

CHƯƠNG TRÌNH ĐÀO TẠO KHÓA 2025
NGÀNH HÓA HỌC (HÓA SINH)
TRÌNH ĐỘ ĐẠI HỌC

*(Kèm theo Quyết định số 1102/QĐ-ĐHQT ngày 04 tháng 9 năm 2025
của Hiệu trưởng Trường Đại học Quốc tế)*

1. Thông tin chung

- Tên ngành đào tạo:
- + Tiếng Việt: Hóa học (Hóa Sinh)
- + Tiếng Anh: Chemistry (Biochemistry program)
- Mã ngành đào tạo: 7440112
- Trình độ đào tạo: Đại học
- Loại hình đào tạo: Chính quy
- Thời gian đào tạo: 3.5-4 năm
- Tên văn bằng sau khi tốt nghiệp:
- + Tiếng Việt: Cử nhân Hóa Học
- + Tiếng Anh: Bachelor of Science in Chemistry
- 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 lý, 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: 35 sinh viên

3. Mục tiêu đào tạo

a. Mục tiêu chung

Chương trình đào tạo ngành Hóa học (chương trình Hóa sinh) tại Trường Đại học Quốc tế được thiết kế nhằm đào tạo các Cử nhân có kiến thức rộng và chuyên sâu trong lĩnh vực khoa học, nghiên cứu về bản chất, cấu trúc, tính chất lý hóa và biến đổi của vật chất trong cơ thể con người cũng như động thực vật. Sinh viên sẽ được cung cấp các kiến thức, kỹ năng chuyên môn, và thái độ cần thiết để trở thành những người hoạt động trong lĩnh vực Hoá sinh trong tương lai, có hiểu biết, trách nhiệm, đóng góp vào sự phát triển của bản thân, gia đình, và xã hội.

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
Sinh viên sẽ được cung cấp các kiến thức, kỹ năng chuyên môn, và thái độ cần thiết để trở thành những người hoạt động trong lĩnh vực Hoá sinh trong tương lai, có hiểu biết, trách nhiệm, đóng góp vào sự phát triển của bản thân, gia đình, và xã hội.	Trường ĐHQT là trường đại học nghiên cứu thuộc top đầu tại châu Á; là cơ sở giáo dục quốc tế, tự chủ, sáng tạo; là nơi vun đắp và phát triển nguồn nhân lực chất lượng cao cho thị trường lao động trong nước và quốc tế.	Là CSGD quốc tế, mang bản sắc văn hóa Việt Nam. CSGD đại học đi tiên phong trong đổi mới cơ chế quản trị đại học theo mô hình tự chủ và tiên tiến. Giảng dạy và nghiên cứu thực hiện bằng tiếng Anh là điểm khác biệt nâng tầm quốc tế của nhà trường. SV được đào tạo và rèn luyện để trở thành công dân toàn cầu và có trách nhiệm với xã hội, dẫn dắt xã hội trong tương lai.	Có kiến thức chuyên môn toàn diện, nắm vững nguyên lý, quy luật tự nhiên - xã hội
Đào tạo các Cử nhân có kiến thức rộng và chuyên sâu trong lĩnh vực khoa học, nghiên cứu về bản chất, cấu trúc, tính chất lý hóa và biến đổi của vật chất trong cơ thể con người cũng như động thực vật.		Nghiên cứu cơ bản với hàm lượng tri thức lớn song hành với nghiên cứu ứng dụng, đáp ứng yêu cầu đổi mới sáng tạo và phát triển bền vững của doanh nghiệp, địa phương và xã hội; quan tâm, thúc đẩy các hoạt động kết nối và PVCĐ.	Có kiến thức chuyên môn toàn diện, nắm vững nguyên lý, quy luật tự nhiên - xã hội. Có kỹ năng thực hành cơ bản. Có khả năng làm việc độc lập, sáng tạo và giải quyết những vấn đề thuộc ngành được đào 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 2 mục tiêu về kiến thức, 1 mục tiêu về kỹ năng và 1 mục tiêu về tự chủ và trách nhiệm, được trình bày như sau:

Kiến thức:

- Mục tiêu 1 (PO1): Đào tạo sinh viên có kiến thức cơ bản về toán học, khoa học tự nhiên và xã hội để sẵn sàng tham gia lực lượng lao động quốc tế, đáp ứng nhu cầu phát triển kinh tế, công nghiệp hóa, hiện đại hóa đất nước.

- Mục tiêu 2 (PO2): Đào tạo sinh viên có kiến thức lý thuyết và thực hành chuyên sâu về hóa sinh, hóa học, công nghệ sinh học; vững vàng về chuyên môn, có kỹ năng quản lý, tư duy phản biện, giao tiếp và làm việc nhóm đa lĩnh vực.

Kỹ năng:

- Mục tiêu 3 (PO3): Đào tạo sinh viên có kỹ năng thực hành, có năng lực số, có khả năng làm việc trong các tổ chức nghề nghiệp như nhà máy, viện nghiên cứu, bệnh viện, trường đại học, trung học phổ thông cũng như trong các cơ quan, doanh nghiệp ở lĩnh vực liên quan như mỹ phẩm, dinh dưỡng, công nghệ sinh học, nông nghiệp, môi trường, thực phẩm và dược phẩm, ...

Tự chủ, trách nhiệm:

- Mục tiêu 4 (PO4): Đào tạo sinh viên có đầy đủ kiến thức, thái độ, trách nhiệm, có đạo đức nghề nghiệp; và tinh thần học tập suốt đời, sẵn sàng tiếp tục học lên các chương trình cao học của các ngành khoa học như hóa sinh, hóa học, công nghệ sinh học... ở Việt Nam hoặc nước ngoài.

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

Từ các mục tiêu cụ thể nêu trên, cùng với việc tham khảo chuẩn đầu ra của các cơ sở đào tạo có chương trình Hóa Sinh trên thế giới, chuẩn đầu ra của ngành Hóa học (chương trình Hóa sinh) tại trường Đại học Quốc tế đã được xây dựng gồm các tiêu chuẩn như dưới đây. Theo đó, sinh viên sau khi hoàn tất chương trình đào tạo, có thể:

1. Xác định được các kiến thức cơ bản liên quan đến Hóa sinh thuộc lĩnh vực toán học, kinh tế, xã hội và khoa học tự nhiên. **(Kiến thức chung)**

2. Thể hiện được năng lực về phương pháp luận và ứng dụng năng lực đó trong các ngành nghề khác nhau để xác định và giải quyết các vấn đề cụ thể một cách hiệu quả. **(Kỹ năng chung)**

3. Có được kiến thức cơ bản và chuyên sâu thuộc các chuyên ngành trong lĩnh vực Hóa sinh. **(Kiến thức chuyên môn)**

4. Thực hiện được các công việc về thực nghiệm một cách độc lập và an toàn trong phòng thí nghiệm thuộc lĩnh vực Hóa sinh và các lĩnh vực liên quan; và có khả năng thu thập, giải thích và đánh giá các dữ liệu khoa học. **(Kỹ năng chuyên môn)**

5. Tuân thủ các nguyên tắc pháp lý cơ bản, các quy định về môi trường, về an toàn và đạo đức trong công việc, về trách nhiệm của bản thân. **(Thái độ)**

6. Thực hiện được các đề tài nghiên cứu, ứng dụng năng lực số, kỹ thuật hiện đại trong phát triển các sản phẩm thuộc lĩnh vực hóa sinh. **(Ứng dụng)**

7. Nhận biết được yêu cầu, tích cực thực hiện việc học tập suốt đời và có sự chuẩn bị đầy đủ cho nghề nghiệp trong tương lai. **(Học tập suốt đời)**

8. Tham gia trong các nhóm làm việc liên ngành, có kỹ năng giao tiếp, lãnh đạo và quản lý. **(Phát triển)**

Chuẩn đầu ra (CDR)	Nội dung Chuẩn đầu ra	Trình độ năng lực*
Kiến thức		
PLO1	Xác định được các kiến thức cơ bản liên quan đến Hóa sinh thuộc lĩnh vực toán học, kinh tế, xã hội và khoa học tự nhiên	Ghi nhớ (Remembering), Hiểu (Understanding)
PLO3	Có được kiến thức cơ bản và chuyên sâu thuộc các chuyên ngành trong lĩnh vực Hóa sinh.	Ghi nhớ (Remembering), Áp dụng (Applying)
Kỹ năng		
PLO2	Thể hiện được năng lực về phương pháp luận và ứng dụng năng lực đó trong các ngành nghề khác nhau để xác định và giải quyết các vấn đề cụ thể một cách hiệu quả.	Quan sát (Observation), Bắt chước (Imitation):
PLO4	Thực hiện được các công việc về thực nghiệm một cách độc lập và an toàn trong phòng thí nghiệm thuộc lĩnh vực Hóa sinh và các lĩnh vực liên quan; và có khả năng thu thập, giải thích và đánh giá các dữ liệu khoa học.	Thực hành (Manipulation), Chính xác (Precision)
PLO6	Thực hiện được các đề tài nghiên cứu, ứng dụng năng lực số, kỹ thuật hiện đại trong phát triển các sản phẩm thuộc lĩnh vực hóa sinh.	Chính xác (Precision), Tự nhiên hóa (Naturalization)
Mức tự chủ và trách nhiệm		
PLO5	Tuân thủ các nguyên tắc pháp lý cơ bản, các quy định về môi trường, về an toàn và đạo đức trong công việc, về trách nhiệm của bản thân.	Tiếp nhận (Receiving), Phản hồi (Responding), Đánh giá (Valuing).
PLO7	Nhận biết được yêu cầu, tích cực thực hiện việc học tập suốt đời và	Đánh giá (Valuing), Tổ chức (Organization).

Chuẩn đầu ra (CDR)	Nội dung Chuẩn đầu ra	Trình độ năng lực*
	có sự chuẩn bị đầy đủ cho nghề nghiệp trong tương lai.	
PLO8	Tham gia trong các nhóm làm việc liên ngành, có kỹ năng giao tiếp, lãnh đạo và quản lý.	Tổ chức (Organization), Nội hóa (Internalization).

*Trình độ năng lực theo thang Bloom

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

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	x	
Kỹ năng	PLO2	x		x	x
	PLO4		x	x	
	PLO6		x	x	x
Tự chủ và trách nhiệm	PLO5			x	x
	PLO7				x
	PLO8		x	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-ĐHQGT 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

Xếp loại	Thang điểm 100	Điểm chữ	Thang điểm 4
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 khóa

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	44	42	2	34.92
	- Bắt buộc: 41 tín chỉ	41	39	2	32.54
	- Tự chọn: 3 tín chỉ	3	3	0	2.38
II	Khối kiến thức cơ sở ngành	55	43	12	43.65
	- Bắt buộc: 55 tín chỉ	55	43	12	43.65
	- Tự chọn: 0 tín chỉ	0	0	0	0
III	Kiến thức chuyên ngành	12	9	3	9.52
	- Bắt buộc: 0 tín chỉ	0	0	0	0
	- Tự chọn: 12 tín chỉ	12	9	3	9.52
IV	Kiến thức bổ trợ	3	3	0	2.38
	- Bắt buộc: 0 tín chỉ	0	0	0	0
	- Tự chọn: 3 tín chỉ	3	3	0	2.38
V	Thực tập, khóa luận/luận văn tốt nghiệp	12	0	12	9.52
	Tổng cộng	126	97	29	100

9. Nội dung chương trình đào tạo

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

Học kỳ	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
I	PT001IU	Physical Training 1	Giáo dục thể chất 1	Bắt buộc	3	3	0	
	PE015IU	Philosophy of Marxism and Leninism	Triết học Mác-Lênin	Bắt buộc	3	3	0	
	PE016IU	Political economics of Marxism and Leninism	Kinh tế chính trị Mác-Lênin	Bắt buộc	2	2	0	
	PE017IU	Scientific socialism	Chủ nghĩa xã hội khoa học	Bắt buộc	2	2	0	
	CH011IU	Chemistry for Engineers	Hóa đại cương	Bắt buộc	3	3	0	
	MA001IU	Calculus 1	Toán cao cấp 1	Bắt buộc	4	4	0	
	PH013IU	Physics 1	Vật lý 1	Bắt buộc	2	2	0	
	EN007IU	Writing AE 1	Viết học thuật	Bắt buộc	2	2	0	
	EN008IU	Listening AE 1	Nghe và ghi chú	Bắt buộc	2	2	0	
II	PT002IU	Physical Training 2	Giáo dục thể chất 2	Bắt buộc	3	3	0	
	PE018IU	History of Vietnamese Communist Party	Lịch sử ĐCSVN	Bắt buộc	2	2	0	HT: PE015IU: Philosophy of Marxism and Leninism PE016IU: Political economics of

Học kỳ	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
								Marxism and Leninism PE017U: Scientific socialism
	PE019IU	Ho Chi Minh's Thoughts	Tư tưởng HCM	Bắt buộc	2	2	0	HT: PE015IU: Philosophy of Marxism and Leninism PE016IU: Political economics of Marxism and Leninism PE017U: Scientific socialism
	PE021IU	General Law	Pháp luật Đại cương	Bắt buộc	3	3	0	
	MA040IU	Applied Statistics	Thống kê Ứng dụng	Bắt buộc	2	2	0	HT: MA001IU: Calculus 1
	MA041IU	Applied Statistics lab	Thực hành Thống kê Ứng dụng	Bắt buộc	1	0	1	
	EN011IU	Writing AE2	Viết bài nghiên cứu	Bắt buộc	2	2	0	
	EN012IU	Speaking AE2	Thuyết trình	Bắt buộc	2	2	0	

Bảng 6. Các môn học thuộc CTĐT

Stt	Mã MH	Tên môn học (MH)		Loại MH (bắt buộc/tự chọn)	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
I	Kiến thức giáo dục đại cương				44	42	2	
	Lý luận chính trị			Bắt buộc	11	11	0	
1	PE015IU	Philosophy of Marxism and Leninism	Triết học Mác-Lênin	Bắt buộc	3	3	0	
2	PE016IU	Political economics of Marxism and Leninism	Kinh tế chính trị Mác-Lenin	Bắt buộc	2	2	0	
3	PE017IU	Scientific socialism	Chủ nghĩa xã hội khoa học	Bắt buộc	2	2	0	
4	PE018IU	History of Vietnamese Communist Party	Lịch sử Đảng Cộng sản Việt Nam	Bắt buộc	2	2	0	
5	PE019IU	Ho Chi Minh's Thoughts	Tư tưởng Hồ Chí Minh	Bắt buộc	2	2	0	
	Khoa học xã hội - Nhân văn - Nghệ thuật				3	3	0	
6	PE021IU	General Law	Pháp luật Đại cương	Bắt buộc	3	3	0	
7	PE008IU	Critical Thinking	Tư duy phân tích	Nhóm tự chọn 1	3	3	0	
	Ngoại ngữ			Bắt buộc	8	8	0	
8	EN007IU	Writing AE 1	Viết học thuật	Bắt buộc	2	2	0	
9	EN008IU	Listening AE 1	Nghe và ghi chú	Bắt buộc	2	2	0	
10	EN011IU	Writing AE 2	Viết bài nghiên cứu	Bắt buộc	2	2	0	
11	EN012IU	Speaking AE 2	Thuyết trình	Bắt buộc	2	2	0	

Stt	Mã MH	Tên môn học (MH)		Loại MH (bắt buộc/tự chọn)	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
	Toán - Tin học - Khoa học tự nhiên - Công nghệ - Môi trường			Bắt buộc	19	17	2	
12	MA001IU	Calculus 1	Toán cao cấp 1	Bắt buộc	4	4	0	
13	PH013IU	Physics 1	Vật lý 1	Bắt buộc	2	2	0	
14	CH011IU	Chemistry for Engineers	Hóa đại cương	Bắt buộc	3	3	0	
15	MA040IU	Applied Statistics	Thống kê Ứng dụng	Bắt buộc	2	2	0	
16	MA041IU	Applied Statistics lab	Thực hành Thống kê Ứng dụng	Bắt buộc	1	0	1	
17	BT311IU	Biology	Sinh học đại cương	Bắt buộc	3	3	0	
18	BT312IU	Practice in biology	Thực hành sinh học đại cương	Bắt buộc	1	0	1	LA1.709
19	PE014IU	Environmental Science	Khoa học môi trường	Bắt buộc	3	3	0	
	Kinh tế - Quản lý			Nhóm tự chọn 1	3	3	0	
20	IS026IU	Project Management	Quản lý dự án	Nhóm tự chọn 1	3	3	0	
21	BA164IU	Production and Operation management	Quản lý sản xuất	Nhóm tự chọn 1	3	3	0	
22	IS078IU	Logistics Engineering and Supply Chain Design	Kỹ thuật Thiết kế Chuỗi cung ứng và Logistics	Nhóm tự chọn 1	3	3	0	
23	BA006IU	Business Communications	Giao tiếp kinh doanh	Nhóm tự chọn 1	3	3	0	
24	BA003IU	Principles of Marketing	Nguyên lý Marketing	Nhóm tự chọn 1	3	3	0	

Stt	Mã MH	Tên môn học (MH)		Loại MH (bắt buộc/tự chọn)	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
25	IT120IU	Entrepreneurship	Khởi nghiệp	Nhóm tự chọn 1	3	3	0	
II	Kiến thức cơ sở ngành			Bắt buộc	55	43	12	
26	BTBC103IU	Inorganic Chemistry	Hóa Vô Cơ	Bắt buộc	3	3	0	
27	BTBC104IU	Inorganic Chemistry lab	Thực hành Hóa vô cơ	Bắt buộc	1	0	1	LA1.502
28	BTBC201IU	Organic Chemistry 1	Hóa hữu cơ 1	Bắt buộc	3	3	0	
29	BTBC206IU	Organic Chemistry 2	Hóa hữu cơ 2	Bắt buộc	3	3	0	
30	BTBC207IU	Organic Chemistry lab	Thực hành Hóa hữu cơ	Bắt buộc	2	0	2	LA1.502
31	BTBC213IU	Fundamentals of Analytical Chemistry	Nguyên lý hóa phân tích	Bắt buộc	3	3	0	
32	BTBC214IU	Fundamental of analytical chemistry lab	Thực hành Nguyên lý hóa phân tích	Bắt buộc	1	0	1	LA1.502
33	BTBC215IU	Instrumental Analysis	Phân tích dụng cụ	Bắt buộc	3	3	0	
34	BTBC216IU	Instrumental analysis lab	Thực hành Phân tích dụng cụ	Bắt buộc	1	0	1	LA1.502
35	BTBC102IU	Introduction to Biochemistry	Nhập môn chuyên ngành Hóa sinh	Bắt buộc	2	2	0	
36	BTBC217IU	Experimental design and technical communication	Thiết kế thí nghiệm và kỹ năng báo cáo trong ngành kỹ thuật	Bắt buộc	3	3	0	
37	BTBC209IU	Biochemistry 1	Hóa sinh 1	Bắt buộc	3	3	0	
38	BTBC211IU	Biochemistry 2	Hóa sinh 2	Bắt buộc	3	3	0	
39	BTBC212IU	Biochemistry 2 lab	Thực hành Hóa sinh 2	Bắt buộc	2	0	2	LA1.501
40	BTBC425IU	Microbial Biochemistry	Hóa sinh Vi sinh vật	Bắt buộc	2	2	0	

Stt	Mã MH	Tên môn học (MH)		Loại MH (bắt buộc/tự chọn)	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
41	BTBC426IU	Microbial Biochemistry lab	Thực hành Hóa sinh Vi sinh vật	Bắt buộc	1	0	1	
42	BTBC218IU	Molecular Cell Biology	Sinh học phân tử của tế bào	Bắt buộc	3	3	0	
43	BTBC219IU	Molecular Cell Biology Lab	Thực hành Sinh học phân tử của tế bào	Bắt buộc	1	0	1	LA1.701
44	BTBC315IU	Enzymology	Enzyme học	Bắt buộc	3	3	0	
45	BTBC316IU	Enzymology lab	Thực hành Enzyme học	Bắt buộc	1	0	1	LA1.501
46	BTBC302IU	Biophysical Chemistry	Hóa lý sinh học	Bắt buộc	3	3	0	
47	BTBC313IU	Methods in Biochemistry	Kỹ thuật Hóa sinh	Bắt buộc	3	3	0	
48	BTBC314IU	Methods in Biochemistry lab	Thực hành Kỹ thuật Hóa sinh	Bắt buộc	2	0	2	LA1.501
49	BT405IU	Physical Chemistry	Hóa lý	Bắt buộc	3	3	0	
III	Kiến thức chuyên ngành (Tự chọn tối thiểu 12 tín chỉ trong các môn học sau) (Sinh viên cần học đúng các môn lý thuyết + thực hành song hành trong cùng nhóm tự chọn)			Nhóm tự chọn 3	12	9	3	
50	BTBC409IU + BTBC429IU	Cosmetics and Cosmeceuticals 1	Mỹ phẩm và mỹ dược 1	Nhóm tự chọn 3	3	3	0	
		Cosmetics and Cosmeceuticals 1 lab	Thực hành Mỹ phẩm và mỹ dược 1	Nhóm tự chọn 3	1	0	1	LA1.703
51	BTBC410IU + BTBC430IU	Cosmetics and Cosmeceuticals 2	Mỹ phẩm và mỹ dược 2	Nhóm tự chọn 3	3	3	0	
		Cosmetics and Cosmeceuticals 2 lab	Thực hành Mỹ phẩm và mỹ dược 2	Nhóm tự chọn 3	1	0	1	LA1.703

