequence alignment, gene and promoter prediction, molecular phylogenetics, structural bioinformatics, genomics and proteomics. Some applications of bioinformatics in drug design will be introduced at the end of the course</i>
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge X ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	1 & 2
Person responsible for the course	<i>Dr. Nguyen Minh Thanh</i>
Language	English
Relation to curriculum	☐ Compulsory X ☐ Elective
Teaching methods	Lecture, assignment, project, seminar

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 135 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 Private study including examination preparation, specified in hours ¹ : 90	
Credit points	3 credits (Theory: 3 + Practice: 0) 4.6 ECTS (<i>optional</i>)	
Number of periods	Theory: 45 Practice: 0	
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name)..... - Corequisites: (Course code – Course name) - Previous course (Course code – Course name): BT311IU – Biology	
Course objectives	The course provides a broad introduction to the entire field of bioinformatics and is specifically designed for students majoring in biological chemistry & biotechnology.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Basic knowledge of bioinformatics: definitions and concepts, perspectives of biological macromolecules, bioinformatics tools. CLO2. Understanding of emerging technology including next-generation sequencing, DNA microarray, in silico drug design, nanoparticulate drug delivery systems.
	Skill	CLO3. Ability to use online database and bioinformatic tools CLO4. Applying methods to determine functional genes of interest, to simulate biological pathways for drug development
	Attitude	CLO5. Be aware of the roles of bioinformatics in many fields of science and life and highlight how this knowledge can be applied to addressing problems in society.

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to Bioinformatics	1	I
	Sequencing technologies for data generation	1	I, T
	Online biological databases	1	T, U
	Database searching	1	T, U
	Sequence alignment	1	T, U
	Revealing genome features	1	T, U
	Phylogenetic analysis	2	T, U
	Protein analysis & proteomics	1	I, T
	Protein structure	1	T, U
	Gene expression analysis	1	T, U
	Genome-wide association study	1	I, T
Application of bioinformatics	2	I, T, U	
Examination forms	Multiple-choice questions, short-answer questions, true-false questions, matching questions, fill-in questions, web-based tools questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	1. Jonathan Pevsnet, J., 2015. Bioinformatics and Functional Genomics, 3rd edition. Wiley Blackwell. 2. Choudhuri, S., 2014. Bioinformatics for Beginners: Genes, Genomes, Molecular Evolution, Databases & Analytical Tools. Elsevier Inc. 3. Lesk. A.M. 2014. Introduction to Bioinformatics, 4th edition. Oxford University Press. 4. Zvelebil, M., Zvelebil, M.J., Baum, J.O., 2008. Understanding Bioinformatics. Garland Science.		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) and Program/Student Learning Outcomes (PLO) is shown in the following table:

	PLO							
CLO	1	2	3	4	5	6	7	8
1				M				
2							M	
3						M		
4						M		
5					M			M

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to Bioinformatics	1	Lecture, homework		[1], [3]
2	Sequencing technologies for data generation	2	Lecture, homework		[1], [2]
3	Online biological databases	3	Lecture, homework	Assignment 1	[1], [2]
4	Database searching	3	Lecture, homework	Assignment 2	[1], [2]
5	Sequence alignment	3	Lecture, homework	Assignment 3	[1], [2]
6	Revealing genome features	3	Lecture, homework	Assignment 4	[1], [2]
7	Revealing genome features (cont.)	3	Lecture, homework	Assignment 4	[1], [2]
8	Midterm exam				
	Phylogenetic analysis	3	Lecture, homework	Assignment 5	[1], [2]
9	Protein analysis & proteomics	3	Lecture, Discussion		[1], [2]
10	Protein structure	3	Lecture, homework	Assignment 6	[1], [2]
11	Gene expression analysis	4	Lecture, Discussion		[1], [2]
13	Genome-wide association study	5	Lecture, Discussion		[1], [3]
14&15	Application of bioinformatics	5	Seminar, Group work	Presentation	Others
16-17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Assignment, quiz, presentation (20%)			Assignment 1-6, 60% Pass		Presentation 60% Pass
Midterm exam (40%)	X 50 %Pass	X 50 %Pass	X 50 %Pass		
Final exam (40%)			X 50 %Pass	X 50 %Pass	X 50 %Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical contents (70%)			
Abstract clearly identifies purpose and summarizes principal contents	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	10		
Analysis and discussion demonstrate good subject mastery	40		
Summary and conclusions appropriate and complete	10		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (10%)			
Correct spelling, grammar	5		
Clear and easy to read	5		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.

Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

6. Date revised: Aug. 5, 2025

7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: nmthanh@hcmiu.edu.vn

....., dd/mm/yyyy

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)



Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Bioinformatics

Course Code: BT338IU

1. General information

Course name	- <i>Practice in Bioinformatics</i> - <i>Thực hành Tin sinh học</i>
Course designation	<i>The course will introduce students to different environments of bioinformatic tools. Students will gain the knowledge in knowing different version of tools, installing Windows-supported tools, reading the manual to use the tool.</i>
Course type	☐ General knowledge ☒ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	6
Person responsible for the course	MSc. Do Ngoc Phuc Chau
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, lab works, project, lab exam
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 60h Contact hours (lecture, exercise, laboratory session, report): 30h Private study including examination preparation, specified in hours ¹ : 30h
Credit points	1 credits (Practice Lab) ~ (2 ECTS)
Number of periods	Practice: 30

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Required and recommended prerequisites for joining the course	- Prerequisites: Biology (BT311IU) Practice in Biology (BT312IU) - Corequisites: Bioinformatics (BT337IU)		
Course objectives	The content is build to get students knowing the post-process of sequencing, conduct the experiment with sequencing reads and first joining to the protein simulation with modelling the structure of protein.		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Know different types of bioinformatic tools CLO2. Install and understand the manual of specific tool	
	Skill	CLO3. Apply different tools on different data sets for specific information CLO4. Analyse and intepret results obtained from different tools	
	Attitude	CLO5. An ability to obtain relevant knowledge of ethical as well as the associated plagiarism issue	
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (5 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Week	Topics	Weight Level
	1	<i>Introduction</i> - Introduce main databases, basic tools and file formats using in the course - Search for information from the databases, install or register for the tools, construct specific file format	1 I, T, U
	2	<i>Galaxy platform (1)</i> - Introduction to R - Understand the fastq format - Read and understand the report of quality control for sequencing results	1 I, T, U
	3	<i>Galaxy platform (2)</i> - Map the sequencing reads on the reference genome - Call the variants of the experienced genome from reference genome - Read the result	1 I, T, U
	4	<i>UCSF Chimera tool</i> - Select and install the suitable version for special computer - Use the Chimera to illustrate and compare the 3D structure of proteins	1 I, T, U
	5	<i>Modeller tool</i> - Introduction to Python - Select and install the suitable version for special computer - Conduct the command line to work with unknown-structure protein - Check the quality of modeled protein	1 I, T, U
	6	<i>Group project</i> - Lab review in a specific microorganism - Poster presentation	1 I, U

Examination forms	- Prelab: Multiple choice questions - Lab reports - Scientific poster presentation for Group project on specific organism: calling variants and modelling unknown-structure protein - Lab examination: Practical session and Short answer questions for explanation
Study and examination requirements	- Attendance: A full attendance of 100% is compulsory for the class sessions. Students will be assessed based on their participations. Questions and comments are strongly encouraged. - Students must get more than 50/100 points overall to pass this module.
Reading list	1. Tutorials for Galaxy platform: https://training.galaxyproject.org/training-material/ 2. Tutorials for UCSF Chimera usage: https://www.cgl.ucsf.edu/chimera/current/docs/UsersGuide/frameset.html 3. Tutorials for Modeller: https://salilab.org/modeller/tutorial/

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-6) and Intended Learning Outcomes (ILOs) (1-8) and the level of contribution of CLOs to ILOs (Low/L - Medium/M - High/H) is shown in the following table:

CLO	PLO							
	1	2	3	4	5	6	7	8
1	H							
2	H							
3				H				
4							M	
5					M			

The intended learning outcomes (ILOs) are detailed below:

- (1) An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)
- (2) An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)
- (3) An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)
- (4) An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)
- (5) An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)
- (6) An ability to apply modern techniques to produce biotechnological products. (Application)
- (7) An ability to analyze and interpret results in biotechnological process, product manufacturing. (Lifelong learning)
- (8) An ability to be well aware of professional development for a career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction	1, 4	Report 1	Introduce, Teach, Utilize	
2	Galaxy platform (1)	2, 3, 4	Prelab 2, Report 2	Introduce, Teach, Utilize	1
3	Galaxy platform (2)	2, 3, 4	Prelab 3, Report 3	Introduce, Teach, Utilize	1
4	UCSF Chimera tool	2, 3, 4	Report 4	Introduce, Teach, Utilize	2
5	Modeller tool	2, 3, 4	Prelab 5	Introduce, Teach, Utilize	3
6	Group project	4, 5	Poster presentation	Introduce, Utilize	1-3
7	Lab exam	1-5	Practical session and Short answer questions	Utilize	

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Prelab (20%)		Prelab 2, 3, 5 100%Pass	Prelab 2, 3, 5 100%Pass	Prelab 2, 3, 5 100%Pass	
Reports (30%)	Report 1 90%Pass	Peport 2, 3, 4 90%Pass	Peport 2, 3, 4 90%Pass	Peport 1, 2, 3, 4 90%Pass	
Group project (20%)				Presentation 80%Pass	Presentation 80%Pass
Lab exam (30%)	Practice 80%Pass	Practice 80%Pass	Practice 80%Pass	Practice 80%Pass	Practice 80%Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

Grading checklist for Prelab			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (100%)			
10 Multiple choice questions – answer correctly	100		
TOTAL SCORE	100		

* The total score will be converted into 20% (percentage of Report for whole course score)

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (90%)			
Follow the correct answers	90		
Presentation (10%)			
Follow the deadline	5		
Correct format of the report: spelling, grammar, and syntax	5		
TOTAL SCORE	100		

* The total score will be converted into 30% (percentage of Report for whole course score)

Grading checklist for Group project			
Student:		Evaluator:	
Date:			
	Max.	Score	Comments
Technical content (80%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background	20		
Method clearly and logically organized, good transitions without many words	20		
Analysis and discussion demonstrate good subject mastery	30		
Presentation (20%)			
Correct requirement	10		
Organized information in form of scientific poster	5		
Correct spelling, grammar, and syntax; clear and easy to read	5		

TOTAL SCORE	100		

* The total score will be converted into 20% (percentage of Report for whole course score)

Grading checklist for Lab exam			
Student:		Evaluator:	
Date:			
	Max.	Score	Comments
Complete the practical session	70		
Given correct explanation in short answer questions	20		
Given short and precise information	10		
TOTAL SCORE	100		

* The total score will be converted into 30% (percentage of Lab exam for whole course score)

6. Date revised: June 17th, 2025

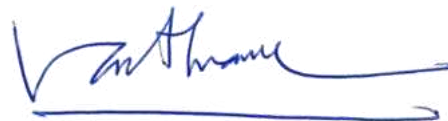
7. Course coordinator/Lecturer

- School of Biotechnology
- Email: dnpchau@hcmiu.edu.vn

Hochiminh City, 17/06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)



Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of Biotechnology

COURSE SYLLABUS
Course Name: Experimental Design
Course Code: BT216IU

1. General information

Course name	- <i>Experimental Design</i> - <i>Thiết kế thí nghiệm</i>
Course designation	This course guides and trains the students to design and implement experiments. The lectures include an introduction to scientific research, hypothesis, control of variables, randomization, replication, sampling, blocking, and statistical inference, data collection and experimental design, data analysis for the research in biotechnology and related fields. Case studies for experimental design in microbial, molecular, pharmaceutical, stem cell and related fields are illustrated. Students will be learn how to improve teamwork, critical thinking, problem-solving and scientific writing skills. From that, students can design the experiments by themselves for studying long-life.
Course type	☐ <i>General knowledge</i> ☒ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	2, 3
Person responsible for the course	Associate Professor. Bui Hong Thuy, Nguyen Hoang Khue Tu, Chan Thi My Hanh, Le Minh Thong
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, homework

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 h Private study including examination preparation, specified in hours ¹ : 90 h	
Credit points	3 credits (Theory) 4.6 ECTS	
Number of periods	Theory: 45	
Required and recommended prerequisites for joining the course	- Prerequisites: * Biostatistic	
Course objectives	The course will provide the students the methods for design the scientific research, the research requirements and principles of experimental design. After the course, students can construct valid and reliable experiments, identify and control sources of variation, analyze data using appropriate statistical methods, data collection and analysis. With the case studies for experimental design in microbial, molecular, pharmaceutical, stem cell and related fields, students can gain well. Students will be learn how to improve teamwork, critical thinking, problem-solving and scientific writing skills. From that, students can continue to study biotechnology and related majors in Vietnam or abroad with the spirit of lifelong learning.	
Course learning outcomes	After the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understanding the principles, variants, methods required for experimental design for biotechnological research.
	Skill	CLO2. Effectively communicating with lecturers and classmates, solving problems by themselves. CLO3. Applying the principles, designing an experimental chart for a topic in biotechnology and related fields.
	Attitude	CLO4: Applying the analytical methods and interpreting results for continuing to study biotechnology and related majors in Vietnam or abroad with the spirit of lifelong learning.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>																																							
	Weight: lecture session																																							
	Teaching levels: I (Introduce); T (Teach); U (Utilize)																																							
	<table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction to Experimental Design</td><td>1</td><td>I,T</td></tr><tr><td>Types of Variables, Measurement, and Validity</td><td>1</td><td>T,U</td></tr><tr><td>Formulating Hypotheses and Research Questions</td><td>1</td><td>T, U</td></tr><tr><td>Randomization, Replication, and Control</td><td>1</td><td>T, U</td></tr><tr><td>Factorial Designs</td><td>1</td><td>T, U</td></tr><tr><td>Repeated Measures and Longitudinal Studies</td><td>1</td><td>T, U</td></tr><tr><td>Analysis of Variance (ANOVA)</td><td>1</td><td>T, U</td></tr><tr><td>Power Analysis and Sample Size Estimation</td><td>1</td><td>T, U</td></tr><tr><td>Nonparametric Designs and Alternatives</td><td>1</td><td>T, U</td></tr><tr><td>Case studies in pharmaceutical experiments</td><td>2</td><td>T, U</td></tr><tr><td>Case studies in molecular diagnostic experiments</td><td>2</td><td>T, U</td></tr><tr><td>Case studies in stem cell and reproductive experiments</td><td>2</td><td>T, U</td></tr></table>	Topic	Weight	Level	Introduction to Experimental Design	1	I,T	Types of Variables, Measurement, and Validity	1	T,U	Formulating Hypotheses and Research Questions	1	T, U	Randomization, Replication, and Control	1	T, U	Factorial Designs	1	T, U	Repeated Measures and Longitudinal Studies	1	T, U	Analysis of Variance (ANOVA)	1	T, U	Power Analysis and Sample Size Estimation	1	T, U	Nonparametric Designs and Alternatives	1	T, U	Case studies in pharmaceutical experiments	2	T, U	Case studies in molecular diagnostic experiments	2	T, U	Case studies in stem cell and reproductive experiments	2	T, U
	Topic	Weight	Level																																					
	Introduction to Experimental Design	1	I,T																																					
	Types of Variables, Measurement, and Validity	1	T,U																																					
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	Repeated Measures and Longitudinal Studies	1	T, U																																					
	Analysis of Variance (ANOVA)	1	T, U																																					
	Power Analysis and Sample Size Estimation	1	T, U																																					
	Nonparametric Designs and Alternatives	1	T, U																																					
Case studies in pharmaceutical experiments	2	T, U																																						
Case studies in molecular diagnostic experiments	2	T, U																																						
Case studies in stem cell and reproductive experiments	2	T, U																																						
Examination forms	Multiple-choice questions, written test																																							
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this module.																																							
Reading list	1. Textbook: 1. Montgomery, D. C. <i>Design and Analysis of Experiments</i> 2. Field, A. <i>Discovering Statistics Using SPSS</i> 2. Research papers relating pharmaceuticals, molecular diagnostic, stem cell and reproductive																																							

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-5) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	SLOs							
CLOs	1	2	3	4	5	6	7	8
1								
2		H		M				

3			M			M		
4							H	

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to Experimental Design	1	Lecture, Discussion		1, 2
2	Types of Variables, Measurement, and Validity	1-4	Lecture, Discussion,		1, 2
3	Formulating Hypotheses and Research Questions	3,4	Lecture, Discussion,		1, 2
4	Randomization, Replication, and Control	3,4	Lecture, Discussion,	HW	1, 2
5	Factorial Designs	3,4	Lecture, Discussion,		1, 2
6	Repeated Measures and Longitudinal Studies	3,4	Lecture, Discussion,		1, 2
7	Analysis of Variance (ANOVA)	3,4	Lecture, Discussion,		1, 2
8	Power Analysis and Sample Size Estimation Midterm test	3,4 1,3,4	Lecture, Discussion,		1, 2
9	Nonparametric Designs and Alternatives	3,4	Lecture, Discussion,		1, 2
10-11	Case studies in pharmaceutical experiments	3,4	Lecture, Discussion,	HW	3
12-13	Case studies in molecular diagnostic experiments	3,4	Lecture, Discussion,	HW	3
14-15	Case studies in stem cell and reproductive experiments	3,4	Lecture, Discussion,	HW	3
16-17	Final exam	1,3,4			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In class-activities, homework (30%)		60% pass	60% pass	
Midterm exam (30%)	60% pass		60% pass	60% pass
Final exam (40%)	60% pass		60% pass	60% pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1 Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2 Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3 Analytic rubric

**Oral communication value rubric for evaluating presentation tasks:*

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score

Presentation content	Content Organization: The presentation is delivered in logical order and has a clear structure, including an introduction and a conclusion.	15	
	Information: The presentation contains accurate information and is cited from appropriate external resources.	15	
	Language usage: Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	Visual aids: The presentation includes suitable and effective visual aids that capture the audience's attention.	15	
Presentation delivery	Time management: The Length of the presentation is within the assigned time limits.	10	
	Presentation Skill: The speaker maintains good eye contact with the audience, and speaks confidently with a good voice, fluid speech, and appropriate pronunciation.)	10	
	Question and Answer: The speaker addresses and answers all questions from the audience following the presentation.	20	
Score	Total Points	100	

****Critical thinking value rubric for evaluating questions in exams:***

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.

	questioned thoroughly.		experts are taken as mostly fact, with little questioning.	
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 11, 2025

7. Course coordinator/Lecturer

- Department: Biotechnology
- Email:

Ho Chi Minh City., 11/06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)

A handwritten signature in blue ink, appearing to read 'Nguyễn Văn Thuận', with a long horizontal flourish extending to the right.

Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of Biotechnology

COURSE SYLLABUS

Course Name: Plant Science

Course Code: BT218IU

1. General information

Course name	- <i>Practice in Plant Science</i> - <i>Khoa học thực vật</i>
Course designation	<i>This course provides learners comprehensive aspects of the plant kingdom, including the morphology, anatomy, physiology, function and responses of plants, as well as introduction of approaches for modification of plant traits. In addition, importance of plant diversity to human and ecosystem is also highlighted.</i>
Course type	☐ General knowledge ☒ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis Others:
Semester(s) in which the course is taught	6
Person responsible for the course	MBT. Hoang Thi Lan Xuan
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lectures, discussion, presentation
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (Lecture, laboratory session, discussion): 37.5 h Private study including examination preparation, specified in hours ¹ : 90 h

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Credit points	3 credits (~4.6 ETCS)
Number of periods	45
Required and recommended prerequisites for joining the course	- Prerequisites: Biology (BT311IU)
Course objectives	After completing the course, students can master the following knowledge: - Experiments in plant science research to understand plant activities - Plant classification according to adaptation and evolutionary characteristics, plant life cycle - Plant structure and function at the cellular, tissue, organ and individual levels - Basic biological processes including growth, development, photosynthesis, respiration, resources acquisition, internal transport of substances, gamete formation, pollination and fertilization, mechanisms of self-pollination reduction, seed development, germination, responses to abiotic and biotic factors, especially to cope with adverse factors and phototropism - Flowers and fruits: structure, function, biodiversity, pollination means - Understand the features of phytohormones and their regulatory roles - Understand genetic techniques on plants: targeting nuclear DNA versus organelle DNA, purposes, advantages, disadvantages, and applications.

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. An understanding of: • Aspects of the plant science, including plant classification and life cycle, anatomy, nutrition, physiology, growth and development. • Plant evolution and the importance of plant diversity to human and ecosystem, especially angiosperms • Important biological activities in plants including photosynthesis, respiration, hormonal regulation, responses and reproduction • Approaches for trait modifications by plant biotechnology and ethical concerns
	Skill	CLO2. Development of students' critical thinking and problem-solving skills. CLO3. Experience with writing and presentation skills. CLO4. Ability to explain various aspects related to plants using scientific concepts.
	Attitude	CLO5. Importance of plant to ecosystem and human life, plant protection and safety regulations regarding research and use of genetically modified plants.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>																																				
	Weight: lecture session (2.5 hours)																																				
	Teaching levels: I (Introduce); T (Teach); U (Utilize)																																				
	<table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction to plant science: Plant evolution, diversity and fitness to various geographical distribution</td><td>1</td><td>I, T</td></tr><tr><td>Plant structure and function at cell and tissue levels</td><td>1</td><td>T, U</td></tr><tr><td>Plant morphology: The plant body and major roles</td><td>1</td><td>I, U</td></tr><tr><td>Plant growth and development: The general process and mechanism and important factors influencing plant growth and development</td><td>2</td><td>T, U</td></tr><tr><td>Plant nutrition. Nutritional requirements, importance of soil and rhizosphere characters, case studies of nutrient deficiency.</td><td>1</td><td>I, T, U</td></tr><tr><td>Photosynthesis, photorespiration and energy: basic concepts and up-to-date understanding</td><td>1</td><td>I, T, U</td></tr><tr><td>Respiration and carbon cycle</td><td>1</td><td>I, T</td></tr><tr><td>Plant responses to internal and external signal: signaling transduction pathway; roles of plant hormones; plant responses to various stimuli</td><td>2</td><td>I, T, U</td></tr><tr><td>Resources acquisition and internal transport in plants, source-sink allocation</td><td>1</td><td>T, U</td></tr><tr><td>Angiosperms: significance of flowering plants, pollination, fertilization and seed development, fruit diversity and classification.</td><td>3</td><td>T, U</td></tr><tr><td>Plants and biotechnology. From classical breeding to genetic engineering and advanced strategies, purposes of modification and ethical concerns</td><td>1</td><td>I, T, U</td></tr></table>	Topic	Weight	Level	Introduction to plant science: Plant evolution, diversity and fitness to various geographical distribution	1	I, T	Plant structure and function at cell and tissue levels	1	T, U	Plant morphology: The plant body and major roles	1	I, U	Plant growth and development: The general process and mechanism and important factors influencing plant growth and development	2	T, U	Plant nutrition. Nutritional requirements, importance of soil and rhizosphere characters, case studies of nutrient deficiency.	1	I, T, U	Photosynthesis, photorespiration and energy: basic concepts and up-to-date understanding	1	I, T, U	Respiration and carbon cycle	1	I, T	Plant responses to internal and external signal: signaling transduction pathway; roles of plant hormones; plant responses to various stimuli	2	I, T, U	Resources acquisition and internal transport in plants, source-sink allocation	1	T, U	Angiosperms: significance of flowering plants, pollination, fertilization and seed development, fruit diversity and classification.	3	T, U	Plants and biotechnology. From classical breeding to genetic engineering and advanced strategies, purposes of modification and ethical concerns	1	I, T, U
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Plants and biotechnology. From classical breeding to genetic engineering and advanced strategies, purposes of modification and ethical concerns	1	I, T, U																																			
Examination forms	Written exam, presentation, progress and assignments																																				
Study and examination requirements	<i>Students must attend at least 80% of the classes in order to qualify for sitting the midterm and final exams.</i> <i>Discussion is strongly encouraged.</i> <i>Overall score: Students must have more than 50/100 points overall to pass this course.</i>																																				

Reading list	[1] Neil A. Campbell, Jane B. Reece, <i>Biology, 11th Edition</i>, Benjamin Cummings, 2016 or more recent edition [2] Raven, P.H., Evert, R.F., Eichhorn, S.E. (2004). <i>Biology of Plants</i>, 7th edition. W.H. Freeman Publisher. ISBN-10: 0716710072, ISBN-13: 978-0716710073. [3] Students are also encouraged to read recent review articles on related topics for updated information and overview, especially publications on <i>Journals Annual Review of Plant Biology, Plant Science, Trends in Plant Science, Current Plant Biology, Current Opinion in Plant Biology, Environmental and Experimental Botany, Plant Physiology and Biochemistry, Journal of Plant Physiology, Plant Stress, The Plant Journal</i>, ...

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) and Program/Student Learning Outcomes (PLO) is shown in the following table:

	PLOs							
CLOs	1	2	3	4	5	6	7	8
1			M		H			M
2			M					
3							M	
4			M					M
5					H			M

**Use Bloom's Taxonomy*

The program learning outcomes (PLOs) are detailed below:

- (1) An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)
- (2) An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)
- (3) An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)
- (4) An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)
- (5) An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)
- (6) An ability to apply modern techniques to produce biotechnological products. (Application)
- (7) An ability to analyze and interpret results in biotechnological process, product manufacturing. (Lifelong learning)
- (8) An ability to be well aware of professional development for a career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLOs	Learning activities	Assessments	Resources
1	Introduction to Plant Science. Evolution – from prokaryotic cyanobacteria to land plants. Plant cells, Plant tissues	1-4	Teaching, discussion	Midterm exam	[1],[2]

2	Plant morphology: The plant body and major roles	1,2	Teaching, discussion	Midterm exam	[1],[2]
3-4	Plant growth and development: The general process, mechanisms and important controlling factors	1,2	Teaching, discussion	Midterm exam, homework assignment	[1],[2]
5	- Photosynthesis, photorespiration: basic concepts and up-to-date understanding - Student presentation	1,3, 4	Teaching, discussion	Midterm exam, presentation	[1],[2]
6	- Respiration and Carbon cycle - Student presentation	1,3, 4	Teaching, discussion	Midterm exam, presentation	[1],[2]
7	- Plant nutrition: Nutritional requirements; importance of soil and rhizosphere, case studies of nutrient deficiency, nutritional adaptations and nutritional relations with other living organisms. - Review and Student presentation	1,2, 3	Teaching, discussion	Midterm exam, presentation	[1],[2]
8	- Student Presentation - Midterm Exam	1,3, 4	Discussion	Midterm exam, presentation	[1],[2]
9-10	Plant response to internal and external signal. Signaling transduction pathway; Plant hormones and their regulatory roles; Plant responses to other stimuli	1,2	Teaching, discussion	Final exam	[1],[2]
11-13	- Angiosperms: Significance of flowering plants; gametophyte formation, pollination and pollination means, fertilization, seed development, flower anatomy and functions, fruit diversity and classification. - Student presentation	1,2, 3	Teaching, discussion	Final exam, presentation	[1],[2]
14	- Resources acquisition and internal transport in plants, source-sink allocation - Student presentation	1,2, 3	Teaching, discussion,	Final exam, presentation	[1],[2]
15	- Plants and biotechnology. From classical breeding to genetic engineering and advanced strategies, purposes of modification and ethical concerns. - Review and Student Presentation	3,4,5	Teaching, discussion	Final exam, Presentation	[1],[2]
16-17	Final exam	1-5			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Progress and assignment (10%)	x	x	x	x	x
Presentation (20%)	x	x	x	x	x
Midterm exam (30%)	x	x	x	x	
Final exam (40%)	x	x	x	x	x

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1. Grading checklist for Progress assessment

Item	Maximal Score (%)
<i>Participation in class</i>	50
<i>Assignment submission by deadline, provide the key points to address the topic</i>	50
Total	100*

* The total score will be converted into 10% (percentage of Progress for whole course score).

Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Unsatisfactory (1)
Subject Knowledge	Accurate and comprehensive answers	Mostly accurate answers	Basic understanding shown	Incorrect or unclear responses
Analytical Thinking	Logical, in-depth analysis	Basic analysis present	Limited or surface-level reasoning	No analysis or illogical

5.2. Grading checklist for Presentation

Item	Maximal Score (%)
Content accuracy: Information is accurate, relevant, comprehensive and clearly addresses the topic and assignment.	35
Organization and Structure: Presentation has a clear introduction, body, and conclusion. Ideas are logically sequenced and easy to follow	10
Visual Aids: Visuals (slides, charts, props) enhance understanding, capture audience's attention and are well-designed, clear, and not overcrowded.	15
Delivery & Speaking Skills (individual-based assessment): Language usage, speak clearly, confidently, and at an appropriate pace. Good eye contact and engagement with the audience.	10
Engagement & Creativity: Presentation is engaging, original, and holds the audience's attention. Uses creative approaches where appropriate.	5
Sources of information: Reliable references, preferably using academic, recent publications	10
Time Management: Presentation stays within the allotted time without rushing or dragging.	5

<i>Q&A / Interaction (Individual-based assessment):</i> <i>Student responds thoughtfully and accurately to the allocated questions.</i>	<i>10</i>
<i>Total</i>	<i>100*</i>

** The total score will be converted into 20% (percentage of Report for whole course score).*

Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Unsatisfactory (1)
Content Quality	In-depth, up-to date, well illustrated content	Good coverage with relevant examples	Covers key points with limited examples	Poor or unclear content, mostly repeating what have learned in class
Presentation Skills	Confident, clear, engaging, effective use of tools	Clear presentation, some audience interaction	Hesitant delivery, limited interaction	Reading from notes, unclear, or off-topic
Supporting Materials (slides, etc.)	Visually clear, aesthetically pleasing, well sourced	Well-organized, complete	Basic slides, some disorganization	Disorganized or missing visual aids
Q&A Handling	Accurate, logical, with examples	Generally correct answers	Basic slides, some disorganization	Unable to answer or incorrect answers

5.3. Grading checklist for Exam

<i>Item</i>	<i>Maximal Score (%)</i>
<i>Multiple choice questions</i>	<i>60</i>
<i>Short answers</i>	<i>40</i>
<i>Total</i>	<i>100*</i>

** The total score will be converted into 30% (percentage of Midterm Exam for whole course score) and 40% (percentage of Final Exam for whole course score).*

6. Date revised: June 11, 2025

7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: htlxuan@hcmiu.edu.vn

Ho Chi Minh City, 11/06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)

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Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Developmental Biology

Course Code: BT306IU

1. General information

Course name	- <i>Developmental Biology</i> - <i>Sinh Học Phát Triển</i>
Course designation	<i>Developmental Biology program includes extensive research aimed at elucidating the molecular and genetic mechanisms that underlie embryonic development and tissue regeneration. This course is designed to provide characteristics of mammal embryo during pre-implantation and post-implantation development with an emphasis on the underlying cellular and molecular mechanisms. Developmental biology aims to understand how a single-cell embryo grows and changes to become a fully functional adult organism. Topics to be discussed include fertilization, determination of cell fate and differentiation, cell migration, establishment of the body, formation of selected organs and organ systems, stem cells, and limb regeneration.</i>
Course type	☐ General knowledge ☒ Fundamental Specialized ☐ knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	5, 6, 7
Person responsible for the course	Assoc. Prof. Nguyen Van Thuan and Assoc. Prof. Bui Hong Thuy Email: nvthuan@hcmiu.edu.vn; bhthuy@hcmiu.edu.vn
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lecture, Presentation, Quiz, Homework.

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 h Private study including examination preparation, specified in hours ¹ : 90 h	
Credit points	3 credits (Theory) 4.6 ECTS	
Number of periods	Theory: 45	
Required and recommended prerequisites for joining the course	- Prerequisites: *BT210IU-Human Physiology	
Course objectives	The goal of this course is to introduce you to address how complex multicellular organisms with diverse forms and cell types arise from single cells. This course provides an ability using your knowledge to make scientifically informed decisions about the future promises and challenges of stem cells, genome modification, manipulation of signalling pathways, tissue engineering for organ generation, and other strategies for the treatment of human congenital disease, and for the preservation of species.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: Understand the mechanism and control activities of the cell, how genetic information is stored in DNA and translated into protein and manipulation of gene expression in mammalian systems. CLO2: Understand the structures and functions of germ cells, embryos, determination of cell fate and how epigenetic mechanisms are involved in regulating the potentiality and differentiation of stem cells.
	Skill	CLO3: Recognize the experimental tools of developmental biology, and identify which organisms are amenable to specific experimental approaches. Experience with basic experimental techniques used in embryology and developmental biology.
	Attitude	CLO4: Development of their critical thinking and problem-solving skills, including read research articles and critically discuss the experimental approaches, results, and conclusions.

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to Developmental Biology- Course outline	1	I, T
	Mammalian Cell Structure- Molecular Foundations	1	I, T
	Fertilization-The First Cell Division and Differentiation of Embryo	2	I, T
	Post-implantation Development in Human Embryos	1	T, U
	The Genetic Core of Development-Zygotic Gene Activation- Determining the function of genes during development	3	I, T, U
	Implantation, Gastrulation, Organogenesis - Sex determination- Telomeres and aging	3	I, T, U
	Genomic reprogramming: Application on regenerative medicine and genomic preservation.	2	T, U
	Animal developmental biology and applications	1	T, U
Summary-Review	1	T, U	
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	Textbook: [1] Gilbert, S.F., Barresi, M.J. F., 2016. Developmental Biology, 11th Edition. Sinauer Associates, Inc. MA Gilbert, S.F., Barresi, M.J. F., 2016. Developmental Biology, 11th Edition. Sinauer Associates, Inc. MA. Book Reference: [1] Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts & Peter Walter 2014. Molecular Biology of The Cell (Sixth Edition), Article References: [3] To be provided (Note: Articles will be updated every year)		

2. Learning Outcomes Matrix (optional)

The intended learning outcomes (ILOs) of Biotechnology Program and three levels of contribution are defined using Bloom's taxonomy (Low [L]: Remember and Understand; Medium [M]: Apply and Analyze; High [H]: Evaluate and Create).

The relationship between Course Learning Outcomes (CLOs) (1-4) and ILOs (1-8) and the level of contribution of CLOs to ILOs is shown in the following table:

	ILOs							
CLOs	1	2	3	4	5	6	7	8
1			M					
2				H				
3						M-H		
4								M-H

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to Developmental Biology- Course outline	1- 4	Lecture, Discussion, In Class-Quiz	Quizzes	1, 2, 3
2	Mammalian Cell Structure- Molecular Foundations	1	Lecture, Discussion, In Class-Quiz		1, 2
3	Fertilization: Beginning of New Organism	1, 2	Lecture, Discussion, In Class-Quiz		1, 2
4	The First Cell Division and the First Differentiation of Embryo	1, 2	Lecture, Discussion, In Class-Quiz		1, 2
5	Post-implantation Development in Human Embryos	1, 2	Lecture, Discussion, In Class-Quiz	HW1	1, 2, 3
6	The Genetic Core of Development: Epigenetic Reprogramming	1, 2	Lecture, Discussion, In Class-Quiz		1, 3
7	Development of Embryo with Different Genome-Zygotic Gene Activation	2, 3	Lecture, Discussion, In Class-Quiz		1, 3
8	Determining the function of genes during development: Transgenic animals Midterm Test	1, 2, 3	Lecture, Discussion, In Class-Quiz		1,3
9	Implantation, Gastrulation, Organogenesis	1, 2	Lecture, Discussion, Presentation		1, 2
10	Later embryonic development: Sex determination	2, 3	Lecture, Discussion, Presentation	HW2	1, 2
11	Postembryonic development: Metamorphosis, regeneration, Telomeres and aging	2, 3	Lecture, Discussion, Presentation		1, 2, 3

12	Genomic reprogramming: Application on regenerative medicine	3, 4	Lecture Discussion Presentation		1, 3
13	Application for genomic preservation	3, 4	Lecture, Discussion, Presentation		1, 3
14	Developmental biology and applications	3, 4	Lecture, Discussion, Presentation		1, 3
15	Summary-Revision		Review-Test		
16-17	Final exam	2, 3, 4			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class Presentation/ quizzes (15%)			Presentation/ 70%Pass	Quiz/ Part. 70%Pass
Homework exercises (15%)	HW1 70%Pass		HW2 70%Pass	
Midterm exam (30%)	MCQs 50% Pass	MC-Written Questions 50% Pass	Written Questions 50% Pass	
Final exam (40%)		Multiple Choice Q. 50% Pass	MC-Written Questions 50% Pass	Written Questions 50% Pass

Note: %Pass (Exam): % students have scores greater than 50 out of 100.

%Pass (Presentation/ Assignment): % students have scores greater than 70 out of 100.

Multiple Choice Questions (MCQs); Homework (HW)

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		

Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: This rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

****Oral communication value rubric for evaluating presentation tasks:***

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score
Presentation content	<i>Content Organization:</i> The presentation is delivered in logical order and has a clear structure, including an introduction and a conclusion.	15	
	<i>Information:</i> The presentation contains accurate information and is cited from appropriate external resources.	15	
	<i>Language usage:</i> Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	<i>Visual aids:</i> The presentation includes suitable and effective visual aids that capture the audience's attention.	15	
Presentation delivery	<i>Time management:</i> The Length of the presentation is within the assigned time limits.	10	
	<i>Presentation Skill:</i> The speaker maintains good eye contact with the audience, and speaks confidently with a good voice, fluid speech, and appropriate pronunciation.)	10	
	<i>Question and Answer:</i> The speaker addresses and answers all questions from the audience following the presentation.	20	
Score	Total Points	100	

***Critical thinking value rubric for evaluating questions in exams:**

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 2025

7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: nvthuan@hcmiu.edu.vn; bhthuy@hcmiu.edu.vn

Ho Chi Minh City, dd/mm/yyyy

DEAN OF DEPARTMENT/SCHOOL

(Signature)

Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Scientific Writing Workshop

Course Code: **BT361IU**

1. General information

Course name	- Scientific Writing Workshop - Kỹ năng viết bài khoa học
Course designation	<i>The main objective of this course is to provide students with basic knowledge of ethical issues in the use of human and animal materials for research, as well as ethical issues in the use of human embryos and stem cell in research. This course is also to provide students with advanced knowledge of academic integrity, plagiarism in scientific writing and misconduct in research and scientific publications, as well as how to avoid violations of academic integrity standards, plagiarism and misconduct in scientific research and publications. In addition, the course will help students gain a comprehensive understanding of the key elements of clinical research, including clinical trial phases, types and designs of clinical trials, trial operations and administration, and avoid violations of academic integrity standards, plagiarism and misconduct in scientific research and publication.</i>
Course type	☐ General knowledge ☐ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	5, 6, 7
Person responsible for the course	Assoc. Prof. Nguyen Van Thuan Email: nvthuan@hcmiu.edu.vn
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective

Teaching methods	Lecture, Presentation, Quiz, Homework.		
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 h Private study including examination preparation, specified in hours : 90 h		
Credit points	3 credits (Theory) 4.6 ECTS		
Number of periods	Theory: 45.		
Required and recommended prerequisites for joining the course	Non		
Course objectives	The course provides students how to create a scientific hypothesis, how to solve a scientific hypothesis and how to successfully write a scientific paper for publication and a thesis for graduation. Students will learn about clinical research and clinical trials. The course also introduces students to issues related to academic integrity, plagiarism and misconduct in research and scientific writing.		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1: Understand the ethical issues in research, clinical trials, and scientific publication as well as the ethical issues in using materials of animal and human origin for scientific research, and be aware of how to avoid committing it.	
	Skill	CLO2. Understand academic integrity, plagiarism and misconduct in scientific publication and scientific research, and how to avoid plagiarism and misconduct in writing for publication and in scientific research. CLO3. Understand how to find a scientific hypothesis, design experiments, answer the question of the hypothesis, and how to give an excellent oral and poster presentation.	
	Attitude	CLO4. Have demonstrated self-direction and initiative in their learning. Know how to evaluate a scientific paper as well as evaluate a scientist.	

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction of scientific writing workshop	3	I, T
	Ethics of research using hybrids, chimeras and cytoplasm hybrids in Scientific Research	3	T, U
	Ethics in human embryos and stem cell research	6	T, U
	Ethical issues related to use human and animals’ materials for research	3	T, U
	Academic integrity	3	I, T
	Plagiarism and misconducts in scientific research and publication	3	T, U
	An index to quantify an individual's scientific paper and quantifying coauthor contributes in a scientific paper	3	I, T
	How to write an abstract and full paper for conference and scientific paper for publication	3	T, U
	How to write a thesis for graduation	3	T, U
	How to give an excellent oral and poster presentation	3	T, U
Understanding clinical research and clinical trials	3	T, U	
Summary-Review	3	T, U	
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	Textbook: [1] Lecture slides (receive from instructor) via Backboard [2] Research papers received from lecturer		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	SLOs							
CLOs	1	2	3	4	5	6	7	8
1					H			
2		M						
3							H	
4								H

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction of Scientific Writing Workshop - Course outline	1-4	Lecture, Discussion, In Class-Quiz	Quizzes	1,2
2	Ethics research using hybrids, chimeras and cytoplasm hybrids	2	Lecture, Discussion, In Class-Quiz		1, 2
3	Ethics in Scientific Research & Scientific publication	2	Lecture, Discussion, In Class-Quiz	HW1	1, 2
4	Ethics in the Use of Human Embryos and Stem Cell Research	2-3	Lecture, Discussion, In Class-Quiz		1, 2
5	Ethical Issues Related to Use of Animals in Research	2-3	Lecture, Discussion, In Class-Quiz		1,2
6	Academic Integrity	2	Lecture, Discussion, In Class-Quiz	HW2	1, 2
7	Plagiarism in Scientific Publication and in thesis for graduation	2-3	Lecture, Discussion, In Class-Quiz		1, 2
8	The Misconducts of Scientific Research and publication Midterm Test	2-3 1-4	Lecture, Discussion, In Class-Quiz		1,2
9	An index to Quantify an Individual's Scientific Paper	2-3	Lecture, Discussion, Presentation		1,2
10	An index to Quantify an Individual's Scientific Paper	4	Lecture, Discussion, Presentation	HW3	1, 2
11	Quantifying coauthor contributes in a scientific paper	4	Lecture, Discussion, Presentation		1, 2
12	How to write an Abstract and Full paper for conference and for thesis	4	Lecture Discussion Presentation		1, 2

13	How to give an excellent oral and poster presentation	4	Lecture, Discussion, Presentation		1, 2
14	Understanding Clinical Trials	2-4	Lecture, Discussion		1,2
15	Summary-Revision		Lecture, Discussion		1.2
16-17	Final Exam	1-4			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class Presentation/ quizzes (10%)		Quiz/Part 80% pass		Quiz/Part 80% pass
Homework exercises (10%)	HW1 80% Pass		HW1 80% Pass	
Midterm exam (40%)	Part I. 60% Pass	Part II. Q1,2 60% Pass		
Final exam (40%)		Part I 60% pass	Part II. Q1,2 60% Pass	Part II. Q3,4 60% Pass

Note: % Pass (Exam): % students have scores greater than 50 out of 100.

% Pass (Presentation/ Assignment): % students have scores greater than 70 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		

Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: This rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

**Oral communication value rubric for evaluating presentation tasks:*

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score
Presentation content	<i>Content Organization:</i> The presentation is delivered in logical order and has a clear structure, including an introduction and a conclusion.	15	
	<i>Information:</i> The presentation contains accurate information and is cited from appropriate external resources.	15	
	<i>Language usage:</i> Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	<i>Visual aids:</i> The presentation includes suitable and effective visual aids that capture the audience's attention.	15	
Presentation delivery	<i>Time management:</i> The Length of the presentation is within the assigned time limits.	10	
	<i>Presentation Skill:</i> The speaker maintains good eye contact with the audience, and speaks confidently with a good voice, fluid speech, and appropriate pronunciation.)	10	
	<i>Question and Answer:</i> The speaker addresses and answers all questions from the audience following the presentation.	20	
Score	Total Points	100	

**Critical thinking value rubric for evaluating questions in exams:*

	Capstone	Milestone		Benchmark
	4	3	2	1

Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 2025

7. Course coordinator/Lecturer

- Department: Biotechnology
- Email: nvthuan@hcmiu.edu.vn

Ho Chi Minh City, /June/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY

(Signature)

Assoc. Prof. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of Biotechnology

COURSE SYLLABUS

Course Name: Human Pharmacology

Course Code: BT207IU

1. General information

Course name	- <i>Human Pharmacology</i> - <i>Dược lý học ở người</i>
Course designation	<i>Development of the new drug discovery is necessary to treat the serious diseases threatening to human lives. Screening a new and potent drug is important step in drug discovery development. This course is designed as an introduction to pharmacology and toxicology. Pharmacology is broadly defined as the effect of drugs and chemicals on living organisms. This course supplies advantages and disadvantages of routes of administration, the movement way of drug molecules across cell membranes, the drug metabolism and elimination in the body, drug interactions & rationale for drug combinations. The course also lectures how to screen the new drug approved by FDA (Food and Drug Administration), the mechanism of action of and drugs affecting on central nervous system, endocrine and blood system, antimicrobial drugs such as vaccine, peptides and protein; antitumor agents such as monoclonal antibodies.</i>
Course type	☐ General knowledge ☒ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	4, 5, 6, 7
Person responsible for the course	Associate Professor. Nguyen Hoang Khue Tu
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lecture, homework, presentation, seminar

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5h Private study including examination preparation, specified in hours ¹ : 90h	
Credit points	3 credits (Theory: 3) 4.6 ECTS	
Number of periods	Theory: 45	
Required and recommended prerequisites for joining the course	- Prerequisites:	
Course objectives	This course will provide students the important knowledge of Pharmaceutical products in pharmacokinetics, pharmacodynamics and molecular interaction in human for drug uses and development. Students will have the skills such as application the mechanisms and the legal steps involved in progressing a new drug to market and effective communication with lecturers and classmates. Students are able to explain the analytical methods, interpret effects and side-effects of the drugs, and biomaterials for long-life.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: Understanding the importance of pharmaceutical products in pharmacokinetics, pharmacodynamics and molecular interaction in human for drug uses and development.
	Skill	CLO2: Effectively communicating with lecturers and classmates. CLO3: Applying the mechanisms and the legal steps involved in progressing a new drug to market.
	Attitude	CLO4: Analyzing, interpreting the effects and side-effects of the drugs, and biomaterials with the spirit of long-life.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	General principles	2	I, T
	Blood pharmacology	2	T, U
	Endocrine pharmacology	1	T, U
	Antimicrobial agents	3	T, U
	Anticancer drugs	2	T, U
	Central nervous system	1	T, U
	Autonomous nervous system	1	T, U
	Pharmacology of Drug-used peptides and proteins	2	T, U
Revision	1	T,U	
Examination forms	Multiple-choice questions, written test		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this module.		
Reading list	Textbook: 1. Goodman and Gilman (2006) <i>The Pharmacological Basis of Therapeutics</i> , 11th edition, Pergamon Press. 2. Gibaldi and Prescott (1999) <i>Hand book of clinical pharmacokinetics</i> . 3. Katzung (2005) <i>Pharmacology</i> , Lance. 4. David Thurston (2004) <i>Chemistry and Pharmacology of Anticancer drugs</i> . 5. Kaplan (2007) <i>USMLE Step 1 Pharmacology</i>		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-5) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	PLO							
CLO	1	2	3	4	5	6	7	8
1	M		M					
2		M						
3					M			
4							H	

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1-2	General principles	1,2, 3,4	Lecture, Discussion, In Class-Quiz	Quizzes	1-5
3-4	Blood pharmacology	1,2, 3,4	Lecture, Discussion, In Class-Quiz	HW1	1-5
5	Endocrine pharmacology	1,2, 3,4	Lecture, Discussion, In Class-Quiz		1-5
6-7-8	Antimicrobial agents Midterm test	1,2, 3,4 1, 3, 4	Lecture, Discussion, In Class-Quiz	Quizzes	1-5
9-10	Anticancer drugs	1,2, 3,4	Lecture, Discussion, In Class-Quiz	HW2	1-5
11	Central nervous system	1,2, 3,4	Lecture, Discussion, In Class-Quiz		1-5
12	Autonomous nervous system	1,2, 3,4	Lecture, Discussion, In Class-Quiz		1-5
13-14	Pharmacology of Drug-used peptides and proteins	1,2, 3,4	Lecture, Discussion, In Class-Quiz		1-5
15	Revision	1, 3,4	Review test		1-5
16-17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In class, quizzes, presentation (15%)	60% pass	60% pass	60% pass	60% pass
Homework (15%)	60% pass		60% pass	60% pass
Midterm exam (30%)	60% pass		60% pass	60% pass
Final exam (40%)	60% pass		60% pass	60% pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports	
Student:	HW/Assignment:

Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: This rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

**Oral communication value rubric for evaluating presentation tasks:*

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score
Presentation content	Content Organization: The presentation is delivered in logical order and has a clear structure, including an introduction and a conclusion.	15	

	Information: The presentation contains accurate information and is cited from appropriate external resources.	15	
	Language usage: Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	Visual aids: The presentation includes suitable and effective visual aids that capture the audience's attention.	15	
Presentation delivery	Time management: The Length of the presentation is within the assigned time limits.	10	
	Presentation Skill: The speaker maintains good eye contact with the audience, and speaks confidently with a good voice, fluid speech, and appropriate pronunciation.)	10	
	Question and Answer: The speaker addresses and answers all questions from the audience following the presentation.	20	
Score	Total Points	100	

****Critical thinking value rubric for evaluating questions in exams:***

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.

Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 11, 2025

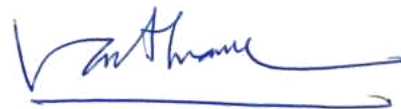
7. Course coordinator/Lecturer

- Department: Biotechnology
- Email: nhktu@hcmiu.edu.vn

Ho Chi Minh City, 11/06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)



Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of ...

COURSE SYLLABUS

Course Name: Protein Biotechnology

Course Code: BT172IU

1. General information

Course name	- <i>Protein Biotechnology</i> - <i>Công nghệ sinh học Protein</i>
Course designation	<i>This course provides students with a comprehensive overview of protein biotechnology in three main themes: protein biochemistry, protein analysis and purification, process for recombinant protein production and applications. Protein Biotechnology course also equips students with routine techniques and analytical skills used to study proteins.</i> .
Course type	☐ <i>General knowledge</i> ☒ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	5,6,7
Person responsible for the course	Associate Professor. Nguyen Hoang Khue Tu
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, homework, presentation

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 85h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 25h Private study including examination preparation, specified in hours ¹ : 75	
Credit points	2 credits (Theory) 30.9 ECTS	
Number of periods	Theory: 30	
Required and recommended prerequisites for joining the course	- Prerequisites:	
Course objectives	This course will provide students with the knowledge on structure and function of proteins, principles of protein engineering, techniques in protein biotechnology, single cell protein, protein fermentation and characterization. The course will also let students apply protein field in diagnostic, therapeutic use and other industries together with the rules of safety, environments in protein biotechnology. Students also have the skills in effective communication with lecturers and classmates with their solving for the problems. The students will apply the analytical methods, equipments and interpret results for developing proteins and continue to study biotechnology and related majors in Vietnam or abroad with the spirit of lifelong learning.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understanding the structures and function of proteins, principles of protein engineering, techniques in protein biotechnology, single cell proteins, fermentation for protein production, and characterization
	Skill	CLO2. Effectively communicating with lecturers and classmates and solving the problems by themselves. CLO3. Applying protein biotechnology in diagnostic, therapeutic use and other industries with concepts of safety, environments in protein biotechnology and related fields.
	Attitude	CLO4. Developing, explaining protein roles in analytical methods, equipments legally, and safely and continue to study biotechnology and related majors in Vietnam or abroad with the spirit of lifelong learning.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction of protein biotechnology	1	I
	Protein structure	1	T,U
	Recombinant protein production	1	T,U
	Single cell protein and fermentation	1	T,U
	Methods of protein isolation	1	T,U
	Methods of protein purification	1	T,U
	Methods of Protein detection and quantification	1	T,U
	Methods for protein stabilization, refolding, characterization	1	T,U
	Applications of protein biotechnology	1	T, U
Revision	1	T, U	
Examination forms	Multiple-choice questions, written test		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this module.		
Reading list	Textbook: 1. Gary Walsh, <i>Protein Biochemistry and Biotechnology</i> , Wiley, 2014 2. Tamás Emri, Éva Csősz and József Tőzsér, <i>Protein Biotechnology</i> , 2011. (Manifestation of Novel Social Challenges of the European Union in the Teaching Material of Medical Biotechnology Master’s programmes at the University of Pécs and at the University of Debrecen		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-5) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	PLO							
CLO	1	2	3	4	5	6	7	8
1		M						

2								
3				M		M		
4					M		H	

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction of protein biotechnology	1	Lecture, Discussion, In Class-Quiz		1-2
2	Protein structure	1,2,3,4	Lecture, Discussion, In Class-Quiz	HW	1-2
3	Recombinant protein production	1,2,3,4	Lecture, Discussion, In Class-Quiz	Quizzes	1-2
4	Single cell protein and fermentation	1,2,3,4	Lecture, Discussion, In Class-Quiz		1-2
5	Methods of protein isolation Midterm test	1,2,3,4 1,3,4	Lecture, Discussion, In Class-Quiz		1-2
6	Methods of protein purification	1,2,3,4	Lecture, Discussion, In Class-Quiz		1-2
7	Methods of Protein detection and quantification	1,2,3,4	Lecture, Discussion, In Class-Quiz		1-2
8	Methods for protein stabilization, refolding, characterization	1,2,3,4	Lecture, Discussion, In Class-Quiz		1-2
9	Applications of protein biotechnology	1,2,3,4	Lecture, Discussion, Presentation	Presentation	1-2
10	Revision	1,2,3,4	Presentation Review test	Presentation	1-2
11-12	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In class, quizzes, presentation (15%)	60% pass	60% pass	60% pass	60% pass
Homework (15%)	60% pass		60% pass	60% pass
Midterm exam (30%)	60% pass		60% pass	60% pass
Final exam (40%)	60% pass		60% pass	60% pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

5.1 Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2 Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3 Analytic rubric

**Oral communication value rubric for evaluating presentation tasks:*

Category	Scoring Criteria	Total point	Score
Presentation content	<i>Content organization:</i> logical, clear	15	
	<i>Language usage:</i> no grammar errors, no plagiarism	15	

	Visual aids: appropriate and effective visual aid to attract audience	10	
	Informative: accurate and cited from clear external resources	15	
Presentation delivery	Time management: within time limitation	10	
	Presentation skill: clear language pronunciation, good voice, confident speech	15	
	Question and answer: able to answer the questions showing understanding, interpretation and application	20	
	Total score	100	

Source: Association of American Colleges and Universities

***Critical thinking value rubric for evaluating questions in exams:**

	Capstone 4	Milestone 3 2		Benchmark 1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.

Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 11, 2025

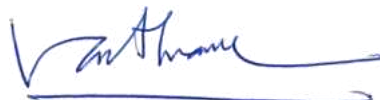
7. Course coordinator/Lecturer

- Department: Biotechnology
- Email: nhktu@hcmiu.edu.vn

Ho Chi Minh City, 11/06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)



Nguyễn Văn Thuận



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Protein Biotechnology

Course Code: BT340IU

1. General information

Course name	- <i>Practice in Protein Biotechnology</i> - <i>Thực hành Công nghệ sinh học Protein</i>
Course designation	<i>This course is designed for undergraduate students who are interested working with recombinant proteins and protein analysis. It trains students commonly used techniques in the field of protein biotechnology.</i>
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☒ <i>Others: Foundation elective</i>
Semester(s) in which the course is taught	6
Person responsible for the course	Dr. Tran Thi Hai Yen
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lectures, discussion, demonstrations, labworks.