Stt	Mã MH	Tên môn học (MH)		Loại MH (bắt buộc/tự chọn)	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
52	BTBC431IU + BTBC432IU	Drug Discovery and Development	Nghiên cứu và Phát triển thuốc	Nhóm tự chọn 3	3	3	0	
		Drug Discovery and Development Lab	Thực hành Nghiên cứu và Phát triển thuốc	Nhóm tự chọn 3	1	0	1	
53	BTBC433IU + BTBC434IU	Pharmaceutical Fermentation	Lên men Dược phẩm	Nhóm tự chọn 3	3	3	0	
		Pharmaceutical Fermentation Lab	Thực hành Lên men Dược phẩm	Nhóm tự chọn 3	1	0	1	LA1.703
54	BTBC427IU + BTBC428IU	Biochemistry of Cancer	Hóa sinh Ung thư	Nhóm tự chọn 3	3	3	0	
		Biochemistry of Cancer lab	Thực hành Hóa sinh Ung thư	Nhóm tự chọn 3	1	0	1	
55	BTBC413IU + BTBC414IU	Clinical Biochemistry	Hóa sinh lâm sàng	Nhóm tự chọn 3	3	3	0	
		Clinical Biochemistry Lab	Thực hành Hóa sinh lâm sàng	Nhóm tự chọn 3	1	0	1	LA1.703
56	BTBC317IU + BTBC318U	Nutritional Biochemistry	Hóa sinh dinh dưỡng	Nhóm tự chọn 3	3	3	0	
		Nutritional Biochemistry Lab	Thực hành Hóa sinh dinh dưỡng	Nhóm tự chọn 3	1	0	1	LA1.703
57	BTBC421IU + BTBC422IU	Nutraceuticals	Dưỡng dược	Nhóm tự chọn 3	3	3	0	
		Nutraceuticals Lab	Thực hành dưỡng dược	Nhóm tự chọn 3	1	0	1	LA1.703

Stt	Mã MH	Tên môn học (MH)		Loại MH (bắt buộc/tự chọn)	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
IV	Kiến thức bổ trợ (tự chọn công nghệ Sinh học - tối thiểu 3 tín chỉ trong các môn học sau) (Sinh viên cần học đúng các môn lý thuyết + thực hành song hành trong cùng nhóm tự chọn)			Nhóm tự chọn 2	3	3	0	
58	BT210IU	Human Physiology	Sinh lý người	Nhóm tự chọn 2	3	3	0	
59	BT351IU	Molecular Diagnostics	Chẩn đoán phân tử	Nhóm tự chọn 2	3	3	0	
60	BT337IU	Bioinformatics	Tin sinh học	Nhóm tự chọn 2	3	3	0	
61	BT365IU + BT342IU	Bioprocess Engineering	Kỹ thuật quy trình sinh học	Nhóm tự chọn 2	2	2	0	
		Practice in Bioprocess Engineering	Thực hành Kỹ thuật quy trình sinh học	Nhóm tự chọn 2	1	0	1	
V	Thực tập, khóa luận/luận văn tốt nghiệp			Bắt buộc	12	0	12	
62	BTBC309IU	Internship	Thực tập ngành nghề	Bắt buộc	2	0	2	
63	BTBC456IU	Thesis	Khóa luận tốt nghiệp	Bắt buộc	10	0	10	
	Tổng số (tín chỉ)				126	97	29	

Ghi chú:

- Nhóm tự chọn 1 (tự chọn kinh tế, quản lý, xã hội): Yêu cầu đạt tối thiểu 3 tín chỉ.
- Nhóm tự chọn 2 (tự chọn công nghệ sinh học): Yêu cầu đạt tối thiểu 3 tín chỉ
- Nhóm tự chọn 3 (tự chọn kiến thức chuyên ngành): Yêu cầu đạt tối thiểu 12 tín chỉ

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

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

Học kỳ	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	
I (tổng tín chỉ: 20)	PT001IU	Physical Training 1	Giáo dục thể chất 1	Bắt buộc	3	3	0	
	PE015IU	Philosophy of Marxism and Leninism	Triết học Mác-Lênin	Bắt buộc	3	3	0	
	PE016IU	Political economics of Marxism and Leninism	Kinh tế chính trị Mác-Lênin	Bắt buộc	2	2	0	
	PE017U	Scientific socialism	Chủ nghĩa xã hội khoa học	Bắt buộc	2	2	0	
	CH011IU	Chemistry for Engineers	Hóa đại cương	Bắt buộc	3	3	0	
	MA001IU	Calculus 1	Toán cao cấp 1	Bắt buộc	4	4	0	
	PH013IU	Physics 1	Vật lý 1	Bắt buộc	2	2	0	
	EN007IU	Writing AE 1	Viết học thuật	Bắt buộc	2	2	0	
	EN008IU	Listening AE 1	Nghe và ghi chú	Bắt buộc	2	2	0	
Tổng cộng					20	20	0	
II (tổng tín chỉ: 20)	PT002IU	Physical Training 2	Giáo dục thể chất 2	Bắt buộc	3	3	0	
	PE018IU	History of Vietnamese Communist Party	Lịch sử ĐCSVN	Bắt buộc	2	2	0	HT: PE015IU, Philosophy of Marxism and Leninism PE016IU, Political economics of Marxism and Leninism

Học kỳ	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	
								PE017U, Scientific socialism
	PE019IU	Ho Chi Minh's Thoughts	Tư tưởng HCM	Bắt buộc	2	2	0	HT: PE015IU, Philosophy of Marxism and Leninism PE016IU, Political economics of Marxism and Leninism PE017U, Scientific socialism
	PE021IU	General Law	Pháp luật Đại cương	Bắt buộc	3	3	0	
	MA040IU	Applied Statistics	Thống kê Ứng dụng	Bắt buộc	2	2	0	HT: MA001IU, Calculus 1
	MA041IU	Applied Statistics lab	Thực hành Thống kê Ứng dụng	Bắt buộc	1	0	1	
	BTBC102IU	Introduction to Biochemistry	Nhập môn chuyên ngành Hóa sinh	Bắt buộc	2	2	0	HT: CH011IU, Chemistry for Engineers
	BT311IU	Biology	Sinh học đại cương	Bắt buộc	3	3	0	

Học kỳ	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	
	BT312IU	Practice in Biology	Thực hành sinh học đại cương	Bắt buộc	1	0	1	SH: BT311IU, Biology
	EN011IU	Writing AE 2	Viết bài nghiên cứu	Bắt buộc	2	2	0	
	EN012IU	Speaking AE 2	Thuyết trình	Bắt buộc	2	2	0	
	Tổng cộng				20	18	2	
III (tổng tín chỉ: 20)	BTBC103IU	Inorganic Chemistry	Hóa Vô Cơ	Bắt buộc	3	3	0	HT: CH011IU, Chemistry for Engineers
	BTBC104IU	Inorganic Chemistry Lab	Thực hành Hóa vô cơ	Bắt buộc	1	0	1	SH: BTBC103IU, Inorganic Chemistry Lab
	BTBC209IU	Biochemistry 1	Hóa sinh 1	Bắt buộc	3	3	0	HT: BT311IU: Biology
	BTBC213IU	Fundamentals of Analytical Chemistry	Nguyên lý hóa phân tích	Bắt buộc	3	3	0	HT: CH011IU, Chemistry for Engineers
	BTBC214IU	Fundamental in analytical chemistry Lab	Thực hành Nguyên lý hóa phân tích	Bắt buộc	1	0	1	SH: BTBC213IU, Fundamentals of Analytical Chemistry
	BTBC201IU	Organic Chemistry 1	Hóa hữu cơ 1	Bắt buộc	3	3	0	HT: CH011IU, Chemistry for Engineers
	BT405IU	Physical Chemistry	Hóa lý	Bắt buộc	3	3	0	HT:

Học kỳ	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	
								CH011IU, Chemistry for Engineers
	PE014IU	Environmental Science	Khoa học môi trường	Bắt buộc	3	3	0	
Tổng cộng					20	18	2	
IV (tổng tín chỉ: 18)	BTBC206IU	Organic Chemistry 2	Hóa hữu cơ 2	Bắt buộc	3	3	0	HT: CH011IU, Chemistry for Engineers, BTBC201IU, Organic Chemistry 1
	BTBC207IU	Organic Chemistry Lab	Thực hành Hóa hữu cơ	Bắt buộc	2	0	2	
	BTBC211IU	Biochemistry 2	Hóa sinh 2	Bắt buộc	3	3	0	HT: BT311IU, Biology, BTBC209IU, Biochemistry 1
	BTBC212IU	Biochemistry 2 Lab	Thực hành Hóa sinh 2	Bắt buộc	2	0	2	SH: BTBC211IU, Biochemistry 2
	BTBC313IU	Methods in Biochemistry	Kỹ thuật Hóa sinh	Bắt buộc	3	3	0	HT: BT311IU, Biology; BTBC209IU, Biochemistry 1
	BTBC314IU	Methods in Biochemistry Lab	Thực hành Kỹ thuật Hóa sinh	Bắt buộc	2	0	2	SH: BTBC313IU, Methods in Biochemistry

Học kỳ	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	
		Business, Management, Social Elective courses	Nhóm tự chọn kinh tế, quản lý, xã hội	Nhóm tự chọn 1	3	3	0	
Tổng cộng					18	12	6	
V (tổng tín chỉ: 16)	BTBC425IU	Microbial Biochemistry	Hóa sinh Vi sinh vật	Bắt buộc	2	2	0	HT: BTBC209IU, Biochemistry 1; BTBC211IU, Biochemistry 2
	BTBC426IU	Microbial Biochemistry Lab	Thực hành Hóa sinh Vi sinh vật	Bắt buộc	1	0	1	SH: BTBC425IU, Microbial Biochemistry
	BTBC302IU	Biophysical Chemistry	Hóa lý sinh học	Bắt buộc	3	3	0	HT: CH011IU, Chemistry for Engineers; BT311IU, Biology
	BTBC215IU	Instrumental Analysis	Phân tích dụng cụ	Bắt buộc	3	3	0	HT: BTBC213IU, Fundamentals of Analytical Chemistry
	BTBC216IU	Instrumental analysis Lab	Thực hành Phân tích dụng cụ	Bắt buộc	1	0	1	SH: BTBC215IU, Instrumental Analysis

Học kỳ	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	
	BTBC217IU	Experimental design and technical communication	Thiết kế thí nghiệm và kỹ năng báo cáo trong ngành kỹ thuật	Bắt buộc	3	3	0	
		BT Elective courses	Nhóm tự chọn công nghệ sinh học	Nhóm tự chọn 2	3	3	0	
	Tổng cộng				16	14	2	
VI (tổng tín chỉ: 16)	BTBC218IU	Molecular Cell Biology	Sinh học phân tử của tế bào	Bắt buộc	3	3	0	HT: BT311IU, Biology; BTBC209IU, Biochemistry 1; BTBC313IU, Methods in Biochemistry
	BTBC219IU	Molecular Cell Biology Lab	Thực hành Sinh học phân tử của tế bào	Bắt buộc	1	0	1	SH: BTBC218IU, Molecular Cell Biology
	BTBC315IU	Enzymology	Enzyme học	Bắt buộc	3	3	0	HT: BTBC302IU, Biophysical Chemistry
	BTBC316IU	Enzymology Lab	Thực hành Enzyme học	Bắt buộc	1	0	1	SH: BTBC315IU, Enzymology
		Professional Elective courses	Nhóm tự chọn kiến thức chuyên ngành	Nhóm tự chọn 3	8	6	2	

Học kỳ	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	
Tổng cộng					16	12	4	
Summer (tổng tín chỉ: 2)	BTBC309IU	Internship	Thực tập ngành nghề	Bắt buộc	2	0	2	Tích lũy tối thiểu 80 tín chỉ
Tổng cộng					2	0	2	
VII (tổng tín chỉ: 14)		Professional Elective courses	Nhóm tự chọn kiến thức chuyên ngành	Nhóm tự chọn 3	4	3	1	
	BTBC456IU	Thesis	Khóa luận tốt nghiệp	Bắt buộc	10	0	10	Tích lũy tối thiểu 104 tín chỉ
Tổng cộng					14	3	11	
	Tổng				126	97	29	

DANH SÁCH CÁC MÔN HỌC TỰ CHỌN TRONG NHÓM TỰ CHỌN 1

Môn học tự chọn nhóm 1 - Tự chọn kinh tế, quản lý, xã hội, (tối thiểu 03 tín chỉ)								
STT	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
1	IS026IU	Project Management	Quản lý dự án	Tự chọn	3	3	0	
2	BA164IU	Production and Operation management	Quản lý sản xuất	Tự chọn	3	3	0	
3	IS078IU	Logistics Engineering and Supply Chain Design	Kỹ thuật Thiết kế Chuỗi cung ứng và Logistics	Tự chọn	3	3	0	
4	BA006IU	Business Communications	Giao tiếp kinh doanh	Tự chọn	3	3	0	
5	BA003IU	Principles of Marketing	Nguyên lý Marketing	Tự chọn	3	3	0	
6	IT120IU	Entrepreneurship	Khởi nghiệp	Tự chọn	3	3	0	
7	PE008IU	Critical Thinking	Tư duy phân tích	Tự chọn	3	3	0	

DANH SÁCH CÁC MÔN HỌC TỰ CHỌN TRONG NHÓM TỰ CHỌN 2

Môn học tự chọn nhóm 2 - Tự chọn Công nghệ sinh học (tối thiểu 03 tín chỉ) <i>(Sinh viên cần học đúng các môn lý thuyết + thực hành song hành trong cùng nhóm tự chọn)</i>								
STT	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
1	BT210IU	Human Physiology	Sinh lý người	Tự chọn	3	3	0	
2	BT351IU	Molecular Diagnostics	Chẩn đoán phân tử	Tự chọn	3	3	0	
3	BT337IU	Bioinformatics	Tin sinh học	Tự chọn	3	3	0	
4	BT365IU + BT342IU	Bioprocess Engineering	Kỹ thuật quy trình sinh học	Tự chọn	2	2	0	
		Practice in Bioprocess Engineering	Thực hành Kỹ thuật quy trình sinh học	Tự chọn	1	0	1	

DANH SÁCH CÁC MÔN HỌC TỰ CHỌN TRONG NHÓM TỰ CHỌN 3

Môn học tự chọn nhóm 3 - Tự chọn Kiến thức chuyên ngành (tối thiểu 12 tín chỉ) <i>(Sinh viên cần học đúng các môn lý thuyết + thực hành song hành trong cùng nhóm tự chọn)</i>								
STT	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
1	BTBC409IU + BTBC429IU	Cosmetics and Cosmeceuticals 1	Mỹ phẩm và mỹ dược 1	Tự chọn	3	3	0	HT: BTBC206IU, Organic Chemistry 2
		Cosmetics and Cosmeceuticals 1 lab	Thực hành Mỹ phẩm và mỹ dược 1	Tự chọn	1	0	1	SH: BTBC409IU, Cosmetics and Cosmeceuticals 1
2	BTBC410IU + BTBC430IU	Cosmetics and Cosmeceuticals 2	Mỹ phẩm và mỹ dược 2	Tự chọn	3	3	0	HT: BTBC409IU: Cosmetics and Cosmeceuticals 1
		Cosmetics and Cosmeceuticals 2 lab	Thực hành Mỹ phẩm và mỹ dược 2	Tự chọn	1	0	1	HT: BTBC409IU, Cosmetics and Cosmeceuticals 1 SH: BTBC410IU, Cosmetics and Cosmeceuticals 2

Môn học tự chọn nhóm 3 - Tự chọn Kiến thức chuyên ngành (tối thiểu 12 tín chỉ) <i>(Sinh viên cần học đúng các môn lý thuyết + thực hành song hành trong cùng nhóm tự chọn)</i>								
STT	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
3	BTBC431IU	Drug Discovery and Development	Nghiên cứu và Phát triển thuốc	Tự chọn	3	3	0	HT: BTBC206IU, Organic Chemistry 2
	+ BTBC432IU	Drug Discovery and Development Lab	Thực hành Nghiên cứu và Phát triển thuốc	Tự chọn	1	0	1	HT: BTBC206IU, Organic Chemistry 2 SH: BTBC431IU, Drug Discovery and Development
4	BTBC433IU	Pharmaceutical Fermentation	Lên men Dược phẩm	Tự chọn	3	3	0	HT: BTBC315IU, Enzymology
	+ BTBC434IU	Pharmaceutical Fermentation Lab	Thực hành Lên men Dược phẩm	Tự chọn	1	0	1	SH: BTBC433IU, Pharmaceutical Fermentation
5	BTBC427IU	Biochemistry of Cancer	Hóa sinh Ung thư	Tự chọn	3	3	0	HT: BTBC209IU, Biochemistry 1; BTBC211IU, Biochemistry 2
	+ BTBC428IU	Biochemistry of Cancer lab	Thực hành Hóa sinh Ung thư	Tự chọn	1	0	1	SH: BTBC427IU, Biochemistry of Cancer

Môn học tự chọn nhóm 3 - Tự chọn Kiến thức chuyên ngành (tối thiểu 12 tín chỉ) <i>(Sinh viên cần học đúng các môn lý thuyết + thực hành song hành trong cùng nhóm tự chọn)</i>								
STT	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)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
6	BTBC413IU	Clinical Biochemistry	Hóa sinh lâm sàng	Tự chọn	3	3	0	
	+ BTBC414IU	Clinical Biochemistry Lab	Thực hành Hóa sinh lâm sàng	Tự chọn	1	0	1	SH: BTBC413IU, Clinical Biochemistry
7	BTBC317IU	Nutritional Biochemistry	Hóa sinh dinh dưỡng	Tự chọn	3	3	0	HT: BTBC209IU, Biochemistry 1; BTBC211IU, Biochemistry 2
	+ BTBC318U	Nutritional Biochemistry Lab	Thực hành Hóa sinh dinh dưỡng	Tự chọn	1	0	1	SH: BTBC317IU, Nutritional Biochemistry
8	BTBC421IU	Nutraceuticals	Dưỡng dược	Tự chọn	3	3	0	HT: BTBC206IU, Organic Chemistry 2; BTBC209IU, Biochemistry 1
	+ BTBC422IU	Nutraceuticals Lab	Thực hành dưỡng dược	Tự chọn	1	0	1	SH: BTBC421IU, Nutraceuticals

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 Hóa học (Hóa sinh) được trình bày như Bảng 8.

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

Học kỳ	Mã môn học	Tên môn học ⁽⁴⁾	Chuẩn đầu ra của CTĐT ⁽⁵⁾							
			PLO1 Level L-H	PLO2 Level L-H	PLO3 Level L-H	PLO4 Level L-H	PLO5 Level L-H	PLO6 Level L-H	PLO7 Level L-H	PLO8 Level L-H
I.	PE015IU	Philosophy of Marxism and Leninism	M	M					M	L
	PE016IU	Political economics of Marxism and Leninism	M				L		M	L
	PE017IU	Scientific socialism	M				L		M	L
	CH011IU	Chemistry for Engineers	L	H	M					
	MA001IU	Calculus 1	L	M		M				
	PH013IU	Physics 1	L	M						L
	EN007IU	Writing AE 1	M	M			M			M
	EN008IU	Listening AE 1	M	M			M			M
II.	PE018IU	History of Vietnamese Communist Party	M							M
	PE019IU	Ho Chi Minh's Thoughts	M	M						H
	PE021IU	General Law		H			M			
	MA040IU	Applied Statistics	M	H	M		L			
	MA041IU	Applied Statistics lab	M	H	M		L			
	BTBC102IU	Introduction to Biochemistry	M		M		M			
	BT311IU	Biology	L	L	M		M			
	BT312IU	Practice in Biology	M	M		H	H		M	
	EN011IU	Writing AE 2	M	L			M			
	EN012IU	Speaking AE 2	M	L			M			
III.	BTBC103IU	Inorganic Chemistry	L		M					M
	BTBC104IU	Inorganic Chemistry Lab		M	M		M			

Học kỳ	Mã môn học	Tên môn học ⁽⁴⁾	Chuẩn đầu ra của CTĐT ⁽⁵⁾							
			PLO1 Level L-H	PLO2 Level L-H	PLO3 Level L-H	PLO4 Level L-H	PLO5 Level L-H	PLO6 Level L-H	PLO7 Level L-H	PLO8 Level L-H
	BTBC209IU	Biochemistry 1		H	M					
	BTBC213IU	Fundamentals of Analytical Chemistry	L	M		M		H		
	BTBC214IU	Fundamental in analytical chemistry Lab		M	M		M			
	BTBC201IU	Organic Chemistry 1		H	M					
	BT405IU	Physical Chemistry	M	M	H		M		M	
	PE014IU	Environmental Science	M				L			
IV.	BTBC206IU	Organic Chemistry 2		H	M					
	BTBC207IU	Organic Chemistry Lab		M	M	M	M			
	BTBC211IU	Biochemistry 2		H	L					H
	BTBC212IU	Biochemistry 2 Lab		M	L	H				
	BTBC313IU	Methods in Biochemistry		H	L					H
	BTBC314IU	Methods in Biochemistry Lab		M		M		M		
V.	BTBC425IU	Microbial Biochemistry		H	L					M
	BTBC426IU	Microbial Biochemistry Lab		H	L	H				
	BTBC302IU	Biophysical Chemistry	H		M			H	M	
	BTBC215IU	Instrumental Analysis		M	M		M			
	BTBC216IU	Instrumental analysis Lab		M	M		M			
	BTBC217IU	Experimental design and technical communication	M	M					M	M
VI.	BTBC218IU	Molecular Cell Biology		H	L					H
	BTBC219IU	Molecular Cell Biology Lab		H	L	H				
	BTBC315IU	Enzymology	M		M			H	M	
	BTBC316IU	Enzymology Lab		M		M		M		
Sum mer	BTBC309IU	Internship	M	H	M	H	M	H	H	H

Học kỳ	Mã môn học	Tên môn học ⁽⁴⁾	Chuẩn đầu ra của CTĐT ⁽⁵⁾							
			PLO1 Level L-H	PLO2 Level L-H	PLO3 Level L-H	PLO4 Level L-H	PLO5 Level L-H	PLO6 Level L-H	PLO7 Level L-H	PLO8 Level L-H
VII.	BTBC456IU	Thesis	M	M	H	M	H	H	H	H
Tự chọn nhóm 3 - Tự chọn kiến thức chuyên ngành										
	BTBC409IU	Cosmetics and Cosmeceuticals 1		H	L					M
	BTBC429IU	Cosmetics and Cosmeceuticals 1 Lab		M		M				L
	BTBC410IU	Cosmetics and Cosmeceuticals 2		H	L					M
	BTBC430IU	Cosmetics and Cosmeceuticals 2 Lab		M		M				L
	BTBC431IU	Drug Discovery and Development			H			H	M	M
	BTBC432IU	Drug Discovery and Development Lab	L	H	H	H	M	H		H
	BTBC433IU	Pharmaceutical Fermentation			M	H				M
	BTBC434IU	Pharmaceutical Fermentation lab		M		M		M		
	BTBC427IU	Biochemistry of Cancer		H	M					H
	BTBC428IU	Biochemistry of Cancer Lab			L	H		H		
	BTBC413IU	Clinical Biochemistry		H	M					
	BTBC414IU	Clinical biochemistry lab			M	H	M			
	BTBC317IU	Nutritional Biochemistry		H	M					M
	BTBC318IU	Nutritional Biochemistry Lab		M		M		M		
	BTBC421IU	Nutraceuticals			M		M			H
	BTBC422IU	Nutraceuticals Lab		M		M		M		
Tự chọn nhóm 2 - Tự chọn Công nghệ sinh học										
	BT210IU	Human Physiology	L	H	M	H		H		

Học kỳ	Mã môn học	Tên môn học ⁽⁴⁾	Chuẩn đầu ra của CTĐT ⁽⁵⁾							
			PLO1 Level L-H	PLO2 Level L-H	PLO3 Level L-H	PLO4 Level L-H	PLO5 Level L-H	PLO6 Level L-H	PLO7 Level L-H	PLO8 Level L-H
	BT351IU	Molecular Diagnostics	L	M			M			
	BT337IU	Bioinformatics				M	M	M	M	M
	BT365IU	Bioprocess Engineering	H			H		M		
	BT342IU	Practice in Bioprocess Engineering					M	H	H	
Tự chọn nhóm 1 - Tự chọn kinh tế, quản lý, xã hội										
	IS026IU	Project Management	M	M			M			M
	BA164IU	Production and Operation management	H	M						H
	IS078IU	Logistics Engineering and Supply Chain Design	H	M						H
	PE008IU	Critical Thinking	L	H						M
	BA006IU	Business Communications	L	M						M
	BA003IU	Principle of Marketing	M	M			L			
	IT120IU	Entrepreneurship	L	M						

Trong đó:

L: Low (có đóng góp thấp)

M: Medium (có đóng góp trung bình)

H: High (có đóng góp cao)

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

- 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.

12.2. Political economics of Marxism and Leninism (Kinh tế chính trị Mác-Lênin)

- 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.

12.3. 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)
- Môn học trước: PE015IU - Philosophy of Marxism and Leninism, PE016IU - Political economics of Marxism and Leninism
- Mô tả nội dung môn học: The course equips students with basic knowledge of scientific socialism.

12.4. 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.

12.5. 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.

12.6. 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: PE015IU - Philosophy of Marxism and Leninism, PE016IU - Political economics of Marxism and Leninism, PE017IU - Scientific socialism

- 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.

12.7. Critical Thinking (Tư duy phân tích)

- Mã môn học: **PE008IU**

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

- Môn học trước/Môn học song hành: N/A

- 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.

12.8. 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.

12.9. 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.

12.10. 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.

12.11. 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).

12.12. 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.

12.13. 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.

12.14. 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.

12.15. Applied Statistics (Thống kê ứng dụng)

- Mã môn học: **MA040IU**
- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành) (3.08 ECTS)
- 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.

12.16. 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.

12.17. Biology (Sinh học đại cương)

- Mã môn học: **BT311IU**

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

- Môn học song hành: BT311IU - Biology

- 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. Environmental Science (Khoa học môi trường)

- Mã môn học: **PE014IU**

- 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 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.

12.20. Project Management (Quản lý dự án)

- Mã môn học: **IS026IU**

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

- Môn học trước/Môn học song hành: N/A

- 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.

12.21. Production and Operation management (Quản lý sản xuất)

- Mã môn học: **BA164IU**

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

- Môn học trước/Môn học song hành: N/A

- Mô tả nội dung môn học: This subject will provide students with sound theoretical and pragmatic approaches that will guide them in the formulation and implementation of corporate, business, and functional strategies.

12.22. Logistics Engineering and Supply Chain Design (Kỹ thuật Thiết kế Chuỗi cung ứng và Logistics)

- Mã môn học: **IS078IU**

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

- Môn học trước/Môn học song hành: N/A

- Mô tả nội dung môn học: This course describes components and structure of a supply chain system. It covers all supply chain network design problems from location-allocation of the facilities, evaluation of design options, calculating the capacity of the facilities, analyzing centralized – decentralized configuration. The subject also introduces some coordination framework that link efficiently supply chain components together. Other topics such as aggregation configuration, smart pricing, and transportation system design are also considered.

12.23. Business Communications (Giao tiếp kinh doanh)

- Mã môn học: **BA006IU**

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

- Môn học trước/Môn học song hành: N/A

- 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.

12.24. Principles of Marketing (Nguyên lý Marketing)

- Mã môn học: **BA003IU**

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

- Môn học trước/Môn học song hành: N/A

- 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.

12.25. Entrepreneurship (Khởi nghiệp)

- Mã môn học: **IT120IU**

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

- Môn học trước/Môn học song hành: N/A

- Mô tả nội dung môn học: An introduction to the creative and innovative managerial practices of successful entrepreneurship.

12.26. Inorganic Chemistry (Hóa Vô cơ)

- Mã môn học: **BTBC103IU**

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

- Môn học trước: CH011IU - Chemistry for Engineers

- Mô tả nội dung môn học: This course is specifically designed for students of Biochemistry. This course focuses on the fundamentals of inorganic chemistry and its relevance to biochemistry. The course’s content includes studies of trends in reactivity, structures and properties of the elements and their compounds, and biological inorganic chemistry.

12.27. Inorganic Chemistry lab (Thực hành Hóa vô cơ)

- Mã môn học: **BTBC104IU**
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)
- Môn học song hành: BTBC103IU - Inorganic Chemistry

- Mô tả nội dung môn học: The inorganic chemistry laboratory course introduces the student to fundamental techniques and procedures in preparing solutions, limit test, synthesis and characterization of inorganic compounds and simple reactions used in the inorganic chemistry laboratory. In addition, the student will be trained in the proper way to write a scientific laboratory report.

12.28. Organic Chemistry 1 (Hóa hữu cơ 1)

- Mã môn học: **BTBC201IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: CH011IU - Chemistry for Engineers

- Mô tả nội dung môn học: This course is specifically designed for students of Biochemistry. It is the first part of a 2-semester course in Organic Chemistry. This particular module provides fundamental information on aspects of stereochemistry and the basics of addition, substitution and elimination reactions, functional groups, saturated and aromatic heterocyclic compounds.

12.29. Organic Chemistry 2 (Hóa hữu cơ 2)

- Mã môn học: **BTBC206IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: CH011IU - Chemistry for Engineers, BTBC201IU - Organic Chemistry 1

- Mô tả nội dung môn học: This course is specifically designed for students of Biochemistry. It is the second part of a 2- semester course in Organic Chemistry. This particular module provides fundamental information on functional groups, mechanisms of their common reactions with a biological emphasis.

12.30. Organic Chemistry lab (Thực hành Hóa hữu cơ)

- Mã môn học: **BTBC207IU**
- Số tín chỉ: 2 tín chỉ (0 lý thuyết + 2 thực hành) (4 ECTS)
- Môn học trước/môn học song hành/ môn học tiên quyết: N/A

- Mô tả nội dung môn học: The organic chemistry laboratory course introduces the student to fundamental techniques and procedures in extraction, purification, synthesis and characterization of organic compounds and simple reactions used in the organic chemistry

laboratory. In addition, the student will be trained in the proper way to write a scientific laboratory report.

12.31. Fundamentals of Analytical Chemistry (Nguyên lý hóa phân tích)

- Mã môn học: **BTBC213IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: CH011IU - Chemistry for Engineers
- Mô tả nội dung môn học: This course is designed to provide the fundamentals of analytical chemistry along with practical principles for working in laboratories, as a requirement for students of biochemistry.

12.32. Fundamentals of Analytical Chemistry lab (Thực hành Nguyên lý hóa phân tích)

- Mã môn học: **BTBC214IU**
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)
- Môn học song hành: BTBC213IU - Fundamentals of Analytical Chemistry
- Mô tả nội dung môn học: This course is designed to provide the practical skills in making chemical analysis and applied theory learned in the course “Fundamentals of Analytical Chemistry”.

12.33. Instrumental Analysis (Phân tích dụng cụ)

- Mã môn học: **BTBC215IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: BTBC213IU - Fundamentals of Analytical Chemistry
- Mô tả nội dung môn học: This course is designed to provide the fundamentals of instrumental analysis along with practical principles for working in laboratories, as a requirement for students of biochemistry.

12.34. Instrumental Analysis lab (Thực hành Phân tích dụng cụ)

- Mã môn học: **BTBC216IU**
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)
- Môn học song hành: BTBC215IU - Instrumental Analysis
- Mô tả nội dung môn học: This course is designed to provide the practical skills in making chemical analysis and applied theory learned in the course “Instrumental Analysis”.

12.35. Introduction to Biochemistry (Nhập môn chuyên ngành Hóa sinh)

- Mã môn học: **BTBC102IU**
- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành) (3.08 ECTS)
- Môn học trước: CH011IU - Chemistry for Engineers
- Mô tả nội dung môn học: Biochemistry is the study of the molecular basis of life. This one-semester course is designed for Biochemistry students who are pursuing a Bachelor's degree in Biochemistry.

12.36. Experimental design and technical communication (Thiết kế thí nghiệm và kỹ năng báo cáo trong ngành kỹ thuật)

- Mã môn học: **BTBC217IU**
- 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 subject will provide knowledge on following:
 - Introduction to scientific research, hypothesis testing and experimental design in chemical science.
 - Structure of a research paper and how to complete a research writing.
 - Course projects that are used to evaluate how theory is applied in practice as well as to develop interpersonal skills.

12.37. Biochemistry 1 (Hóa sinh 1)

- Mã môn học: **BTBC209IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: BT311IU - Biology
- Mô tả nội dung môn học: This course is part of two-part general biochemistry designed for students who are pursuing the bachelor's degree in biochemistry. Course covers some central concepts in general biochemistry. Topics include the sources, classification, properties, functions of 4 macromolecules (carbohydrates, lipids, proteins and nucleic acids) and vitamins.

12.38. Biochemistry 2 (Hóa sinh 2)

- Mã môn học: **BTBC211IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: BT311IU - Biology

- Mô tả nội dung môn học: This course is designed to provide the basic understanding of metabolic pathways with emphasis on the reactions, bioenergetics, regulation and disease relevance.

12.39. Biochemistry 2 lab (Thực hành Hóa sinh 2)

- Mã môn học: **BTBC212IU**
- Số tín chỉ: 2 tín chỉ (0 lý thuyết + 2 thực hành) (4 ECTS)
- Môn học song hành: BTBC211IU - Biochemistry 2
- Mô tả nội dung môn học: This course is designed to build proficiency in laboratory techniques and give hands-on experience of concepts related to Biochemistry course.

12.40. Microbial Biochemistry (Hóa sinh vi sinh vật)

- Mã môn học: **BTBC425IU**
- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành) (3.08 ECTS)
- Môn học trước: BTBC209IU - Biochemistry 1, BTBC211IU - Biochemistry 2
- Mô tả nội dung môn học: The course examines the structure and function of microbial cell components, approaches to microbial systematics as well as microbial growth, metabolism, signal transduction, homeostasis and genetics.

12.41. Microbial Biochemistry lab (Thực hành Hóa sinh vi sinh vật)

- Mã môn học: **BTBC426IU**
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)
- Môn học song hành: BTBC425IU - Microbial Biochemistry
- Mô tả nội dung môn học: This course provides hands-on experience with microbial cultures, cell counting, and the examination of microbial morphology, growth, and characteristics.

12.42. Molecular Cell Biology (Sinh học phân tử của tế bào)

- Mã môn học: **BTBC218IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: BT311IU - Biology, BTBC209IU - Biochemistry 1, BTBC313IU - Methods in Biochemistry
- Mô tả nội dung môn học: This course is designed with emphasis on the structure of cells and its constituents as well as basic molecular cell mechanisms and their regulation. Some molecular genetic techniques are also introduced in the course.

12.43. Molecular Cell Biology Lab (Thực hành Sinh học phân tử của tế bào)

- Mã môn học: **BTBC219IU**
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)
- Môn học song hành: BTBC218IU - Molecular Cell Biology
- Mô tả nội dung môn học: This course is designed to give hands-on experience with techniques related to Molecular Cell Biology.

12.44. Enzymology, Enzyme học

- Mã môn học: **BTBC315IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: BTBC302IU - Biophysical Chemistry
- Mô tả nội dung môn học: Provides students with knowledge on the structure and function of enzymes, with special reference to molecular mechanisms underlying the catalytic activity, and mechanisms of inhibition and modulation.

12.45. Enzymology Lab (Thực hành Enzyme học)

- Mã môn học: **BTBC316IU**
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)
- Môn học song hành: BTBC315IU - Enzymology
- Mô tả nội dung môn học:
 - Provide students with knowledge on the structure and function of enzymes, with special reference to molecular mechanisms underlying the catalytic activity, and mechanisms of inhibition and modulation.
 - Provide introduction to some of the basic techniques for the extraction, purification and characterization of the enzymes.
 - Provide discussions on some typical enzymes.

12.46. Biophysical Chemistry (Hóa lý sinh học)

- Mã môn học: **BTBC302IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: BT311IU - Biology, CH011IU - Chemistry for Engineers
- Mô tả nội dung môn học: This course is aimed to provide students with physical insights into the biochemical phenomena including protein folding and binding phenomena.

12.47. Methods in Biochemistry (Kỹ thuật Hóa Sinh)

- Mã môn học: **BTBC313IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: BT311IU - Biology
- Mô tả nội dung môn học: This course is designed to provide a basic understanding of the principles, overall workflow and applications of common techniques in biochemistry.

12.48. Methods in Biochemistry lab (Thực hành Kỹ thuật Hóa Sinh)

- Mã môn học: **BTBC314IU**
- Số tín chỉ: 2 tín chỉ (0 lý thuyết + 2 thực hành) (4 ECTS)
- Môn học song hành: BTBC313IU - Methods in Biochemistry
- Mô tả nội dung môn học: This course aims to provide a basic understanding and the accurate execution of different techniques in biochemistry.

12.49. Physical Chemistry (Hóa lý)

- Mã môn học: **BT405IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: CH011IU - Chemistry for Engineers
- Mô tả nội dung môn học: This subject will provide knowledge on working mechanism of physical chemical phenomena.

12.50. Cosmetics and Cosmeceuticals 1 (Mỹ phẩm và mỹ dược 1)

- Mã môn học: **BTBC409IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: BTBC206IU – Organic Chemistry 2
- Mô tả nội dung môn học: Cosmetics are designed for use on the hair and body, especially the face, to improve its appearance. Cosmeceuticals represent a marriage between cosmetics and pharmaceuticals. This course is designed to impart knowledge and skills necessary for the fundamental need for cosmetic and cosmeceutical products.

12.51. Cosmetics and Cosmeceuticals 1 lab (Thực hành Mỹ phẩm và mỹ dược 1)

- Mã môn học: **BTBC429IU**
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)
- Môn học song hành: BTBC409IU – Cosmetics and Cosmeceuticals 1

- Mô tả nội dung môn học: Cosmetics are designed for use on the hair and body, especially the face, to improve its appearance. Cosmeceuticals represent a marriage between cosmetics and pharmaceuticals. This course is designed to impart knowledge and skills necessary for the fundamental need for cosmetic and cosmeceutical products.

12.52. Cosmetics and Cosmeceuticals 2 (Mỹ phẩm và mỹ dược 2)

- Mã môn học: **BTBC410IU**

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

- Môn học trước: BTBC409IU – Cosmetics and Cosmeceuticals 1

- Mô tả nội dung môn học: Cosmetics are designed for use on the hair and body, especially the face, to improve its appearance. Cosmeceuticals represent a marriage between cosmetics and pharmaceuticals. This course is designed to impart knowledge and skills necessary for the fundamental need for cosmetic and cosmeceutical products.

12.53. Cosmetics and Cosmeceuticals 2 lab (Thực hành Mỹ phẩm và mỹ dược 2)

- Mã môn học: **BTBC430IU**

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

- Môn học trước: BTBC409IU – Cosmetics and Cosmeceuticals 1

- Môn học song hành: BTBC410IU – Cosmetics and Cosmeceuticals 2

- Mô tả nội dung môn học: Cosmetics are designed for use on the hair and body, especially the face, to improve its appearance. Cosmeceuticals represent a marriage between cosmetics and pharmaceuticals. This course is designed to impart knowledge and skills necessary for the fundamental need for cosmetic and cosmeceutical products.

12.54. Drug Discovery and Development (Nghiên cứu và Phát triển thuốc)

- Mã môn học: **BTBC431IU**

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

- Môn học trước: BTBC206IU - Organic Chemistry 2

- Mô tả nội dung môn học: This course will emphasize on the original and developmental process of herbal and synthetic drugs. Application of organic synthesis and modern methods towards the development of pharmaceutical drugs will be covered, followed by discussions of some relevant drug target. The course will provide the groundwork for learning medicinal chemistry and pharmaceutical technology.

12.55. Drug Discovery and Development lab (Thực hành Nghiên cứu và Phát triển thuốc)

- Mã môn học: **BTBC432IU**

- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)
- Môn học trước: BTBC206IU - Organic Chemistry 2
- Môn học song hành: BTBC431IU – Drug Discovery and Development
- Mô tả nội dung môn học: The drug development laboratory course will emphasize on the application of organic synthesis towards the development of pharmaceutical targets. The important organic reactions in drug synthesis are covered, together with several drug syntheses. The course will provide the groundwork for learning medicinal chemistry and pharmaceutical technology. In addition, the student will be trained in the proper way to write a scientific laboratory report.

12.56. Pharmaceutical Fermentation (Lên men dược phẩm)

- Mã môn học: **BTBC433IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: BTBC315IU - Enzymology
- Mô tả nội dung môn học: The course is designed to equip biochemistry students with knowledge of fermentation technology in the research, development and production of biological chemicals and pharmaceuticals. The course will cover the principles of fermentation technology (e.g. the processes of fermentation, fermentation types and fermentation design), microbial growth kinetics and selection of potential microbes used in pharmaceutical substances production, and the major methods for industrial fermentation product recovery and purification. Theory and practical aspects (from development, design, scale-up and operation) of fermentation for producing pharmaceutical substances is emphasized.