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 55 Contact hours (lectures, discussion, labworks): 30 Private study including examination preparation, specified in hours ¹ : 25		
Credit points	1 credit (Practice Lab) ~ (2 ECTS)		
Number of periods	Practice: 30		
Required and recommended prerequisites for joining the course	- Prerequisites: Biology (BT311IU) Practice in Biology (BT312IU) Biochemistry (BT319IU) Practice in Biochemistry (BT320IU) Molecular Biotechnology (BT333IU) Practice in Molecular Biotechnology (BT334IU) - Corequisites: Protein (New code)		
Course objectives	On completion of this course, students should be able to - understand well what can be done with proteins and how to study protein characteristics - perform techniques used in working with generating and analyzing recombinant proteins and evaluating protein activity in an extract		
Course learning outcomes	Upon the successful completion of this course students will have or have the following improved		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Understanding commonly used techniques in protein biotechnology including preparing, selecting and maintaining cells, extracting, quantifying, purifying and analyzing recombinant proteins and analyzing proteinaceous enzymatic activity.	
	Skill	CLO2. Being able to perform commonly used techniques in protein biotechnology including preparing, selecting and maintaining cells, expressing, extracting, quantifying, purifying and analyzing recombinant proteins and analyzing proteinaceous enzymatic activity. CLO3. General lab skills, Critical Thinking, Teamworking, Scientific writing.	
	Attitude	CLO4. Seriousness, Care, Hardworking, Activeness, Patience.	

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (4 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to the practical course: safety issue, chemical and reagent preparation	1	I, T, U
	emGFP expression in <i>E. coli</i>	1	T, U
	emGFP purification by affinity chromatography	1	T, U
	Protein quantification	1	T, U
	SDS-PAGE: gel preparation, running and staining	1	T, U
Examination forms	Western blot: Gel running, Membrane transfer, Antibody Incubation, Detection		
	Lab review and Examination of immunological labwork		
Examination forms	Lab reports; Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	[1] Protein Biotechnology Lab Manual (Edited by Tran Thi Hai Yen), <i>School of Biotechnology, International University [Internal Use]</i>		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-4) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	ILO							
CLO	1	2	3	4	5	6	7	8
1			H					
2				H		H		
3							M	
4				H				

The intended learning outcomes (ILOs) are detailed below:

- (1) An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)
- (2) An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)
- (3) An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)
- (4) An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)
- (5) An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)
- (6) An ability to apply modern techniques to produce biotechnological products. (Application)
- (7) An ability to analyze and interpret results in biotechnological process, product manufacturing. (Lifelong learning)
- (8) An ability to be well aware of professional development for a career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to the practical course: safety issue, chemical and reagent preparation	1,2,3,4	Progress and bonus score	Lecture, Discussion, Practice	1
2	emGFP expression in <i>E. coli</i>	1,2,3,4	Progress and bonus score	Lecture, Discussion, Practice	1
3	emGFP purification by affinity chromatography	1,2,3,4	Progress and bonus score	Lecture, Discussion, Practice	1
4	Protein quantification	1,2,3,4	Progress and bonus score	Lecture, Discussion, Practice	1
5	SDS-PAGE: gel preparation, running and staining	1,2,3,4	Progress and bonus score	Lecture, Discussion, Practice	1
6	Western blot: Gel running, Membrane transfer, Antibody Incubation, Detection	1,2,3,4	Progress and bonus score	Lecture, Discussion, Practice	1
7	Lab Report Submission/ Lab Test				

* Homework is assigned to groups of students. It includes scientific writing and presentation task which are due after Mid-term examination.

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4

Attendance (10%)	x	x	x	x
Performance (30%)		x	x	x
Lab report (30%)	x		x	x
Lab Test (30%)	x	x	x	

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

Grading checklist:

Grading checklist for Progress			
Student:		Evaluator:	
Date:			
	Max.	Score	Comments
Attendance (20%)			
Fully attend	10		
Be on-time	10		
Participation (20%)			
Actively engaged in lecture discussion	10		
Actively engaged in lab activity	10		
TOTAL SCORE	40		

Grading checklist for Written Reports			
Student:		Report:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (70%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		

Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100*		

* The total score will be converted into 30% (percentage of Report for whole course score).

Grading checklist for Final exam			
Student:	Evaluator:		
Date:			
	Max.	Score	Comments
Multiple-choice questions (70%)			
Pick-up correct answer	70		
Short-answer questions (30%)			
Give the correct answer	15		
Explanation for answer	15		
TOTAL SCORE	100*		

* The total score will be converted into 30% (percentage of Final exam for whole course score).

6. Date revised: June 10, 2025

7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: tthyen@hcmiu.edu.vn

Ho Chi Minh City, 10/6/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)

Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology

COURSE SYLLABUS

Course Name: Molecular Genetics

Course Code: BT217IU

1. General information

Course name	- (in English) Molecular Genetics - (in Vietnamese) Di truyền phân tử
Course designation	<i>The course includes: (i) Mechanisms of gene control and nature of mutation in both prokaryotes and eukaryotes; (ii) Application of key molecular genetic techniques in the laboratory and in practice; (iii) Genomics and proteomics studies; (iv) QTL analysis for quantitative traits; (v) Introduction to bioinformatics; (vi) Evolution at molecular level.</i>
Course type	☐ General knowledge ☐ Fundamental X ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	1 & 2
Person responsible for the course	<i>Dr. Nguyen Minh Thanh</i>
Language	English
Relation to curriculum	☐ Compulsory ☐ Elective X
Teaching methods	Lecture, quiz, assignment, project

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 90 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 Private study including examination preparation, specified in hours ¹ : 45	
Credit points	3 credits (Theory: 3 + Practice: 0) 4.6 ECTS (<i>optional</i>)	
Number of periods	Theory: 45 Practice: 0	
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name)..... - Corequisites: (Course code – Course name) - Previous course (Course code – Course name): BT311IU – Biology	
Course objectives	This course introduces the integration of classical genetics and modern molecular biology and its applications	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Gain knowledge of gene regulation, effects of mutations, the new disciplines of genomics, proteomics and bioinformatics. CLO2. Be familiar with the most common techniques in molecular genetics. CLO3. Understand molecular genetic analysis of simple and complex phenotypic traits, genome, transcriptome and evolution.
	Skill	CLO4. Apply the basic bioinformatics in molecular genetics.
	Attitude	CLO5. Be aware of the power of molecular genetics to answer critical questions about life and highlight how this knowledge can be applied to addressing problems in society.

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to molecular genetics	1	I
	Regulation of gene expression in prokaryotes & eukaryotes	2	T
	Transposable genetic elements	1	I, T
	Mutations & DNA repair	1	T
	Genetics of bacteria & their viruses	1	T
	The techniques of molecular genetics	1	T, U
	Genomics and Proteomics	1	I, T
	QTL analysis	1	T
	Molecular evolution	1	T
	Application of molecular genetics	2	T, U
Applied bioinformatics for molecular genetics	2	T, U	
Examination forms	Multiple-choice questions, short-answer questions, true-false questions, matching questions, fill-in questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	1. Pierce, B.A., 2012. Genetics: A Conceptual Approach, 4th Edition. W.H. Freeman and Comp., New York. 2. Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J., 2015. Introduction to Genetic Analysis, 11th Edition. W.H. Freeman and Comp., New York. 3. Verma, A.S. & Singh, A., 2020. Animal Biotechnology: Models in Discovery and Translation, 2 nd Edition. Academic Press is an imprint of Elsevier. 4. Choudhuri, S., 2014. Bioinformatics for Beginners: Genes, Genomes, Molecular Evolution, Databases & Analytical Tools. Elsevier Inc.		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) and Program/Student Learning Outcomes (PLO) is shown in the following table:

	PLO							
CLO	1	2	3	4	5	6	7	8
1						M		
2				M				
3		M						
4							M	
5								M

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to molecular genetics	1	Lecture, homework quiz	Quiz 1	[1]
2 & 3	Regulation of gene expression in prokaryotes & eukaryotes	1	Lecture, homework quiz	Quiz 2	[1], [2]
4	Transposable genetic elements	1	Lecture, homework quiz	Quiz 3	[1], [2]
5	Mutations & DNA repair	1	Lecture, homework quiz	Quiz 4	[1], [2]
6	Genetics of bacteria & their viruses	1, 2	Lecture, homework quiz	Quiz 5	[1], [2]
7	The techniques of molecular genetics	1, 2	Lecture, homework quiz	Quiz 6	[1], [2]
8	Midterm exam				
9	Genomics and Proteomics	3	Lecture,	Quiz 7	[1], [2]
10	QTL analysis	3	Lecture, Discussion		[1], [2]
11	Molecular evolution	3	Lecture, Discussion		[1], [2]
12 & 13	Application of molecular genetics	4, 5	Presentation, Group work	Presentation	[3]
14 & 15	Applied bioinformatics for molecular genetics	4	Computer lab, Group work	Assignment	[4]
16-17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Quiz, presentation, assignment (30%)	Quiz 1, 2, 3, 4, 5, 6 60% Pass	Quiz 5, 6 60% Pass	Quiz 7 60% Pass	Assignment Presentation 60% Pass	Assignment Presentation 60% Pass
Midterm exam (30%)	x 50 %Pass	x 50% Pass			
Final exam (40%)			x 50% Pass	x 50% Pass	x 50% Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical contents (70%)			
Abstract clearly identifies purpose and summarizes principal contents	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	10		
Analysis and discussion demonstrate good subject mastery	40		
Summary and conclusions appropriate and complete	10		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (10%)			
Correct spelling, grammar	5		
Clear and easy to read	5		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.

Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.

Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

6. Date revised: Aug. 5, 2025

7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: nmthanh@hcmiu.edu.vn

....., dd/mm/yyyy

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)



Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Molecular Microbiology

Course Code: BT363IU

1. General information

Course designation	In Molecular Microbiology the fascinating array of intricate microbial components and genetic pathways, principally from of bacteria and fungi, will be revealed with particular emphasis on how these relate to their cellular biology, environmental survival strategies, human infection and treatment of disease. Students will learn how these molecular processes are not only important to the microorganisms but also how they can be exploited through advanced molecular techniques for human benefit (societal, environmental and industrial) and for the advancement of medicine. This course has an emphasis on research and as such consists of current-knowledge lecture material and advanced, comprehensive practicals.
Semester(s) in which the course is taught	II, III
Person responsible for the course	Assoc. Prof. Nguyen Hoang Khue Tu E-mail: nhktu@hcmiu.edu.vn
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, paper discussion, quiz, assignment, and presentation

Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 127.5 h</i> <i>Contact hours (lecture, paper discussion, and presentation): 37.5 h</i> <i>Private study including examination preparation, specified in hours¹: 90 h</i>	
Credit points	03 credits (theory) ~ (4.6 ECTS)	
Required and recommended prerequisites for joining the course	Microbiology	
Course objectives	On completion of this course, students will be able to: (1) Analyze genetic manipulation (2) Differentiate signal transduction (3) List regulation of gene expression, bacterial operons and regulons (4) Describe fungal genetics, bacterial physiology and stress responses, bacterial organelles and their function and mechanisms of bacterial persistence. Two extended practical classes (5) Propose High throughput compound screening for antibiotic discovery for the treatment of emerging superbugs. (6) Master skills for presentation and group discussion on scientific topics	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Describing important characteristics of genetic manipulation, signal transduction, regulations of gene expression, bacterial operons and regulons CLO2. Acquiring and mastering microbial genetic engineering, physiology
	Application	CLO3. Ability to high through put compound screening
	Attitude	CLO4. Stay updated with the contemporary applications in the field

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction to molecular microbiology</td><td>1</td><td>I, T</td></tr><tr><td>Advanced technologies</td><td>2</td><td>I, T</td></tr><tr><td>Microbial gene regulation in relation to physiology</td><td>1</td><td>I, T</td></tr><tr><td>Microbial cell biology - structure and components</td><td>1</td><td>T, U</td></tr><tr><td>Microbial adaption</td><td>2</td><td>T, U</td></tr><tr><td>Signal transduction</td><td>1</td><td>T, U</td></tr><tr><td>Microbial genetics</td><td>1</td><td>T, U</td></tr><tr><td>Molecular mechanisms and diseases</td><td>1</td><td>T, U</td></tr><tr><td>Bioactive compound screening</td><td>2</td><td>T, U</td></tr><tr><td>Papers discussion</td><td>1</td><td>U</td></tr><tr><td>Group presentation</td><td>2</td><td>U</td></tr></table>	Topic	Weight	Level	Introduction to molecular microbiology	1	I, T	Advanced technologies	2	I, T	Microbial gene regulation in relation to physiology	1	I, T	Microbial cell biology - structure and components	1	T, U	Microbial adaption	2	T, U	Signal transduction	1	T, U	Microbial genetics	1	T, U	Molecular mechanisms and diseases	1	T, U	Bioactive compound screening	2	T, U	Papers discussion	1	U	Group presentation	2	U
Topic	Weight	Level																																			
Introduction to molecular microbiology	1	I, T																																			
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Signal transduction	1	T, U																																			
Microbial genetics	1	T, U																																			
Molecular mechanisms and diseases	1	T, U																																			
Bioactive compound screening	2	T, U																																			
Papers discussion	1	U																																			
Group presentation	2	U																																			
Examination forms	Written exam, oral presentation, and report																																				
Study and examination requirements	Attendance: A minimum attendance of 80 percent of the class sessions is compulsory. Student participation will be assessed on a regular basis. Questions and comments are strongly encouraged. Assignments/Examination: Students must obtain at least 50/100 points in total to pass this course.																																				
Reading list	Textbook 1. Joanne Willey, Molecular Microbiology, 1st ed, 2021 Article References 2. To be provided (Note: Articles will be updated every year) Other 3. Slides of lectures.																																				

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO 1-4) and Program Learning Outcomes (PLO 1-8) is shown in the following table:

	SLO							
CLO	1	2	3	4	5	6	7	8
1	x							
2			x					
3		x						
4								x

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to molecular microbiology	1	Activities in class	Lecture, Discussion,	1,2,3
2,3	Advanced technologies	1,2,3	Activities in class	Lecture, Discussion,	1,2,3
4	Microbial gene regulation in relation to physiology	1,2	Activities in class	Lecture, Discussion,	1,2,3
5	Microbial cell biology - structure and components	1,2	Activities in class	Lecture, Discussion,	1,2,3
6,7	Microbial adaption	1,2	Activities in class	Lecture, Discussion,	1,2,3
8	Signal transduction	1,2	Activities in class	Lecture, Discussion,	1,2,3
9	Midterm				
10	Microbial (Bacteria, Fungi,...) genetics	1,2	Quizzes	Lecture, Discussion, In-class Quiz	1,3
11	Molecular mechanisms and diseases	1,2,3	Quizzes	Lecture, Discussion, In-class Quiz	1
12,13	Bioactive compound screening	1,2,3	Quizzes	Lecture, Discussion, In-class Quiz	1
14	Papers discussion	2,4	HW, Quizzes	Papers, discussion	2
15,16	Group presentation	2,3	Quizzes	Presentation, discussion	Topics to be assigned
17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Individual assignment (15%)		HW 70%Pass		

Group assignment (15%)			P 70%Pass	
Midterm exam (30%)	Q 50%Pass	Q 50%Pass		
Final exam (40%)		Q 50%Pass		Q 50%Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

1. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical contents (70%)	70		
Abstract clearly identifies purpose and summarizes principal contents	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	10		
Analysis and discussion demonstrate good subject mastery	40		
Summary and conclusions appropriate and complete	10		
Organization (10%)	10		
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (10%)	10		
Correct spelling, grammar	5		
Clear and easy to read	5		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

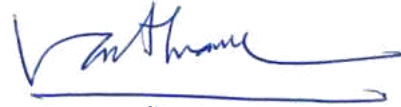
Source: Association of American Colleges and Universities

2. Date revised: September 22, 2023

Ho Chi Minh City, 22/09/2023

Head/Dean of Department/School

(Signature)

A handwritten signature in blue ink, appearing to read 'N. Văn Thuận', with a long horizontal stroke extending to the right.

Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of Biotechnology

COURSE SYLLABUS
Course Name: Microbial Genomics
Course Code: **BT364IU**

1. General information

Course name	- <i>Microbial Genomics</i> - <i>Hệ gene Vi sinh vật</i>
Course designation	<i>This course covers the principles of microbial genomics and its application to cultured and uncultured microbial diversity (metagenomics), including the use of informational macromolecules such as 16S rRNA. The course emphasises the use of genomics and metagenomics to advance the fields of metabolic engineering, geobiology and human health. This course has content relevant to Biotechnology and Genetics majors.</i>
Course type	☐ General knowledge ☐ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☒ Others: Foundation elective
Semester(s) in which the course is taught	5, 6
Person responsible for the course	A.Prof. Nguyen Hoang Khue Tu
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lecture, paper discussion, quiz, assignment, and presentation
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (lecture, paper discussion, and presentation): 37.5 h Private study including examination preparation, specified in hours: 90 h

Credit points	03 credits (theory) ~ (4.6 ECTS)	
Number of periods	Theory: 45	
Required and recommended prerequisites for joining the course	- Prerequisites: Microbiology (BT321IU)	
Course objectives	This course covers the principles of microbial genomics and its application to cultured and uncultured microbial diversity (metagenomics), including the use of informational macromolecules such as 16S rRNA. The course emphasizes the use of genomics and metagenomics to advance the fields of metabolic engineering, geobiology and human health. Students will also be introduced the techniques in microbial genomics including sequencing, assembly, annotation and metabolic reconstruction; microbial diversity; evolution and classification; culture-independent molecular analysis of microbial communities via metagenomics; application of microbial metagenomics in health and host-microbe interactions affecting health and disease.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Describing concepts microbial genomics CLO2. Explaining the importance of microbial genomics in biotechnology and others in life science
	Application	CLO3. Analyzing and developing the techniques and products from the microbial genomics
	Attitude	CLO4. Understanding the importance of microbial genomics for career

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to microbial genomics	1	I, T
	Culture-independent rRNA approach	1	I, T
	The origins and principles of culture-independent analysis using the 16S rRNA molecule	2	I, T
	Microbial genomics sequencing and analysis	1	T, U
	Metagenomics and application	1	T, U
	Metabolic potential of a microorganism derived from its genome sequence	2	T, U
	Microbiome in Health and disease	2	T, U
	Microbiome in product development	2	T, U
	Papers discussion	1	U
Group presentation	2	U	
Examination forms	Written exam, oral presentation, and report		
Study and examination requirements	Attendance: A minimum attendance of 80 percent of the class sessions is compulsory. Student participation will be assessed on a regular basis. Questions and comments are strongly encouraged. Assignments/Examination: Students must obtain at least 50/100 points in total to pass this course.		
Reading list	Textbook 1. Madigan, M., Martinko, J., Bender, K., Buckley, D., and Stahl, D. Brock Biology of Microorganisms. Pearson Education:Boston. Any recent edition. 2. Metagenomics : theory, methods and applications / edited by Diana Marco. Publisher Norfolk : Caister Academic, 2010.		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-4) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	ILO							
CLO	1	2	3	4	5	6	7	8
1	M							
2			H					
3		M						

4								M

The intended learning outcomes (ILOs) are detailed below:

- (1) An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)
- (2) An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)
- (3) An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)
- (4) An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)
- (5) An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)
- (6) An ability to apply modern techniques to produce biotechnological products. (Application)
- (7) An ability to analyze and interpret results in biotechnological process, product manufacturing. (Lifelong learning)
- (8) An ability to be well aware of professional development for a career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to microbial genomics	1	Activities class in	Lecture, Discussion,	1,2
2	Culture-independent rRNA approach	1	Activities class in	Lecture, Discussion,	1,2
3-4	The origins and principles of culture independent analysis using the 16S rRNA molecule	1	Activities in class	Lecture, Discussion,	1,2
5	Microbial genomics sequencing and analysis	1,2	Activities class in	Lecture, Discussion,	1
6	Metagenomics and application	1,2	Activities class in	Lecture, Discussion,	1
7-8	Metabolic potential of a microorganism derived from its genome sequence Midterm exam [8th Week]	2,3	Activities in class	Lecture, Discussion	1, 3
9-10	Microbiome in Health and disease	2,4	Activities class in	Discussion, Lecture,	1,3
11-12	Microbiome in product development	2,4	Activities class in	Discussion, Lecture,	1
13	Papers discussion	2,4	HW, Quizzes	Papers, discussion	2
14-15	Group presentation	2,3	Quizzes	Presentatio n	Topics to be assigned
16	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Individual assignment (15%)		HW 70%Pass		
Group assignment (15%)			P 70%Pass	
Midterm exam (30%)	Q 50%Pass	Q 50%Pass		
Final exam (40%)		Q 50%Pass		Q 50%Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

Grading checklist:

Grading checklist for Written Reports			
Student:		Report:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (70%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100*		

5.1. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW

Score	Description
5	Demonstrating a complete understanding of the problem. All requirements are well addressed
4	Demonstrating a considerable understanding of the problem. The majority of the requirements are addressed
3	Demonstrating a partial understanding of the problem. Some requirements are properly addressed
2	Demonstrating a little understanding of the problem. Only a part of the requirements is addressed
1	Demonstrating a poor understanding of the problem.
0	No response or providing irrelevant statement

Note: this rubric is also used to evaluate questions in an exam.

5.2. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone 4	Milestone 3 2		Benchmark 1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 10, 2025

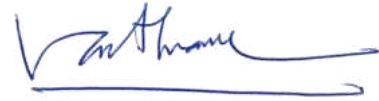
7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: nhktu@hcmiu.edu.vn

Ho Chi Minh City, 10/6/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)



Nguyen Van Thuan



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Medical Genetics

Course Code: **BT343IU**

1. General information

Course name	- <i>Medical Genetics</i> - <i>Di truyền y học</i>
Course designation	<i>Medical genetics is the integration between the basic science and clinical science, in which the knowledge from genetics is applied to human medical care. The subject reveals the relationship between genetic alterations and the disease consequence in human. Those alterations encompass from the small scale of the mutation on genes to the large scale of the abnormal structure or number of chromosomes. The subject also studies the inheritance pattern of disease in families as well as provide the method to explore the association of the disease to the specific genes or chromosome locations. From that, the subject also equips the students with basic knowledge of genetic disease diagnostics, genetic counseling for suspected families and recently, methods for gene therapy. Specifically, medical geneticists care for fetuses, newborns, children, and adults with inherited conditions, adults with infertility or recurrent miscarriages, and adults who are genetically predisposed to cancer.</i>
Course type:	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	7, 8
Person responsible for the course	Dr. Le, Minh Thong Email: lmthong@hcmiu.edu.vn
Language	English

Relation to curriculum	Elective	
Teaching methods	Classroom activities: Lecturing, question – answer, discussion Self-learning: Reading, homework Teamwork: Group assignment, presentation	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 135 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Lecture – 45 Private study including examination preparation, specified in hours ¹ : 90	
Credit points	3	
Required and recommended prerequisites for joining the course	Cell Biology (BT009IU), Genetics (BT313IU)	
Course objectives	Upon complete this course the successful students will be able to: • Understand association between genetic variations and inherited diseases as well as somatic mutation disease (cancer). • Understand the principles of laboratory-based methods used in the differential diagnosis of genetic disease.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Have a solid understand of the basic principles of human genetics. CLO2. Have a general concept of the genetic and molecular mechanism of common genetic disorders.
	Skill	CLO3. Presenting a scientific issue, explain and answer the scientific questions relating to medical genetics
	Attitude	CLO4. Discerning the importance, ethical and privacy issues in medical genetics and genetic counseling.

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	1 – Introduction of Medical genetics	1	I
	2 - Basic Cell Biology: Structure and Function of Genes and Chromosomes	1	I, T
	3 - Genetic Variation: Its Origin and Detection	1	I, T
	4 - Autosomal Dominant and Recessive Inheritance	1	
	5 - Sex-Linked and Nontraditional Modes of Inheritance	1	I, T
	6 - Clinical Cytogenetics: The Chromosomal Basis of Human Disease	1	I, T
	7 - Biochemical Genetics: Disorders of Metabolism	1	I, T
	8 - Disease-Gene Identification	1	I, T
	9 - Immunogenetics	1	I, T
	10 - Genetic Basis of Development	1	I, T
	11 - Cancer Genetics	1	I, T
12 - Multifactorial Inheritance and Common Diseases	1	I, T	
13 - Genetic Testing and Gene Therapy	1	I, T	
14 - Genetics and Precision Medicine; Clinical Genetics and Genetic Counseling	1	I, T	
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		

Reading list	Textbook(s) [1] PhD, Lynn B. Jorde, John C. Carey MD MPH, and Michael J. Bamshad MD. Medical Genetics. 5^{ed}. Philadelphia, PA: Elsevier, 2015. References Online Mendelian Inheritance in Man (OMIM): http://www.ncbi.nlm.nih.gov The Alliance of Genetic Support Groups: http://www.geneticalliance.org/ Gene Tests: http://www.genetests.org/servlet/access Genetics Education Center, University of Kansas Medical Center: http://www.kumc.edu/gec/prof/genewww.html (This is one of the best web sites to “surf” for information on all aspects of medical genetics.) American Society of Human Genetics: http://www.faseb.org/genetics/ashg/ashgmenu.htm (More information about genetics careers)

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Program/Student Learning Outcomes (SLO) (1-6) is shown in the following table:

	SLO							
CLO	1	2	3	4	5	6	7	8
1	H							
2		H						
3			M					
4								M

- 1. An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)*
- 2. An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)*
- 3. An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)*
- 4. An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)*
- 5. An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)*
- 6. An ability to apply modern techniques to produce biotechnological products. (Application)*
- 7. An ability to analyse and interpret results in biotechnological process, product manufacturing. (Life-long learning)*
- 8. An ability to be well aware of professional development for career. (Development)*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction of Medical genetics	1		Lecture, Discussion,	[1], 1

2	Basic Cell Biology: Structure and Function of Genes and Chromosomes	1	Presentation	Lecture, Discussion,	[1], 2
3	Genetic Variation: Its Origin and Detection	2, 4	Presentation Quiz1	Lecture, Discussion,	[1], 3
4	Autosomal Dominant and Recessive Inheritance	2, 3	Presentation	Lecture, Discussion,	[1], 4
5	Sex-Linked and Nontraditional Modes of Inheritance	2, 3	Presentation	Lecture, Discussion,	[1], 5
6	Clinical Cytogenetics: The Chromosomal Basis of Human Disease	2, 3	Presentation Quiz2	Lecture, Discussion,	[1], 6
7	Biochemical Genetics: Disorders of Metabolism	2, 3	Presentation	Lecture, Discussion,	[1], 7
8	Disease-Gene Identification MIDTERM EXAM	2, 3	Presentation	Lecture, Discussion,	[1], 8
10	Disease-Gene Identification	2, 3	Presentation	Lecture, Discussion,	[1], 8
11	Immunogenetics	2, 3	Presentation Quiz3	Lecture, Discussion,	[1], 9
12	Genetic Basis of Development	2, 3	Presentation	Lecture, Discussion,	[1], 10
13	Cancer Genetics	2, 3	Presentation	Lecture, Discussion,	[1], 11
14	Multifactorial Inheritance and Common Diseases	2, 3	Presentation Quiz4	Lecture, Discussion,	[1], 12
15	Genetic Testing and Gene Therapy	2, 3, 4	Presentation	Lecture, Discussion,	[1], 13
16	Genetics and Precision Medicine	5	Presentation	Lecture, Discussion,	[1], 14
17	Clinical Genetics and Genetic Counseling	5	Presentation	Lecture, Discussion,	[1], 15
18	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class quizzes/presentation (15%)	Qz1 70 % Pass		Presentation 70 % Pass	
Homework exercises (15 %)		HW1 80 % Pass		
Midterm exam (30%)	60 % Pass	60 % Pass	60 % Pass	
Final exam (40%)	60 % Pass	60 % Pass	60 % Pass	60 % Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

1. Grading checklist

Grading checklist for Written Reports			
Student (or group):		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal contents	10		
Introduction demonstrates knowledge of relevant backgrounds and the context of the present work	15		
Analysis and discussion demonstrate good understanding, explanation, and theory development	30		
Summary and conclusions appropriate and complete to the content	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.

1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Oral communication value rubric for evaluating presentation tasks:

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score
Presentation content	Content Organization: The presentation is delivered in logical order and has a clear structure including introduction and conclusion.	15	
	Information: The presentation contains accurate information and cited from appropriate external resources.	15	
	Language usage: Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	Visual aids: The presentation contains appropriate and effective visual aids which can grab the attention of audiences.	15	
Presentation delivery	Time management: Length of presentation is within the assigned time limits.	10	
	Presentation Skill: The speaker maintains good eye contact with audiences, and speaks confidently with good voice, fluid speech, and appropriate pronunciation.)	10	
	Question and Answer: The speaker is able to answer all questions from the audiences after the presentation.	20	
Score	Total Points	100	

**Critical thinking value rubric for evaluating questions in exams:*

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.

Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

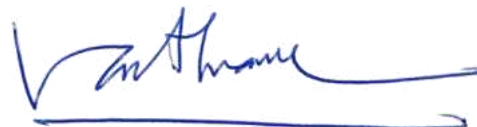
6. Date revised: June 11, 2025

7. Course coordinator/Lecturer

Department: Biotechnology

Email: lmthong@hcmiu.edu.vn

Dean of School of Biotechnology



Assoc. Prof. NGUYEN VAN THUAN



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Medical Genetics

(Thực hành Di truyền y học)

Course Code: BT344IU

1. General information

Course designation	<i>Medical genetics is the integration between the basic science and clinical science, in which the knowledge from genetics is applied to human medical care. The subject reveals the relationship between genetic alterations and the disease consequence in human. Those alterations encompass from the small scale of the mutation on genes to the large scale of the abnormal structure or number of chromosomes. The subject also studies the inheritance pattern of disease in families as well as provide the method to explore the association of the disease to the specific genes or chromosome locations. From that, the subject also equips the students with basic knowledge of genetic disease diagnostics, genetic counseling for suspected families and recently, methods for gene therapy. Specifically, medical geneticists care for fetuses, newborns, children, and adults with inherited conditions, adults with infertility or recurrent miscarriages, and adults who are genetically predisposed to cancer.</i>
Semester(s) in which the course is taught	7
Person responsible for the course	Dr. Le, Minh Thong
Language	English
Relation to curriculum	Elective
Teaching methods	Classroom activities: Lecture, Laboratory works, question – answer, discussion, Self-learning: Reading Teamwork: Group assignment, presentation, report
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 55 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Laboratory – 25 h Private study including examination preparation, specified in hours ²⁸ : 30 h

²⁸ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be

Credit points	1 credit (Practice Lab) ~ (2 ECTS)
Required and recommended prerequisites for joining the course	Cell Biology (BT009IU), Genetics (BT313IU)
Course objectives	Upon complete this course the successful students will be able to: Understand the principles and practices of laboratory-based methods used in the differential diagnosis of genetic disease.
Course learning outcomes	Upon the successful completion of this course students will be able to:
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (5 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)
Examination forms	Short-answer questions, report, oral examination
Study and examination requirements	Attendance: Student must participate all class. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	Textbook(s) [1] PhD, Lynn B. Jorde, John C. Carey MD MPH, and Michael J. Bamshad MD. Medical Genetics. 5^{ed}. Philadelphia, PA: Elsevier, 2015. [2] Lab Manual for Medical Genetics, Le Minh Thong
Competency level	Course learning outcome (CLO)

Skill	CLO1. Presenting a practical issue, explain and answer the questions relating to medical genetic experiment CLO2. Perform basic laboratory experiments to validate the disease associated genetic variants.		
Attitude	CLO3. Discerning the importance, ethical and privacy issues in medical genetic laboratory.		
Topic		Weight	Level
1 – Laboratory biosafety – chemical preparation		1	I, T, U
2 – Collecting samples – extract DNA		1	I, T, U
3 - Evaluating extracted DNA - Performing ARMS-PCR for detection of a mutation.		1	I, T, U
4 - Analyzing PCR results		1	I, T, U
5 - Performing a realtime PCR for detection of mutation		1	I, T, U
6 – Oral/Writing report. Interpret the diagnostic result and disease association		1	I, T, U
	References Online Mendelian Inheritance in Man (OMIM): http://www.ncbi.nlm.nih.gov The Alliance of Genetic Support Groups: http://www.geneticalliance.org/ Gene Tests: http://www.genetests.org/servlet/access Genetics Education Center, University of Kansas Medical Center: http://www.kumc.edu/gec/prof/genewww.html (This is one of the best web sites to “surf” for information on all aspects of medical genetics.) American Society of Human Genetics: http://www.faseb.org/genetics/ashg/ashgmenu.htm (More information about genetics careers)		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Program/Student Learning Outcomes (SLO) (1-6) is shown in the following table:

	SLO							
CLO	1	2	3	4	5	6	7	8
1							H	
2				H	H			
3						H		
4								

1. An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)
2. An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)
3. An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)
4. An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)
5. An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)
6. An ability to apply modern techniques to produce biotechnological products. (Application)

7. An ability to analyse and interpret results in biotechnological process, product manufacturing. (Life-long learning)

8. An ability to be well aware of professional development for career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Laboratory biosafety – chemical preparation	2, 3		Lecture, Laboratory work	[2]
2	Collecting samples – extract DNA	2	Presentation	Lecture, Laboratory work	[2]
3	Evaluating extracted DNA - Performing ARMS-PCR for detection of a mutation	2	Quiz1	Lecture,	[2]

Week	Topic	CLO	Assessments	Learning activities	Resources
				Laboratory work	
4	Analyzing PCR results	1	Presentation	Lecture, Laboratory work	[2]
5	Performing a realtime PCR for detection of mutation	2	Presentation	Lecture, Laboratory work	[2]
6	Oral/Writing report. Interpret the diagnostic result and disease association	1	Oral, report	Discussion	[2]

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
In-class quizzes (15%)			Qz1 50%Pass
Presentation (25 %)	Based on performace, discussion quality		
Laboratory work report/Oral check (60%)		50%Pass	

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (Optional)

Grading checklist for Progress

Student:.....Date:	Evaluator:		
	Max.	Score	Comments
Attendance (20%)			
Fully attend	25		
Be on-time	25		
Participation (20%)			
Actively engaged in lecture discussion	25		
Actively engaged in lab activity	25		
TOTAL SCORE	100		

(Follow the policy of the school)

Grading checklist for Written Reports and Oral examination			
Student:.....Date:	Report: Evaluator:		
	Max.	Score	Comments
Oral interview on the report (100%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			

Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100*		

* The total score will be converted into 70% (percentage of Report for whole course score).

Grading checklist for Technical performance			
Student:.....Date:		Evaluator:	
	Max.	Score	Comments
Technical performance (100%)			
Perform the practice objective properly	50		
Give the correct answer	25		
Explanation for answer	25		
TOTAL SCORE	100*		

* The total score will be converted into 30% (percentage of Final exam for whole course score).

6. Date revised: June 11, 2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof. NGUYEN VAN THUAN



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of ...

COURSE SYLLABUS
Course Name: Crop Biotechnology
Course Code: BT345IU

1. General information

Course name	-Crop Biotechnology - Công nghệ sinh học cây trồng
Course designation	This course introduces students to genetic engineering for crop improvement: plant cell and tissue culture, gene transfer techniques into plant cells, application in agricultural and food industries
Course type	☐ General knowledge Fundamental ☐ ☐ Specialized knowledge Internship/Project/Thesis Others:.....
Semester(s) in which the course is taught	Semester VII, VIII
Person responsible for the course	Assoc. Prof. Nguyen Phuong Thao (PhD)
Language	English
Relation to curriculum	☐ Compulsory ☐ Elective
Teaching methods	Lecture, seminar, presentation
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 hours Private study including examination preparation, specified in hours ¹ : 90 hours

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Credit points	3 credits (Theory: 3 + Practice: 0) 4.6 ECTS (<i>optional</i>)	
Number of periods	Theory: 45 Practice: 0	
Required and recommended prerequisites for joining the course	- Prerequisites: - Corequisites: - Previous course (Course code – Course name)	
Course objectives	This course introduces students to genetic engineering for crop improvement: plant cell and tissue culture, gene transfer techniques into plant cells, application in agricultural and food industries	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understanding of : • The principles, practices and application of genetic engineering for crop improvement • The importance of crop biotechnology • Advantages and disadvantages of commercial transgenic crops CLO2. Issues and challenges encountered in the area of crop biotechnology
	Skill	CLO3. Development of their critical thinking and problem-solving skills CLO4. Scientific English writing and speaking skill

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to Crop Biotechnology	1	I, T
	Chapter 1 : <i>Crop improvement</i>	1	I, T
	Chapter 2: <i>Tissue culture in crop improvement:</i> Micropropagation for virus-free plants, Somaclonal variation, Somatic hybridization, Polyploids in plant breeding	3	I, T
	Chapter 3: <i>Genetic engineering for biotic stress tolerance:</i> insects, fungi, bacteria, viruses, weeds.	1	I, T
	Chapter 4: <i>Genetic engineering for abiotic stress:</i> drought, flooding, salt and temperature.	1	I, T
	Chapter 5: <i>Genetic engineering for increasing crop productivity:</i> Photosynthesis, Nitrogen fixation, Nutrient uptake efficiency	1	I, T
	Chapter 6 : <i>Genetic engineering for quality improvement,</i> protein, lipids, carbohydrates, vitamins & mineral nutrients	1	I, T
	Chapter 7 : <i>Production of antibodies and pharmaceuticals in plants</i>	1	I, T
	Chapter 8: <i>Plants as bioreactor</i>	1	I, T
	Chapter 9: <i>Bio-safety concerns of transgenic plants</i>	1	I, T
Chapter 10: <i>Commercial status of transgenic plants</i>	1	I, T	
	Specific seminar: seminar schedule depends on availability of speaker	1	I, T,U
Examination forms	Multiple-choice questions, short-answer questions, essay questions		
Study and examination requirements	Students must attend at least 80% of the classes in order to qualify for sitting the midterm and final exams Questions and comments are strongly encouraged Overall score: Students must have more than 50/100 points overall to pass this course.		

Reading list	[1] Slater, A., Scott, N.W. and Fowler, M.R. (2003). Plant Biotechnology - The Genetic Manipulation of Plants. Oxford University Press. ISBN 0-19-925468-0. [2] M. J. Chrispeels and D.F. Sadava (2003), Plants, Genes and Crop Biotechnology, 2nd Edition, Jones and Barlett Press. [3] Christou, P. and Klee, H. (2004). Handbook of Plant Biotechnology. John Wiley & Sons Ltd., England. ISBN 0-471-85199-X. Vol. 2: 741-1420p. [4] Taiz, L., Zeiger, E. (2002). Plant Physiology, 3rd edition. Palgrave Macmillan. ISBN-10: 0878938230, ISBN-13: 978-0878938230. 690p.

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-4) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	PLO							
CL O	1	2	3	4	5	6	7	8
1	M		L					
2	M		M		M		M	L
3				M			M	
4								

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Crop Biotechnology	1, 2, 3,4	In-class exercises/quizzes , Midterm exam	Lecture, Discussion	[1],[2],[3]
2-3	Chapter 1 : <i>Crop improvement</i>	1, 2, 3, 4	In-class exercises/quizzes , Midterm exam	Lecture, Discussion	[1],[2]
4-7	Chapter 2: <i>Tissue culture in crop improvement</i> : Micropropagation for virus-free plants, Somaclonal variation, Somatic hybridization, Polyploids in plant breeding	1, 2, 3, 4	In-class exercises/quizzes , Midterm exam	Lecture, Discussion, Presentation Seminar	[1],[2],[3]
8	Midterm exam Chapter 3: <i>Genetic engineering for biotic stress tolerance</i> : insects, fungi, bacteria, viruses, weeds.	1, 2, 3, 4	In-class exercises/quizzes , Midterm exam	Lecture, Discussion	[2]
9	Chapter 3: <i>Genetic engineering for biotic stress tolerance</i> : insects, fungi, bacteria, viruses, weeds.	1, 2, 3, 4	In-class exercises/quizzes , Final exam	Lecture, Discussion	[2]

10	Chapter 4: Genetic <i>engineering for abiotic stress</i> : drought, flooding, salt and temperature.	1, 2, 3, 4	In-class exercises/quizzes , Final exam	Lecture, Discussion, Presentation	[2]
11	Chapter 5: <i>Genetic engineering for increasing crop productivity</i> : Photosynthesis, Nitrogen fixation, Nutrient uptake efficiency	1, 2, 3, 4	In-class exercises/quizzes , Final exam	Lecture, Discussion, Presentation	[1],[2],[3]
12	Chapter 6 : <i>Genetic engineering for quality improvement</i> , protein, lipids, carbohydrates, vitamins & mineral nutrients	1, 2, 3, 4	In-class exercises/quizzes , Final exam	Lecture, Discussion, Presentation	[1],[2],[3]
13	Chapter 7 : <i>Production of antibodies and pharmaceuticals in plants</i>	1, 2, 3, 4	In-class exercises/quizzes , Final exam	Lecture, Discussion,	[3],[4]
14	Chapter 8: <i>Plants as bioreactor</i>	1, 2, 3, 4	In-class exercises/quizzes , Final exam	Lecture, Discussion,	[3],[4]
15	Chapter 9: <i>Bio-safety concerns of transgenic plants</i> Chapter 10: <i>Commercial status of transgenic plants</i>	2, 3, 4	In-class exercises/quizzes , Final exam	Lecture, Discussion, Presentation	[1],[2],[3],[
16	Revision				
17-18	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class exercises/quizzes (20%)	80% Attended			
Seminar/Presentation (20%)	80% Attended			
Midterm (30%)	75-80% Pass			
Final (30%)	75-80% Pass			

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

In-class exercises/Quizzes (20%)

Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Unsatisfactory (1)

Subject Knowledge	Accurate and comprehensive answers	Mostly accurate answers	Basic understanding shown	Incorrect or unclear responses
Analytical Thinking	Logical, in-depth analysis	Basic analysis present	Limited or surface-level reasoning	No analysis or illogical
Timeliness	Completed within the time limit	Slightly late (< 5 mins)	Late (5–10 mins)	Over 10 mins late or not submitted

Seminar/Presentation (20%)

Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Unsatisfactory (1)
Content Quality	In-depth, up-to-date, well-illustrated content	Good coverage with relevant examples	Covers key points with limited examples	Poor or unclear content
Presentation Skills	Confident, clear, engaging, effective use of tools	Clear presentation, some audience interaction	Hesitant delivery, limited interaction	Reading from notes, unclear, or off-topic
Supporting Materials (slides, etc.)	Visually clear, aesthetically pleasing, well-sourced	Well-organized, complete	Basic slides, some disorganization	Disorganized or missing visual aids
Q&A Handling	Accurate, logical, with examples	Generally correct answers	Vague or partially correct answers	Unable to answer or incorrect answers

Midterm and final exam

Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Unsatisfactory (1)
Theoretical Knowledge	Comprehensive, accurate, well-articulated	Mostly accurate, minor gaps	Partial or vague understanding	Inaccurate or off-topic
Analysis & Argument	Deep, well-supported reasoning	Logical reasoning with some depth	Limited or basic logic	Lack of reasoning or irrelevant answers
Critical Thinking	Demonstrates independent thinking and creativity	Some original ideas, not fully developed	Mostly repeats lecture content	No critical insight, mechanical repetition

6. Date revised: 11/06/2025

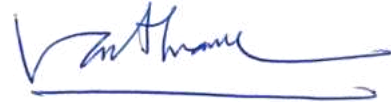
7. Course coordinator/Lecturer

- School/Department: School of Biotechnology
- Email: npthao@hcmiu.edu.vn

....., dd/mm/yyyy

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)

A handwritten signature in blue ink, appearing to read 'Van Thuan', with a long horizontal stroke extending to the right.

Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Crop Biotechnology

Course Code: BT346IU

1. General information

Course name	- <i>Practice in Crop Biotechnology</i> - <i>Thực hành Công nghệ Sinh học trên đối tượng cây trồng</i>
Course designation	<i>This course will allow you to experience one of common molecular approaches in crop research - techniques relating to RNA work and gene expression analysis.</i>
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	6, 8
Person responsible for the course	MBT. Hoang Thi Lan Xuan
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lectures, discussion, demonstration, labworks
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 55 h Contact hours (Lecture, laboratory session, discussion): 25 h Private study including examination preparation, specified in hours ¹ : 30 h

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Credit points	1 credit (Practice Lab) (~2 ETCS)	
Number of periods	Practice: 30	
Required and recommended prerequisites for joining the course	- Prerequisites: Plant Physiology (BT010IU), Genetics (BT313IU) - Corequisites: Crop Biotechnology (BT345IU)	
Course objectives	• Learners be familiar with common techniques and experimental setup for RNA work, including RNA isolation, RNA quantification and quality checking, cDNA synthesis and quantitative realtime PCR. • Familiarize learners with gene expression analysis and comparison using relative realtime-PCR approach	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understand principles of techniques in RNA work. CLO2. Know how to analyze gene expression and comparison of expression of gene(s) of interest among different samples using relative RT-qPCR approach.
	Skill	CLO3. Be able to perform RNA extraction with high yield, integrity and purity. CLO4. Be able to check RNA quantity and quality. CLO5. Be able to perform cDNA synthesis. CLO6. Be able to setup and perform realtime PCR. CLO7. Be able to process raw data of qPCR and interpret gene expression.
	Attitude	CLO8. Seriousness and care regarding lab safety, personal protection, RNA protection and sample contamination issues.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (4 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Establishing conditions for sample collection	1	I, T, U
	Total RNA extraction	1	I, T, U
	RNA quantity and quality analyses	1	I, T, U
	cDNA synthesis	1	I, T, U
	Relative quantification by realtime PCR	1	I, T, U
Examination forms	RT-qPCR result interpretation		
	Examination		
Examination forms	Lab performance and reports; written exam		
Study and examination requirements	<i>Attendance: A minimum attendance of 80% is compulsory for the class sessions. Students will be assessed on the basis of their participation.</i> <i>Questions and comments are strongly encouraged.</i> <i>Assignments/Examination: Students must have more than 50/100 points overall to pass this course</i>		
Reading list	<i>[1] Lab manual for Crop biotechnology Practical class, School of Biotechnology, International University [Internal Use]</i> <i>[2] Thermo Scientific information sheets for plant RNA extraction, cDNA synthesis and, RT-qPCR (company website)</i>		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) and Program/Student Learning Outcomes (PLO) is shown in the following table:

	PLOs							
CLOs	1	2	3	4	5	6	7	8
1			M		H			
2			M					
3				H				
4				H				
5				H				
6				H				
7				H		M		
8					H			

**Use Bloom's Taxonomy*

The program learning outcomes (PLOs) are detailed below:

(1) An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural

sciences, molecular, cell and organismic biology. (Generic knowledge)

(2) An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)

(3) An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)

(4) An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)

(5) An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)

(6) An ability to apply modern techniques to produce biotechnological products. (Application)

(7) An ability to analyze and interpret results in biotechnological process, product manufacturing. (Lifelong learning)

(8) An ability to be well aware of professional development for a career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	- Performing stress assay - Sample collection according to timepoints	1	Lecture, Discussion, Practice	Progress, Report, Exam	[1]
2	- Aseptic technique - Total RNA extraction	1, 3, 8	Lecture, Discussion, Practice	Progress, Report, Exam	[1, 2]
3	- Genomic DNA removal - RNA quantification by spectrophotometry - RNA gel electrophoresis	1, 4, 8	Lecture, Discussion, Practice	Progress, Report, Exam	[1,2]
4	- cDNA synthesis	1,5,8	Lecture, Discussion, Practice	Progress, Report, Exam	[1,2]
5	- qPCR	1, 6, 8	Lecture, Discussion, Practice	Progress, Report, Exam	[1,2]
6	- qPCR result analysis for gene expression - Melting curve analysis - PCR efficiency analysis - Gel electrophoresis of qPCR products	1,7,8	Lecture, Discussion, Practice	Progress, Report, Exam	[1]
7	Exam	1-8			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Progress (20%)	x	x	x	x	x	x	x	x
Lab report (50%)	x	x	x	x	x	x	x	x
Exam (30%)	x	x	x	x	x	x	x	x

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1. Grading checklist for Progress assessment

Item	Maximal Score (%)
<i>Fully attend</i>	30
<i>Be on-time</i>	20
<i>Produce satisfied performance</i>	50
Total	100*

* The total score will be converted into 20% (percentage of Progress for whole course score).

5.2. Grading checklist for Lab report

Item	Maximal Score (%)
Technical content (60%)	
<i>Abstract clearly identifies purpose and summarizes principal content</i>	10
<i>Introduction demonstrates thorough knowledge of relevant background and prior work</i>	10
<i>Results description, analysis and discussion demonstrate good subject mastery</i>	30
<i>Summary and conclusions appropriate and complete, including suggestion for improvement</i>	5
<i>Appropriate references</i>	5
Organization (10%)	
<i>Distinct introduction, body, conclusions</i>	5
<i>Content clearly and logically organized, good transitions</i>	5
Presentation (20%)	
<i>Correct spelling, grammar, and syntax</i>	10
<i>Clear and easy to read</i>	5
<i>Consistent and proper citation format</i>	5
Quality of Layout and Graphics (10%)	
<i>Clear images and annotation</i>	5
<i>Tables, supplementary and figures provided to support for calculation and data interpretation</i>	5
Total	100*

* The total score will be converted into 50% (percentage of Report for whole course score).

5.3. Grading checklist for Exam

Item	Maximal Score (%)
<i>Writing: Give the correct answers for three questions</i>	100
Total	100*

* The total score will be converted into 30% (percentage of Exam for whole course score).

6. Date revised: June 11, 2025

7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: htlxuan@hcmiu.edu.vn

Ho Chi Minh City, 11/06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)

A handwritten signature in blue ink, appearing to read 'Van Thuan', with a long horizontal stroke extending to the right.

Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
 School of Biotechnology
 Department of Biotechnology

COURSE SYLLABUS

Course Name: Techniques in Plant Biotechnology

Course Code: **BT347IU**

1. General information

Course name	- Techniques in Plant Biotechnology - Kỹ thuật công nghệ sinh học thực vật
Course designation	A completely presents detailed descriptions of basic cell culture techniques. Includes clearly illustrated practical examples for easy understanding and direct implementation. Covers important applications. This course provides all relevant protocols for basic and applied plant cell and molecular technologies, such as histology, electron microscopy, cytology, virus diagnosis, gene transfer and PCR. Also included are chapters on laboratory facilities, operation and management. In-depth compilation on the latest global trends of plant tissue culture and transgenic crops. Brings out focused content RNAi, miRNA and on development of marker-free transgenic plants. Discusses nanotechnology, genome engineering and plant - omics applications in agricultural practices
Course type	☐ General knowledge ☐ Fundamental Specialized ☒ Specialized Knowledge ☐ Internship/Project/Thesis ☐ Others
Semester(s) in which the course is taught	6-8
Person responsible for the course	A/Prof. Tran Van Minh
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lecture, lesson, project, seminar.

Workload (incl. contact hours, self- study hours)	Total workload: 127.5 h Contact hours (lecture): 37.5 h Self-study ³¹ : 90 h
Credit points	3 credits (theory) ~ (4.6 ECTS)
Number of periods	Theory: : 45
Required and recommended prerequisites for joining the course	Prerequisite: Biology, Organic Chemistry
Course objectives	This course is clearly structured with richly illustrated chapters and practical examples for easy understanding and direct implementation. The methods and findings developed are presented in detailed. Students will find valuable updates on the molecular basis of biotechnological processes, secondary metabolite production and genetic engineering. In addition, the basic principles of important biotechnologies, as well as examples of specially designed crops that deliver improved productivity under stress conditions, are presented

³¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: The course sets the direction for future research on the basic aspects of plant tissue culture and its applications in the fields of secondary metabolite production and genetic engineering. It provides both general and specific information for students, teachers, academic researchers and industrial teams who are interested in new developments in plant tissue culture and its applications. CLO2. This course caters to the need of researchers working in the ever-evolving field of agricultural biotechnology. It discusses and provides in-depth information about latest advancements happening in this field. The book discusses evolution of plant tissue culture techniques, development of doubled haploids technology, role of recombinant-DNA technology in crop improvement. It also provides an insight into the global status of genetically modified crops, use of RNAi technology and mi-RNAs in plant improvement
	Skill	CLO3. It is especially designed for professionals and advanced students who wish to acquire practical skills and first-hand experience in plant biotechnology.
	Attitude	CLO4. "...provides assistance in acquiring those skills that are critical for plant tissue culture and plant biotechnology research." Horticultural Science "...a well produced course with comprehensive details on the major techniques used in plant biotechnology currently. The book is well organised and well illustrated." Australasian Biotechnology. Issues and ethical practices in application

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Chapter 1: Introduction</td><td>3</td><td>I, T, U</td></tr><tr><td>Chapter 2: History</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 3: Laboratory</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 4: Tissue and Cell</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 5: Plant Hormones</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 6: Micropropagation</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 7: Organogenesis</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 8: Embryogenesis</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 9: Protoplast</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 10: Haploid</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 11: Hairy root cultures</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 12: Cell suspension cultures and Cell cloning</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 13: Production of secondary metabolites</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 14: Transformation</td><td>3</td><td>T, U</td></tr><tr><td>Chapter 15: Bioreactor and Gene bank</td><td>3</td><td>T, U</td></tr></table>	Topic	Weight	Level	Chapter 1: Introduction	3	I, T, U	Chapter 2: History	3	T, U	Chapter 3: Laboratory	3	T, U	Chapter 4: Tissue and Cell	3	T, U	Chapter 5: Plant Hormones	3	T, U	Chapter 6: Micropropagation	3	T, U	Chapter 7: Organogenesis	3	T, U	Chapter 8: Embryogenesis	3	T, U	Chapter 9: Protoplast	3	T, U	Chapter 10: Haploid	3	T, U	Chapter 11: Hairy root cultures	3	T, U	Chapter 12: Cell suspension cultures and Cell cloning	3	T, U	Chapter 13: Production of secondary metabolites	3	T, U	Chapter 14: Transformation	3	T, U	Chapter 15: Bioreactor and Gene bank	3	T, U
Topic	Weight	Level																																															
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Chapter 15: Bioreactor and Gene bank	3	T, U																																															
Examination forms	Short-answer questions																																																
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																																																
Reading list	[1] Plant Cell and Tissue Culture – A Tool in Biotechnology. Eds. Karl-Hermann Neumann, Ashwani Kumar, Jafargholi Imani. Springer 2020 [2] Plant Cell, Tissue and Organ Culture. Ed. Oluf L. Gamborg. Gregory C. Phillips. Springer 1995. [3] Agricultural Biotechnology: Latest Research and Trends. Eds. Dinesh Kumar Srivastava, Ajay Kumar Thakur, Pankaj Kumar. Springer 2021																																																

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Program/Student Learning Outcomes (SLO) (1-6) is shown in the following table:

CLO	SLO							
	1	2	3	4	5	6	7	8
1	M							
2	M							
3						M		
4				M			M	M

**Use Bloom's Taxonomy*

The program learning outcomes (PLOs) are detailed below:

- (1) An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)
- (2) An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)
- (3) An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)
- (4) An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)
- (5) An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)
- (6) An ability to apply modern techniques to produce biotechnological products. (Application)
- (7) An ability to analyze and interpret results in biotechnological process, product manufacturing. (Lifelong learning)
- (8) An ability to be well aware of professional development for a career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Chapter 1: Introduction	1,2,3	Progress, exam	Lecture, Discussion,	[1-3]
2	Chapter 2: History	1,2,3	Progress, exam	Lecture, Discussion,	[1-3]
3	Chapter 3: Laboratory	1,2,3	Progress, exam	Lecture, Discussion,	[1-3]
4	Chapter 4: Tissue and Cell	1,2,3	Progress, exam	Lecture, Discussion,	[1-3]
5	Chapter 5: Plant Hormones	1,2,3	Progress, exam	Lecture Discussion,	[1-3]
6	Chapter 6: Micropropagation	2,3,4	Progress, exam	Lecture Discussion,	[1-3]
7	Chapter 7: Organogenesis	1,2,3	Progress, exam	Lecture, Discussion,	[1-3]
8	Chapter 8: Embryogenesis	1,2,3	Progress, exam	Lecture, Discussion,	[1-3]

	Midterm exam	1,2			
9	Chapter 9: Protoplast	1,2,3	Progress, exam	Lecture, Discussion,	[1-3]
10	Chapter 10: Haploid	1,2,3	Progress, exam	Lecture, Discussion,	[1-3]
11	Chapter 11: Hairy root cultures	1,2,3	Progress, exam	Lecture, Discussion,	[1-3]
12	Chapter 12: Cell suspension cultures and Cell cloning	2,3,4	Progress, exam	Lecture, Discussion,	[1-3]
13	Chapter 13: Production of secondary metabolites	1,2,3	Progress, exam	Lecture, Discussion,	[1-3]
14	Chapter 14: Transformation	1,2,3	Progress, exam	Lecture, Discussion,	[1-3]
15	Chapter 15: Bioreactor and Gene bank	2,3,4	Progress, exam	Lecture, Discussion,	[1-3]
16-17	Final exam	1,2			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Homework exercises (30%)	50%pass	50%pass	50%pass	50%pass
Midterm exam (30%)	50%pass	50%pass	50%pass	50%pass
Final exam (40%)	50%pass	50%pass	50%pass	50%pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1 Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			

Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100*		

* The total score will be converted into 40% (percentage of Report for whole course score).