12.57. Pharmaceutical Fermentation lab (Thực hành Lên men dược phẩm)

- Mã môn học: **BTBC434IU**
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)
- Môn học song hành: BTBC433IU - Pharmaceutical Fermentation
- Mô tả nội dung môn học: This Pharmaceutical Fermentation course is designed for the applied chemistry major interested in learning about biological processes and fermented products. The course will equip students with the principles of fermentation technology and major methods for industrial fermentation product recovery and purification.

12.58. Biochemistry of cancer (Hóa sinh ung thư)

- Mã môn học: **BTBC427IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: BTBC209IU – Biochemistry 1, BTBC211IU – Biochemistry 2

- Mô tả nội dung môn học: The course covers the characteristics and biochemical mechanisms of cancer, along with approaches to diagnosis, prevention and treatment.

12.59. Biochemistry of cancer lab (Thực hành Hóa sinh ung thư)

- Mã môn học: **BTBC428IU**
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)
- Môn học song hành: BTBC427IU – Biochemistry of cancer
- Mô tả nội dung môn học: This course provides hands-on experience in illustrating, exploring and analyzing cancer data using artificial intelligence tools.

12.60. Clinical Biochemistry (Hóa sinh lâm sàng)

- Mã môn học: **BTBC413IU**
- 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 course aims to provide a basic understanding of the techniques in diagnostics of various diseases. You will be able to analyze the complex structure of biomolecules in the human body such as glucose, bilirubin, creatinine, ALT, AST, etc.

12.61. Clinical Biochemistry lab (Thực hành Hóa sinh lâm sàng)

- Mã môn học: **BTBC414IU**
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)
- Môn học song hành: BTBC413IU – Clinical Biochemistry
- Mô tả nội dung môn học: This course covers various experimental aspects related with clinical biochemistry such as urinary analysis of bioorganic constituents and estimation of proteins, urea, uric acid, minerals, etc., in urine which is essential for early diagnosis of a disease and also assessment of its therapy efficacy.

12.62. Nutritional Biochemistry (Hóa sinh dinh dưỡng)

- Mã môn học: **BTBC317IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: BTBC209IU – Biochemistry 1, BTBC211IU – Biochemistry 2
- Mô tả nội dung môn học: This course provides a basic understanding of the structure, properties, function, digestion, absorption and metabolism of macronutrients. The course also focuses on energy balance, vitamins, minerals, water, nutritional needs, nutritional assessment, nutrition in health promotion and disease prevention and treatment along with dietary guidelines.

12.63. Nutritional Biochemistry lab (Thực hành Hóa sinh dinh dưỡng)

- Mã môn học: **BTBC318IU**
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)
- Môn học song hành: BTBC317IU – Nutritional Biochemistry
- Mô tả nội dung môn học: This course aims to
 - Provide students with introductory knowledge on different types of Nutrients.
 - Provide instructions on some of the basic techniques and applications for different methods in testing and isolating nutrients.
 - Understand the analysis of data to reach sound scientific conclusions.

12.64. Nutraceuticals (Dưỡng dược)

- Mã môn học: **BTBC421IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước: BTBC206IU – Organic Chemistry 2, BTBC209IU – Biochemistry
- 1
- Mô tả nội dung môn học: This course provides the basic knowledge on nutraceuticals, including the definition, classification, absorption, distribution, metabolism, excretion, physicochemical characteristics, preparation, health benefits, and regulation.

12.65. Nutraceuticals lab (Thực hành Dưỡng dược)

- Mã môn học: **BTBC422IU**
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành) (2 ECTS)
- Môn học song hành: BTBC422IU – Nutraceuticals
- Mô tả nội dung môn học: This course aims to
 - Provide students with knowledge on the Phytochemical testing, identification of antioxidant activities
 - Provide instructions on some of the basic techniques and applications for different methods in UV spectrometry
 - Understand the analysis of data to reach sound scientific conclusions

12.66. Human Physiology (Sinh lý người)

- Mã môn học: **BT210IU**
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành) (4.62 ECTS)
- Môn học trước/Môn học song hành: N/A

- 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.

12.67. Molecular Diagnostics (Chẩn đoán phân tử)

- Mã môn học: **BT351IU**

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

- Môn học trước/Môn học song hành: N/A

- 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.

12.68. Bioinformatics (Tin sinh học)

- Mã môn học: **BT337IU**

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

- Môn học trước/Môn học song hành: N/A

- 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.

12.69. Bioprocess Engineering (Kỹ thuật quy trình sinh học)

- Mã môn học: **BT365IU**

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

- Môn học trước/Môn học song hành: N/A

- 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.

12.70. Practice in Bioprocess Engineering (Thực hành Kỹ thuật quy trình sinh học)

- Mã môn học: **BT342IU**

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

- Môn học trước/Môn học song hành: N/A

- Mô tả nội dung môn học: Students will learn how to identify potential factors which influence the productivity of a certain bioproduct yield (e.g. biomass and/or lipid production of a slime mold), practice experimental design using a statistical tool (e.g. RSM), perform the designed experiments, collect and statistically analyze the data to find out the condition for the optimal productivity.

12.71. Internship (Thực tập ngành nghề)

- Mã môn học: **BTBC309IU**

- Số tín chỉ: 2 tín chỉ (0 lý thuyết + 2 thực hành) (5.82 ECTS)

- Môn học trước: Đạt được tối thiểu 90 tín chỉ

- Mô tả nội dung môn học:

- To those working at manufacturing factories: Observing and understanding the technological process of the main product(s) in the factories. Understanding the structure and operating manufacturing machines and equipment, and product QA and QC activities.

- To those working at research institutes: Learning how to do a research: doing a research. Understanding research methods. Understanding analytical equipment and techniques. Operating research equipment and apparatus. Learning how to write a scientific paper.

- To those working at health care service establishments: Observing and understanding procedures, regulations, structures of organizations providing health care services (clinical biochemistry, nutrition, drug preparation and development). Understanding different methods and standards.

12.72. Thesis (Khóa luận tốt nghiệp)

- Mã môn học: **BTBC456IU**

- Số tín chỉ: 10 tín chỉ (0 lý thuyết + 10 thực hành) (29.09 ECTS)

- Môn học trước: Đạt được tối thiểu 104 tín chỉ

- 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.

TRƯỜNG 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 HÓA HỌC (HÓA SINH)
KHÓA 2025 SO VỚI KHÓA 2024

*(Kèm theo Quyết định số 1102/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	Physics 2	PH014IU	2 (2,0)	Môn học bắt buộc
2	Biostatistics	BT317IU	2 (2,0)	Môn học bắt buộc
3	Practice in Biostatistics	BT318IU	1 (0,1)	Môn học bắt buộc
4	Biopharmaceutics	BTBC304IU	3 (3,0)	Môn học bắt buộc
5	Nutrition Therapy	BTBC417IU	3 (3,0)	Nhóm môn tự chọn chuyên ngành
6	Nutrition Therapy Lab	BTBC418IU	1 (0,1)	Nhóm môn tự chọn chuyên ngành
7	Clinical Nutrition	BTBC419IU	3 (3,0)	Nhóm môn tự chọn chuyên ngành
8	Clinical Nutrition Lab	BTBC420IU	1 (0,1)	Nhóm môn tự chọn chuyên ngành
9	Immunology	BT335IU	3 (3,0)	Nhóm môn tự chọn chuyên ngành
10	Practice in Immunology	BT336IU	1 (0,1)	Nhóm môn tự chọn chuyên ngành
11	The chemistry of surfaces and interfaces	BTBC424IU	3 (3,0)	Nhóm môn tự chọn chuyên ngành
12	Practice in Bioinformatics	BT338IU	1 (0,1)	Môn học bắt buộc
13	Microbiology	BT321IU	3 (3,0)	Môn học bắt buộc
14	Microbiology Lab	BT322IU	1 (0,1)	Môn học bắt buộc
15	Cosmetics and Cosmeceuticals Lab	BTBC411IU	2 (0,2)	Nhóm môn tự chọn chuyên ngành
16	Thesis	BT179IU	12	Môn học bắt buộc

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

- Bổ sung nhóm môn học kiến thức bổ trợ (tự chọn công nghệ sinh học - BT elective courses, tối thiểu 3 tín chỉ) bao gồm các môn sau:

STT	Tên môn học	Mã MH	Số tín chỉ	Ghi chú
1	Human Physiology	BT210IU	3 (3,0)	Chuyển từ Nhóm môn tự chọn chuyên ngành
2	Molecular Diagnostics	BT351IU	3 (3,0)	Chuyển từ Nhóm môn tự chọn chuyên ngành
3	Bioinformatics	BT337IU	3 (3,0)	Chuyển từ môn học bắt buộc
4	Bioprocess Engineering	BT365IU	2 (2,0)	Thêm môn học mới
5	Practice in Bioprocess Engineering	BT342IU	1 (0,1)	Thêm môn học mới

- Bổ sung các môn học sau vào chương trình:

STT	Tên môn học	Mã MH	Số tín chỉ	Khối kiến thức - nhóm tự chọn
1	Business Communications	BA006IU	3 (3,0)	Môn học tự chọn kinh tế, quản lý, xã hội
2	Principle of Marketing	BA003IU	3 (3,0)	Môn học tự chọn kinh tế, quản lý, xã hội
3	Entrepreneurship	IT120IU	3 (3,0)	Môn học tự chọn kinh tế, quản lý, xã hội
4	Cosmetics and Cosmeceuticals Lab 1	BTBC429IU	1 (0,1)	Môn học tự chọn chuyên ngành
5	Cosmetics and Cosmeceuticals Lab 2	BTBC430IU	1 (0,1)	Môn học tự chọn chuyên ngành
6	Biochemistry of Cancer	BTBC427IU	3 (3,0)	Môn học tự chọn chuyên ngành
7	Biochemistry of Cancer Lab	BTBC428IU	1 (0,1)	Môn học tự chọn chuyên ngành
8	Thesis	BTBC456IU	10	Môn học bắt buộc
9	Microbial Biochemistry	BTBC425IU	2 (2,0)	Môn học bắt buộc
10	Microbial Biochemistry Lab	BTBC426IU	1 (0,1)	Môn học bắt buộc
11	Applied Statistics	MA040IU	2 (2,0)	Môn học bắt buộc
12	Applied Statistics lab	MA041IU	1 (0,1)	Môn học bắt buộc

3. Các điều chỉnh khác

Thay đổi vị trí 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 (3,0)	Môn học bắt buộc	Môn học tự chọn kinh tế, quản lý, xã hội
2	Human Physiology	BT210IU	3 (3,0)	Nhóm môn tự chọn chuyên ngành	Nhóm môn tự chọn CNSH
3	Molecular Diagnostics	BT351IU	3 (3,0)	Nhóm môn tự chọn chuyên ngành	Nhóm môn tự chọn CNSH
4	Bioinformatics	BT337IU	3 (3,0)	Môn học bắt buộc	Nhóm môn tự chọn CNSH

Thay thế tên các môn học sau:

Tên môn học cũ	Mã MH	Số tín chỉ	Tên môn học mới	Mã MH	Số tín chỉ
Drug Development	BTBC408IU	3	Drug Discovery and Development	BTBC431IU	3
Drug Development Lab	BTBC423IU	1	Drug Discovery and Development Lab	BTBC432IU	1
Fermentation Technology	BTBC415IU	3	Pharmaceutical Fermentation	BTBC433IU	3
Fermentation Technology Lab	BTBC416IU	1	Pharmaceutical Fermentation Lab	BTBC434IU	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	Mã MH	Tên môn học	Số tín chỉ	Hướng xử lý
1	PH014IU	Physics 2	2 (2,0)	Môn học vẫn mở cho các ngành khác, sinh viên vẫn đăng ký học bình thường
2	BT317IU	Biostatistics	2 (2,0)	Sinh viên đăng ký môn MA040IU - Applied Statistics và xét tương đương
3	BT318IU	Practice in Biostatistics	1 (0,1)	Sinh viên đăng ký môn MA041IU - Applied Statistics Lab và xét tương đương
4	BTBC304IU	Biopharmaceutics	3 (3,0)	Môn học tiếp tục mở cho các sinh viên khóa cũ

STT	Mã MH	Tên môn học	Số tín chỉ	Hướng xử lý
5	BTBC417IU	Nutrition Therapy	3 (3,0)	Môn học thuộc Nhóm môn tự chọn chuyên ngành, SV sẽ đăng ký học các môn tự chọn khác.
6	BTBC418IU	Nutrition Therapy Lab	1 (0,1)	Môn học thuộc Nhóm môn tự chọn chuyên ngành, SV sẽ đăng ký học các môn tự chọn khác.
7	BTBC419IU	Clinical Nutrition	3 (3,0)	Môn học thuộc Nhóm môn tự chọn chuyên ngành, SV sẽ đăng ký học các môn tự chọn khác.
8	BTBC420IU	Clinical Nutrition Lab	1 (0,1)	Môn học thuộc Nhóm môn tự chọn chuyên ngành, SV sẽ đăng ký học các môn tự chọn khác.
9	BT335IU	Immunology	3 (3,0)	Môn học vẫn mở cho các ngành khác, sinh viên vẫn đăng ký học bình thường
10	BT336IU	Practice in Immunology	1 (0,1)	Môn học vẫn mở cho các ngành khác, sinh viên vẫn đăng ký học bình thường
11	BTBC424IU	The chemistry of surfaces and interfaces	3 (3,0)	Môn học thuộc Nhóm môn tự chọn chuyên ngành, SV sẽ đăng ký học các môn tự chọn khác.
12	BT338IU	Practice in Bioinformatics	1 (0,1)	Môn học vẫn mở cho các ngành khác, sinh viên vẫn đăng ký học bình thường
13	BT321IU	Microbiology	3 (3,0)	Môn học vẫn mở cho các ngành khác, sinh viên vẫn đăng ký học bình thường
14	BT322IU	Microbiology Lab	1 (0,1)	Môn học vẫn mở cho các ngành khác, sinh viên vẫn đăng ký học bình thường
15	BTBC411IU	Cosmetics and Cosmeceuticals Lab	2 (0,2)	SV đăng ký đồng thời 2 môn BTBC429IU - Cosmetics and Cosmeceuticals 1 Lab và BTBT430IU - Cosmetics and Cosmeceuticals 2 Lab để xét tương đương.
16	BT179IU	Thesis	12	Môn học tiếp tục mở cho các sinh viên khóa cũ.



Phụ lục 2
MỨC ĐỘ ĐÁP ỨNG KHUNG NĂNG LỰC SỐ CỦA CHƯƠNG TRÌNH ĐÀO TẠO
(Kèm theo Quyết định số 1102/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	Năng lực thành phần (NLTP)		
			NLTP 1.1	NLTP 1.2	NLTP 1.3
1	BTBC431IU	Drug Discovery and Development	4	4	3
2	BT337IU	Bioinformatics	4	4	4
3	BTBC315IU	Enzymology	4	4	4
4	BTBC428IU	Biochemistry of Cancer Lab	4	4	4
5	BTBC314IU	Methods in Biochemistry Laboratory	4	4	4
6	BTBC213IU	Fundamentals of Analytical Chemistry	4	4	3

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	Năng lực thành phần					
			NLTP 2.1	NLTP 2.2	NLTP 2.3	NLTP 2.4	NLTP 2.5	NLTP 2.6
1	BTBC431IU	Drug Discovery and Development		4	4		3	
2	BT337IU	Bioinformatics	4	4	4			
3	BTBC315IU	Enzymology	4	4		4	4	
4	BTBC314IU	Methods in Biochemistry Laboratory	4	4		4	4	
5	BTBC213IU	Fundamentals of Analytical Chemistry	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	Năng lực thành phần			
			NLTP 3.1	NLTP 3.2	NLTP 3.3	NLTP 3.4
1	BTBC431IU	Drug Discovery and Development	5		4	
2	BT337IU	Bioinformatics		4		3
3	BTBC315IU	Enzymology	4			4
4	BTBC428IU	Biochemistry of Cancer Lab	4	4		
5	BTBC314IU	Methods in Biochemistry Laboratory	4	4		

6	BTBC213IU	Fundamentals of Analytical Chemistry	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	Năng lực thành phần			
			NLTP 4.1	NLTP 4.2	NLTP 4.3	NLTP 4.4
1	BTBC314IU	Methods in Biochemistry Laboratory	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	Năng lực thành phần			
			NLTP 5.1	NLTP 5.2	NLTP 5.3	NLTP 5.4
1	BTBC431IU	Drug Discovery and Development		4	5	
2	BT337IU	Bioinformatics	4	4	3	
3	BTBC315IU	Enzymology		4		
4	BTBC428IU	Biochemistry of Cancer Lab	4	4	4	
5	BTBC314IU	Methods in Biochemistry Laboratory	4	4	4	
6	BTBC213IU	Fundamentals of Analytical Chemistry	4		3	

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	Năng lực thành phần		
			NLTP 6.1	NLTP 6.2	NLTP 6.3
1	BTBC431IU	Drug Discovery and Development	5		4
2	BTBC315IU	Enzymology	4		
3	BTBC314IU	Methods in Biochemistry Laboratory	3		
4	BTBC213IU	Fundamentals of Analytical Chemistry	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	BTBC431IU-Drug Discovery and Development	Bài tập nhóm
		BT337IU- Bioinformatics	Bài tập nhóm
		BTBC315IU -Enzymology	Bài luận nhóm
		BTBC428IU-Biochemistry of Cancer Lab	Bài tập trên lớp/bài tập về nhà/thi cuối kỳ
		BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp/ Bài báo cáo thực hành
		BTBC213IU- Fundamentals of Analytical Chemistry	Bài tập cá nhân

	NLTP 1.2	BTBC431IU-Drug Discovery and Development	Bài tập nhóm
		BT337IU- Bioinformatics	Bài tập nhóm
		BTBC315IU -Enzymology	Bài luận nhóm
		BTBC428IU-Biochemistry of Cancer Lab	Bài tập trên lớp/bài tập về nhà/thi cuối kỳ
		BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp/ Bài báo cáo thực hành
		BTBC213IU- Fundamentals of Analytical Chemistry	Bài tập cá nhân
	NLTP 1.3	BTBC431IU-Drug Discovery and Development	Bài tập nhóm
		BT337IU- Bioinformatics	Bài tập nhóm
		BTBC315IU -Enzymology	Bài luận nhóm
		BTBC428IU-Biochemistry of Cancer Lab	Bài tập trên lớp/bài tập về nhà/thi cuối kỳ
		BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp/ Bài báo cáo thực hành
		BTBC213IU- Fundamentals of Analytical Chemistry	Bài tập cá nhân
2. Giao tiếp và hợp tác trong môi trường số	NLTP 2.1	BT337IU- Bioinformatics	Bài tập nhóm
		BTBC315IU -Enzymology	Thuyết trình nhóm
		BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp/ Bài báo cáo thực hành
		BTBC213IU- Fundamentals of Analytical Chemistry	Bài tập nhóm

	NLTP 2.2	BTBC431IU-Drug Discovery and Development	Bài tập nhóm
		BT337IU- Bioinformatics	Bài tập nhóm
		BTBC315IU -Enzymology	Thuyết trình nhóm
		BTBC213IU- Fundamentals of Analytical Chemistry	Bài tập nhóm
	NLTP 2.3	BTBC431IU-Drug Discovery and Development	Bài tập nhóm
		BT337IU- Bioinformatics	Bài tập nhóm
	NLTP 2.4	BTBC315IU -Enzymology	Thuyết trình nhóm
		BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp/ Bài báo cáo thực hành
		BTBC213IU- Fundamentals of Analytical Chemistry	Bài tập nhóm
	NLTP 2.5	BTBC431IU-Drug Discovery and Development	Bài tập nhóm
		BTBC315IU -Enzymology	Thuyết trình nhóm
		BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp/ Bài báo cáo thực hành
	NLTP 2.6		
3. Sáng tạo nội dung số	NLTP 3.1	BTBC431IU-Drug Discovery and Development	Bài tập nhóm
		BTBC315IU -Enzymology	Thuyết trình nhóm
		BTBC428IU-Biochemistry of Cancer Lab	Bài tập trên lớp/ bài tập về nhà/ thi cuối kỳ
		BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp/ Bài báo cáo

			thực hành
		BTBC213IU- Fundamentals of Analytical Chemistry	Bài tập cá nhân
	NLTP 3.2	BT337IU- Bioinformatics	Bài tập nhóm
		BTBC428IU-Biochemistry of Cancer Lab	Bài tập trên lớp/ bài tập về nhà/ thi cuối kỳ
		BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp/ Bài báo cáo thực hành
		BTBC213IU- Fundamentals of Analytical Chemistry	Bài tập cá nhân
	NLTP 3.3	BTBC431IU-Drug Discovery and Development	Bài tập nhóm
	NLTP 3.4	BT337IU- Bioinformatics	Bài tập nhóm
		BTBC315IU -Enzymology	Thuyết trình nhóm
4. An toàn	NLTP 4.1	BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp
	NLTP 4.2		
	NLTP 4.3	BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp
	NLTP 4.4	BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp
5. Giải quyết vấn đề	NLTP 5.1	BT337IU- Bioinformatics	Bài tập nhóm
		BTBC428IU-Biochemistry of Cancer Lab	Bài tập trên lớp/ bài tập về nhà/ thi cuối kỳ
		BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp
		BTBC213IU- Fundamentals of Analytical Chemistry	Bài tập cá nhân

	NLTP 5.2	BTBC431IU-Drug Discovery and Development	Bài tập nhóm
		BT337IU- Bioinformatics	Bài tập nhóm
		BTBC315IU -Enzymology	Dùng phần mềm fitting mô hình toán trong kỳ thi
		BTBC428IU-Biochemistry of Cancer Lab	Bài tập trên lớp/ bài tập về nhà/ thi cuối kỳ
		BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp
	NLTP 5.3	BTBC431IU-Drug Discovery and Development	Bài tập nhóm
		BT337IU- Bioinformatics	Bài tập nhóm
		BTBC428IU-Biochemistry of Cancer Lab	Bài tập trên lớp/ bài tập về nhà/ thi cuối kỳ
		BTBC314IU – Methods in Biochemistry Laboratory	Thao tác thực hành trên lớp/ Bài báo cáo thực hành
		BTBC213IU- Fundamentals of Analytical Chemistry	Bài tập cá nhân
	NLTP 5.4		
6. Ứng dụng trí tuệ nhân tạo	NLTP 6.1	BTBC431IU-Drug Discovery and Development	Bài tập nhóm
		BTBC315IU -Enzymology	Thuyết trình nhóm
		BTBC314IU – Methods in Biochemistry Laboratory	Bài báo cáo thực hành
		BTBC213IU- Fundamentals of Analytical Chemistry	Bài tập cá nhân
	NLTP 6.2		

	NLTP 6.3	BTBC431IU-Drug Discovery and Development	Bài tập nhóm
		BTBC213IU- Fundamentals of Analytical Chemistry	Bài tập cá nhân



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 1102/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 sau đây.



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

Triết học Mác-Lênin

Philosophy of Marxism – Leninism

- Mã số môn học: PE015IU

- 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 chuyển về kỹ năng chung

☐ Môn học đồ án/luận văn tốt nghiệp

- Số tín chỉ:

03

• Lý thuyết

30 (trên lớp)

• Thực hành (thuyết trình)

15 (trên lớp)

90 (về nhà)

- Môn học tiên quyết: Không

- Môn học trước: Không

- Môn học song hành: Không

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 – Lenin*, (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 – Lenin*, 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 - Lenin, 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 (TDNL) được phân bổ cho môn học)

Mục tiêu (1)	Mô tả mục tiêu (2)	CDR của môn học tương ứng CTĐT (3)	TDNL 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 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 (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	- Chuyển 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 <i>a. Hai nguyên lý.</i> - 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 <i>c. Các cặp phạm trù của PBCDV</i> - 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 <i>c. Ba quy luật:</i> - 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. <i>Biện chứng giữa lực lượng sản xuất và quan hệ sản xuất</i>		- Đọc trước mục 3.4 phần I chương 3.	
12/3 tiết	Chương 3 CHỦ NGHĨA DUY VẬT LỊCH SỬ 1. Học thuyết hình thái kinh tế - xã hội 3. <i>Biện chứng giữa cơ sở hạ tầng và kiến trúc thượng tầng của xã hội</i> 4. <i>Sự phát triển các hình thái kinh tế - xã hội là một quá trình lịch sử - tự nhiên</i>	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. <i>Vấn đề giai cấp và đấu tranh giai cấp</i> 2. <i>Dân tộc</i> 3. <i>Mối quan hệ giai cấp - dân tộc - nhân loại</i> III. Nhà nước và cách mạng xã hội 1. <i>Nhà nước</i>	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. <i>Khái niệm tồn tại xã hội và các yếu tố cơ bản của tồn tại xã hội</i> 2. <i>Ý thức xã hội và kết cấu của ý thức xã hội</i>	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. <i>Khái niệm con người và bản chất con người</i> - 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)	CDR 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 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)

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. Mạch 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	Kinh tế chính trị Mác - Lênin
- Tiếng Anh	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 (TDNL) được phân bổ cho môn học)

Mục tiêu (1)	Mô tả mục tiêu (2)	CDR của môn học tương ứng CTĐT (3)	TDNL 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 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

CDR (1)	Mô tả CDR (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 - <i>Khái niệm và thuộc tính của hàng hóa.</i> - <i>Tính hai mặt của lao động sản xuất hàng hóa.</i> - <i>Lượng giá trị và các nhân tố ảnh hưởng đến lượng giá trị của hàng hóa.</i>	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) 2. Tính tất yếu khách quan và nội dung công nghiệp hóa, hiện đại hóa ở Việt Nam. <i>- Tính tất yếu của công nghiệp hóa, hiện đại hóa ở Việt Nam.</i> <i>- Nội dung CNH, HĐH ở Việt Nam</i> II. Hội nhập kinh tế quốc tế của Việt Nam 1. Khái niệm và nội dung hội nhập kinh tế quốc tế. 2. Tác động của hội nhập kinh tế quốc tế đến quá trình phát triển của Việt Nam 3. Phương hướng nâng cao hiệu quả hội nhập kinh tế quốc tế trong phát triển của Việt Nam Ôn tập thi cuối kì	G.1.6 G.2.4 G.3.1 G.3.2	- Trình chiếu, thuyết giảng, tổng kết nội dung thuyết trình nhóm. - Giải đáp thắc mắc cho sinh viên - Công bố điểm quá trình. Hoạt động học: - Nghe giảng - Phát biểu, thảo luận - Nêu thắc mắc về môn học.	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)

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



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/phiên bản). *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 (TDNL) 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 thể 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

CDR (1)	Mô tả CDR (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 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 % (6)
A1. Đánh giá quá trình	A1.1. Chuyển 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 (để 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 để chung. Đề thi bao quát toàn bộ nội dung môn học bằng hình thức tự luận (để 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 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

6. Kế hoạch giảng dạy chi tiết

Tuần/Buổi học (1)	Nội dung (2)	Hoạt động dạy và học (3)	CDRMH (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

QUỐC GIA

HỒ CHÍ MINH

	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

	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: Lân 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 <i>3.1. Dân chủ xã hội chủ nghĩa ở Việt Nam</i> <i>3.2. Nhà nước pháp quyền xã hội chủ nghĩa ở Việt Nam</i> <i>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</i>	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 KỶ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 1. CƠ CẤU XÃ HỘI GIAI CẤP TRONG THỜI KỶ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI <i>1.1. Khái niệm và vị trí của cơ cấu xã hội - giai cấp trong cơ cấu xã hội</i> <i>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</i> 2. LIÊN MINH GIAI CẤP, TẦNG LỚP TRONG THỜI KỶ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI <i>2.1. Tính tất yếu của liên minh giai cấp, tầng lớp trong thời kỳ quá độ lên chủ nghĩa xã hội</i> <i>2.2. Nội dung của liên minh giai cấp, tầng lớp trong thời kỳ quá độ lên chủ nghĩa xã hội</i>	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 KỶ 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 KỶ 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 KỶ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 1. DÂN TỘC TRONG THỜI KỶ 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 KỶ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI (tiếp theo) 2. TÔN GIÁO TRONG THỜI KỶ 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 KỶ 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 KỶ 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: VĂN ĐỀ GIA ĐÌNH TRONG THỜI KỶ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI (tiếp theo) 3. XÂY DỰNG GIA ĐÌNH VIỆT NAM TRONG THỜI KỶ 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, chăm 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

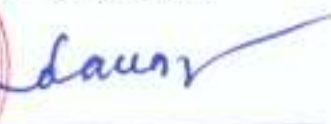
KT. Trưởng Bộ môn
Phó trưởng Bộ môn (phụ trách)



TS. Mạch Thị Khánh Trinh

Tp. Hồ Chí Minh, ngày 14 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
 - 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 (thuyết trình)
- Môn học tiên quyết:
- Môn học trước:
- Môn học song hành:
- Lịch sử Đảng Cộng sản Việt Nam**
History of Vietnamese communist party
PE018IU
- ☐ Kiến thức cơ sở ngành
- ☐ Kiến thức khác
- ☐ Môn học đồ án/luận văn tốt nghiệp
- 02
- 20 tiết
- 10 tiết (trên lớp)
60 tiết (về nhà)
- Không
- 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)	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-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)	CDRMH (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 I	G1.1 G2.1 G2.2 G3.1 G3.2
	Chương I ĐẢNG CỘNG SẢN VIỆT NAM RA ĐỜI VÀ LÃNH ĐẠO	Hoạt động dạy: - Trình chiếu, thuyết giảng mục	

TH
KH
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VG

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. Bối cảnh lịch sử 2. Nguyễn Ái Quốc chuẩn bị các điều kiện để thành lập Đảng	1,2 phần I của chương I - 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 I	G1.2 G2.1 G2.2 G3.1 G3.2
3/2 tiết	Chương I (tiếp theo) I. Đảng cộng sản Việt Nam ra đời và cương lĩnh chính trị đầu tiên của Đảng (tháng 2 – 1930) (tt) 3. Thành lập Đảng Cộng sản Việt Nam và Cương lĩnh chính trị đầu tiên của Đảng 4. Ý nghĩa lịch sử của việc thành lập Đảng Cộng sản Việt Nam	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 3,4 phần I của chương I - 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 I	G1.1 G1.2 G2.1 G2.2 G3.1 G3.2
4/2 tiết	Chương I (tiếp theo) II. Lãnh đạo đấu tranh giành chính quyền (1930-1945) 1. Phong trào cách mạng 1930-1935 và khôi phục phong trào 1932-1935 2. Phong trào dân chủ 1936-1939	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 1, 2 phần II của chương I - 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 I	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. Tinh 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) 1. Xây dựng chủ nghĩa xã hội và bảo vệ Tổ quốc 1975-1981 (tt) 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	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) 1. Đổi mới toàn diện, đưa đất nước ra khỏi khủng hoảng kinh tế - xã hội 1986-1996	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) 1. Đổi mới toàn diện, đưa đất nước ra khỏi khủng hoảng kinh tế - xã hội 1986-1996 (tt) 2. Tiếp tục công cuộc đổi mới, đẩy mạnh công nghiệp hóa, hiện đại hóa và hội nhập quốc tế 1996 đến nay	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 3	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
 -



-
 - 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 trí 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 tinh 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;

	Mình 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 luận	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	Bảo 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 để tái 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 01 năm 2023

KT. TRƯỞNG KHOA
PHÓ TRƯỞNG KHOA



TS. Nguyễn Đình Quốc Cường



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: <table border="1"> <tr> <td>Assignment</td><td>20%</td></tr> <tr> <td>Midterm examination</td><td>30%</td></tr> <tr> <td>Final examination</td><td>50%</td></tr> <tr> <td>Total</td><td>100%</td></tr> </table> 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 <i>six</i> 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	Assignment	20%	Midterm examination	30%	Final examination	50%	Total	100%
Assignment	20%								
Midterm examination	30%								
Final examination	50%								
Total	100%								

	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



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

COURSE SYLLABUS

Course Name: Critical Thinking

Course Code: PE008IU/PE008WE

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	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: <table border="1"> <thead> <tr> <th>Competency level</th><th>Course learning outcome (CLO)</th></tr> </thead> <tbody> <tr> <td>Knowledge</td><td>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</td></tr> <tr> <td>Skill</td><td>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</td></tr> <tr> <td>Attitude</td><td>CLO5: Display discipline, responsibilities, and ethical practices as an individual and a team member in attending class regularly and actively participating in class activities</td></tr> </tbody> </table>	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
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)

The relationship between Course Learning Outcomes (CLO) (1-44) and Program Learning Outcomes (PLO) (1-7) is shown in the following table:

	PLO						
	1	2	3	4	5	6	7
CLO	demonstrate an active command of linguistic theory and linguistic investigation in at least one area of linguistics. (Knowledge)	select appropriate theories and tools of translation and interpreting in their translation-interpreting practice, with regard to the aesthetic values of English literary works. (Knowledge, Skills)	perform English teaching lessons and assessment by evaluating various teaching methodologies and approaches, incorporating Global Englishes perspective, and utilizing relevant techniques and innovative technology, with respect to individual differences. (Knowledge, Skills)	develop communication strategies in an international working environment by recognizing the relationship between language and culture and analysing the cultural factors in intercultural communications in order to work effectively in multidisciplinary teams. (Knowledge, Skills)	display the competence in using languages (English and a second foreign language) flexibly and successfully for social, academic, and professional purposes. (Skills)	demonstrate the ability to conduct scientific research effectively and ethically applying appropriate research methods, technology, and critical thinking. (Skills, Attitudes)	adhere to discipline, responsibilities, and ethical practices as an individual and a team member, in both professional and social settings. (Attitudes)
1				X		X	X
2				X		X	X
3				X		X	X
4				X		X	X

**Use Bloom's Taxonomy*

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

Week	Topic	CLO	Assessments	Learning activities	Resources
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	MIDTERM TEST				
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%)	In-class assignments 60%Pass	In-class assignments 60%Pass	In-class assignments 60%Pass	In-class assignments 60%Pass	Attendance score 60%Pass
Midterm exam (20%)	X 60%Pass		X 60%Pass		
Final exam (50%)		X 60%Pass		X 60%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. Revised date: June 2nd, 2025

7. Course coordinator/Lecturer: Đỗ Thị Diệu Ngọc

- School of Languages

- Email: dtdngoc@hcmiu.edu.vn

Ho Chi Minh City, June 6th, 2025

VICE DEAN OF SCHOOL OF LANGUAGES

(Signature)

Dr. Vũ Hoa Ngân



**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 (optional)
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 AE1 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) Introduction: The introduction has a thesis statement. (10)	10	CLO 1,3,4
Body: At least one paragraph discusses the counter-arguments. (10)	10	
Each paragraph discusses a particular point and begins with a clear topic sentence. (10)	10	
Each paragraph has specific supporting details (fact, examples, etc.). There are no sentences that are off-topic. (10)	10	
Each paragraph has cohesion and coherence. There are transition signals to show the relationship among ideas and to link paragraphs. (10)	10	
Conclusion: 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	
Total	100	

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**
School of Languages

COURSE SYLLABUS

Course Name: Listening AE1

Course Code: **EN008IU**

1. General information

Course name	- (in English) LISTENING AE1 (Listening and Note-taking) - (in Vietnamese) <i>Nghe AE1 (Nghe và ghi chú)</i>
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 School of Languages
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lectures, lesson Individual practice Discussion Pair work Group work
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>)
Number of periods	Theory: 30 Practice: 0

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	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. Apply knowledge of lecture language in listening comprehension via giving accurate information</td></tr> <tr> <td>Skill</td><td>CLO2. Demonstrate appropriate listening strategies and note-taking skills in taking organized notes of academic lectures. CLO3. Perform listening comprehension in writing a summary of a lecture.</td></tr> <tr> <td>Attitude</td><td>CLO4. Display discipline, responsibilities, and ethical practices as an individual and a team member in attending class regularly and actively participating in class activities</td></tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Apply knowledge of lecture language in listening comprehension via giving accurate information	Skill	CLO2. Demonstrate appropriate listening strategies and note-taking skills in taking organized notes of academic lectures. CLO3. Perform listening comprehension in writing a summary of a lecture.	Attitude	CLO4. Display discipline, responsibilities, and ethical practices as an individual and a team member in attending class regularly and actively participating in class activities
Competency level	Course learning outcome (CLO)								
Knowledge	CLO1. Apply knowledge of lecture language in listening comprehension via giving accurate information								
Skill	CLO2. Demonstrate appropriate listening strategies and note-taking skills in taking organized notes of academic lectures. CLO3. Perform listening comprehension in writing a summary of a lecture.								
Attitude	CLO4. 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) <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
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Chapter 9: The Art of Graffiti	3	T, U																																						
Final Sample Test & Review	2	T, U																																						
Examination forms	Paper-based tests: True-False questions, short-answer questions, open-ended questions (such as writing 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 Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																																							

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)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	ORIENTATION Chapter 1 New Trends in Marketing Research Recognizing topic introducing and lecture plan presenting expressions Organizing ideas by outlining	1, 2, 4	Lecture Group work Individual task	Ongoing assessment Midterm test	[1] p.2-13
2	Chapter 2 Business Ethics Recognizing transition expressions Using symbols and abbreviations	1, 2, 4	Lecture Group work Individual task	Ongoing assessment Midterm test	[1] p.14-25
3	REVIEW	1, 2, 4		Ongoing assessment Midterm test	Designed by lecturer
4	Chapter 3 Trends in Children's Media Use Recognizing generalization and support expressions	1, 2, 4	Lecture Group work Individual task	Ongoing assessment Midterm test	[1] p.28-39
5	Chapter 4 The Changing Music Industry Recognizing expressions for clarification or emphasis Organizing notes by using a split-page format	1, 2, 4	Lecture Group work Individual task	Ongoing assessment Midterm test	[1] p.40-52
6	Chapter 5 The Placebo Effect Recognizing cause and effect expressions	1, 2, 4	Lecture Group work	Ongoing assessment Midterm test	[1] p.54-65

Week	Topic	CLO	Learning activities	Assessments	Resources
	Noting causes and Effects		Individual task		
7	REVIEW SAMPLE MIDTERM EXAM + CORRECTION	1, 2, 4		Ongoing assessment Midterm test	Designed by lecturer
8	MIDTERM TEST				
9	<u>Chapter 6</u> Intelligent Machines Recognizing expressions used to predict causes and effects Using arrows to show the relationship between causes and effects	1-4	Lecture Group work Individual task	Ongoing assessment Final exam	[1] p.66-78
10	<u>Chapter 7</u> Sibling Relationships Recognizing expressions of comparison and contrast Noting comparison and contrast	1-4	Lecture Group work Individual task Lecture Group work Individual task	Ongoing assessment Final exam	[1] p.80-91
11	REVIEW <u>In-class assignment</u>	1-4 1, 2, 4		Ongoing assessment Final exam	Designed by lecturer
12	<u>Chapter 8</u> Multiple Intelligences Recognizing non-verbal signals indicating important information Representing information in list form	1-4	Lecture Group work Individual task	Ongoing assessment Final exam	[1] p.92-104
13	<u>Chapter 9</u> The Art of Graffiti Recognizing expressions of definition Reviewing and practicing all note taking strategies	1-4	Lecture Group work Individual task	Ongoing assessment Final exam	[1] p.105-117
14	REVIEW	1-4		Ongoing assessment Final exam	Designed by lecturer

Week	Topic	CLO	Learning activities	Assessments	Resources
15	<u>Sample final exam + Correction</u>	1-4		Ongoing assessment Final exam	
FINAL EXAMINATION					

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Ongoing assessment (30%)	60% Pass	60% Pass		60% Pass
Midterm test (20%)	Part 1 60% Pass	Part 2 60% Pass		
Final exam (50%)	Part 1 60% Pass	Part 2 60% Pass	Part 3 60% Pass	

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

5. Rubrics (optional)

5.1. Rubrics for Midterm test

Part	Task	CLO
1	Listen to part of a lecture and decide whether these statements are TRUE or FALSE. (40 pts)	1
2	Listen to a talk and fill in the summary notes (60 pts)	2

5.2. Rubrics for Final exam

Part	Task	CLO
1	Listen to part of a lecture and decide whether these statements are TRUE or FALSE. (30 pts)	1
2	Listen to a talk and fill in the summary notes (50 pts)	2
3	Write a short paragraph summarizing the main ideas. (20 pts.)	3

Evaluative criteria for Part 3

- Content accuracy (16 pts):** All statements are accurate and relevant. Summary includes main idea and important details of the given lecture.
- Organization & Grammar (4 pts):** The summary is in the form of a paragraph. No/minor punctuation/grammatical/spelling errors.