5.2 Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3 Analytic rubric

**Critical thinking value rubric for evaluating questions in exams:*

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.

Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.

Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 11, 2025

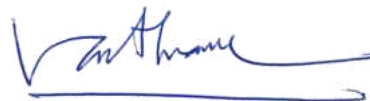
7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: tvminh@hcmiu.edu.vn

Ho Chi Minh City, 11/06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)



Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Techniques in Plant Biotechnology

Course Code: BT348IU

1. General information

Course name	- <i>Practice in Techniques in Plant Biotechnology</i> - <i>Thực hành Kỹ thuật Công nghệ Sinh học thực vật</i>
Course designation	<i>The course is designed for undergraduate students who are interested in plant biotechnology. Students will be introduced with facilities for working with plants such as environmentally controlled growth rooms and net house, techniques in plant tissue culture such as sterilization, in vitro culture for seedlings and callus, media preparation and subculture of plants of interest.</i>
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	6-8
Person responsible for the course	Pham Hong Diep (PhD) Hoang Thi Lan Xuan (MBT)
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lectures, Demonstration, Practice, Presentation/Site visit

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 55 h Contact hours (Lecture, laboratory session, discussion): 25 h Private study including examination preparation, specified in hours ¹ : 30 h	
Credit points	1 credit (Practice Lab) (~2 ETCS)	
Number of periods	Practice: 30	
Required and recommended prerequisites for joining the course	- Prerequisites: Plant Physiology (BT010IU) - Corequisites: Techniques in Plant Biotechnology (BT347IU)	
Course objectives	● Providing learners fundamental techniques of <i>in vitro</i> culture of plant materials and hands-on experience of plant-related facilities. ● Discussing openly relevant topics in plant biotechnology ● Group presentation of plant transformation/field trip	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Learn fundamental techniques of plant tissue and cell cultures, including preparation of culturing media; aseptic procedure for explant surface sterilization, <i>in vitro</i> subculture techniques and callus induction. CLO2. Explore protocols and procedures for plant engineering
	Skill	CLO3. Being able to prepare stock solutions and culturing medium for growing seedlings and for callus formation, perform aseptic techniques in plant tissue culture, introduce <i>ex vivo</i> plant materials into containers for <i>in vitro</i> culture.
	Attitude	CLO4. Awareness of contamination, lab safety, environmental protection issues, seriousness, care, hardworking, activeness and patience.

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (4 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Organization for plant tissue culture lab and preparation of culture media	1	I, T, U
	Aseptic techniques	1	I, T, U
	Shoot apical meristem culture and shoot formation induction	1	I, T, U
	Callus induction	1	I, T, U
	Relative quantification by realtime PCR	1	I, T, U
	Subculture of in vitro plant materials	1	I, T, U
One-day field trip/Group presentation	1	I, T	
Examination			
Examination forms	Reports, Presentation and Exam		
Study and examination requirements	<i>Attendance: A minimum attendance of 80% is compulsory for the class sessions. Students will be assessed on the basis of their participation.</i> <i>Questions and comments are strongly encouraged.</i> <i>Assignments/Examination: Students must have more than 50/100 points overall to pass this course</i>		
Reading list	<i>1] Lab-manual for Techniques in Plant Biotechnology Practical Class. School of Biotechnology, International University [Internal Use]</i> <i>[2] Slater, A., Scott, N.W. and Fowler, M.R. (2003). Plant Biotechnology - The Genetic Manipulation of Plants. Oxford University Press. ISBN 0-19-925468-0.</i> <i>[3] Christou, P. and Klee, H. (2004). Handbook of Plant Biotechnology. John Wiley& Sons Ltd., England. ISBN 0-471-85199-X. Vol. 2: 741-1420.</i> <i>[4]. Srivastava, P.S. (2005). Plant Biotechnology and Molecular Markers. Kluwer Academic Publishers, NY. ISBN 1-4020-1911-4.</i> <i>[5] Oksman-Caldentey, K.M. and Barz, W.H. (2002). Plant Biotechnology and Transgenic Plants. Marcel Dekker Inc., NY. ISBN 0-8247-0794-X.</i> <i>[6] H.S. Chawla (2003). Plant Biotechnology: A Practical Approach. Science Publishers</i>		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) and Program/Student Learning Outcomes (PLO) is shown in the following table:

CLOs	PLOs							
	1	2	3	4	5	6	7	8
1			M					
2			M					
3				H				
4					H			

**Use Bloom's Taxonomy*

The program learning outcomes (PLOs) are detailed below:

- (1) An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)*
- (2) An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)*
- (3) An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)*
- (4) An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)*
- (5) An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)*
- (6) An ability to apply modern techniques to produce biotechnological products. (Application)*
- (7) An ability to analyze and interpret results in biotechnological process, product manufacturing. (Lifelong learning)*
- (8) An ability to be well aware of professional development for a career. (Development)*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	- Introduction to organization for plant tissue culture lab - Preparation of culture media	1,3,4	Lecture, Discussion, Practice	Progress, Report, Exam	[1,6]
2	- Aseptic technique - Explant sterilization methods	1,3,4	Lecture, Discussion, Practice	Progress, Report, Exam	[1, 6]
3	Shoot apical meristem culture and shoot formation induction	1,3,4	Lecture, Discussion, Practice	Progress, Report, Exam	[1, 6]
4	Callus induction	1,3,4	Lecture, Discussion, Practice	Progress, Report, Exam	[1, 6]
5	Subculture of <i>in vitro</i> plant materials	1,3,4	Lecture, Discussion, Practice	Progress, Report, Exam	[1, 6]
6	One-day field trip or Group presentation	1-4	Lecture, Discussion	Progress, Report/ Presentation	[1-6]
7	Exam	1,3	Exam		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Lab report (40%)	Lab result discussion and theory answer 70% pass			Lab result and discussion 70% pass
Field trip report (30%) or Presentation (30%)	Site visit report 100% pass	Understanding shown via presentation, answer audience's questions 75%	Site visit report 100% pass	
Exam (30%)	Technique performance and written exam 85% pass			Technique performance and written exam 85% pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		

Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100*		

** The total score will be converted into 40% (percentage of Report for whole course score).*

5.2 Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3 Analytic rubric

**Oral communication value rubric for evaluating presentation tasks:*

Group:	Topic for presentation:		
Categor	Scoring Criteria	Total Points	Score
Presentation content	Content Organization: The presentation is delivered in logical order and has a clear structure, including an introduction and a conclusion.	15	
	Information: The presentation contains accurate information and is cited from appropriate external resources.	15	
	Language usage: Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	Visual aids: The presentation includes suitable and effective visual aids that capture the audience's attention.	15	
Presentation delivery	Time management: The Length of the presentation is within the assigned time limits	10	
	Presentation Skill: The speaker maintains good eye contact with the audience, and speaks confidently with a good voice, fluid speech, and appropriate pronunciation.)	10	
	Question and Answer: The speaker addresses and answers all questions from the audience following the presentation.	20	
TOTAL SCORE		100*	

** The total score will be converted into 20% (percentage of Presentation for whole course score).*

**Critical thinking value rubric for evaluating questions in exams:*

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.

Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

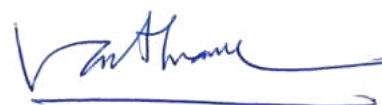
6. Date revised: June 11, 2025

7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: phdiep@hcmiu.edu.vn; htlxuan@hcmiu.edu.vn

Ho Chi Minh City, 11/06/2025

**HEAD/DEAN OF DEPARTMENT/SCHOOL
(Signature)**



Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of Biotechnology

COURSE SYLLABUS

Course Name: Pharmaceutical Biotechnology

Course Code: BT349IU

1. General information

Course name	- <i>Pharmaceutical Biotechnology</i> - <i>Công nghệ sinh học Dược</i>
Course designation	<i>This course will be lectured in the 6,7th semester for Biotech students. This course emphasizes the biotechnological aspects in the pharmaceutical and biopharmaceutical product development, fundamentals of genetic engineering, analyzing the products and its application in medicine. This course also emphasizes the principle of synthesis and manufacturing processes of monoclonal antibodies, introduction to gene therapy, recombinant therapeutic protein, enzymes, biotech compounds and materials used in pharmaceutical and biopharmaceutical fields. This course is designed to provide how to formulate a biopharmaceutical product and establish a pharmaceutical pilot.</i>
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	5,6,7
Person responsible for the course	Associate Professor. Nguyen Hoang Khue Tu Email:nhktu@hcmiu.edu.vn
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lecture, homework, presentation, quiz

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 h Private study including examination preparation, specified in hours ¹ : 90 h		
Credit points	3 credits (Theory) 4.6 ECTS		
Number of periods	Theory: 45		
Required and recommended prerequisites for joining the course	- Prerequisites:		
Course objectives	This course will provide students the knowledges of processes for biopharmaceutical discovery and development, formulation, biopharmaceutical products (recombinant proteins and genetic material, nanoparticles, monoclonal antibody, vaccine, biological compounds) and the the needs of Biopharmaceutical products in life. Students will have the effective communication with lecturers and classmates and be able to solve problems by themselves. Students will be taught how to apply the concepts of biopharmaceutical quality and safety, manufacturing issues, and formulating biopharmaceutical products for working in factories, research institutes, hospitals, universities, medicine, etc... The students will apply the analytical methods, equipments, interpret results and continue to study biotechnology and related majors in Vietnam or abroad with the spirit of lifelong learning.		
Course learning outcomes	After the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1: understanding the knowledge and the needs of Biopharmaceutical products	
	Skill	CLO2. Effectively communicating with lecturers and classmates, solving problems by themselves. CLO3. Applying the concepts of biopharmaceutical quality and safety, manufacturing issues, and formulating biopharmaceutical products for working in factories, research institutes, hospitals, universities, medicine, etc...	
	Attitude	CLO4: Applying analytical methods, equipments, interpret results and continuing to study biotechnology and related majors in Vietnam or abroad with the spirit of lifelong learning.	

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction	1	I,T
	Recombinant production technology of therapeutic peptides and proteins	2	T,U
	Synthesis and manufacturing processes of monoclonal antibodies	2	T, U
	Vaccine technology	2	T, U
	X- crystallization application	1	T, U
	Nanoparticle technology and application	2	T, U
	Gene and Immunotherapy	2	T, U
	Advances in therapy	1	T, U
	Formulation for a pharmaceutical and biopharmaceutical	1	T, U
Revisions	1	T, U	
Examination forms	Multiple-choice questions, written test		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this module.		
Reading list	Textbook: 1. Liddell, J.E. and Cryer, A. (1991). <i>A practical guide to Monoclonal Antibodies, Paperback.</i> 2. Harvey, A.L (1998). <i>Advances in Drug discovery techniques.</i> 3. Grandi, G. (2004). <i>Genomics, Proteomics and Vaccines.</i> 4. Streips, U.N. and Yasbin, R.E. (2002). <i>Modern Microbial Genetics</i>, 2nd edition. 5. Walsh, G. (2007). <i>Phamaceutical Biotechnology: Concepts and Applications.</i> 6. Taylor and Francis (2007). <i>Pharmaceutical Biotechnology – An Introduction for Pharmacists and Pharmaceutical Scientists</i>, 3rd edition.		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-5) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	SLOs							
CLOs	1	2	3	4	5	6	7	8

1								
2		H		M				
3			M			M		
4							H	

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to Pharmaceutical Biotechnology	1	Lecture, Discussion, In Class-Quiz	Quizzes	5
2-3	Recombinant production technology of therapeutic peptides and proteins	1-4	Lecture, Discussion, In Class-Quiz		1,4,5
4-5	Synthesis and manufacturing processes of monoclonal antibodies	3,4	Lecture, Discussion, In Class-Quiz		1,6
6-7	Vaccine technology	3,4	Lecture, Discussion, In Class-Quiz	HW	3,5
8	X- crystallization application Midterm test	1,3,4 1,3,4	Lecture, Discussion, In Class-Quiz		2,6
9-10	Nanoparticle technology and application	3,4	Lecture, Discussion, In Class-Quiz		2,6
11-12	Gene and Immunotherapy	3,4	Lecture, Discussion, Presentation	Presentation	1-6
13	Advances in therapy	3,4	Lecture, Discussion, Presentation	Presentation	1,2,3,4,5
14	Formulation for a pharmaceutical and biopharmaceutical	3,4	Lecture, Discussion, Presentation	Presentation	1,2,3,4,5,6
15	Revisions	1-4	Summary-Review test		
16-17	Final exam	1,3,4			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Presentation, Quiz, In class-activities, homework (30%)		60% pass	60% pass	
Midterm exam (30%)	60% pass		60% pass	60% pass
Final exam (40%)	60% pass		60% pass	60% pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1 Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)			
TOTAL SCORE			
	100		

5.2 Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3 Analytic rubric

**Oral communication value rubric for evaluating presentation tasks:*

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score

Presentation content	Content Organization: The presentation is delivered in logical order and has a clear structure, including an introduction and a conclusion.	15	
	Information: The presentation contains accurate information and is cited from appropriate external resources.	15	
	Language usage: Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	Visual aids: The presentation includes suitable and effective visual aids that capture the audience's attention.	15	
Presentation delivery	Time management: The Length of the presentation is within the assigned time limits.	10	
	Presentation Skill: The speaker maintains good eye contact with the audience, and speaks confidently with a good voice, fluid speech, and appropriate pronunciation.)	10	
	Question and Answer: The speaker addresses and answers all questions from the audience following the presentation.	20	
Score	Total Points	100	

***Critical thinking value rubric for evaluating questions in exams:**

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.

	questioned thoroughly.		experts are taken as mostly fact, with little questioning.	
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 11, 2025

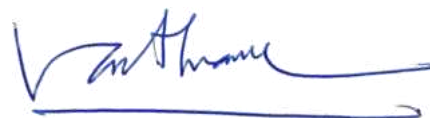
7. Course coordinator/Lecturer

- Department: Biotechnology
- Email: nhktu@hcmiu.edu.vn

Ho Chi Minh City., 11/06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)

A handwritten signature in blue ink, appearing to read 'Nguyễn Văn Thuận', with a long horizontal flourish extending to the right.

Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department/School of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Pharmaceutical Biotechnology

Course Code: BT350IU

1. General information

Course name	- <i>Practice in Pharmaceutical Biotechnology</i> - <i>Thực hành Công nghệ sinh học dược</i>
Course designation	<i>This course emphasizes the upstream processing in producing therapeutic recombinant protein, protein recovery by cell extration, concentration, purification, desalt process, SDS-PAGE, nanoparticle production, killing microorganism for vaccine preparation and cream formulation. The study also focused on analyzing and interpreting the products and its application in medicine. This course is designed to provide how to formulate a biopharmaceutical product and establish a pharmaceutical pilot.</i>
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	5, 6,7
Person responsible for the course	Associate Professor. Nguyen Hoang Khue Tu
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lectures, discussion, demonstrations, labworks.

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 35 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 20 Private study including examination preparation, specified in hours ¹ : 15		
Credit points	1 credits (Practice) 15.3 ECTS		
Number of periods	Practice: 30		
Required and recommended prerequisites for joining the course	- Corequisites: * BT349IU-Pharmaceutical Biotechnology		
Course objectives	The course will provide the students: • <i>Knowledge</i>: Principles of Biopharmaceutical techniques for pharmaceutical industry and related areas. • <i>Skill</i>: production of therapeutic recombinant protein, protein recovery by cell extration, concentration, purification, desalt process, SDS-PAGE, nanoparticle production, killing microorganism for vaccine preparation and cream formulation. <i>Competences</i> : Ability to design and conduct experiments, as well as to analyze and interpret data.		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1: Understand the principles of Biopharmaceutical techniques for pharmaceutical industry and related areas	
	Skill	CLO2: Identify Biopharmaceutical products. CLO3: Produce Biopharmaceutical products. CLO4: Qualify Biopharmaceutical products.	
	Attitude	CLO5: Seriousness, Care, Hardworking, Activeness, Patience.	

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Upstream processing for Recombinant production technology of therapeutic proteins	1	I, T, U
	Downstream processing (protein recovery, characterization, purification)	2	I, T, U
	Killing microorganism preparation for antibody production	1	I, T, U
Examination forms	Formulation		
	Nanoparticle development		
Study and examination requirements	Attendance: A minimum attendance of 80% is compulsory for the class sessions. Students will be assessed based on their participations. Questions and comments are strongly encouraged. Assignments/Examination: Students must get more than 50/100 points overall to pass this module.		
Reading list	1. Lab-manual for Pharmaceutical Practice Class. School of Biotechnology, International University [Internal Use] 2. Journal of protein expression and purification 3. Biomedicine journal		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-5) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	SLOs							
CLOs	1	2	3	4	5	6	7	8
1								
2		M						
3						M		
4		M	M		H			
5							H	

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources

1	Upstream processing for Recombinant production technology of therapeutic proteins	1,2,3,5	Lecture, discussion	Lab report, question-answer	1,2
2,3	Downstream processing (protein recovery, characterization, purification)	1,2,3,4,5	Lecture, discussion	Lab report, question-answer	1,2
4	Killing microorganism preparation for antibody production	1,2,3,4,5	Lecture, discussion	Lab report, question-answer	1,3
5	Formulation	1,2,3,4,5	Lecture, discussion	Lab report, question-answer	1,3
6	Nanoparticle development	1,2,3,4,5	Lecture, discussion	Lab report, question-answer	1,3
	Report submission and Oral test				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Attendance, Lab, Presentation (70%)	60% pass	60% pass	60% pass	60% pass	60% pass
Final exam (30%)	60% pass	60% pass	60% pass	60% pass	60% pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1 Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			

Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2 Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3 Analytic rubric

**Oral communication value rubric for evaluating presentation tasks:*

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score
Presentation content	Content Organization: The presentation is delivered in logical order and has a clear structure, including an introduction and a conclusion.	15	
	Information: The presentation contains accurate information and is cited from appropriate external resources.	15	
	Language usage: Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	Visual aids: The presentation includes suitable and effective visual aids that capture the audience's attention.	15	
Presentation delivery	Time management: The Length of the presentation is within the assigned time limits.	10	
	Presentation Skill: The speaker maintains good eye contact with the audience, and speaks confidently with a good voice, fluid speech, and appropriate pronunciation.)	10	
	Question and Answer: The speaker addresses and answers all questions from the audience following the presentation.	20	
Score	Total Points	100	

**Critical thinking value rubric for evaluating questions in exams:*

	Capstone	Milestone		Benchmark
	4	3	2	1

Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 11, 2025

7. Course coordinator/Lecturer

- Department: Biotechnology
- Email: nhktu@hcmiu.edu.vn

Ho Chi Minh City, 11/06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)

Nguyễn Văn Thuận



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Molecular Diagnostics

Course Code: **BT351IU**

1. General information

Course Name	- <i>Molecular diagnostics</i> - <i>Chẩn đoán phân tử</i>
Course designation	<i>The molecular diagnostics course is an applied course, using molecular biotechnology using both protein and nucleic-acid-based methods in diagnosis of the infectious diseases in human, plant, animal, and food as well as the identify genetic causative or risks contributing to diseases. The molecular techniques are reviewed and studied to apply them as the diagnosis tools, also the troubleshooting for diverse technical applications. The course gives the approach to develop new or advance methods for diagnosis of the diseases based on the principle of molecular biotechnology. The applications in detection of target infectious disease or genetic or somatic causative/risk variants will be introduced and discussed.</i>
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	7, 8
Person responsible for the course	Dr. Le, Minh Thong Email: lmthong@hcmiu.edu.vn
Language	English
Relation to curriculum	Elective

Teaching methods	Classroom activities: Lecturing, question – answer, discussion Self-learning: Reading, homework Teamwork: Group assignment, presentation		
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 135 Contact hours (<i>please specify whether lecture, exercise, laboratory session, etc.</i>): Lecture – 45 Private study including examination preparation, specified in hours ¹ : 90		
Credit points	3 credits (theory) 4.6 ECTS		
Number of periods	Theory 45		
Required and recommended prerequisites for joining the course	Cell Biology (BT009IU), Genetics (BT313IU), Molecular Biotechnology (BT334IU)		
Course objectives	Upon complete this course the successful students will be able to: • Understand the classification of risks to human activities such as: production, food, healthcare, ... and the needs to use molecular technologies for diagnostics. • Understand the principle of molecular methods used in the specific context for effective diagnostics.		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Have a understand of the classification of risks to human activities. CLO2. Have an understanding molecular technique: principles and specific context utilization for diagnostics	
	Skill	CLO3. Apply molecular techniques in diagnosis factors in human, plant, animal, and food (design, setup, perform and explain the test)	
	Attitude	CLO4. Discerning the importance, ethical and privacy issues in molecular testing.	

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	1 – Introduction of Molecular diagnostics and traditional diagnosis methods	1	I
	2 - Classification of the risks and the need of using molecular diagnostics & Quality Assurance and Quality Control in the Molecular Laboratory	1	I, T
	3 - Protein based technologies	1	I, T
	4 - Low- and Medium-Throughput Variant Detection Methods	1	
	5 - Quantitative Polymerase Chain Reaction and High-Resolution Melting Curve Analysis for Molecular Diagnostics	1	I, T
	6 - Molecular Cytogenetics in Molecular Diagnostics	1	I, T
	7 - Sequencing based technologies	1	I, T
	8 - Microarray and Lab-on-a-chip technologies	1	I, T
	9 - DNA Polymorphisms and Human Identification	1	I, T
	10 - Detection and Identification of Microorganisms	1	I, T
	11 - Molecular Detection of Inherited Diseases	1	I, T
12 - Molecular Oncology	1	I, T	
13 - DNA-Based Tissue Typing	1	I, T	
14 - Preimplantation Genetic Diagnosis and Noninvasive Cell-Free DNA Prenatal Testing for Fetal Aneuploidy	1	I, T	
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		

Reading list	Textbook(s) [1] Lela Buckingham and Maribeth L. Flaws (2007). <i>Molecular Diagnostics: Fundamentals, Methods and Clinical Applications</i> . [2] Patrinos, George P., Wilhelm Ansorge, and Phillip B. Danielson, eds. <i>Molecular Diagnostics</i> . 3 editions. Amsterdam: Academic Press, 2016. [3] William B. Coleman, Gregory J. Tsongalis (2006). <i>Molecular Diagnostics: For the Clinical Laboratorian</i> .

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Program/Student Learning Outcomes (SLO) (1-6) is shown in the following table:

	SLO							
CLO	1	2	3	4	5	6	7	8
1	M							
2		H						
3			H					
4								M

1. An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)
2. An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)
3. An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)
4. An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)
5. An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)
6. An ability to apply modern techniques to produce biotechnological products. (Application)
7. An ability to analyse and interpret results in biotechnological process, product manufacturing. (Life-long learning)
8. An ability to be well aware of professional development for career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction of Molecular diagnostics and traditional diagnosis methods	1		Lecture, Discussion,	[1], 1
2	Classification of the risks and the need of using molecular diagnostics & Quality Assurance and Quality Control in the Molecular Laboratory	1	Presentation	Lecture, Discussion,	[1], 2
3	Protein based technologies	2, 4	Presentation Quiz1	Lecture, Discussion,	[1], 11

4	Low- and Medium-Throughput Variant Detection Methods	2, 3	Presentation	Lecture, Discussion,	[2], 3
5	Quantitative Polymerase Chain Reaction and High-Resolution Melting Curve Analysis for Molecular Diagnostics	2, 3	Presentation	Lecture, Discussion,	[1], 6
6	Molecular Cytogenetics in Molecular Diagnostics	2, 3	Presentation Quiz2	Lecture, Discussion,	[1], 7
7	Sequencing based technologies	2, 3	Presentation	Lecture, Discussion,	[1], 8, 9
9	Microarray and Lab-on-a-chip technologies MIDTERM EXAMINATION	2, 3	Presentation	Lecture, Discussion,	[2], 11, 18
10	DNA Polymorphisms and Human Identification	2, 3	Presentation Quiz3	Lecture, Discussion,	[1], 11
11	Detection and Identification of Microorganisms	2, 3	Presentation	Lecture, Discussion,	[1], 12
12	Molecular Detection of Inherited Diseases	2, 3	Presentation	Lecture, Discussion,	[1], 13
13	Molecular Oncology	2, 3	Presentation Quiz4	Lecture, Discussion,	[2], 14
14	DNA-Based Tissue Typing	2, 3, 4	Presentation	Lecture, Discussion,	[1], 15
15	Preimplantation Genetic Diagnosis and Noninvasive Cell-Free DNA Prenatal Testing for Fetal Aneuploidy	5	Presentation	Lecture, Discussion,	[2], 23, 24
16	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class quizzes/presentation (15%)	Qz1 70 % Pass		Presentation 70 % Pass	
Homework exercises (15 %)		HW1 80 % Pass		
Midterm exam (30%)	60 % Pass	60 % Pass	60 % Pass	
Final exam (40%)	60 % Pass	60 % Pass	60 % Pass	60 % Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

1. Grading checklist

Grading checklist for Written Reports	
Student (or group):	HW/Assignment:
Date:	

Evaluator:			
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal contents	10		
Introduction demonstrates knowledge of relevant backgrounds and the context of the present work	15		
Analysis and discussion demonstrate good understanding, explanation, and theory development	30		
Summary and conclusions appropriate and complete to the content	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Oral communication value rubric for evaluating presentation tasks:

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score
Presentation content	Content Organization: The presentation is delivered in logical order and has a clear structure including introduction and conclusion.	15	
	Information: The presentation contains accurate information and cited from appropriate external resources.	15	
	Language usage: Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	Visual aids: The presentation contains appropriate and effective visual aids which can grab the attention of audiences.	15	
Presentation delivery	Time management: Length of presentation is within the assigned time limits.	10	
	Presentation Skill: The speaker maintains good eye contact with audiences, and speaks confidently with good voice, fluid speech, and appropriate pronunciation.)	10	
	Question and Answer: The speaker is able to answer all questions from the audiences after the presentation.	20	
Score	Total Points	100	

**Critical thinking value rubric for evaluating questions in exams:*

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.

Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 11, 2025

7. Course coordinator/Lecturer

Department: Biotechnology

Email: lmthong@hcmu.edu.vn

Dean of School of Biotechnology

A handwritten signature in blue ink, appearing to read 'Van Thuan', with a long horizontal flourish extending to the right.

Assoc. Prof. NGUYEN VAN THUAN



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Molecular Diagnostics

(Thực hành Chẩn đoán phân tử)

Course Code: BT352IU

1. General information

Course designation	<i>The molecular diagnostics course is an applied course, using molecular biotechnology using both protein and nucleic-acid-based methods in diagnosis of the infectious diseases in human, plant, animal, and food as well as the identify genetic causative or risks contributing to diseases. The molecular techniques are reviewed and studied to apply them as the diagnosis tools, also the troubleshooting for diverse technical applications. The course gives the approach to develop new or advance methods for diagnosis of the diseases based on the principle of molecular biotechnology. The applications in detection of target infectious disease or genetic or somatic causative/risk variants will be introduced and discussed.</i>
Semester(s) in which the course is taught	7
Person responsible for the course	Dr. Le, Minh Thong
Language	English
Relation to curriculum	Elective
Teaching methods	Classroom activities: Lecturing, question – answer, discussion, Laboratory works Self-learning: Reading Teamwork: Group assignment, presentation

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 55 h Contact hours (<i>please specify whether lecture, exercise, laboratory session, etc.</i>): Laboratory – 25 h Private study including examination preparation, specified in hours ³⁴ : 30 h
Credit points	1 credit (Practice Lab) ~ (2 ECTS)
Required and recommended prerequisites for joining the course	Cell Biology (BT009IU), Genetics (BT313IU), Molecular Biotechnology (BT334IU)
Course objectives	Upon complete this course the successful students will be able to: • Understand the classification of risks to human activities such as: production, food, healthcare, ... and the needs to use molecular technologies for diagnostics. • Understand the principle and practice of molecular methods used in the specific context for effective diagnostics.
Course learning outcomes	Upon the successful completion of this course students will be able to:
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (5 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)
Examination forms	Multiple-choice questions, short-answer questions

Competency level	Course learning outcome (CLO)
Knowledge	CLO1. Have an understanding molecular technique: principles and specific context utilization for diagnostics

Skill	CLO2. Apply molecular techniques in diagnosis factors in human, plant, animal, and food (design, setup, perform and explain the test)
Attitude	CLO3. Discerning the importance, ethical and privacy issues in molecular testing.