Revised date: June 5th, 2025

Ho Chi Minh City, June 6th, 2025
Vice Dean of School of Languages
(Signature)

Dr. Vu Hoa Ngan



**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 (<i>optional</i>)
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. & Slaught, 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	<u>Unit 7: Description, Methods & Reality</u> 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	<u>Unit 8: Results, Discussion & Relevance</u> 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	<u>Unit 9: The Whole Academic Text</u> 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	<u>Unit 10: Creating the Whole Text</u> 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	<u>Unit 10: Creating the Whole Text</u> 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**
School of Languages

COURSE SYLLABUS

Course Name: Speaking AE2

Course Code: **EN012IU**

1. General information

Course name	- (in English) SPEAKING AE2 (Effective Presentations) - (in Vietnamese) <i>Nói AE2 (Bài thuyết trình hiệu quả)</i>
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 School of Languages
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, lesson, mini presentations
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	- Previous courses: 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	Speaking AE2 aims at introducing 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: Apply effective visual aids in preparing and planning well-organized academic presentations	
	Skill	CLO2: Use appropriate language for academic presentations CLO3: Perform delivery techniques, body language and other para-linguistic elements in academic presentation CLO4: Demonstrate techniques to handle audience questions	
	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
	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. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	[1] Lowe, S, & Pile, L. (2011). <i>Presenting</i>. Singapore: Cengage Learning [2] Comfort, J. (1996). <i>Effective presentations</i>. Oxford: Oxford University Press [3] Lucas, S. (2019). <i>The art of public speaking</i> (13th ed.). New York: McGraw-Hill Education. [4] Suzy Siddons. (2008). <i>The Complete Presentation Skills Handbook, U.S. U.K.</i>

2. Learning Outcomes Matrix (optional)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	1. Orientation & Introduction 2. Needs analysis 3. Instructions for video making of self-introduction	1, 5	Lecture	Ongoing assessment Midterm test	[1] Presenting, p. 5 [3]* The Art of Public Speaking, Chapter 6 + videos of introductory speeches
2	Introduction to informative speeches Unit 1: The first few minutes	1, 2, 5	Lecture, Group work	Ongoing assessment Midterm test	[1] Presenting, pp. 8-13 [2] Effective Presentations: p.7 + video clip; p.13+ video clip [3] The Art of Public Speaking, Chapter 10 [3]* The Art of Public Speaking, Chapter 15
3	Unit 3: Organizing what you want to say	1, 2, 5	Lecture, Group work	Ongoing assessment Midterm test	[1] Presenting, pp. 22-27) [2] Effective Presentations: p.19 + video clip [3]* The Art of Public Speaking, Chapters 8+9
4	Unit 6: Summarizing and concluding	1, 2, 3, 5	Lecture, Group work	Ongoing assessment Midterm test	[1] Presenting, pp. 40-45 [2] Effective Presentations: p.41 + video clip [3]* The Art of Public Speaking, Chapters 10
5	Unit 2: Using equipment	1, 2, 3, 5	Lecture	Ongoing assessment Midterm test	[1] Presenting, pp. 14-21) [2] Effective Presentations: p.31 + video clip [3]* The Art of Public Speaking, Chapters 14
6	Delivery techniques: Putting it all together	1, 2, 3, 5	Lecture, Group work	Ongoing assessment Midterm test	[2] Effective Presentations: p.50 + video clip Assignment: Topic(s) for group presentation) [3]* The Art of Public Speaking, Chapters 13

Week	Topic	CLO	Learning activities	Assessments	Resources
7	Group practice <u>or</u> reserved week for midterm exam (big class)	1, 2, 3, 5	Group work Individual work	Ongoing assessment Midterm test	
8 + 9	MIDTERM TEST: Individual informative presentation (4-6 minutes)				
10	Introduction to persuasive speeches	1, 5	Lecture, Group work	Ongoing assessment Final exam	[3] The art of public speaking, Chapter 15 (Handout given by the instructor)
11	Methods of persuasion	1, 2, 3, 5	Lecture, Group work	Ongoing assessment Final exam	[3] The art of public speaking, Chapter 16 (Handout given by the instructor)
12	Unit 4: Maintaining interest	1, 2, 3, 5	Lecture, Group work	Ongoing assessment Final exam	[1] Presenting: pp. 28-33) [2] Effective Presentations: p.25 + video clip)
13	Unit 5: Dealing with problems and questions	4, 5	Lecture, Group work	Ongoing assessment Final exam	[1] Presenting: pp. 34-39) [2] Effective Presentations: p.44 (Question time) [3] * The Art of Public Speaking, Chapters 13
14	Unit 6: Body language	3, 5	Lecture, Group work	Ongoing assessment Final exam	[2] Effective Presentations: pp.36-39 [3] * The Art of Public Speaking, Chapters 13
15	Practice Wrap-up	1-5	Group work	Ongoing assessment Final exam	
	FINAL EXAM: Individual persuasive presentation (6-8 minutes)				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Ongoing assessment (30%)	60% Pass	60% Pass	60% Pass	60% Pass	60% Pass
Midterm test (20%)	Criteria 4-7 60% Pass	Criteria 1-2 60% Pass	Criterion 3 60% Pass		
Final exam (50%)	Criteria 4-6 60% Pass	Criteria 1-2 60% Pass	Criterion 3 60% Pass	Criterion 4 60% Pass	

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

5. Rubrics

5.1. Rubrics for Midterm test

No	Criteria	CLO
1	Pronunciation & Voice Techniques (Pause, Volume, Speed Change, Stress, Tone, etc.) (15 pts)	2
2	Language use: Grammar & Vocabulary (usage and appropriateness for audience) (15 pts)	2
3	Body Language: Gestures, Eye contact, Facial expressions, Appearance (10 pts)	3
4	Organization: Intro, Body, Ending, Coherence (20 pts)	1
5	Content: Relevance, Accuracy (20 pts)	1
6	Visual aids: Appropriateness, Clarity (10 pts)	1
7	Overall effectiveness (10 pts)	1

5.2. Rubrics for Final exam

No	Criteria	CLO
1	Pronunciation & Voice Techniques (Pause, Volume, Speed Change, Stress, Tone, etc.) (15 pts)	2
2	Language use: Grammar & Vocabulary (usage and appropriateness for audience) (10 pts)	2
3	Body Language: Appearance, Posture, Gestures, Eye contact, Facial expression (15 pts)	3
4	Organization: Intro, Body, Ending, Coherence (15 pts)	1
5	Content: Relevant, Accurate, Informative and Persuasive (20 pts)	1
6	Visual aids: Appropriateness, Clarity (15 pts)	1
7	Question response (10 pts)	4

Revised date: June 2nd, 2025

Ho Chi Minh City, June 6, 2025
Vice Dean of School of Languages

Dr. Vũ Hoa Ngân



**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	
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lectures, assignments
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 120 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 60 (lectures) Private study including examination preparation, specified in hours ¹ : 60
Credit points	4

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	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 modelling 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)		
	Topic	Weight	Level
	Review: Set theory and mapping. 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
	Anti-derivatives 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	
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

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

	PLO						
CLO	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7
1	4	4					
2	4	3					
3			4	3			
4			3	3			
5							3

3. Planned learning activities and teaching methods

Week	Topics	CLO	Assessment	Teaching and Learning activities
1	Review: Set theory and mapping. 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	Anti-derivatives 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 % of students having scores greater than 50 out of 100.

5. Date revised: May 2025

Ho Chi Minh City, 03/06/2025

Department of Mathematics



Nguyễn Minh Quân



**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:		
	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	
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
	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
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	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: 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 Chemical and Environmental Engineering

COURSE SYLLABUS

Course Name: Chemistry for Engineers
(Hóa học cho Kỹ sư)
Course Code: CH011IU

1. General information

Course designation	This one-semester course is designed for engineering students those who are pursuing a chemistry or non-chemistry engineering degree such as information technology, bio-technology, civil, biomedical, electronic and telecommunication engineering, environmental engineering, and chemical engineering. The course will introduce the basic principles of chemistry and connect those principles to issues in engineering professions.																																								
Teaching schedule	☒ Year 1 ☐ Year 2 ☐ Year 3 ☐ Year 4 ☐ Year 5 ☒ Semester 1 ☐ Semester 2 ☐ Summer																																								
Person In-Charge	Dr. Huynh Kim Lam, hklam@hcmiu.edu.vn Dr. Ngo Thi Thuan, ntthuan@hcmiu.edu.vn Dr. Phung Thanh Khoa, ptkhoa@hcmiu.edu.vn Dr. Nguyễn Thị Hoàng Hải, nthhai@hcmiu.edu.vn																																								
Language	English																																								
Relation to curriculum	☒ General ☐ Fundamental ☐ Specialization ☐ Project/Internship/Thesis			☐ Compulsory ☐ Elective																																					
Teaching methods	☒ Lecture ☐ Lesson ☐ Project ☐ Seminar Others, please specify:																																								
Workload	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th><th></th><th>Lecture</th><th>Lab</th><th>Project</th><th>Internship</th><th>Thesis</th></tr> </thead> <tbody> <tr> <td></td><td><i>Credit</i></td><td>3</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Contact hours</td><td>37.5</td><td>37.5</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr> <td>Self-Study hours</td><td>90</td><td>90</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr> <td>Total workload</td><td>127.5</td><td>127.5</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </tbody> </table>								Lecture	Lab	Project	Internship	Thesis		<i>Credit</i>	3					Contact hours	37.5	37.5	0	0	0	0	Self-Study hours	90	90	0	0	0	0	Total workload	127.5	127.5	0	0	0	0
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Requirements for taking the course	☒ None ☐ Prerequisite course: <i>(Please specify course ID & course title, if any)</i> ☐ Parallel course: <i>(Please specify course ID & course title, if any)</i> ☐ Previous course: <i>(Please specify course ID & course title, if any)</i>																																
Course objectives	The course objectives for chemistry for engineers aim to equip students with a strong conceptual understanding of chemical principles, analytical and problem-solving skills, and the ability to apply their knowledge to various chemical systems and phenomena.																																
Course learning outcomes	Upon the successful completion of this course, students will be able to: <table border="1"> <thead> <tr> <th>Competency level¹</th><th>Course learning outcome (CLO)</th></tr> </thead> <tbody> <tr> <td>Knowledge</td><td> CLO1. Demonstrate an understanding of the basic principles of chemistry, including atomic structure, chemical bonding, and the periodic table. [Apply] CLO2. Apply fundamental chemical concepts, such as stoichiometry, kinetics, and thermodynamics, to solve problems and make predictions about chemical reactions. [Apply] CLO3. Identify common chemical compounds, including organic and inorganic molecules, acids and bases, and salts. [Remember] CLO4. Analyze chemical reactions using principles of equilibrium, acid-base reactions, and oxidation-reduction reactions. [Analyze] CLO5. Apply chemistry knowledge to interdisciplinary fields, such as biochemistry, environmental science, materials science, and engineering. [Apply] </td></tr> <tr> <td>Skill</td><td></td></tr> <tr> <td>Attitude</td><td></td></tr> </tbody> </table>	Competency level ¹	Course learning outcome (CLO)	Knowledge	CLO1. Demonstrate an understanding of the basic principles of chemistry, including atomic structure, chemical bonding, and the periodic table. [Apply] CLO2. Apply fundamental chemical concepts, such as stoichiometry, kinetics, and thermodynamics, to solve problems and make predictions about chemical reactions. [Apply] CLO3. Identify common chemical compounds, including organic and inorganic molecules, acids and bases, and salts. [Remember] CLO4. Analyze chemical reactions using principles of equilibrium, acid-base reactions, and oxidation-reduction reactions. [Analyze] CLO5. Apply chemistry knowledge to interdisciplinary fields, such as biochemistry, environmental science, materials science, and engineering. [Apply]	Skill		Attitude																									
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Attitude																																	
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	<table border="1"> <thead> <tr> <th></th><th>Level 1</th><th>Level 2</th><th>Level 3</th><th>Level 4</th><th>Level 5</th><th>Level 6</th><th>Level 7</th></tr> </thead> <tbody> <tr> <td>Knowledge</td><td>Remembering</td><td>Understanding</td><td>Applying</td><td>Analyzing</td><td>Evaluating</td><td>Creating</td><td>x</td></tr> <tr> <td>Skills</td><td>Perception</td><td>Set</td><td>Guided Response</td><td>Mechanism</td><td>Complex Overt Response</td><td>Adaptation</td><td>Origination</td></tr> <tr> <td>Attitudes</td><td>Receiving Phenomena</td><td>Responding to Phenomena</td><td>Valuing</td><td>Organization</td><td>Internalizing values</td><td>x</td><td>x</td></tr> </tbody> </table>		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
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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> <u>Weight</u>: lecture session (2.5 hours) <u>Teaching levels</u>: I (Introduce); T (Teach); U (Utilize) <table border="1"> <thead> <tr> <th>No.</th><th>Topic</th><th>Weight</th><th>Level</th></tr> </thead> <tbody> <tr><td>1</td><td>Chemistry and Measurement</td><td>1</td><td>I, T</td></tr> <tr><td>2</td><td>Atoms, Molecules and Ions</td><td>2</td><td>T, U</td></tr> <tr><td>3</td><td>Periodicity</td><td>1</td><td>T, U</td></tr> <tr><td>4</td><td>Chemical Bonds</td><td>2</td><td>T</td></tr> <tr><td>5</td><td>Intermolecular Forces</td><td>2</td><td>T, U</td></tr> <tr><td>6</td><td>Gases and Their Properties</td><td>2</td><td>T</td></tr> <tr><td>7</td><td>Solutions and Their Properties</td><td>1</td><td>T, U</td></tr> <tr><td>8</td><td>Solids and Their Properties</td><td>1</td><td>T, U</td></tr> <tr><td>9</td><td>Chemical Reactions</td><td>2</td><td>I, T</td></tr> <tr><td>10</td><td>Chemical Kinetics</td><td>2</td><td>I, T</td></tr> <tr><td>11</td><td>Chemical Equilibrium</td><td>1</td><td>T, U</td></tr> <tr><td>12</td><td>Electrolytes, Acid- Base, pH and Buffer</td><td>1</td><td>I, T</td></tr> <tr><td>13</td><td>Thermochemistry</td><td>2</td><td>I, T</td></tr> <tr><td>14</td><td>Thermodynamics</td><td>2</td><td>I, T</td></tr> </tbody> </table>			No.	Topic	Weight	Level	1	Chemistry and Measurement	1	I, T	2	Atoms, Molecules and Ions	2	T, U	3	Periodicity	1	T, U	4	Chemical Bonds	2	T	5	Intermolecular Forces	2	T, U	6	Gases and Their Properties	2	T	7	Solutions and Their Properties	1	T, U	8	Solids and Their Properties	1	T, U	9	Chemical Reactions	2	I, T	10	Chemical Kinetics	2	I, T	11	Chemical Equilibrium	1	T, U	12	Electrolytes, Acid- Base, pH and Buffer	1	I, T	13	Thermochemistry	2	I, T	14	Thermodynamics	2	I, T
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2. Learning Outcomes Matrix

The relationship between Course Learning Outcomes (CLO) (1-5) and Intended Learning Outcomes (ILO) (1-8) is shown in the following table:

CLO	ILO (*)							8
	1	2	3	4	5	6	7	
1	L							
2		M						
3	L							
4		H						
5			M					

*L (Low); M (Medium); H (High)

3. Planned learning activities and teaching methods

No.	Week	Topic	CLO	Assessments	Learning activities	Resources
1	1	Chemistry and Measurement	1,5	HW	Lecture	[1-4]
2	2	Atoms, Molecules, and Ions	1	HW	Lecture	[1-4]
3	3	Periodicity	1	HW	Lecture	[1-4]
4	4&5	Chemical Bonds	1	HW	Lecture	[1-4]
5	6	Intermolecular Forces	1	HW	Lecture	[1-4]
6	7	Gases and Their Properties	1	HW	Lecture	[1-4]
7	8	Review, midterm	1,5			[1-4]
8	9	Liquid, Solids, and Their Properties	1,5	HW	Lecture	[1-4]
9	10	Chemical Reactions	1,4	HW	Lecture	[1-4]
10	11	Chemical Kinetics	2,5	HW	Lecture	[1-4]
11	12	Chemical Equilibrium	4	HW	Lecture	[1-4]
12	13	Electrolytes, Acid-Base, pH, and Buffer	3,4,5	HW	Lecture	[1-4]
13	14	Thermochemistry	2,5	HW	Lecture	[1-4]
14	15	Thermodynamics	2,5	HW	Lecture	[1-4]
16	18	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Homework/Quiz (30%)	50%pass		50%pass		
Midterm exam (30%)	50%pass			50%pass	

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Final exam (40%)		50%pass			

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

5. Rubrics (optional): No

6. Revision Date: June 9, 2025

Ho Chi Minh City, ...2025

Dean of School of Chemical and Environmental Engineering

Huỳnh Kim Lâm

(*) Intended Learning Outcomes

No .	Program Learning Outcomes Graduates of Chemical Engineering program will attain
<i>Knowledge</i>	
1	Identify, formulate, and solve complex chemical engineering problems by applying principles of engineering, science, and mathematics
2	Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
<i>Skills</i>	
3	Communicate (in English) effectively with a range of audiences
4	Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
5	Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
6	Acquire and apply new knowledge as needed, using appropriate learning strategies.
<i>Attitude</i>	
7	Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

For administrative purposes

REVISION HISTORY AND NOTES

[illegible]



**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>Credit</td><td>2</td><td>2</td><td></td><td></td><td></td><td></td></tr><tr><td>ECTS</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	Credit	2	2					ECTS	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																																										
Credit	2	2																																														
ECTS	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																																										
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><tr><th>No.</th><th>Topic</th><th>Weight</th><th>Level</th></tr><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></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		
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																																				
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																																															
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																																										
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: 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) 4.62 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)																																			
	<table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction to Biology and Course outline</td><td>1</td><td>I, T</td></tr><tr><td>The Chemistry of Life-The Chemical Context of Life</td><td>1</td><td>I, T</td></tr><tr><td>A Tour of the Cell- Membrane Structure and Function- Cellular Energy- Cell Communication</td><td>2</td><td>I, T</td></tr><tr><td>Cell Cycle-Genetic Basis of Life- Regulation of Gene expression</td><td>2.5</td><td>I, T</td></tr><tr><td>Gene Activity and Biotechnology</td><td>1.5</td><td>T, U</td></tr><tr><td>The Evolutionary History of Biological Diversity, The Evolution of Populations; The Origin of Species</td><td>2</td><td>I, T</td></tr><tr><td>Animal Form and Function- Basic principles- Endocrine system; Reproduction and Development; Nervous system; Sensory & motor mechanisms.</td><td>2</td><td>T, U</td></tr><tr><td>Structure and Function of Plants: Structure, Reproduction and Development</td><td>1</td><td>T, U</td></tr><tr><td>Ecology: Interactions between organisms and the environment</td><td>1</td><td>T, U</td></tr><tr><td>Summary-Review</td><td>1</td><td>T, U</td></tr></table>	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		
Topic	Weight	Level																																		
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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						
3			M					
4					M			

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	3, 4	Lecture	HW3	1, 2, 3

	Nutrition-Circulation-Immune system- Osmoregulation.		Discussion Presentation		
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 flourish 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
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	Assoc.Prof. Tran Tien Khoi Dr. Tran Thanh Tu																																			
Language	English																																			
Relation to curriculum	Compulsory																																			
Teaching methods	Lecture, lesson, homework, presentation																																			
Workload (incl. contact hours, self-study hours)	<table><tr><td></td><td><i>Lecture</i></td><td><i>Lab</i></td><td><i>Project</i></td><td><i>Internship</i></td><td><i>Thesis</i></td></tr><tr><td></td><td><i>Credit</i></td><td><i>3</i></td><td></td><td></td><td></td></tr><tr><td><i>Contact hours</i></td><td><i>37.5</i></td><td><i>37.5</i></td><td></td><td></td><td></td></tr><tr><td><i>Self-Study hours</i></td><td><i>90</i></td><td><i>90</i></td><td></td><td></td><td></td></tr><tr><td><i>Total workload</i></td><td><i>127.5</i></td><td><i>127.5</i></td><td></td><td></td><td></td></tr></table>							<i>Lecture</i>	<i>Lab</i>	<i>Project</i>	<i>Internship</i>	<i>Thesis</i>		<i>Credit</i>	<i>3</i>				<i>Contact hours</i>	<i>37.5</i>	<i>37.5</i>				<i>Self-Study hours</i>	<i>90</i>	<i>90</i>				<i>Total workload</i>	<i>127.5</i>	<i>127.5</i>			
	<i>Lecture</i>	<i>Lab</i>	<i>Project</i>	<i>Internship</i>	<i>Thesis</i>																															
	<i>Credit</i>	<i>3</i>																																		
<i>Contact hours</i>	<i>37.5</i>	<i>37.5</i>																																		
<i>Self-Study hours</i>	<i>90</i>	<i>90</i>																																		
<i>Total workload</i>	<i>127.5</i>	<i>127.5</i>																																		
Credit points	3 (equivalent to 4.62 ECTS)																																			

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.								
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. 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. </td></tr> <tr> <td>Skill</td><td>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.</td></tr> <tr> <td>Attitude</td><td>CLO6. Discuss the impacts of human activities to the ecosystem, biodiversity and the environment.</td></tr> </table>	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.
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	
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) (1-6) and Intended Learning Outcomes (ILO) (1-8) is shown in the following table:

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

3. Planned learning activities and teaching methods

Week	Topic	CL O	Assessments	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 (IP) and Quiz (30%)	IP1,2 Quiz 1,2 60%Pass	IP3□5 Quiz3 60%Pass	IP6□8 Quiz 4,5 60%Pass	IP9,10 Quiz6 60%Pass	IP1□10 60%Pass	

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
	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 the audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to the audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and the speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and the speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and the speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and the 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 Industrial Engineering and Management

COURSE SYLLABUS

Course Name: Project Management

Course Code: IS026IU

1. General information

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: 70 Contact hours (please specify whether lecture, exercise, etc.): 45 Private study including examination preparation, specified in hours ¹ : 25
Credit points	3

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: <table> <tr> <th>Competency level</th><th>Course learning outcome (CLO)</th></tr> <tr> <td>Knowledge</td><td> 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. </td></tr> <tr> <td>Skill</td><td>CLO3. Work effectively in group projects in a specific context; combining the techniques to conduct practical cases. Respond to the needs of community and industrial sectors</td></tr> <tr> <td>Attitude</td><td> 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 </td></tr> </table>	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 projects 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
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 projects 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). 5 th Edition, Newtown Square, Pa. : Project Management Institute, Inc. [2] Project management: A managerial approach / Jack R. Meredith, Samuel J. Mantel. 7 th 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 Intended Learning Outcomes (ILO) (1-7) is shown in the following table:

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

Intended Learning Outcomes

Criteria for Accrediting Engineering Programs, 2020-2021

- 1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
- 2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
- 3. an ability to communicate effectively with a range of audiences*
- 4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
- 5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
- 6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
- 7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

The relationship between Course Learning Outcomes (CLO) (1-3) and ASIIN learning outcomes is shown in the following table:

	ASIIN learning outcomes								
CLO	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	2.6
1		1.2b	1.3c	2.1a 2.1b			2.4a	2.5a	
2		1.2b	1.3c	2.1a 2.1b			2.4a	2.5a	
3		1.2a	1.3d		2.2b		2.4b	2.5a	
4	1.1b		1.3c					2.5b	2.6b

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Lecture 1: Introduction to Project Management, project life cycle and organization	1 1.2.b		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	1 1.2.b	HW 1	Lecture, Group work	[1].

	- Planning process group				
3	Lecture 3: Work breakdown structure	1,3,4 1.2.b 1.2.a/1.3. d	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 1.2.b 1.2.a/1.3. d	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 1.2.b 1.2.a/1.3. d 1.1.b	HW 4	Lecture, Group work	[1].
6 & 7	Lecture 6: Logical Framework Approach (LFA)	3 1.2.a/1.3. d		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 2.5a 1.2.a/1.3. d 1.1.b	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	2, 3, 4 2.5a 1.2.a/1.3. d 1.1.b	HW 6	Lecture, Group work	
11	Lecture 9: Project quality management - Plan quality - Perform quality assurance - Perform quality control	2, 3, 4 2.5a 1.2.a/1.3. d 1.1.b	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 2.5a 1.2.a/1.3. d 1.1.b	HW 8	Lecture, Group work	[1].
13	Lecture 11: Project procurement management - Plan procurements - Conduct procurements - Administer procurements	2, 3, 4 2.5a 1.2.a/1.3. d	HW 9	Lecture, Group work	[1].

	- Close procurements	1.1.b			
14	Lecture 12: Project executing, monitoring & control.	2, 3, 4 2.5a	HW 10	Lecture, Group work	[1].
15	Lecture 13: Project closing Project Presentation Review for Final Exam	2, 3, 4 2.5a 1.2.a/1.3. d 1.1.b		Problems solving Group work	[1].
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Homework exercises (30%)	HW1-2 50%Passes	HW4, HW5, HW6 50%Passes	HW7-8 50%Pass	HW9-10 50%Pass
Midterm exam (30%)	Q1 50%Passes	Q2 50%Passes	Q3, Q4 50%Pass	
Final exam (40%)	Q1 50%Passes	Q2 50%Passes	Q3, Q4 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	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 23, 2022

Ho Chi Minh City, dd/mm/yyyy
Dean of School of Industrial Engineering and
Management
(Signature)

A handwritten signature in blue ink, appearing to be 'V. H. P.', enclosed within a light blue rectangular border.

Assoc. Prof. Dr. Nguyen Van Hop



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

**COURSE SYLLABUS
PRODUCTION AND OPERATIONS MANAGEMENT
BA164IU**

1. General information

Course designation	This subject will provide students with sound theoretical and pragmatic approaches that will guide them in the formulation and implementation of corporate, business, and functional strategies.
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, Tutorial, Presentation, Field Trip
Workload (incl. contact hours, selfstudy hours)	(Estimated) Total workload: Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Private study including examination preparation, specified in hours ¹ :
Credit points	3

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	• To gain understanding of the role of operations manager in organization • To identify and explain how operations manager make decisions which are related to operation management, such as: Product design, location planning, scheduling, inventory management... • To understand how operations management related to other functional areas in an organization such as: marketing, finance /accounting and personnel • To gain the knowledge and skills to maintain the competitive advantage for an organization by improving better productivity, reducing cost, responding more quickly to the demand and providing better quality	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Apply the quantitative techniques to support the Operations Manager in making his or her decisions in realistic situations (problem solving skills)
	Skill	CLO2. Explain real problems/ factors which affect on the organizations and develop their recommendations (Bloom 2) CLO3. Analyze an operation process in both written and spoken forms. (Bloom 4)
	Attitude	CLO4. Having overall perspectives of global Operations management to obtain sustainable business

Content	BA164IU– Production and Operations Management which is to present a broad introduction to the field of operations in a realistic, practical manner includes a blend of topics from accounting, industrial engineering, management, management science, and statistics. Therefore, the students will have a better understanding of the role of operations in different functional departments of a firm. In that connection, other foundation courses such as Management, Accounting, Marketing, Human Resource Management and some specialized course (Project Management, Quality Management) are also very useful in term of supporting to this course.										
Examination forms	Open or closed questions Open-ended questions										
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: <table border="1"> <tr> <td>Group Presentation</td><td>15%</td></tr> <tr> <td>Individual Assignment</td><td>15%</td></tr> <tr> <td>Midterm examination</td><td>30%</td></tr> <tr> <td>Final examination</td><td>40%</td></tr> <tr> <td>Total</td><td>100%</td></tr> </table> COURSE POLICIES Attendance Your regular and punctual attendance at lectures and related seminar (if any) is expected in this course. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Exemptions may only be made on medical grounds. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted. Please inform your lecture if you are unable to attend the class and arrange for a classmate to collect any handouts. Workload It is expected that you will spend at least 6 hours per week studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. In periods where you need to complete assignment or prepare for examinations, the workload may be greater.	Group Presentation	15%	Individual Assignment	15%	Midterm examination	30%	Final examination	40%	Total	100%
Group Presentation	15%										
Individual Assignment	15%										
Midterm examination	30%										
Final examination	40%										
Total	100%										

General Conduct and Behaviour

You are expected to conduct yourself with considerable and respect for the needs of your fellow students and teaching staff. Conduct that unduly disrupts or interferes with a class, such as ringing, or talking on mobile phones, or chatting on internet, is not acceptable and students may be asked to leave the class.

Keeping informed

You should take note of all announcements made in lectures, tutorials or on the course website. From time to time, the University will send important announcements to you through website, course website and/ or Announcement Board (of School of Business and/ or Academic Affair) without providing you with a paper copy. You will be deemed to have received this information.

Academic honesty and plagiarism

The University regards plagiarism as a form of academic misconduct, and has very strict rules regarding plagiarism.

Plagiarism is the presentation of the thoughts or work of another as one's own. Examples include:

- direct duplication of the thoughts or work of another, including by copying work, or knowingly permitting it to be copied. This includes copying material. Ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/ or progression of ideas of the original; - piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does not amount to plagiarism.

Students are also reminded that careful time management is an important part of 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.

Special consideration

	Request 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. Meeting up with the lecturers after classes
	Reading list The following text and references are essential for the course. <u>Textbook:</u> Jay Heizer and Barry Render (2009), Operations Management. Ninth Edition, Prentice Hall. (H&R) <u>References:</u> Russell and Taylor (2009), Operations Management- Creating Value Along The Supply Chain, Six Edition, John Wiley & Sons. (R&T)

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Chaper 1: Introduction and Operations & Productivity What is Operations Management	1; 2; 3; 4;		Lecturing Discussion	Instructor Manual, Teacher's Resource

	Organizing to produce goods and services Why study OM What operations managers do Operations in the service sector Exciting new trends in Operations Managements Issues in Operations strategy Global Operations Strategy Options Productivity				
2	Chapter 2: Operations strategy in global environment A global view of Operations Developing missions and strategies Achieving competitive advantage thru Operations ▪ Review productivity (15 mins): Rapid Review; Homework solving	3; 4;		Presentations Lecturing Discussion	Case-study, Teacher's Resource

	▪ Lecture (combined with Q&A, brainstorming, and activity after every 15 min): 60 min ▪ Q&A and queries: 15 min				
3	Chapter 4: Design of Goods and services Goods and services selection Generating new product Product development	1; 2; 3; 4;		Presentations Lecturing Discussion	Instructor Manual, Teacher's Resource (Handouts)
	Issues for product design Defining product Documents for production Service design				
4	Chapter 6: Managing Quality Quality and Strategy Defining Quality International Quality Standards Total Quality Management Tools of TQM	2; 3; 4;	Quiz: Drawing 7 tools for TQM	Presentations Lecturing Discussion	Instructor Manual, Teacher's Resources

	The Role of Inspection TQM in services ▪ Lecture (combined with Q&A, brainstorming, and activity after every 15 min): 60 min Presentation Presentation				
5	Chapter 7: Process Strategy Four process strategies Process Analysis and design Service process design Production Technology Process Decision ▪ Review Managing Quality: 15 min Lecture (combined with Q&A, brainstorming, and activity after every 15 min): 60 min ▪ Q&A and queries: 15 min	1 2; 3; 4;	Quiz: Breakeven point analysis	Presentations Lecturing Discussion	Instructor Manual, Teacher's Resource (Handouts)

6	Chapter 7s: Capacity Planning Capacity Capacity planning Break-even analysis Applying decision trees to capacity decisions Strategy –driven investments ▪ Review Process Strategy: 15 min	3; 4;		Presentations Lecturing Discussion	Case-study, Teacher's Resource
7	Chapter 8: Location Strategies The strategic importance of location Factors that effect location decisions Methods of evaluating location alternatives Service location strategy	3; 4;		Presentations Lecturing Discussion	
8	Midterm				
9	Chapter 9: Layout Strategy The strategic importance of layout decisions Types of layout	1 2; 3; 4;	Exercises	Presentations Lecturing Discussion	

	Fixed-position layout Process-oriented layout Office layout Retail layout Warehousing and storage layouts Repetitive and product – oriented layout ▪ Review: 15 min ▪ Lecture (combined with Q&A, brainstorming, and activity after every 15 min): 60 min ▪ Q&A and queries: 15 min				
10	Chapter 11: Supply Chain Management The strategic importance of the supply chain Supply-chain economics Supply-chain strategies Logistic management ▪ Review: 15 min	1 2;		Presentations Lecturing Discussion	Instructor Teacher's Resource

11	Chapter 12: Inventory Management Function of inventory Inventory management Inventory models Inventory models for independent demand	1 2; 3; 4;		Presentations Lecturing Discussion	Instructor Manual, Teacher's Resource Explain and use models for managing inventory with independent demand including EOQ, POQ and quantity discount
12	Chapter 14: Material Requirement Planning & Enterprise Resource Planning -MRP and ERP Dependent Inventory model requirements MRP structure MRP management Lot-sizing techniques ▪ Lecture (combined with Q&A, brainstorming, and activity after every 15 min): 60 min ▪ Q&A and queries: 15 min	1 2; 3; 4;	Quiz	Presentations Lecturing Discussion	Instructor Manual, Teacher's Resource ▪ Build material requirement plan (MRP) using lot-sizing technique ▪ Underst and expansion of MRP and ERP Explain how MRP works (handouts in bb)

13	Field trip	3;4	Writing report of field trip		
14	Chapter 15: Short term Scheduling The strategic importance of scheduling Scheduling issues Scheduling process-focused facilities Loading jobs Sequencing jobs Finite capacity scheduling (FCS) Scheduling repetitive facilities Scheduling service	1 2; 3; 4;		Presentations Lecturing Discussion	▪ Explain the relationship between short-term scheduling, capacity planning and master plan ▪ Apply assignment methods ▪ Use priority rules ▪ Apply Johnson's rule
15	Chapter 10: Job Design and Work Measurement	1 2;		Presentations Lecturing	▪ Identify major issues in designing jobs and
	Human resource strategy for competitive advantage Labor planning Job design The visual workplace	3; 4;		Discussion	managing labor ▪ Identify ergonomic and work environment issues ▪ Use the tools of methods analysis

	Labor standards and work measurement Time studies Predetermined time standards Work sampling ▪ Review: 15 min ▪ Lecture (combined with Q&A, brainstorming, and activity after every 15 min): 60 min ▪ Q&A and queries: 15 min				
16	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Group Presentation (15%)	100% Pass	100% Pass	100% Pass	100% Pass
Individual Assignment (15%)	90% Pass	90% Pass	90% Pass	90% Pass
Midterm examination (25%)	90% Pass	90% Pass	90% Pass	90% Pass
Final examination (45%)	90% Pass	90% Pass	90% Pass	90% Pass

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

5. Rubrics (optional)

6. GRADING RUBRIC FOR WRITTEN COURSEWORK

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	Draws upon sources to support most points. Some evidence may not support arguments or may appear where inappropriate.	Draws upon primary and secondary source information in useful and illuminating ways to support key points. Excellent integration of
			poorly integrated into paragraphs. Some possible problems with source citations	Quotations integrated well into paragraphs. Sources cited correctly	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 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.

6. Date revised:

Ho Chi Minh City, 2023
Head/Dean of Department/School





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

COURSE SYLLABUS

**Course Name: LOGISTICS ENGINEERING AND
SUPPLY CHAIN DESIGN**

Course Code: **IS078IU**

1. General information

Course designation	<i>This course describes components and structure of a supply chain system. It covers all supply chain network design problems from location-allocation of the facilities, evaluation of design options, calculating the capacity of the facilities, analyzing centralized – decentralized configuration. The subject also introduces some coordination framework that link efficiently supply chain components together. Other topics such as aggregation configuration, smart pricing, and transportation system design are also considered.</i>
Semester(s) in which the course is taught	2
Person responsible for the course	Assoc. Prof. Nguyen Van Hop
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, project
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 45 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 42 lecture hours Private study including examination preparation, specified in hours¹: 3 hours for project presentation.</i>
Credit points	3

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	Deterministic Models in OR
Course objectives	This course aims to help students to: - Understanding of key elements and structure of a Supply Chain System. - Understanding how to design an effective supply chain. - Formulating and solving logistics and supply chain design problems with optimization techniques.

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 concepts, key points, and primary challenges of supply chain design based on Engineering, Scientific, and Economic knowledge. Able to distinguish different issues and problems in logistics and supply chain design with the applications of new development and technologies in engineering and natural sciences based on investigating databases, guidelines, and safety regulations. Students are able to identify non-technical impacts of engineering actions and aware of the repercussions their activities have on various areas of life and consider these when making decisions.
	Skill	CLO2. Know how to identify, formulate and solve different logistics and supply chain design problems by using optimization and advanced techniques from the collected data and reviewed literature. Know how to solve the complex engineering problems by a holistic and systematic approach using computer-based solutions such as CPLEX, LINGO, Python, Matlab and the knowledge of natural sciences, mathematics and engineering. Students are also able conducting experiments and developing equipment and processes of engineering for the designed system. CLO3. Students are able to solve practical problems, conduct detailed research, conduct experiments and analyze the solutions by evaluating, planning, choosing and applying adequate methods of modeling, simulation, design and implementation of technical and economic systems. Student can develop, optimize and implement application-oriented solutions using the knowledge of natural sciences, mathematics and engineering.
	Attitude	CLO4. Develop teamworking (leadership, organize, plan, and manage the projects), soft and professional (communication, decision making) skills and apply ethical practices to handle issues in the working 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) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction</td><td>1</td><td>I, T</td></tr><tr><td>Network Design</td><td>2</td><td>I, T, U</td></tr><tr><td>Distribution Network Design</td><td>1</td><td>I, T, U</td></tr><tr><td>Capacity Design</td><td>2</td><td>I, T, U</td></tr><tr><td>Supply contracts</td><td>2</td><td>I, T, U</td></tr><tr><td>Aggregation in Supply Chain</td><td>2</td><td>I, T,U</td></tr><tr><td>Smart pricing & revenue management</td><td>2</td><td>I, T, U</td></tr><tr><td>Transportation Design</td><td>2</td><td>I, T, U</td></tr></table>	Topic	Weight	Level	Introduction	1	I, T	Network Design	2	I, T, U	Distribution Network Design	1	I, T, U	Capacity Design	2	I, T, U	Supply contracts	2	I, T, U	Aggregation in Supply Chain	2	I, T,U	Smart pricing & revenue management	2	I, T, U	Transportation Design	2	I, T, U
Topic	Weight	Level																										
Introduction	1	I, T																										
Network Design	2	I, T, U																										
Distribution Network Design	1	I, T, U																										
Capacity Design	2	I, T, U																										
Supply contracts	2	I, T, U																										
Aggregation in Supply Chain	2	I, T,U																										
Smart pricing & revenue management	2	I, T, U																										
Transportation Design	2	I, 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	Textbooks: - Chopra, S., and Meindl, P. (2016). Supply chain management: Strategy, Planning and Operation, 6th ed.. NY: Prentice Hall. - Simchi-Levi, D., Kaminsky, P., and Simchi-Levi, E. (2008). Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies. Boston: McGraw-Hill/ Irwin. References books: - Mankiw NG (2011). Principles of Economics, 5th edition. South-Western Cengage Learning. - Simchi-Levi, D., Chen, X., Bramel, J. (2014). The Logic of Logistics Management. Springer Series in Operations Research and Financial Engineering. - M. Watson, S. Lewis, P. Cacioppi, J. Jayaraman, 2013. Supply Chain Network Design: Applying Optimization and Analytics to the Global Supply Chain. Pearson Education, FT Press, New Jersey. - I. Minis, V. Zeimpekis, G. Dounias, N. Ampazis, 2011. Supply Chain Optimization, Design, and Management: Advances and Intelligent Methods. Business Science Reference, Hershey, Newyork. - M.Govil, J.M. Proth, 2002. Supply Chain Design and Management: Strategic and Tactical Perspective. Academic Press, Sandiego, California.																											

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Intended Learning Outcomes (ILO) (1-7) is shown in the following table:

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

Intended Learning Outcomes (ILO)

Criteria for Accrediting Engineering Programs, 2020-2021

- 1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*
- 2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*
- 3. an ability to communicate effectively with a range of audiences*
- 4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts*
- 5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*
- 6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
- 7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

The relationship between Course Learning Outcomes (CLO) (1-3) and ASIIN learning outcomes is shown in the following table:

CLO	ASIIN learning outcomes								
	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	2.6
1	1.1a, 1.1b,1 .1c		1.3c			2.3a	2.4c	2.5b	2.6b
2		1.2a, 1.2b	1.3c, 1.3d	2.1a, 2.1b	2.2a		2.4a	2.5a	
3		1.2a, 1.2b	1.3c, 1.3d	2.1a, 2.1b			2.4a, 2.4b	2.5a	
4	1.1b, 1.1c		1.3a 1.3b 1.3c					2.5b	2.6a 2.6b

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Lecture 1: Introduction to Supply Chain Design	1		Lecture Group forming. Class discussion Read book & lecture 2	
2	Lecture 2: Network Design	1, 2,3	Quiz/HW	Lecture Class discussion Read book & lecture 3.	
3	Lecture 3: Network Design	1, 2,3	Quiz/HW	Lecture Class discussion Read book & lecture 4.	
4	Lecture 4: Distribution Network Design	1, 2,3	Quiz/HW	Lecture Class discussion Read book & lecture 5.	
5	Lecture 5: Capacity Design	1, 2,3	Quiz/HW	Lecture Class discussion Read book & lecture 6.	
6	Lecture 6: Capacity Design	1,2,3	Quiz/HW	Lecture Class discussion Read book & lecture 7	
7	Lecture 7: Supply contracts	1, 2,3	HW	Lecture Class discussion	
	Midterm exam		Written Exam		
8	Lecture 8: Supply contracts	1,2,3	Quiz/HW	Lecture Class discussion Read book & lecture 9.	
9	Lecture 9: Aggregation in Supply Chain	1,2,3	Quiz/HW	Lecture Class discussion Read book & lecture 10.	
10	Lecture 10: Aggregation in Supply Chain	1, 2,3	Quiz/HW	Lecture Class discussion Read book & lecture 11	
11	Lecture 11: Smart pricing & revenue management	1,2,3	Quiz/HW	Lecture Class discussion Read book & lecture 12	

12	Lecture 12: Smart pricing & revenue management	1, 2,3	Quiz/HW	Lecture Class discussion Read book & lecture 13	
13	Lecture 13: Transportation Design	1, 2,3	Quiz/HW	Lecture Class discussion Read book & lecture 14	
14	Lecture 14: Transportation Design	1, 2,3	Quiz/HW	Lecture Class discussion	
15	Project presentation	3,4	Project	Group Presentation	
	Final exam		Written Exam		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Quizzes and homework (15%)	60%Pass	60%Pass	60%Pass	100% Pass
Project (15%)	60%Pass	60%Pass	60%Pass	100% Pass
Midterm Exam (30%)	60%Pass	60%Pass	60%Pass	90% Pass
Final Exam (40%)	60%Pass	60%Pass	60%Pass	90% 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 Semester Project Report			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Part 1. Problem (25%)			
Criterion 1: Problem Statement	10		
Criterion 2: Objectives of Study	5		
Criterion 3: Scope and Limitations	5		
Criterion 4: Literature Review	5		
Part 2. Proposed System Design and Solution (40%)			
Criterion 1: Proposed System	10		
Criterion 2: Proposed Solution	15		

Criterion 3: New Contribution	15		
Part 3. Results and Validation (35%)			
Criterion 1: Results	15		
Criterion 2: Validation	20		
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: 10/5/2022

Ho Chi Minh City, dd/mm/yyyy
**Dean of School of Industrial Engineering and
Management**

(Signature)

Assoc. Prof. Dr. Nguyen Van Hop



**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> <i><Full Name></i>

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. 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 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.