Topic	Weight	Level
1 – Computer practice and experimental design	1	I, T, U
2 – Chemical and sample preparation.	1	I, T, U
3 - DNA extraction and evaluation	1	I, T, U
4 - Performing a PCR for detect infectious agent in food	1	I, T, U
5 - Performing a realtime PCR for detection of infectious disease in animal	1	I, T, U
6 – Oral/Writing report. Interpret the diagnostic result	1	I, T, U

³⁴ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	Textbook(s) [1] Lela Buckingham and Maribeth L. Flaws (2007). <i>Molecular Diagnostics: Fundamentals, Methods and Clinical Applications</i> . [2] Patrinos, George P., Wilhelm Ansorge, and Phillip B. Danielson, eds. <i>Molecular Diagnostics</i> . 3 editions. Amsterdam: Academic Press, 2016. [3] William B. Coleman, Gregory J. Tsongalis (2006). <i>Molecular Diagnostics: For the Clinical Laboratorian</i> . [4] <i>Manual for Molecular Diagnostics – Le Minh Thong</i>

2. Learning Outcomes Matrix (optional)

The intended learning outcomes (ILOs) of Biotechnology Program and three levels of contribution are defined using Bloom's taxonomy (Low [L]: Remember and Understand; Medium [M]: Apply and Analyze; High [H]: Evaluate and Create).

The relationship between Course Learning Outcomes (CLOs) (1-5) and ILOs (1-8) and the level of contribution of CLOs to ILOs is shown in the following table:

	SLO							
CLO	1	2	3	4	5	6	7	8
1							H	
2				H	H			
3						M		
4								

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Computer practice and experimental design	1		Lecture, Laboratory work	[4]
2	Chemical and sample preparation	1	Presentation	Lecture, Laboratory work	[4]
3	DNA extraction and evaluation	2, 4	Quiz1	Lecture, Laboratory work	[4]
4	Performing a PCR for detect infectious agent in food	2, 3	Presentation	Lecture, Laboratory work	[4]
5	Performing a realtime PCR for detection of infectious disease in animal	2, 3	Presentation	Lecture, Laboratory work	[4]
6	Oral/Writing report. Interpret the diagnostic result	2, 3	Oral, report	Discussion	[4]

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
In-class quizzes (15%)			Qz1 50%Pass

Presentation (25 %)	Based on performance, discussion quality		
Laboratory work report/Oral check (60%)		50% Pass	

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

Grading checklist for Progress			
Student:.....Date:		Evaluator:	
	Max.	Score	Comments
Attendance (20%)			
Fully attend	25		
Be on-time	25		
Participation (20%)			
Actively engaged in lecture discussion	25		
Actively engaged in lab activity	25		
TOTAL SCORE	100		

(Follow the policy of the school)

Grading checklist for Written Reports and Oral examination			
Student:.....Date:		Report: Evaluator:	
	Max.	Score	Comments
Oral interview on the report (100%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			

Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100*		

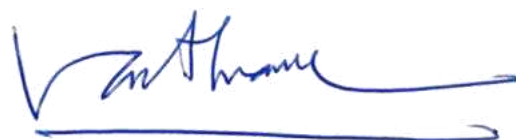
* The total score will be converted into 70% (percentage of Report for whole course score).

Grading checklist for Technical performance			
Student:.....Date:		Evaluator:	
	Max.	Score	Comments
Technical performance (100%)			
Perform the practice objective properly	50		
Give the correct answer	25		
Explanation for answer	25		
TOTAL SCORE	100*		

* The total score will be converted into 30% (percentage of Final exam for whole course score).

6. Date revised: June 11, 2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof. NGUYEN VAN THUAN



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Reproductive and Regenerative Biomedicine

Course Code: BT353IU

1. General information

Course name	- <i>Reproductive and Regenerative Biomedicine</i> - <i>Y Sinh Học Tái Tạo và Sinh Sản</i>
Course designation	<i>This course is designed to help future student's understanding of human and animal germ cells, assisted reproductive technologies, development of embryos, embryo differentiation, genomic reprogramming, transgenic animal, cloning animals, chimeric animals, and application of those techniques in regenerative biomedicine. This course also provides students with the skill and knowledge on assisted reproductive technology (ART) and application of ART on infertility treatment in human and bio-organ for xenotransplantation using animal models.</i>
Course type	☐ General knowledge Fundamental ☐ ☐ Specialized knowledge Internship/Project/Thesis Others: ☐ ☐
Semester(s) in which the course is taught	5,6,7
Person responsible for the course	Assoc. Prof. Nguyen Van Thuan Email: nvthuan@hcmiu.edu.vn
Language	English

Relation to curriculum	☐ Compulsory ☐ Elective	
Teaching methods	Lecture, Quiz, Homework.	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 h Private study including examination preparation, specified in hours ¹ : 90 h	
Credit points	3 credits (Theory) 4.6 ECTS (<i>optional</i>)	
Number of periods	Theory: 45	
Required and recommended prerequisites for joining the course	- Prerequisites: *BT210IU-Human Physiology	
Course objectives	The course provides students with basic understanding and advanced concepts of reproductive biotechnology and cell reprogramming models for applications in medicine and in pharming.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: Understand the ethical issues in research using human embryos, stem cells and human materials for scientific research.
	Skill	CLO2: Understand what is assisted reproductive technology (ART) and application ART for treatment of infertility in human. CLO3: Understand how to reprogram a somatic cell to stem cell line and to full term development. How to create cloned embryos, transgenic embryos, tetraploid embryos and chimeric embryos.
	Attitude	CLO4: Apply transgenic and cloned embryos technologies combined with cell reprogramming and chimerism technique to produce human recombinant proteins and human bio-organ.

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Reproductive Biotechnology and applications	3	I, T
	The mammalian cells: Totipotent cells, pluripotent cells multipotent cells and germ cells	6	T, U
	Assisted Reproductive Technology and Application for infertility treatment	3	T, U
	Development of embryos and embryos transfer	3	T, U
	Transgenic animals and application for medicine and agriculture	3	T, U
	Embryonic stem cells, differentiation and application for		
	stem cell therapy	3	T, U
	Somatic cell reprogramming and applications	6	T, U
	Chimeric animals and applications	3	T, U
	Applications of transgenic and chimeric techniques in combined with somatic cell reprogramming for productions of human recombinant proteins and human bio-organs	6	T, U
	Reproductive Biotechnology and applications	3	I, T
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	Article References: [1] Advanced Protocol for animal transgenesis (Pringer 2011) [2] Principle of cloning 9Second edition, Elsevier Academic Press, 2014) [3] Lecture slides (receive from instructor) via Backboard		

2. Learning Outcomes Matrix (optional)

The intended learning outcomes (ILOs) of Biotechnology Program and three levels of contribution are defined using Bloom's taxonomy (Low [L]: Remember and Understand; Medium [M]: Apply and Analyze; High [H]: Evaluate and Create).

The relationship between Course Learning Outcomes (CLOs) (1-4) and ILOs (1-8) and the level of contribution of CLOs to ILOs is shown in the following table:

	ILOs							
CLOs	1	2	3	4	5	6	7	8
1					H			
2		M						
3						H		
4								M-H

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction of reproductive and Regenerative Biomedicine - Course outline	1- 4	Lecture, Discussion, In Class-Quiz	Quizzes	1, 2, 3
2	The mammalian cells: Totipotent cells, pluripotent cells multipotent cells and germ cells	1-2	Lecture, Discussion, In Class-Quiz	HW1	1, 2, 3
3	The mammalian cells: Totipotent cells, pluripotent cells multipotent cells and germ cells	1-2	Lecture, Discussion, In Class-Quiz		1, 2, 3
4	Assisted Reproductive Technology and Application for infertility treatment	1-2	Lecture, Discussion, In Class-Quiz	Quizzes	1, 2, 3
5	Assisted Reproductive Technology and Application for infertility treatment	1-2	Lecture, Discussion, In Class-Quiz	Quizzes	1, 2, 3
6	Development of embryos and embryos transfer	1-3	Lecture, Discussion, In Class-Quiz		1, 2, 3
7	Transgenic animals and application for medicine and agriculture	1-3	Lecture, Discussion, In Class-Quiz		1, 2, 3
8	Summary Midterm Test	1-3	Lecture, Discussion, In Class-Quiz		1, 2, 3
9	Embryonic stem cells, differentiation and application for stem cell therapy	2-3	Lecture, Discussion, In Class-Quiz	HW1	1, 2, 3
10	Somatic cell reprogramming and applications	2-3	Lecture, Discussion, In Class-Quiz		1, 2, 3
11	Somatic cell reprogramming and applications	3-4	Lecture, Discussion, In Class-Quiz		1, 2, 3
12	Chimeric animals and applications	3-4	Lecture, Discussion, In Class-Quiz		1, 2, 3

13	Applications of transgenic and chimeric techniques in combined with somatic cell reprogramming for productions of human recombinant proteins and human bio- organs	1-4			1, 2, 3
14	Applications of transgenic and chimeric techniques in combined with somatic cell reprogramming for productions of human recombinant proteins and human bio- organs	1-4	Lecture, Discussion, In Class-Quiz		1, 2, 3
16-17	Final exam	1-4			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class Presentation/quizzes (20%)	Quiz/ Part. 80%Pass	Quiz/ Part. 80%Pass	Quiz/ Part. 80%Pass	Quiz/ Part. 80%Pass
Homework exercises (10%)	HW1 70%Pass		HW2 70%Pass	
Midterm exam (30%)	MCQs 60% Pass	MC-Written Questions 60% Pass	Written Questions 60% Pass	
Final exam (40%)	MCQs 60% Pass	MCQs 60% Pass	MC-Written Questions 60% Pass	Written Questions 60% Pass

Note: %Pass (Exam): % students have scores greater than 50 out of 100.

%Pass (Homework/ Assignment): % students have scores greater than 70 out of 100.

Multiple Choice Questions (MCQs); Homework (HW).

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		

Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: This rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.

Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 2025

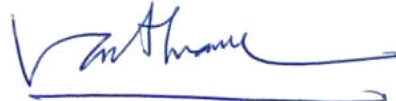
7. Course coordinator/Lecturer

- School/Department:
- Email: nvthuan@hcmiu.edu.vn.

Ho Chi Minh City, dd/mm/yyyy

DEAN OF DEPARTMENT/SCHOOL

(Signature)



Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Reproductive & Regenerative Biomedicine

Course Code: BT354IU

1. General information

Course name	- <i>Practice in Reproductive & Regenerative Biomedicine</i> - <i>Thực hành Y Sinh Học Tái Tạo và Sinh Sản</i>
Course designation	Application of knowledge of reproductive biotechnology and regenerative biomedicine in the treatment of infertility in humans and animals and advanced methods for stem cell therapy and bio-organs for humans. Students will practice technologies such as in vitro growth of small oocyte to full growth oocyte (IVG), in vitro maturation (IVM), intracytoplasmic sperm injection (ICSI), embryo culture for development (IVD), embryo biopsy techniques for preimplantation genome diagnosis (PGD). In addition, students also learn to establish fibroblast cell lines and stem cells.
Course type	☐ <i>General knowledge</i> <i>Fundamental</i> ☐ <i>Specialized knowledge</i> <i>Internship/Project/Thesis</i> <i>Others:</i>
Semester(s) in which the course is taught	5, 6, 7
Person responsible for the course	Assoc. Prof. Nguyen Van Thuan & Assoc. Prof. Bui Hong Thuy Email: nvthuan@hcmiu.edu.vn bhthuy@hcmiu.edu.vn
Language	English
Relation to curriculum	☐ Compulsory ☐ Elective
Teaching methods	Practice

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 55 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 20 h Private study including examination preparation, specified in hours ¹ : 30 h	
Credit points	1 credit (Practice) 2 ECTS	
Number of periods	Practice: 30	
Required and recommended prerequisites for joining the course	- Prerequisites: BT353IU-Reproductive and Regenerative Biomedicine	
Course objectives	This course helps provide criteria for isolating and culturing of primordial oocytes to full growth oocytes and mature oocytes. The students also can establish fibroblast cell form tissue and blastocyst. Besides, students practice ICSI, embryo culture for preimplantation development, and modern technologies such as tetraploid embryos, embryos biopsies, chimeric animal, and somatic cell nuclear transfer embryos.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: Apply knowledge of reproductive biotechnology for treatment of infertility in human and animal (ART). CLO2: Apply knowledge of stem cells, cell reprogramming, cloning animals, chimeric and transgenic techniques for productions of human recombinant proteins and human bio-organs.
	Skill	CLO3: Apply embryo technologies and embryo biopsy for PGD and stem cells therapy. CLO4: Being able to perform lab-work: perform experiment, analyze data, answer questions, make conclusion, research assignments, report writing.
	Attitude	CLO5: Understand ethical issues in research related to the use of human embryos in assisted reproductive technology and research related to regenerative biomedical technology applied to the treatment of human diseases.

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (5 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction of reproductive and regenerative biomedicine Lab	1	I, T
	Practice for in vitro growth of small oocytes to full growth oocytes and in vitro maturation using porcine eggs	1	T, U
	Practice for establishment of mouse embryonic stem cell line	1	T, U
	Practice for establishment of mouse fibroblast cell line	1	T, U
	Practice for intracytoplasmic sperm injection and somatic cell nuclear transfer in the mouse	1	T, U
	Practice for establish tetraploid embryos and embryos biopsy in the mouse	1	T, U
Examination forms	Test in each Lab and Final Lab Report/Test.		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	[1] Reproductive and Regenerative biomedicine Lab Manual, Nguyen Van Thuan [2] Article references be provided (Note: Articles will be updated every year)		

2. Learning Outcomes Matrix (optional)

The intended learning outcomes (ILOs) of Biotechnology Program and three levels of contribution are defined using Bloom's taxonomy (Low [L]: Remember and Understand; Medium [M]: Apply and Analyze; High [H]: Evaluate and Create).

The relationship between Course Learning Outcomes (CLOs) (1-5) and ILOs (1-8) and the level of contribution of CLOs to ILOs is shown in the following table:

	ILOs							
CLOs	1	2	3	4	5	6	7	8
1		L						
2			M					
3						H		
4				H				
5					H			

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction about experiments in Reproductive and Regenerative Biomedicine Lab. Animal cell culture.	1-5	Instruction, Discussion, Practice	Quizzes	1, 2
2	Isolation of growing pig oocytes from ovarian tissue and culture for in vitro growth	1, 2	Instruction, Discussion, Practice	Submit sample and get scores	1, 2
3	Collection of fully growth porcine oocytes by dissection method and culture for in vitro maturation.	3, 4	Instruction, Discussion, Practice	Submit sample and get scores	1, 2
4	Induce superovulation in mouse, collection of mouse mature oocytes and spermatozoa. Culture and establish fibroblast cell line	2, 3	Instruction, Discussion, Practice	Submit sample and get scores	1, 2
5	Preparation of microinjection pipette and micromanipulator system, perform Intracytoplasmic Sperm Injection (ICSI), enucleation, and Somatic Cell Nuclear Transfer (SCNT).	3, 4	Instruction, Discussion, Practice	Submit sample and get scores	1, 2
6	Collect mouse 2-cell and 8-cell embryos for establishment of tetraploid embryos and for embryo biopsy.	3, 4	Instruction, Discussion, Practice	Submit sample and get scores	1, 2
7	Lab Report/Lab Test	1-5			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Test in Each Lab (50%)	Submit Lab work 1 70%Pass	Submit Lab work 2 70%Pass	Submit Lab work 3,4 70%Pass	Submit Lab work 5 70%Pass	Submit Lab report 6 70%Pass
Final Lab report (50%)	60 % Pass				

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (60%)			

Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: This rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.

Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 2025

7. Course coordinator/Lecturer

- Department: Biotechnology
- Email: nvthuan@hcmiu.edu.vn; bhthuy@hcmiu.edu.vn.

Ho Chi Minh City, dd/mm/yyyy

DEAN OF DEPARTMENT/SCHOOL

(Signature)

Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Stem Cell Biology

Course Code: BT355IU

1. General information

Course name	- <i>Stem Cell Biology</i> - <i>Sinh Học Tế Bào Gốc</i>
Course designation	<i>Stem cell study opens the door to an undiscovered world of biology. Stem cells are undifferentiated cells that are capable of self-renew and have the potential to differentiate into specialized cell types. Stem cells play a principal role in development, reproduction, growth, healing, and maintaining homeostasis. The Stem Cell Biology program encompasses comprehensive research focused on the current state of the stem cell field and its applications in agriculture and regenerative medicine. Through lectures, students will learn the basic concepts of embryonic and adult stem cells and recent discoveries in the rapidly evolving field of stem cell research.</i>
Course type	☐ General knowledge ☐ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	5, 6, 7
Person responsible for the course	Assoc. Prof. Bui Hong Thuy Email: bhthuy@hcmiu.edu.vn
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lecture, Presentation, Quiz, Homework.

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 h Private study including examination preparation, specified in hours: 90 h	
Credit points	3 credits (Theory) 4.6 ECTS	
Number of periods	Theory: 45	
Required and recommended prerequisites for joining the course	- Prerequisites: *BT009IU-Cell Biology *BT210IU-Human Physiology	
Course objectives	This course focuses on characterizing embryonic stem cells and establishing embryonic stem cell lines from the embryo. Students will study how these cells can differentiate into various cell types in the body, including the microenvironment necessary for maintaining stem cells, asymmetric cell division, and the genes involved in stem cell fate and differentiation. Additionally, the course will cover cell reprogramming and stem cell therapy within the context of regenerative medicine. This content is particularly beneficial for students interested in assisted reproductive techniques, cloning technologies, and pharming, which involves creating transgenic animals that can serve as bioreactors for producing recombinant proteins in pharmaceutical applications.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: Understanding the importance of stem cells related to the development and maintenance of multicellular organisms and epigenetic mechanisms sculpting stem cell biology and aging mechanisms. CLO2: Understand how cell-cell signaling maintains stem cells and influences the differentiation of specialized cells.
	Skill	CLO3: Applying several aspects of stem cell biology, including the microenvironments that are required to maintain stem cells, asymmetric cell division, the genes required for stem cell fate, and the use of stem cells for medical applications.
	Attitude	CLO4. Collaborative learning exercises develop informed opinions on the science, policy, and ethics of modern applied stem cell biology. CLO5. Develop an original research proposal, including reading research articles and critically discussing the experimental approaches, results, and conclusions.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction of Stem Cell Biology- Course outline	1	I, T
	Gametogenesis- Preimplantation Development	2	I, T
	Post-implantation and Early Organogenesis	1	I, T
	Epigenetics in Stem Cell Biology-Establishment of Embryonic Stem Cells	2	T, U
	Bioethics in Stem Cell Biology- Applications of Stem Cells Agriculture and Regenerative biomedicine	2	T, U
	Methods of Induced Pluripotent Stem Cells-Basic Concepts in Stem Cell Research and Therapy-	2	T, U
	Adult Stem Cell: Male and Female Germ Line Stem Cells, Hematopoietic, Mesenchymal, Pancreatic, Neural Stem Cells	3	T, U
	Cellular Technology- Stem cells and Cell Conservation	1	T, U
Summary-Review	1	T, U	
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	Textbook: [1] Robert Lanza and Anthony Atala., 2014. Essentials of Stem Cell Biology. Third Edition, Elsevier. San Diego, CA, USA. Book Reference: [2] Gilbert, S.F., Barresi, M.J. F., 2016. Developmental Biology, 11th Edition. Sinauer Associates, Inc. MA Gilbert, S.F., Barresi, M.J. F., 2016. Developmental Biology, 11th Edition. Sinauer Associates, Inc. MA. Article References: [3] To be provided (Note: Articles will be updated every year)		

2. Learning Outcomes Matrix (optional)

The intended learning outcomes (ILOs) of Biotechnology Program and three levels of contribution are defined using Bloom's taxonomy (Low [L]: Remember and Understand; Medium [M]: Apply and Analyze; High [H]: Evaluate and Create).

The relationship between Course Learning Outcomes (CLOs) (1-5) and ILOs (1-8) and the level of contribution of CLOs to ILOs is shown in the following table:

	ILOs							
CLOs	1	2	3	4	5	6	7	8
1			M					
2				M				
3						H		
4					H			
5								M-H

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction of Stem Cell Biology- Course outline	1-5	Lecture, Discussion, In Class-Quiz	Quizzes	1, 2, 3
2	Gamete (Germ Cell) Formation: Spermatogenesis and Oogenesis	1	Lecture, Discussion, In Class-Quiz		1, 2
3	The Cell-fate decision of Preimplantation Embryo Development.	1	Lecture, Discussion, In Class-Quiz	HW1	1, 2
4	Embryonic Stem Cells and Differentiation in Early Development	1, 2	Lecture, Discussion, In Class-Quiz		1, 2
5	Epigenetics in Stem Cell Biology - Characteristics of Embryonic Stem cells	1, 2	Lecture, Discussion, In Class-Quiz		1, 3
6	Application of Embryo Technology for Production of Embryonic Stem Cells.	1, 3	Lecture, Discussion, In Class-Quiz	HW2	1, 3
7	Basic Principle of Stem Cells and Applications in Agriculture and Regenerative Biomedicine	1, 3	Lecture, Discussion, In Class-Quiz		1, 3
8	Ethics of Research Using Hybrids, Chimeras, Cytoplasmic Hybrids, and Stem Cells for Science- Midterm Test	1, 4 1, 2, 4	Lecture, Discussion, In Class-Quiz		1,3
9	Methods of Induced Pluripotent Stem Cells- Production of Embryonic stem cells with a different genome	3, 4	Lecture, Discussion, Presentation		1, 3
10	Basic Concepts in Stem Cell Research and Therapy- Biomedical Implications	3,4	Lecture, Discussion, Presentation	HW3	1, 2, 3
11	Male and Female germ-line Stem Cells	3, 4	Lecture, Discussion, Presentation		1, 3

12	Adult Stem Cell- Hematopoietic Stem Cells- Mesenchymal Stem Cells	3, 5	Lecture Discussion Presentation		1, 2, 3
13	Repairing the Nervous System- Diabetes Disease with Stem Cells	3, 5	Lecture, Discussion, Presentation		1, 2, 3
14	Cellular Technology- Stem Cells and Cell Conservation	3, 4, 5	Lecture, Discussion		1, 3
15	Summary-Revision		Review-Test		
16-17	Final Exam	3, 4, 5			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
In-class Presentation/ quizzes (15%)			Presentation/ 80%Pass		Quiz/ Part. 80%Pass
Homework exercises (15%)	HW1 70%Pass	HW2 70%Pass			HW3 70%Pass
Midterm exam (30%)	MCQs 60% Pass	MC-Written Questions 60% Pass		Written Questions 60% Pass	
Final exam (40%)			MCQs 60% Pass	MC-Written Questions 60% Pass	Written Questions 60% Pass

Note: %Pass (Exam): % students have scores greater than 50 out of 100.

%Pass (Presentation/ Assignment): % students have scores greater than 70 out of 100.

Multiple Choice Questions (MCQs); Homework (HW)

5. Rubrics

5.1.Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		

Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: This rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

**Oral communication value rubric for evaluating presentation tasks:*

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score
Presentation content	Content Organization: The presentation is delivered in logical order and has a clear structure, including an introduction and a conclusion.	15	
	Information: The presentation contains accurate information and is cited from appropriate external resources.	15	
	Language usage: Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	Visual aids: The presentation includes suitable and effective visual aids that capture the audience's attention.	15	
Presentation delivery	Time management: The Length of the presentation is within the assigned time limits.	10	
	Presentation Skill: The speaker maintains good eye contact with the audience, and speaks confidently with a good voice, fluid speech, and appropriate pronunciation.)	10	
	Question and Answer: The speaker addresses and answers all questions from the audience following the presentation.	20	
Score	Total Points	100	

****Critical thinking value rubric for evaluating questions in exams:***

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 2025

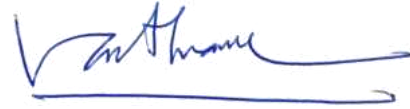
7. Course coordinator/Lecturer

- Department: Biotechnology
- Email: bhthuy@hcmiu.edu.vn

Ho Chi Minh City, dd/mm/yyyy

DEAN OF DEPARTMENT/SCHOOL

(Signature)

A handwritten signature in blue ink, appearing to read 'N. Van Thuan', with a long horizontal flourish extending to the right.

Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Stem Cell Biology

Course Code: BT356IU

1. General information

Course name	- <i>Practice in Stem Cell Biology</i> - <i>Thực hành Sinh Học Tế Bào Gốc</i>
Course designation	<i>Apply knowledge of Stem Cell Biology to make perfect embryo from germ cells to establish embryonic stem cell line and characterization of them. To understand reprogramming somatic cells into stem cells and identifying induced pluripotent stem cells after establishment</i>
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	5, 6, 7
Person responsible for the course	Assoc. Prof. Bui Hong Thuy Email: bhthuy@hcmiu.edu.vn
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Practice

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 55 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 25 h Private study including examination preparation, specified in hours ¹ : 30 h	
Credit points	1 credit Practice 2 ECTS	
Number of periods	Practice: 30	
Required and recommended prerequisites for joining the course	- Prerequisites: BT355IU-Stem Cell Biology	
Course objectives	This course helps provide criteria or standards for isolating, culturing, maintaining, and characterizing embryonic stem cells from mammalian embryos. The student also can perform experiments from germ cells and gamete to develop become embryo for assisted reproductive biotechnology.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: Apply knowledge in germ cell and embryology to analyze complex molecular, cellular, and genetic techniques used to investigate stem cell biology and understand how stem cells can be used for medical purposes.
	Skill	CLO2: Being able to perform lab-work: perform experiment, analyze data, answer questions, make conclusions, research assignments, and report writing. CLO3: Apply epigenetic mechanisms in regulating the potentiality and differentiation of stem cells to reprogram somatic cells into stem cells
	Attitude	CLO4: Understand how defects in stem cell behavior can lead to medical problems and the ethics of stem cell applications in biotechnology and medicine.

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (5 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to Embryology and Stem Cell Biology Lab	1	I, T
	Collect small pig oocytes-making and using the pipette	1	T, U
	Collect pig oocytes using the aspiration technique and fix them for staining chromosomes.	1	T, U
	Collect mature oocytes or fertilized embryos to prepare for Embryonic Stem Cell (ES) establishment and staining pig oocytes to determine chromosome morphology.	1	T, U
Establishment of ES from the mouse embryo	1	T, U	
Examine the morphology of ES. Pick up the colony and pass ES cells.	1	T, U	
Examination forms	Test in each Lab and Final Lab report.		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	[1] Embryology and Stem Cell Biology Lab Manual, Bui Hong Thuy [2] Article references be provided (Note: Articles will be updated every year)		

2. Learning Outcomes Matrix (optional)

The intended learning outcomes (ILOs) of Biotechnology Program and three levels of contribution are defined using Bloom's taxonomy (Low [L]: Remember and Understand; Medium [M]: Apply and Analyze; High [H]: Evaluate and Create).

The relationship between Course Learning Outcomes (CLOs) (1-4) and ILOs (1-8) and the level of contribution of CLOs to ILOs is shown in the following table:

	ILOs							
CLOs	1	2	3	4	5	6	7	8
1			M					
2		L		H				
3						H		
4					H			

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction about experiments in Embryology and Stem Cell Biology Lab: safety issue, animal care and bioethics.	1	Instruction, Discussion, Practice	Quizzes	1, 2
2	Collect growing pig oocytes from the early antral follicle and learn a method-making pipette for oocyte collection, training to use mouth pipetting.	1, 2	Instruction, Discussion, Practice	Submit sample and get scores	1, 2
3	Collect pig oocytes by aspiration method and fix oocyte to study chromosome morphology of oocyte.	2, 3	Instruction, Discussion, Practice	Submit sample and get scores	1, 2
4	Collect mature oocyte or fertilized embryos in mice to prepare for the study of Embryonic Stem Cells and staining chromosome of oocyte	2, 3	Instruction, Discussion, Practice	Submit sample and get scores	1, 2
5	Establishment of Embryonic Stem Cell (ES), from mouse embryo	3, 4	Instruction, Discussion, Practice	Submit sample and get scores	1, 2
6	Examine the morphology of ES. Pick up the colony and pass ES cells.	3, 4	Instruction, Discussion, Practice	Submit sample and get scores	1, 2
7	Lab Report/Lab Test	1-4			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Test in Each Lab (50%)	Submit Lab work 1, 2 70%Pass	Submit Lab work 3, 4 70%Pass	Submit Lab work 5 70%Pass	Submit Lab work 6 70%Pass
Final Lab Report/Test (50%)	60 % Pass			

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			

Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: This rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

**Critical thinking value rubric for evaluating questions in exams:*

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.

Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

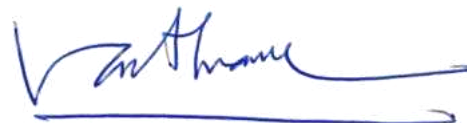
Source: Association of American Colleges and Universities

6. Date revised: June 2025

7. Course coordinator/Lecturer

- Department: Biotechnology
- Email: bhthuy@hcmiu.edu.vn

Ho Chi Minh City, dd/mm/yyyy
DEAN OF DEPARTMENT/SCHOOL
(Signature)



Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Medical Microbiology

Course Code: BT357IU01

1. General information

Course name	- <i>Medical Microbiology</i> - <i>Vi sinh vật y học</i>
Course designation	<i>This course is designed for undergraduate students who are interested and/or would like to be specialized in medical-related field. It brings students practical and applicable knowledge of medical microbiology whose importance in the human life has made it one of the most complex biological sciences dealing with many diverse biological disciplines including genetics, metabolism, physiology, ecology, infections, disease, diagnostics, therapy, immunology, epidemiology and public health. Medical microbiology will introduce general knowledge of different infectious diseases caused by bacterial, viral and fungal pathogens. It includes the study of microbial pathogenesis, epidemiology, diagnostics and treatments. Besides, pathological and immunological aspect of the infectious diseases will also be discussed in the course.</i>
Course type	☐ <i>General knowledge</i> <i>Fundamental</i> ☐ ☐ <i>Specialized knowledge</i> <i>Internship/Project/Thesis</i> <i>Others:</i> ☐ ☐
Semester(s) in which the course is taught	6,7
Person responsible for the course	Assoc. Prof. Nguyen Thi Thu Hoai Email: ntthoai@hcmiu.edu.vn

Language	English	
Relation to curriculum	☐ Compulsory ☐ Elective	
Teaching methods	Lecture, Presentation, Quiz, Homework (Scientific Writing).	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 h Private study including examination preparation, specified in hours : 90 h	
Credit points	3 credits (Theory) 4.6 ECTS	
Number of periods	Theory: 45.	
Required and recommended prerequisites for joining the course	- Prerequisites: *BT321IU- Microbiology	
Course objectives	On completion of this course, students should have a good understanding of various microorganisms of medical importance with regard to their pathogenesis, epidemiology, diagnostics and treatments. Students should also understand and be able to apply techniques frequently used in studying medical microbiology including microbial culture, classification and identification. In addition, medical microbiology course also fortifies students' soft skills including scientific cooperation, interaction and presentation.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understanding on what medical microbiology is and the skill sets needed to be an medical microbiologist. CLO2. Understanding of characteristics of different types of human pathogens. CLO3. Understanding of mechanisms how pathogens cause pathological effects in human and spread in human population CLO4. Understanding of human defense and antimicrobial drugs and their resistance of microorganisms
	Skill	CLO5. Critical Thinking, Teamworking, Scientific writing.
	Attitude	CLO6. Seriousness, Care, Hardworking, Activeness, Patience.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to the course, Medical Microbiology: History, Basic Concepts and General Applications	1	I, T, U
	Bacterial Pathogens: Structure, Classification, Virulence and Pathogenicity, Common bacterial pathogens	3	T, U
	Viral Pathogens: Structure, Classification, Virulence and Pathogenicity, Common viral pathogens	2	T, U
	Fungal Pathogens: Structure, Classification, Virulence and Pathogenicity, Common fungal pathogens	2	T, U
	Parasitic Pathogens: Structure, Classification, Virulence and Pathogenicity, Common parasitic pathogens	2	T, U
	Interaction between host and pathogens: Host immunity, Immune evasion of pathogens	2	T, U
	Vaccine and vaccine development	1	T, U
Control of microbes: Sterilization and disinfection methods, antimicrobial compounds, antimicrobial resistance	2	T, U	
SUM	15		
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	Textbooks: [1] Brooks, Medical Microbiology, 25 th Edition, 2010 [2] Stratton, Clinical Microbiology, 2011 Article References: [3] To be provided (Note: Articles will be updated every year)		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-5) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	SLO (PLO/ILOs)							
CLOs	1	2	3	4	5	6	7	8
1	M							
2	M							
3						M		
4				M				
5					M			
6						M		

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to the course, Medical Microbiology: History, Basic Concepts and General Applications	1, 4,5,6	Lecture, Discussion, In Class-Quiz	Progress and bonus score	1, 2
2-4	Bacterial Pathogens: Structure, Classification, Virulence and Pathogenicity, Common bacterial pathogens	2,4,5,6	Lecture, Discussion, In Class-Quiz	Progress and bonus score	1, 2
5-6	Viral Pathogens: Structure, Classification, Virulence and Pathogenicity, Common viral pathogens	2,4,5,6	Lecture, Discussion, In Class-Quiz	Progress and bonus score	1, 2
7-8	Fungal Pathogens: Structure, Classification, Virulence and Pathogenicity, Common fungal pathogens Midterm Test (1,2,3,4,5)	2,4,5,6	Lecture, Discussion, In Class-Quiz	Progress and bonus score	1, 2
9-10	Parasitic Pathogens: Structure, Classification, Virulence and Pathogenicity, Common parasitic pathogens	2,4,5,6	Lecture, Discussion, In Class-Quiz	Midterm Exam	1, 3
11	Interaction between host and pathogens: Host immunity, Immune evasion of pathogens	2,4,5,6	Lecture, Discussion, In Class-Quiz	Progress and bonus score	1, 3
12	Vaccine and vaccine development	2,4,5,6	Lecture, Discussion, In Class-Quiz	Progress and bonus score	1, 3

13-14	Control of microbes: Sterilization and disinfection methods, antimicrobial compounds, antimicrobial resistance	2,4,5,6	Lecture, Discussion, In Class-Quiz	Progress and bonus score	1,3
15	Final Exam	3, 4, 5, 6		Final exam	

**In-Class-quizzes are converted into bonus score which are added directly to the Exam scores with no bigger than 20 points/100 points.

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Attendance/progr ess (5%)						80%Pass
Scientific Writing/ Presentation (25%)					80%Pass	80%Pass
Midterm exam (30%)	80%Pass	80%Pass	80%Pass			
Final exam (40%)		80%Pass	80%Pass	80%Pass		

Note: %Pass (Exam): % students have scores greater than 50 out of 100.

%Pass (Presentation/ Assignment): % students have scores greater than 70 out of 100.

5. Rubrics

5.1.Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			

Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: This rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

**Oral communication value rubric for evaluating presentation tasks:*

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score
Presentation content	Content Organization: The presentation is delivered in logical order and has a clear structure, including an introduction and a conclusion.	15	
	Information: The presentation contains accurate information and is cited from appropriate external resources.	15	
	Language usage: Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	Visual aids: The presentation includes suitable and effective visual aids that capture the audience's attention.	15	
Presentation delivery	Time management: The Length of the presentation is within the assigned time limits.	10	
	Presentation Skill: The speaker maintains good eye contact with the audience, and speaks confidently with a good voice, fluid speech, and appropriate pronunciation.)	10	
	Question and Answer: The speaker addresses and answers all questions from the audience following the presentation.	20	
Score	Total Points	100	

****Critical thinking value rubric for evaluating questions in exams:***

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

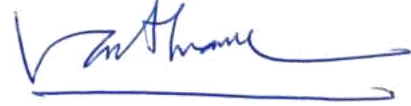
6. Date revised: June 2025

7. Course coordinator/Lecturer

- Department: Biotechnology
- Email: ntthoai@hcmiu.edu.vn

Ho Chi Minh City, dd/mm/2025

DEAN OF DEPARTMENT/SCHOOL
(Signature)

A handwritten signature in blue ink, appearing to read 'Nguyễn Văn Thuận', with a long horizontal flourish extending to the right.

Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Medical Microbiology

Course Code: BT358IU

1. General information

Course name	- <i>Practice in Medical Microbiology</i> - <i>Thực hành vi sinh vật y học</i>
Course designation	<i>This course is designed for undergraduate students who are interested and/or would like to be specialized in medical-related field. It trains students commonly used techniques in the field of clinical/ medical microbiology</i>
Course type	☐ <i>General knowledge</i> <i>Fundamental</i> ☐ ☐ <i>Specialized knowledge</i> <i>Internship/Project/Thesis</i> <i>Others:</i> ☐ ☐
Semester(s) in which the course is taught	6,7
Person responsible for the course	Assoc. Prof. Nguyen Thi Thu Hoai Email: ntthoai@hcmiu.edu.vn
Language	English
Relation to curriculum	☐ Compulsory ☐ Elective
Teaching methods	Instruction, Practice

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 120 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 30 h Private study including examination preparation, specified in hours : 90 h	
Credit points	1 credit (Practice) 2 ECTS	
Number of periods	Practice: 30.	
Required and recommended prerequisites for joining the course	- Prerequisites: *BT321IU- Microbiology	
Course objectives	On completion of this course, students should have a good understanding of various microorganisms of medical importance with regard to their pathogenesis, epidemiology, diagnostics and treatments. Students should also understand and be able to apply techniques frequently used in studying medical microbiology including microbial culture, classification and identification. In addition, medical microbiology course also fortifies students' soft skills including scientific cooperation, interaction and presentation.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understanding on what medical microbiology is and the skill sets needed to be an medical microbiologist. CLO2. Understanding of characteristics of different types of human pathogens. CLO3. Understanding of mechanisms how pathogens cause pathological effects in human and spread in human population CLO4. Understanding of human defense and antimicrobial drugs and their resistance of microorganisms
	Skill	CLO5. Critical Thinking, Teamworking, Scientific writing.
	Attitude	CLO6. Seriousness, Care, Hardworking, Activeness, Patience.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (5 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to the practical course: safety issue, chemical and reagent preparation and bacterial isolation and culture.	1	I, T, U
	Identification of some important bacterial pathogens by using biochemical methods.	1	T, U
	Antimicrobial susceptibility testing (AST): disc diffusion and micro-dilution method.	2	T, U
	Detection of staphylococcal enterotoxins and antibiotic resistance genes (ARGs) using multiplex PCR.	2	T, U
	SUM	6	
Examination forms	Lab report with response to review questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	[1] Medical Microbiology Lab Manual, Nguyen Thi Thu Hoai		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-5) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	SLO (PLO/ILOs)							
CLOs	1	2	3	4	5	6	7	8
1	M							
2	M							
3						M		
4				M				
5					M			

6						M		

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to the practical course: safety issue, chemical and reagent preparation and bacterial isolation and culture.	1,2,3,4	Lecture, Discussion, Practice	Progress and bonus score	1
2	Identification of some important bacterial pathogens by using biochemical methods.	1,2,3,4	Lecture, Discussion, Practice	Progress and bonus score	1
3-4	Antimicrobial susceptibility testing (AST): disc diffusion and micro-dilution method.	1,2,3,4	Lecture, Discussion, Practice	Progress and bonus score	1
5-6	Detection of staphylococcal enterotoxins by using multiplex PCR.	1,2,3,4	Lecture, Discussion, Practice	Progress and bonus score	1
7	Lab Report Submission				

In-Class contributions are converted into bonus score which are added directly to the **Final score with no bigger than 20 points/100 points.

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Bonus Score (Up to 20%)	80%Pass	80%Pass	80%Pass	80%Pass
Lab report (80%)	80%Pass	80%Pass	80%Pass	80%Pass

Note: %Pass (Exam): % students have scores greater than 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (60%)			

Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: This rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

**Oral communication value rubric for evaluating presentation tasks:*

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score
Presentation content	Content Organization: The presentation is delivered in logical order and has a clear structure, including an introduction and a conclusion.	15	
	Information: The presentation contains accurate information and is cited from appropriate external resources.	15	
	Language usage: Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	Visual aids: The presentation includes suitable and effective visual aids that capture the audience's attention.	15	

Presentation delivery	Time management: The Length of the presentation is within the assigned time limits.	10	
	Presentation Skill: The speaker maintains good eye contact with the audience, and speaks confidently with a good voice, fluid speech, and appropriate pronunciation.)	10	
	Question and Answer: The speaker addresses and answers all questions from the audience following the presentation.	20	
Score	Total Points	100	

****Critical thinking value rubric for evaluating questions in exams:***

	Capstone 4	Milestone 3 2		Benchmark 1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: June 2025

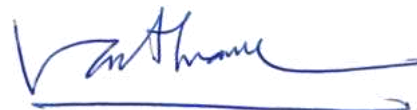
7. Course coordinator/Lecturer

- Department: Biotechnology
- Email: ntthoai@hcmiu.edu.vn

Ho Chi Minh City, dd/mm/2025

DEAN OF DEPARTMENT/SCHOOL

(Signature)



Nguyễn Văn Thuận



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS

Course Name: Microbial Biotechnology

Course Code: BT359IU

1. General information

Course designation	This course provides general characteristics of ideal microorganisms used in industries and general procedures for the isolation and screening of such microorganisms from both natural samples and culture collections. A part of the course will introduce students to general methods for microbial culture preservation and steps for producing a microbial product from a stock culture and how to recover and purify the target product from the microbial culture.
Semester(s) in which the course is taught	I, II
Person responsible for the course	Assoc. Prof. Tran Thi My Hanh E-mail: ttmhnh@hcmiu.edu.vn
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, paper discussion, quiz, assignment, and presentation
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 127.5 h</i> <i>Contact hours (lecture, paper discussion, and presentation): 37.5 h</i> <i>Private study including examination preparation, specified in hours³⁸: 90 h</i>
Credit points	03 credits (theory) ~ (4.6 ECTS)
Required and recommended prerequisites for joining the course	Microbiology

³⁸ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course objectives	On completion of this course, students will be able to: (1) Analyze the factors affecting microbial growth and their metabolisms (2) Differentiate different metabolic types of microorganisms (3) List down all the ideal characteristics of industrial microorganisms and be able to perform the isolation and screening of target microbe(s) (4) Describe the upstream and downstream processes and the principles of the methods and or techniques involved for producing microbial products from a stock culture (5) Propose possible procedures for manufacturing a microbial product of interest (6) Master skills for presentation and group discussion on scientific topics																																				
Course learning outcomes	Upon the successful completion of this course students will be able to: <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO1. Describing important characteristics of industrial microbes and factors influencing microbial growths and the production of primary and secondary metabolites CLO2. Acquiring and mastering microbial culture techniques and the techniques used in upstream and downstream steps for production of conventional and advanced microbial products</td></tr><tr><td>Application</td><td>CLO3. Ability to identify potential factors influencing the manufacture of a microbial product and able to propose procedure for the production of a desired product</td></tr><tr><td>Attitude</td><td>CLO4. Stay updated with the contemporary applications in the field</td></tr></table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Describing important characteristics of industrial microbes and factors influencing microbial growths and the production of primary and secondary metabolites CLO2. Acquiring and mastering microbial culture techniques and the techniques used in upstream and downstream steps for production of conventional and advanced microbial products	Application	CLO3. Ability to identify potential factors influencing the manufacture of a microbial product and able to propose procedure for the production of a desired product	Attitude	CLO4. Stay updated with the contemporary applications in the field																												
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Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Overview on factors affecting microbial growth</td><td>2</td><td>I, T</td></tr><tr><td>Microbial growth profile and methods for microbial growth measurements</td><td>2</td><td>I, T</td></tr><tr><td>Secondary and primary products</td><td>0.5</td><td>I, T</td></tr><tr><td>Characteristics of industrial microbes</td><td>0.5</td><td>T, U</td></tr><tr><td>Isolation, screening and improvements of target microbes</td><td>2</td><td>T, U</td></tr><tr><td>Procedure for producing a microbial product from a stock culture</td><td>1</td><td>T, U</td></tr><tr><td>Microbial stock culture preparation</td><td>1</td><td>T, U</td></tr><tr><td>Types of fermentation</td><td>2</td><td>T, U</td></tr><tr><td>Product recovery and purification</td><td>2</td><td>T, U</td></tr><tr><td>Papers discussion</td><td>2</td><td>U</td></tr><tr><td>Group presentation</td><td>2</td><td>U</td></tr></table>	Topic	Weight	Level	Overview on factors affecting microbial growth	2	I, T	Microbial growth profile and methods for microbial growth measurements	2	I, T	Secondary and primary products	0.5	I, T	Characteristics of industrial microbes	0.5	T, U	Isolation, screening and improvements of target microbes	2	T, U	Procedure for producing a microbial product from a stock culture	1	T, U	Microbial stock culture preparation	1	T, U	Types of fermentation	2	T, U	Product recovery and purification	2	T, U	Papers discussion	2	U	Group presentation	2	U
Topic	Weight	Level																																			
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Procedure for producing a microbial product from a stock culture	1	T, U																																			
Microbial stock culture preparation	1	T, U																																			
Types of fermentation	2	T, U																																			
Product recovery and purification	2	T, U																																			
Papers discussion	2	U																																			
Group presentation	2	U																																			
Examination forms	Written exam, oral presentation, and report																																				

Study and examination requirements	Attendance: A minimum attendance of 80 percent of the class sessions is compulsory. Student participation will be assessed on a regular basis. Questions and comments are strongly encouraged. Assignments/Examination: Students must obtain at least 50/100 points in total to pass this course.
Reading list	Textbook 1. Glazer and Nikaido, <i>Microbial Biotechnology</i>, Second Edition (2007). Cambridge University Press, UK- USA Article References 2. To be provided (Note: Articles will be updated every year) Other 3. YouTube channel: https://www.youtube.com/channel/UCoZgEu3kaRDan1Mvf5l6EcQ

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO 1-4) and Program Learning Outcomes (PLO 1-8) is shown in the following table:

	SLO							
CLO	1	2	3	4	5	6	7	8
1			x					
2				x				
3						x		
4							x	

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Overview on factors affecting microbial growth	1	Quizzes	Lecture, Discussion, In-class Quiz	1,3
2	Microbial growth profile and methods for microbial growth measurements	1	Quizzes	Lecture, Discussion, In-class-Quiz	1,3
3	Secondary and primary products	1	Quizzes	Lecture, Discussion, In-class Quiz	1,3
4	Characteristics of industrial microbes	1	Quizzes	Lecture, Discussion, In-class Quiz	1
5	Isolation, screening and improvements of target microbes	1,2	Quizzes	Lecture, Discussion, In-class Quiz	1
9	Midterm				

Week	Topic	CLO	Assessments	Learning activities	Resources
10	Procedure for producing a microbial product from a stock culture	1,2	Quizzes	Lecture, Discussion, In-class Quiz	1,3
11	Microbial stock culture preparation	1,2	Quizzes	Lecture, Discussion, In-class Quiz	1
12	Types of fermentation	1,2	Quizzes	Lecture, Discussion, In-class Quiz	1
13	Product recovery and purification	1,2	Quizzes	Lecture, Discussion, In-class Quiz	1,3
14	Papers discussion	2,4	HW, Quizzes	Papers, discussion	2
15	Group presentation	2,3	Quizzes	Presentation, discussion	Topics to be assigned
17	Final exam				

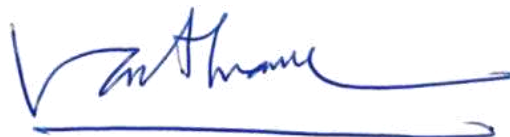
4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Individual assignment (15%)		HW 70%Pass		
Group assignment (15%)			P 70%Pass	
Midterm exam (30%)	Q 50%Pass	Q 50%Pass		
Final exam (40%)		Q 50%Pass		Q 50%Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Date revised: August, 2022

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof. NGUYEN VAN THUAN



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biotechnology

COURSE SYLLABUS

Course Name: Practice in Microbial Biotechnology

Course Code: BT360IU

1. General information

Course name	- <i>Practice in Microbial Biotechnology</i> - <i>Thực hành Công nghệ sinh học Vi sinh</i>
Course designation	Students will get an opportunity to practice isolating target microbes (ethanol-producing yeasts) from different types of sample sources, then learn how to set up a microbial culture to produce the desired product (ethanol), then learn how to monitor the microbial culture and evaluate the product yield. By the completion of the course, students will master microbial culture techniques and some analytical techniques for the analysis of microbial metabolites.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☒ <i>Others: Professional elective</i>
Semester(s) in which the course is taught	6, 7, 8
Person responsible for the course	Dr. Tran Thi Hai Yen
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lectures, discussion, experimental illustration, labworks.

Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload:</i> <i>Contact hours (lecture, paper discussion, and presentation): 30</i> <i>Private study including examination preparation, specified in hours¹: 10</i>	
Credit points	1 credit (Practice Lab) ~ (2 ECTS)	
Number of periods	Practice: 30	
Required and recommended prerequisites for joining the course	- Prerequisites: Biology (BT311IU) Practice in Biology (BT312IU) Microbiology (BT321IU) Practice in Microbiology (BT322IU) - Corequisites: Microbial biotechnology (BT359IU)	
Course objectives	On completion of this course, students will be able to: (1) Being able to describe major steps for the isolation of a target microbe (2) Being able to describe major steps for setting up a microbial culture for a desired microbial product (3) Being able to perform microbial culture techniques and metabolite analysis well	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understating major steps for the isolation of a target microbe CLO2. Understating major steps for setting up a microbial culture for a desired microbial product
	Skills	CLO3. Mastering microbial culture techniques and metabolite (e.g. ethanol) analysis
	Attitude	CLO4. Applying safety and ethical practices

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (5 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Laboratory safety rules Isolation of potential ethanol-producing yeast strains from various sample sources	1.5	I, U
	Morphological characterization of the isolated yeast strains	1.5	I, U
	Effects of different conditions on yeast growth and ethanol production	1.5	I, U
	Growth, sugar utilization and ethanol production analysis Data discussion and guidelines for lab-report preparation	1.5	I, U
Examination forms	Lab reports; Final written exam		
Study and examination requirements	Attendance: attending 100 % of the class sessions is compulsory. In case students are not able to attend the class due to some valid reason, they are required to notify their instructor for an arrangement of a make-up class. Questions and comments are strongly encouraged. Assignments/Examination: Students must obtain at least 50/100 points in total to pass this course.		
Reading list	Lab manual Article References To be provided (Note: Articles will be updated every year) Others YouTube videos		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-4) and Intended Learning Outcomes (ILOs) (1 -8) and the level of contribution of CLOs to ILOs (Low/L – Medium/M – High/H) is shown in the following table:

	ILO							
CLO	1	2	3	4	5	6	7	8
1	H							

2			H					
3		H						
4					M			

The intended learning outcomes (ILOs) are detailed below:

- (1) An ability to obtain fundamental biology-relevant knowledge of mathematics and the natural sciences, molecular, cell and organismic biology. (Generic knowledge)
- (2) An ability to obtain methodological competence in biotechnology and apply this in other contexts, identify and solve subject-specific problems effectively. (Generic skills)
- (3) An ability to obtain professional knowledge in Biotechnology. (Specific knowledge)
- (4) An ability to obtain independent practical work in laboratories in biotechnology and related others. (Specific skills)
- (5) An ability to obtain relevant knowledge of safety, environmental and ethical issues as well as the associated legal fundamentals. (Attitudes)
- (6) An ability to apply modern techniques to produce biotechnological products. (Application)
- (7) An ability to analyze and interpret results in biotechnological process, product manufacturing. (Lifelong learning)
- (8) An ability to be well aware of professional development for a career. (Development)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Laboratory safety rules Isolation of potential ethanol-producing yeast strains from various sample sources	1,3,4	Progress and bonus score	Lecture, Discussion, Experiment	1,3
2	Morphological characterization of the isolated yeast strains	1,3,4	Progress and bonus score	Lecture, Discussion, Experiment	1,3
3	Effects of different conditions on yeast growth and ethanol production	2,3,4	Progress and bonus score	Lecture, Discussion, Experiment	1,3
4+5	Growth, sugar utilization and ethanol production analysis	2,3,4	Progress and bonus score	Lecture, Discussion, Experiment	1
6	Data discussion and guidelines for lab-report preparation	2,3,4	Progress and bonus score	Lecture, Discussion, Experiment	1
7	Final exam		Short questions	Written exam	

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Lab report (50%)	Q 50%Pass	Q 50%Pass	Q 50%Pass	Q 50%Pass
Final exam (50%)	Q 50%Pass	Q 50%Pass	Q 50%Pass	Q 50%Pass

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

Grading checklist:

Grading checklist for Progress			
Student:	Evaluator:		
Date:			
	Max.	Score	Comments
Attendance (20%)			
Fully attend	10		
Be on-time	10		
Participation (20%)			
Actively engaged in lecture discussion	10		
Actively engaged in lab activity	10		
TOTAL SCORE	40		

Grading checklist for Written Reports			
Student:	Report:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (70%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		

Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100*		

* The total score will be converted into 30% (percentage of Report for whole course score).

Grading checklist for Final exam			
Student:	Evaluator:		
Date:			
	Max.	Score	Comments
Short-answer questions (100%)			
Give the correct answer	50		
Explanation for answer	50		
TOTAL SCORE	100*		

* The total score will be converted into 30% (percentage of Final exam for whole course score).

6. Date revised: June 10, 2025

7. Course coordinator/Lecturer

- School/Department: Biotechnology
- Email: tthyen@hcmiu.edu.vn

Ho Chi Minh City, 10/6/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)

Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Languages

COURSE SYLLABUS
Course Name: Critical Thinking
Course Code: PE008IU

1. General information

Course name	- <i>Critical Thinking</i> - <i>Tư duy Biện luận</i>
Course designation	<i>This course provides students with the knowledge and practice necessary to sharpen their observation and judgment skills, enabling them to evaluate arguments effectively and construct compelling arguments of their own. Additionally, the course helps students evaluate information from diverse sources to obtain reliable data and avoid fallacies.</i>
Course type	☒ General knowledge / College Foundation Courses ☐ Fundamental/ English Foundation courses & English Core courses ☐ Specialized knowledge/ Specialization Core Courses & Specialization ☐ Electives ☐ Internship/Project/Thesis Others:.....
Semester(s) in which the course is taught	1, 2, and 3
Person responsible for the course	Assoc.Prof.Dr.Nguyễn Thị Thủy Assoc.Prof.Dr.Phạm Ngọc Trần Thanh Tú (Ph.D) Nguyễn Văn Tiếp (Ph.D) Phạm Thanh Tùng (Ph.D) Đỗ Thị Diệu Ngọc (MA)
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective

Teaching methods	Lectures Discussion Pair work Group work Project-based learning	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 135 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 periods lectures Private study including examination preparation, specified in hours ¹ : 90 hours	
Credit points	3 credits (Theory: 3 + Practice: 0) 4.62 ECTS (<i>optional</i>)	
Number of periods	Theory: 45 Practice: 0	
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name) EN007IU Writing AE1 and EN008IU Listening AE1 - Corequisites: (Course code – Course name) none - Previous course (Course code – Course name) none	
Course objectives	<i>This course will enable students to</i> • know basic concepts of critical thinking • identify, construct, analyze, and evaluate inductive and deductive arguments in spoken and written forms • recognize common fallacies in everyday reasoning	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: identify standards of and barriers to critical thinking, and argument types belonging to deductive and inductive reasoning CLO2: identify logical fallacies of relevance and insufficient evidence
	Skill	CLO3: relate statements and evaluate the validity of deductive arguments using Venn diagram and truth tables CLO4: relate statements, summarize and evaluate deductive & inductive arguments
	Attitude	CLO5: Display discipline, responsibilities, and ethical practices as an individual and a team member in attending class regularly and actively participating in class activities

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to Critical thinking	1	I, T, U
	Recognizing arguments	1	I, T, U
	Basic logical concepts	1	I, T, U
	A little categorical logic	1	I, T, U
	A little propositional logic	1	I, T, U
	Logical fallacies I	1	I, T, U
	Logical fallacies II	1	I, T, U
	Analyzing arguments	1	I, T, U
	Evaluating arguments and truth claims	1	I, T, U
	Inductive reasoning	1	I, T, U
Group presentations + Review for exams	5	U	
Examination forms	Written exams and project presentations		
Study and examination requirements	<i>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.</i> <i>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</i>		
Reading list	[1]. Bassham, J., Irwin, W., Nardone, H., & Wallace, J. M. (2022). <i>Critical Thinking: A Student's Introduction</i> (7th ed.). McGraw-Hill Education References: [2]. Moore, B.N., & Parker, R. (2009). <i>Critical thinking</i> (9th ed.). Boston: McGraw-Hill [3]. Hurley, P. J. (2012). <i>A concise introduction to logic</i> (11th ed.). Wadsworth: Cengage Learning. + Relevant web resources		

2. Learning Outcomes Matrix (optional)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Critical thinking	1, 5	Ongoing assessment & Midterm exam	Lecture, Discussion	[1] Chapter 1
2	Recognizing arguments	1, 5	Ongoing assessment & Midterm exam	Lecture, Discussion	[1] Chapter 2
3	Basic logical concepts	2, 5	Ongoing assessment & Midterm exam	Lecture, Discussion	[1] Chapter 3
4	A little categorical logic Quiz 1	3, 5	Ongoing assessment & Midterm exam	Lecture, Discussion	[1] Chapter 9
5	A little propositional logic	3, 5	Ongoing assessment & Midterm exam	Lecture, Discussion	[1] Chapter 10
6	Logical fallacies I	2, 5	Ongoing assessment & Midterm exam	Lecture, Discussion	[1] Chapter 5
7	Logical fallacies II Quiz 2	2, 5	Ongoing assessment & Midterm exam	Lecture, Discussion	[1] Chapter 6
8	Review for midterm exam Sample test	1, 2, 3, 5	Ongoing assessment & Midterm exam		
	Midterm exam				
9	Analyzing arguments	4, 5	Ongoing assessment & Final exam	Lecture, Discussion	[1] Chapter 7
10	Evaluating arguments and truth claims	4, 5	Ongoing assessment & Final exam	Lecture, Discussion	[1] Chapter 8
11	Inductive reasoning Quiz 3	4, 5	Ongoing assessment & Final exam	Lecture, Discussion	[1] Chapter 11
12-14	Group presentations	1-5	Ongoing assessment & Final exam	Presentation, Discussion	
15	Review for final exam Sample test	1-5	Ongoing assessment & Final exam		
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Ongoing assessment (30%)	X 60%Pass	X 60%Pass	X 60%Pass	X 60%Pass	X 60%Pass
Midterm exam (30%)	X 50%Pass		X 50%Pass		
Final exam (40%)		X 50%Pass		X 50%Pass	

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics

Marks for multiple choice questions:

CLO1: 2pts/correct answer

CLO2: 2pts/correct answer

CLO3: 3pts/correct answer

CLO4: 4pts/correct answer

6. Date revised: April 20th, 2024

7. Course coordinator/Lecturer: Đỗ Thị Diệu Ngọc

- School of Languages
- Email: dtdngoc@hcmiu.edu.vn

Ho Chi Minh City, / /2024

DEAN OF SCHOOL OF LANGUAGES

(Signature)

Dr. Nguyễn Huy Cường



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
 School of Computer Science and Engineering

COURSE SYLLABUS

Course Name: Entrepreneurship

Course Code: IT120IU

1. General information

Course name	- (in English): Entrepreneurship - (in Vietnamese): Khởi Nghiệp
Course designation	An introduction to the creative and innovative managerial practices of successful entrepreneurship.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	7
Person responsible for the course	MSc. Dao Tran Hoang Chau
Language	English
Relation to curriculum	Compulsory (CS, NE, CE) Elective (DS)
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self- study hours)	(Estimated) Total workload: 127.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Lecture: 37.5 hours Private study including examination preparation, specified in hours: 90 hours
Credit points	3 credits (Theory: 3 + Practice: 0) 4.64 ECTS

Number of periods	Theory: 45 Practice: 0		
Required and recommended prerequisites for joining the course	None		
Course objectives	This course reviews the significant economic and social contributions entrepreneurs provide to society, the intense lifestyle commitment, and the skills necessary for entrepreneurial success. It explores how to identify and develop solutions to the most common leadership and personal challenges faced by entrepreneurs when starting new ventures or launching new products. It also promotes a deeper understanding of what is required to be a successful entrepreneur, highlights the skills and tools necessary to start a new business and explores alternatives to common pitfalls. This course applies entrepreneurial marketing approaches used by successful entrepreneurs. These include utilizing industry sector trends, identifying emerging customer niches, developing new products/services, using guerilla marketing strategies, and Internet and social marketing strategies. It emphasizes the importance of managing cash flows, ratio analysis, pro forma development, and the basics of deal structure and harvesting a business venture. Students will identify and interpret sources of information from company financial reports, financial publications, industry benchmarks, the media, and web sites. An introduction to the process of researching, writing, and presenting a business plan. Students identify and screen ideas using a business feasibility study that describes the product features, market opportunity, customer profile, sales forecast, competitive advantage, and profit potential. Following a successful feasibility study, students may use business plan software as each develops their own complete business plan.		
Course learning outcomes	CLO 1. Understand entrepreneurial processes; CLO 2. Apply new technology to boost business performance; CLO 3. Manage marketing strategy and financial statements in a enterprise;		
		Competency level	Course learning outcome (CLO)
		Knowledge	1, 2, 3
		Skill	1, 3
		Attitude	3
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		

	Topic	Weight	Level
	Entrepreneurship, Creativity and Innovation;	3	I, T
	Creative Problem Solving Model;	3	T, U
	Develop a Product. Generate Ideas and Protect Inventions;	2	T
	Marketing Strategies;	3	T, U
	Finance and Accounting	4	T, U
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	1. Duening & Hisrich & Lechter, Technology Entrepreneurship 2nd, 2014		

2. Learning Outcomes Matrix

The relationship between Course Learning Outcomes (CLO) (1-4) and Program/Student Learning Outcomes (SLO) (1-6) is shown in the following table:

	SLO					
CLO	1	2	3	4	5	6
1			x			
2		x				
3				x		

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Entrepreneurship, Creativity and Innovation;	1	Midterm exam	Lecture, In- class activities, Quiz	
2	Creative Problem Solving Model;	1	Midterm exam	Lecture, In- class activities, Quiz	
3	Develop a Product. Generate Ideas	2	Midterm exam	Lecture, In- class	

	and Protect Inventions;		Assignment	activities, Project	
4	Midterm				
5	Marketing Strategies;	3	Final exam, Assignment	Lecture, Project	
6	Finance and Accounting	3	Final exam, Assignment	Lecture, Project	
7	Final exam				

Note: %Pass: Target that % of students having scores greater than 50 out of 100

4. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3
Midterm examination (25%)	50%	50%	
Projects/Presentations/ Report (25%)			60%
Final examination (40%)			40%
Exercises/ Quiz (10%)	50%	50%	

Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			

Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

Note: this rubric is also used to evaluate questions in an exam.

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	Issue/ problem to be considered critically is stated without clarification or description.
Evidence <i>Selecting and using information to investigate a point of view or conclusion</i>	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of	Thoroughly	Identifies own and	Questions some	Shows an emerging

context and assumptions	(systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	others' assumptions and several relevant contexts when presenting a position.	assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusions and related outcomes (implications and consequence)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.

		appropriate to audience.	presentation is appropriate to audience.	
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is Compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

Date revised: April 24, 2024

Ho Chi Minh City, 24/04/2024

Dean of the School of Computer Science and Engineering

(Signature)



Nguyen Van Sinh



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department of Environmental Engineering

COURSE SYLLABUS

Course Name: Environmental Science

Course Code: PE014IU

1. General information

Course designation	This course provides the basic knowledge about environmental science; population growth and utilization of natural resources and the environment; natural resources and current exploitation; pollution and its impacts, environmental economic and sustainable development. It also aims to raise students' awareness about possible impacts of human activities on the environment and natural resources in order to apply relevant economic practices.
Semester(s) in which the course is taught	1,2,3
Person responsible for the course	Dr. Tran Thanh Tu Dr. Nguyen Thi Hoang Hai MSc. Bui Xuan Anh Dao MSc. Nguyen Thi Hong Lan Assoc. Prof. Pham Thi Hoa Assoc. Prof. Pham Ngoc
Language	English
Relation to curriculum	Compulsory

Teaching methods	Lecture, lesson, homework, presentation
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 135 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 Private study including examination preparation, specified in hours ¹ : 90
Credit points	3
Required and recommended prerequisites for joining the course	None
Course objectives	Students will be provided with the knowledge about environmental science; population growth and utilization of natural resources and the environment; natural resources and current exploitation; pollution and its impacts, environmental economic and sustainable development. Through this unit, students will be more aware of possible impacts of human activities on the environment and natural resources to apply relevant economic practices.

¹ When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Recognize the current environmental issues and the roles of ecosystem and biodiversity. CLO2. Explain the growth of human population and its impacts to the ecosystem, biodiversity and the environment. CLO3. Describe the impacts of food, soil, and pest management, principles of water resources and water pollution, energy consumption and its impacts to the environment. CLO4. Identify the problems related to air pollution, climate disruption, and ozone depletion as well as environmental economics, politics, and environmental worldviews.
	Skill	CLO5. Describes the issues related to ecosystem, biodiversity, human population growth, food management, water and energy consumption, environmental pollution, climate change, etc. via in-class presentation.
	Attitude	CLO6. Discuss the impacts of human activities to the ecosystem, biodiversity and the environment.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Environmental Issues	1	I,T
	Ecosystem	1	I,T
	Biodiversity and Evolution	1	I,T
	Biodiversity: Species Interaction and Population Control		
	Human Population	1	I,T
	Food, Soil, and Pest Management	1	I,T
	Water Resources and Water Pollution	2	I,T
	Energy	2	I,T
	Air Pollution, Climate Disruption, and Ozone Depletion	2	I,T
	Environmental Economics, Politics, and Worldviews	1	I,T
	Group presentations	3	T,U
Examination forms	Multiple-choice questions, presentation		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	[1] Miller T.G. and Spoolman S.E., <i>Environmental Science</i> , 15 th edition, Cengage Learning Publisher, USA, 2015.		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-...) and Program/Student Learning Outcomes (SLO) (1 -...) is shown in the following table:

	SLO					
CLO	1	2	3	4	5	...
1						
2						
3						
4						

5						

3. Planned learning activities and teaching methods

Week	Topic	CL O	Assessment s	Learning activities	Resources
1	Environmental Issues	1,6		Lecture, Discussion	[1] Chapter 1
2	Ecosystem	1	Quiz1	Lecture, Discussion, Quiz	[1] Chapter 3
3	Biodiversity and Evolution Biodiversity: Species Interaction and Population Control	1	Quiz2	Lecture, Discussion, Quiz	[1] Chapter 4,5
4	Human Population	2,5	IP1 Quiz3	Lecture, Presentation, Discussion, Quiz	[1] Chapter 6
5	Food, Soil, and Pest Management	3,5	IP2	Lecture, Presentation, Discussion	[1] Chapter 10
6	Water Resources and Water Pollution: Part 1 – Water Resources	3,5	IP3	Lecture, Presentation, Discussion	[1] Chapter 11
7	Water Resources and Water Pollution: Part 2 – Water Pollution	3	Quiz4	Lecture, Discussion, Quiz	[1] Chapter 11
8	Energy: Part 1 – Nonrenewable energies	3,5	IP4	Lecture, Presentation, Discussion	[1] Chapter 13
	Midterm				
9	Energy: Part 2 – Renewable energies	3,5	IP5 Quiz5	Lecture, Presentation, Discussion, Quiz	[1] Chapter 13
10	Air Pollution, Climate Disruption, and Ozone Depletion – Part 1: Air Pollution	4,5	IP6	Lecture, Presentation, Discussion	[1] Chapter 15
11	Air Pollution, Climate Disruption, and Ozone Depletion – Part 2: Climate Disruption and Ozone Depletion	4	Quiz6	Lecture, Discussion, Quiz	[1] Chapter 15
12	Environmental Economics, Politics, and Worldviews	4,5	IP7	Lecture, Presentation, Discussion	[1] Chapter 17
13□15	Group presentation	5	IP8→10	Lecture, Presentation, Discussion	
	Reserved week				
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
In-class presentation	IP1,2 Quiz1,2	IP3→5 Quiz3	IP6→8 Quiz4,5	IP9,10 Quiz6	IP1→10 60%Pas	

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
(IP) and Quiz (30%)	60%Pass	60%Pass	60%Pass	60%Pass	s	
Midterm exam (30%)	PartI: Q3→16 PartII: Q1→8 PartIII: Q1→8 60%Pass	PartI: Q17→20 PartII: Q9,10 PartIII: Q9,10 60%Pass				PartI: Q1→2 60%Pass
Final exam (40%)			PartI: Q1→12 PartII: Q1→6 PartIII: Q1→6 60%Pass	PartI: Q13→20 PartII: Q6→10 PartIII: Q6→10 60%Pass		

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Rubrics (optional)

5.1. Rubric for assessment questions in assignment/HW and exam.

Criteria	Level				
	Excellent	Good	Average	Weak	
	100	75	50	25	0
Writing part	Totally correct in method with the differences (if any) in results is within 5%	Calculations mainly correct with 1-2 mistakes and the results are not strongly affected (within 10%)	Direction is correct, calculations with 50% steps having mistakes and the results are strongly affected	Calculation is done but mainly wrong or less relevant	No calculation; calculation is not relevant
MCQs part	Answer is totally correct	Answer is correct at 75%	Answer is correct at 50%	Answer is not clear and less relevant	No answer; answer is not relevant

5.2. Rubric for evaluating presentation tasks

Oral communication value rubric:

	Capstone	Milestone		Benchmark
	76-100	51-75	26-50	0-25
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.

	Capstone	Milestone		Benchmark
	76-100	51-75	26-50	0-25
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

6. Date revised: 11/3/2022

	<i>Ho Chi Minh City, dd/mm/yyyy</i> <i>Head/Dean of Department/School</i> <i>(Signature)</i> <i><Full Name></i>



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biotechnology
Department of Biotechnology

COURSE SYLLABUS
Course Name: Internship
Course Code: **BT221IU**

1. General information

Course name	- <i>Internship</i> - <i>Thực tập</i>
Course designation	<i>This course is designed to help 3rd year students of biotechnology major to transition from being a student to beginning their career as a technician in the field of biotechnology. Students will apply the academic and technical competencies that students have learned in the university to real world problems. Students will also develop employability skills that will assist students in their chosen field for the thesis and the future work. Internship is the most exciting time of students experience, the culmination of many hours of hard work as a student and the beginning of many years of satisfying employment or graduate study in the future. Student has to work for 2 months at industry manufactory, hospital, or research institute that relates to one of the categories below: Pharmaceutical biotechnology, Plant Biotechnology, Animal Biotechnology, Medical biotechnology, Assisted Reproductive Technology, stem cell technology, Micro-biotechnology, regenerative biomedicine etc..</i>
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☒ <i>Internship/Project/Thesis</i> ☐ <i>Others:.....</i>
Semester(s) in which the course is taught	6,7,8
Person responsible for the course	Assoc. Prof. Nguyen Van Thuan Email: nvthuan@hcmiu.edu.vn Academic members of BT. IU (IU Supervisor) and On-site Supervisor
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective

Teaching methods	This is a formal internship experience under an industry Site-Supervisor and apply their advanced biotechnology knowledge and training in a biotechnological laboratory.	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: Student has to work for 2 months (180 hours)	
Credit points	2 credits (Internship) 6.5 ECTS	
Number of periods	Self-study 180 h	
Required and recommended prerequisites for joining the course	Accumulated at least 80 Credits	
Course objectives	Student will be able to articulate and apply principles learned in and outside of the classroom; gain self-understanding, self-confidence, and interpersonal skills; develop work competencies for a specific profession or occupation and student will explore career options, and gain general work experience.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: Gain practical experience in biotechnology processing, product development, biotechnology research and related areas. CLO2: Develop an individual career plan and create a resume and successfully interview for a job
	Skill	CLO3: Demonstrate employability skills; including safely and competently working in a biotechnology job CLO4: Demonstrate the academic and technical competencies of the position.
	Attitude	CLO5: Develop confidence in personal judgment and gain maturity and self-confidence. CLO6: Develop work competencies for a specific profession or occupation and student will explore career options, and gain general work experience

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>
	How to apply internship course
	1. If you are going to register for the internship, you have to complete the internship Registration form. This is required of all students intending to register for an internship.
	2. Student has to identify the internship opportunities by him/herself or with assistance from the Academic Advisor and faculty members of department of Biotechnology.
	3. Student has to work at hospital, research institutes and biotechnological industry for a period of 2 months.
	4. Student has to Fill the Form of Internship Conformation after completion of the internship period with signature of the On-site Supervisor and submit it to the School of Biotechnology.
	5. Student has to write and submit the Internship Report, following the Report requirements. In general, the report should be at least 10 pages in lengths, and be submitted latest 4 weeks after student return from the internship place
	6. Student present the results of internship to an internship committee consisting of 3 academic members of the department of biotechnology.
Examination forms	Oral presentation, Report
Study and examination requirements	Students must receive comments from the On-site Supervisor and approval by BT.IU supervisor.

2. Learning Outcomes Matrix (optional)

The intended learning outcomes (ILOs) of Biotechnology Program and three levels of contribution are defined using Bloom's taxonomy (Low [L]: Remember and Understand; Medium [M]: Apply and Analyze; High [H]: Evaluate and Create).

The relationship between Course Learning Outcomes (CLOs) (1-6) and ILOs (1-8) and the level of contribution of CLOs to ILOs is shown in the following table:

	ILOs							
CLOs	1	2	3	4	5	6	7	8
1			M					
2				H				
3					H			
4						H		
5							M-H	
6								M-H

3. Course Evaluation

Methods	Frequency	%
Evaluation from Supervisor (Presentation + Report)	1	50
Evaluation from Site-Supervisor	1	50
Total		100

4. Grading system by 100-point scale and equivalent scales

Rank	100-point scale	4-point scale	Letter A, B
Passed			
Excellent	$85 \leq \text{O.A.} \leq 100$	4.0	A
Very Good	$75 \leq \text{O.A.} < 85$	3.75	A-
Good	$65 \leq \text{O.A.} < 75$	3.5	B+
Lower Good	$60 \leq \text{O.A.} < 65$	3.0	B
Upper Average	$55 \leq \text{O.A.} < 60$	2.5	C+
Average	$50 \leq \text{O.A.} < 55$	2.0	C
Failed			
Weak	$30 \leq \text{O.A.} < 50$	1.3	D+
Very weak	$10 \leq \text{O.A.} < 30$	1.0	D
Too weak	$\text{O.A.} < 10$	0	F

Note: O.A. = overall average

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Oral communication value rubric for evaluating presentation tasks:

Group:	Topic for presentation:		
Category	Scoring Criteria	Total Points	Score
Presentation content	Content Organization: The presentation is delivered in logical order and has a clear structure, including an introduction and a conclusion.	15	
	Information: The presentation contains accurate information and is cited from appropriate external resources.	15	
	Language usage: Presentation contains no grammatical errors and no misspelling; technical terms are well defined.	15	
	Visual aids: The presentation includes suitable and effective visual aids that capture the audience's attention.	15	
Presentation delivery	Time management: The Length of the presentation is within the assigned time limits.	10	
	Presentation Skill: The speaker maintains good eye contact with the audience, and speaks confidently with a good voice, fluid speech, and appropriate pronunciation.)	10	
	Question and Answer: The speaker addresses and answers all questions from the audience following the presentation.	20	
Score	Total Points	100	

6. Plan for consultancy, support to students:

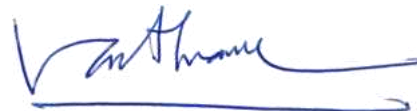
Students send a report to and get advice from his/her Academic Adviser on a weekly basis.

7. Date revised: June 2025

8. Course coordinator/Lecturer

- Department: Biotechnology
- Email: nvthuan@hcmiu.edu.vn

Ho Chi Minh City, dd/mm/yyyy
DEAN OF DEPARTMENT/SCHOOL
(Signature)



Assoc. Prof. NGUYEN VAN THUAN



VIETNAM NATIONAL UNIVERSITY HCMC
 INTERNATIONAL UNIVERSITY
 School of Biotechnology
 Department of Biotechnology

COURSE SYLLABUS

Course Name: Thesis

Course Code: **BT367IU**

1. General information

Course name	- <i>Thesis</i> - <i>Luận văn tốt nghiệp</i>
Course designation	<i>The research project is to give students an opportunity to deepen their theoretical knowledge by applying theory into practice. The studies also develop students' analytical skills, project management skills, social skills, and their ability to participate in Research and Development (R&D) work. The aim of the thesis is to provide students with practice on how to undertake original research in the major fields offered by the School of Biotechnology, International University (IU). By the end of the research project, students will have gained experience in conducting independent research and should be capable of it.</i>
Course type	☐ <i>General knowledge</i> <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i> ☐
Semester(s) in which the course is taught	7, 8
Person responsible for the course	Assoc. Prof. Nguyen Van Thuan Email: nvthuan@hcmiu.edu.vn Academic members of BT. IU (IU Supervisor) and On-site Supervisor
Language	English
Relation to curriculum	☐ Compulsory ☐ Elective

Teaching methods	Projects should be original laboratory, field-based or survey research on a topic proposed by adviser at IU. Student could also conduct your thesis project outside the University given that your proposal is approved with adequate supervision by external supervisor.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 850 h Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 250 h. Private study including examination preparation, specified in hours¹: 600 h The student has four working months for thesis. Students are required to meet their advisor weekly to discuss the research progress meeting. (Students are also encouraged to participate as volunteers in the labs from the second or third year to study more techniques and prepare for the thesis).
Credit points	10 credits (Thesis) 30.9 ECTS
Number of periods	Practice: 250 hours Private study: 600 hours
Required and recommended prerequisites for joining the course	Accumulated at least 113 Credits
Course objectives	The thesis aims to develop and demonstrate students' skills in applying theoretical knowledge and using the chosen methods to specify and solve workplace problems. The thesis also demonstrates students' ability to apply their advanced biotechnology knowledge and training in a biotechnological laboratory and work independently in demanding expert duties.

¹

When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: Be familiar with working in many areas: laboratory sessions, library work, site visits, studio-based sessions, fieldwork, or work-based learning. CLO2: Independently investigate a scientific problem and develop an evolving strategy with the potential to further understanding within the chosen research area. CLO3: Gain the ability to review the literature, which forms the background to the project, and then an element of information gathering through lab work and the use of further literature, assignments, and presentation skills.
	Skill	CLO4: Demonstrate skills in performing experiments, analysis, and presentation of data to support or refute scientific hypotheses. CLO5: Demonstrate employability skills, including safely and competently working in a biotechnology job. CLO6: Communicate their research to others in both written thesis and oral report and engage with relevant research governance.
	Attitude	CLO7: Develop an individual career plan, create a resume, and successfully interview for a job. CLO8: Critically evaluate the findings/creations as unique contributions in the context of previous relevant research.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>	
	Planned to do the thesis	
	1. Faculty members will offer a list of possible projects for students' consideration. The proposed projects are closely related to the supervisor's expertise in the IU laboratory system or alternatives elsewhere. Students can select the most interesting project and discuss it with the faculty member proposing it.	
	2. Students are requested to provide evidence for such an arrangement by completing the thesis registration form (BT01) along with a CV of your supervisor (supervised by a non-IU employer)	
	3. About eight weeks after starting the research, students must submit a progress report to the school using thesis progress report form BT02. This progress report must be certified by the supervisor.	
	4. Student has to write the thesis and submit it depending on the date for submission (i.e. four months upon commencement of the research). Two copies of thesis (soft-bounded) should be submitted to the School's secretaries two weeks before the date set for thesis defense.	
	5. Students present the results thesis to five members of the scientific committee of the department of biotechnology, the reviewer, and their supervisor.	
	6. After a successful defense, the students revise thesis according to the comments and amendments required by the Evaluation Committee. The advisor should make sure that all corrections are followed by the student by approving the revised thesis using report on thesis revision form BT07.	
	7. Students must submit two copies of the thesis (no binding is required) , a CDROM that contains the electronic versions of the thesis (in both .doc and /pdf formats), and the presentation in PowerPoint. The CDROM should be labeled with the student's name, ID, and graduation year.	
Examination forms	Writing thesis and Oral presentation	
Study and examination requirements	Students are to send a report to and get advice from his/her Academic Adviser every week. Thesis evaluation: Students must have more than 50/100 points overall to pass the thesis.	
Reading list		

2. Learning Outcomes Matrix (optional)

The intended learning outcomes (ILOs) of Biotechnology Program and three levels of contribution are defined using Bloom's taxonomy (Low [L]: Remember and Understand; Medium [M]: Apply and Analyze; High [H]: Evaluate and Create).

The relationship between Course Learning Outcomes (CLOs) (1-8) and ILOs (1-8) and the level of contribution of CLOs to ILOs is shown in the following table:

	ILOs							
CLOs	1	2	3	4	5	6	7	8
1	L							
2		L-M						
3			M					
4				H				
5					H			
6						M-H		
7								H
8							M-H	

3. Assessment plan

Assessment Type	Strategy and Details
Writing Proposal and Defense	The student should identify a research problem, give some preliminary view of existing research, provide a proposed solution, and set down the schedule for the research and writing process.
Progress Report	The student is required to submit a progress report to the school. Students wishing to extend the research duration should indicate their request in the Progress Report and seek the school's approval.
Writing Thesis and Submit	The student is required to write the thesis in the form of an extended paper. This requirement is not only to train students with manuscript preparation but also to facilitate the later publication of good research by the school. The format of your thesis is a blended design of a traditional thesis, i.e. with the cover page, followed by Acknowledgment and ending up with an Appendix. The main body of the thesis is a paper-styled, including the Title, Author name(s) and Affiliation, Abstract, Introduction, Materials and Methods, Results, Discussion, Conclusion, and References.
Thesis Defense	Students present the results thesis by oral presentation to members of the scientific committee.
Revised Thesis	Students should contact the secretary of the Evaluation Committee to receive a copy of the defense memo with detailed requests of the Committee for revision/correction of the thesis. The revised thesis is finally checked and approved by the Committee's secretary on behalf of the School.

Note: %Pass: Target that % of students having scores greater than 50 out of 100.

4. Course Evaluation:

The thesis will be evaluated by an anonymous reviewer assigned by the School. Students are allowed to present the thesis only if the mark is higher than 50/100. Your supervisor is requested to mark your performance and send the result to the School. The final mark is the average given by five members of the Scientific Committee, the reviewer, and your supervisor.

No. STT	Member of the Committee	Score
1		
2		
3		
4		
5		
6	Thesis advisor	
7	Thesis reviewer	
Total		

Average Score: /100 (Total/No. of members)

5. Date revised: June 2025

6. Course coordinator/Lecturer

- School/Department:
- Email: nvthuan@hcmiu.edu.vn

Ho Chi Minh City, dd/mm/yyyy
DEAN OF DEPARTMENT/SCHOOL
(Signature)



Nguyen Van Thuan