Course Name: Entrepreneurship

Course Code: IT120IU

1. General information

Course designation	An introduction to the creative and innovative managerial practices of successful entrepreneurship.
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)	Total workload: 135 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 (lecture) Private study including examination preparation, specified in hours: 90
Credit points	Number of credits : 3 (ECTS: 4.46) Lecture: 3 Laboratory: 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; <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>1, 2, 3</td></tr><tr><td>Skill</td><td>1, 3</td></tr><tr><td>Attitude</td><td>3</td></tr></table>	Competency level	Course learning outcome (CLO)	Knowledge	1, 2, 3	Skill	1, 3	Attitude	3										
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) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Entrepreneurship, Creativity and Innovation;</td><td>3</td><td>I, T</td></tr><tr><td>Creative Problem Solving Model;</td><td>3</td><td>T, U</td></tr><tr><td>Develop a Product. Generate Ideas and Protect Inventions;</td><td>2</td><td>T</td></tr><tr><td>Marketing Strategies;</td><td>3</td><td>T, U</td></tr><tr><td>Finance and Accounting</td><td>4</td><td>T, U</td></tr></table>	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
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

0. 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					
CL O	1	2	3	4	5	6
1			x			
2		x				
3				x		

0. Planned learning activities and teaching methods

Week	Topic	CL O	Assessments	Learning activities	Resource s
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 and Protect Inventions;	2	Midterm exam, Assignment	Lecture, In-class 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				

0. *Assessment plan*

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

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)

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		

0. 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.

0. 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	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others'	Specific position (perspective, thesis/hypothesis) acknowledge s different	Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.

	complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	points of view are acknowledged within position (perspective, thesis/hypothesis).	sides of an issue.	
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	Organizational pattern (specific introduction and conclusion,	Organizational pattern (specific introduction and conclusion, sequenced	Organizational pattern (specific introduction and conclusion, sequenced material within

	transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	material within the body, and transitions) is intermittently observable within the presentation.	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)	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies,

	make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	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.	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.	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: June 10, 2025

Ho Chi Minh City, 10/06/2025
Dean of School of Computer Science and Engineering

TT

Assoc.Prof. Nguyen Van Sinh



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

COURSE SYLLABUS

Course Name: INORGANIC CHEMISTRY

Course Code: **BTBC103IU**

1. General information

Course name	- <i>INORGANIC CHEMISTRY</i> - <i>Hóa Vô cơ</i>												
Course designation	<i>This course is specifically designed for students of Biochemistry. This course focuses on the fundamentals of inorganic chemistry and its relevance to biochemistry. The course's content includes studies of trends in reactivity, structures and properties of the elements and their compounds, and biological inorganic chemistry.</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	2												
Person responsible for the course	<i>Assoc. Prof. Nguyen Tan Khoi</i>												
Language	English												
Relation to curriculum	☒ <i>Compulsory</i> ☐ <i>Elective</i>												
Teaching methods	Lecture, lesson, homework, quiz												
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours <table><tr><td><i>Credit</i></td><td><i>3</i></td><td></td></tr><tr><td><i>Contact hours</i></td><td><i>37.5</i></td><td><i>37.5</i></td></tr><tr><td><i>Self-Study hours</i></td><td><i>90</i></td><td><i>90</i></td></tr><tr><td><i>Total workload</i></td><td><i>127.5</i></td><td><i>127.5</i></td></tr></table>	<i>Credit</i>	<i>3</i>		<i>Contact hours</i>	<i>37.5</i>	<i>37.5</i>	<i>Self-Study hours</i>	<i>90</i>	<i>90</i>	<i>Total workload</i>	<i>127.5</i>	<i>127.5</i>
<i>Credit</i>	<i>3</i>												
<i>Contact hours</i>	<i>37.5</i>	<i>37.5</i>											
<i>Self-Study hours</i>	<i>90</i>	<i>90</i>											
<i>Total workload</i>	<i>127.5</i>	<i>127.5</i>											

Credit points	3 credits (Theory: 3) 4.62 ECTS (<i>optional</i>)		
Number of periods	Theory: 45 Practice: 0		
Required and recommended prerequisites for joining the course	- Prerequisites: CH011IU - Chemistry for Engineers.		
Course objectives	- Students will be provided with skills of recognizing different types of inorganic compounds, their structures, properties, and reactions - Students will be provided with the ability of analyzing, predicting and explaining inorganic complexes.		
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 chemical elements and compounds based on their general trends, structures, properties, and reactions, as well as being able to relate the knowledge with compounds and processes in living materials. CLO2. Recognizing different type of symmetrical elements of molecular structure	
	Skill	CLO3. Know how to draw and predict the structures of simple compounds.	
	Apply	CLO4. Able to predict and explain properties of transition metal complexes using crystal field theory. CLO5. Able to present, explain and communicate important transition metal complexes.	
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
	Foundations of inorganic chemistry Molecular structure and bonding	1	T, I
	Intermolecular forces	1	T, U
	Molecular geometry	2	T, U
Periodic trends of the elements	1	T, I	
Atomic parameters			

	Periodic characteristics of compounds		
	Coordination chemistry	2	T, U
	The elements and their compounds Types of inorganic reactions	1	T, I
	Main Group Elements	1	T, U
	Transition elements	3	T, U
	Group presentation: Transition metals complexes and their application in daily activity and biochemistry	3	T, U
Examination forms	<i>Written exams (Midterm+Final)</i>		
Study and examination requirements	Students are expected to spend at least 8 hours per week studying this course. This time should be made up of reading, working on exercises and problems, group assignments and attending class lectures and tutorials. University regulations indicate that students may be refused to take final assessment if they attend less than 80% of scheduled classes. Regular attendance is essential for successful performance and learning in this course, particular in the view of the interactive teaching and learning approach adopted.		
Reading list	Textbooks: [1] Shriver and Atkins' Inorganic Chemistry, 5th Edition, 2009, Peter Atkins, Tina Overton, Jonathan Rourke, Mark Weller and Fraser Armstrong. [2] Inorganic Chemistry, 5th Edition, 2014, Gary Miessler, Paul Fischer and Donald Tarr. [3] Biological Inorganic Chemistry An Introduction, 1st Edition, 2008, Robert Crichton.		

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	<i>Lecture 1: Part 1: Foundations of inorganic chemistry Molecular structure and bonding</i>	1	Quiz1, HW1	Lecture, In Class-Quiz, HW	

2	<i>Lecture 2: Intermolecular forces</i>	1	Quiz2, HW2	Lecture, In Class-Quiz, HW	
3-4	<i>Lecture 3: Molecular geometry</i>	2	Quiz3, HW3	Lecture, In Class-Quiz, HW	
5	<i>Lecture 4: Periodic trends of the elements Atomic parameters Periodic characteristics of compounds</i>	1	Quiz4, HW4	Lecture, In Class-Quiz, HW	
6-7	<i>Lecture 5-6: Coordination chemistry</i>	1,3	Quiz5, HW5	Lecture, In Class-Quiz, HW	
8	<i>Lecture 7: Part 2: The elements and their compounds Types of inorganic reactions</i>	1	Quiz6, HW6	Lecture, In Class-Quiz, HW	
	Midterm				
9	<i>Lecture 7: Main Group Elements</i>	1	Quiz7, HW5	Lecture, In Class-Quiz, HW	
10-12	<i>Lecture 8: Transition elements</i>	4	Quiz8, HW6	Lecture, In Class-Quiz, HW	
13-15	<i>Group presentation: Transition metals complexes and their application in daily activity and biochemistry</i>	4,5	Quiz9	Lecture, In Class-Quiz, HW	
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Written exam (70%)	60%Pass	60%Pass	60%Pass	60%Pass	60%Pass
Quiz (20%)	80%Pass	80%Pass	80%Pass	80%Pass	80%Pass
Class participation (10%)	80%Pass	80%Pass	80%Pass	80%Pass	80%Pass

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

5. Date revised: May 2025.....

6. Course coordinator/Lecturer

- School/Department: School of BT. Department of Applied Chemistry.
- Email: ntkhoi@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

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., Dr. Nguyen Van Thuan



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

COURSE SYLLABUS

Course Name: INORGANIC CHEMISTRY LAB

Course Code: BTBC104IU

1. General information

Course name	Inorganic chemistry laboratory (in English) Thực hành hóa học vô cơ (in Vietnamese)
Course designation	This course is designed to provide the practical skills in making instrumental chemical analysis and applied theory learned in the course “Inorganic Chemistry”
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	<i>Pham Thi Hoa</i>
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	<i>lecture, coaching, assignment/report</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 55</i> <i>Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 25</i> <i>Private study including examination preparation, specified in hours¹: 30</i>

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.

Credit points	1 (equivalent to 2 ECTS)																							
Number of periods	Theory: Practice: 30																							
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code– Course name) BTBC103IU – Inorganic Chemistry. - Corequisites: (Course code – Course name) - Previous course (Course code – Course name)																							
Course objectives	This course is designed to provide practical skills of inorganic chemistry along with practicing principles of inorganic chemical reactions for chemical analysis in laboratories, as a requirement for students of biochemistry																							
Course learning outcomes	Upon the successful completion of this course students will be able to: <table><tr><th>Competency level</th><th colspan="2">Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td colspan="2">CLO1. Applied inorganic chemical reactions for synthesis of inorganic chemicals (apply)</td></tr><tr><td>Skill</td><td colspan="2">CLO2. Exercise analysis of inorganic chemicals in laboratory (apply)</td></tr><tr><td>Attitude</td><td colspan="2">CLO3. Demonstrate ethical and responsibility of chemist in providing analytical data (apply)</td></tr></table>			Competency level	Course learning outcome (CLO)		Knowledge	CLO1. Applied inorganic chemical reactions for synthesis of inorganic chemicals (apply)		Skill	CLO2. Exercise analysis of inorganic chemicals in laboratory (apply)		Attitude	CLO3. Demonstrate ethical and responsibility of chemist in providing analytical data (apply)										
Competency level	Course learning outcome (CLO)																							
Knowledge	CLO1. Applied inorganic chemical reactions for synthesis of inorganic chemicals (apply)																							
Skill	CLO2. Exercise analysis of inorganic chemicals in laboratory (apply)																							
Attitude	CLO3. Demonstrate ethical and responsibility of chemist in providing analytical data (apply)																							
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>Preparation of laboratory solutions</td><td>2</td><td>T</td></tr><tr><td>Synthesis of copper chloride</td><td>2</td><td>T</td></tr><tr><td>Synthesis of sodium thiosulfate pentahydrate</td><td>2</td><td>T</td></tr><tr><td>Synthesis of cis-platin</td><td>2</td><td>T</td></tr><tr><td>Limit test for chloride</td><td>2</td><td>T</td></tr><tr><td>Limit test for sulfate</td><td>2</td><td>T</td></tr></table>			Topic	Weight	Level	Preparation of laboratory solutions	2	T	Synthesis of copper chloride	2	T	Synthesis of sodium thiosulfate pentahydrate	2	T	Synthesis of cis-platin	2	T	Limit test for chloride	2	T	Limit test for sulfate	2	T
Topic	Weight	Level																						
Preparation of laboratory solutions	2	T																						
Synthesis of copper chloride	2	T																						
Synthesis of sodium thiosulfate pentahydrate	2	T																						
Synthesis of cis-platin	2	T																						
Limit test for chloride	2	T																						
Limit test for sulfate	2	T																						
Examination forms	<i>e.g. oral presentation, essay, etc.</i> Reports, Multiple-choice questions, short-answer questions																							

Study and examination requirements	<i>Requirements for successfully passing the module</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. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	<i>Names of textbooks, articles, etc.</i> 1. Lab manual

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-3) and Intended Learning Outcomes (ILOs) (1 -11) and level of contribution of CLO to ILO (Low – Medium – High) is shown in the following table:

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

3. Planned learning activities and teaching methods.

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Preparation of laboratory solutions	1, 2, 3	Report 1	Lecture, Practice, homework	[1]. 1
2	Synthesis of copper chloride	1, 2, 3	Report 2	Lecture, Practice, homework	[1]. 2
3	Synthesis of sodium thiosulfate pentahydrate	1, 2, 3	Report 3	Lecture, Practice, homework	[1]. 3
4	Synthesis of cis-platin	1, 2, 3	Report 4	Lecture, Practice, homework	[1]. 4
5	Limit test for chloride	1, 2, 3	Report 5	Lecture, Practice, homework	[1]. 5
6	Limit test for sulfate	1, 2, 3	Report 6	Lecture, Practice, homework	[1]. 6
	Final test	1, 2, 3	Examination	Examination	

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Class participation (20%)			X
Reports (60%)	x	x	X
Final exam (20%)	x	x	x

Note: %Pass: Target that 70% of students having scores greater than 60 out of 100.

5. Rubrics

6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: School of BT. Department of Applied Chemistry.
- Email: pthoa@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: Organic Chemistry 1

Course Code: **BTBC201IU**

1. General information

Course name	- (in English) Organic Chemistry 1. - (in Vietnamese) Hóa hữu cơ 1																																			
Course designation	<i>This course is specifically designed for students of Biochemistry program. It is the first part of a 2-semester course in Organic Chemistry. This particular module provides fundamental information on aspects of stereochemistry and the basics of addition, substitution and elimination reactions, functional groups, saturated and aromatic heterocyclic compounds.</i>																																			
Course type	☐ General knowledge ☒ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:																																			
Semester(s) in which the course is taught	3,4																																			
Person responsible for the course	Dr. Le Quang Phong																																			
Language	English																																			
Relation to curriculum	Compulsory																																			
Teaching methods	Lecture, lesson, homework, quiz.																																			
Workload (incl. contact hours, self-study hours)	<table><tr><td></td><td></td><td>Lecture</td><td>Lab</td><td></td><td></td><td></td></tr><tr><td></td><td>Credit</td><td>3</td><td></td><td></td><td></td><td></td></tr><tr><td>Contact hours</td><td>37.5</td><td>37.5</td><td>0</td><td></td><td></td><td></td></tr><tr><td>Self-Study hours</td><td>90</td><td>90</td><td>0</td><td></td><td></td><td></td></tr><tr><td>Total workload</td><td>127.5</td><td>127.5</td><td>0</td><td></td><td></td><td></td></tr></table>			Lecture	Lab					Credit	3					Contact hours	37.5	37.5	0				Self-Study hours	90	90	0				Total workload	127.5	127.5	0			
		Lecture	Lab																																	
	Credit	3																																		
Contact hours	37.5	37.5	0																																	
Self-Study hours	90	90	0																																	
Total workload	127.5	127.5	0																																	

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	- Previous course (Course code – Course name) CH011IU-Chemistry for Engineers.	
Course objectives	Students will be provided with skills of recognizing different types of functional groups and reactions. Students will be provided with the ability to analyze and draw reaction mechanisms.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understand organic and hydrocarbon compound structures, their properties, and reactions
	Skill	CLO2. Know how to distinguish chiral and achiral compounds and draw CLO3. Know how to draw a reaction mechanism.
	Apply	CLO4. Able to predict products of hydrocarbons, alkyl halide and aromatic compounds reactions. CLO5. Able to characterize and determine the organic compounds structures.

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>Bonding and molecular structure</td><td>2</td><td>T, I</td></tr><tr><td>Introduction to organic compounds</td><td>1</td><td>T, I</td></tr><tr><td>Stereochemistry</td><td>1</td><td>T, U</td></tr><tr><td>Types of organic reactions</td><td>1</td><td>T, I</td></tr><tr><td>Alkanes and Cycloalkanes</td><td>1</td><td>T, U</td></tr><tr><td>Alkenes</td><td>2</td><td>T, U</td></tr><tr><td>Alkynes</td><td>1</td><td>T, U</td></tr><tr><td>Alkyl halides</td><td>3</td><td>T, U</td></tr><tr><td>Diels and Aromatic compounds</td><td>3</td><td>T, U</td></tr></table>	Topic	Weight	Level	Bonding and molecular structure	2	T, I	Introduction to organic compounds	1	T, I	Stereochemistry	1	T, U	Types of organic reactions	1	T, I	Alkanes and Cycloalkanes	1	T, U	Alkenes	2	T, U	Alkynes	1	T, U	Alkyl halides	3	T, U	Diels and Aromatic compounds	3	T, U
Topic	Weight	Level																													
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Alkanes and Cycloalkanes	1	T, U																													
Alkenes	2	T, U																													
Alkynes	1	T, U																													
Alkyl halides	3	T, U																													
Diels and Aromatic compounds	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 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] Organic Chemistry, 7th Edition, 2007, John McMurry [2] Organic Chemistry with a Biological Emphasis, LibreTexts Open Access, 2016, Timothy Soderberg [3] Organic Chemistry, 12th Edition, 2016, T.W. Graham Solomons, Craig B. Fryhle, Scott A. Snyder [4] Organic Chemistry, 8th Edition, 2013, L.G. Wade Jr.																														

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-4) and Intended Learning Outcomes (ILOs) (1-8) level of contribution of CLO to ILO (Low – Medium – High) is shown in the following table:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1-2	<i>Lecture 1: Bonding and molecular structure: Lewis structure, Electronegativity and polarity; Resonances; Intermolecular forces (review) Hybridization, Writing organic structures and mechanisms. Curved arrows</i>	1	Quiz1, HW1	Lecture, In Class-Quiz, HW	
3	<i>Lecture 2: Introduction to organic compounds: Hydrocarbons and functional groups Infrared Spectroscopy: Introduction</i>	1, 5	Quiz2, HW2	Lecture, In Class-Quiz, HW	
4	<i>Lecture 3: Stereochemistry</i>	2	Quiz3, HW3	Lecture, In Class-Quiz, HW	
5	<i>Lecture 4: Types of organic reactions</i>	1,3	Quiz4, HW4	Lecture, In Class-Quiz, HW	
6	<i>Lecture 5: Alkanes and Cycloalkanes: Nomenclature and Conformations</i>	1,3,4	Quiz5, HW5	Lecture, In Class-Quiz, HW	
7	<i>Lecture 6: Alkenes: Properties and Synthesis; <u>Addition reactions</u> Review</i>	1,3,4	Quiz6, HW6	Lecture, In Class-Quiz, HW	
8	Midterm <i>Lecture 6: Alkenes: Properties and Synthesis; <u>Addition reactions</u> Review (Continued)</i>	1,3,4	Quiz6, HW6	Lecture, HW	
9	<i>Lecture 7: Alkynes: Properties and Synthesis; Addition reactions</i>	1,3,4	Quiz7, HW5	Lecture, In Class-Quiz, HW	
10-12	<i>Lecture 8: Alkyl halides: <u>Elimination reactions</u>; <u>Nucleophilic substitutions</u></i>	1,3,4	Quiz8, HW6	Lecture, In Class-Quiz, HW	
13-15	<i>Lecture 9: Diels and Aromatic compounds: Conjugated unsaturated systems; <u>Electrophilic aromatic substitutions</u></i>	1,3,4	Quiz9, HW7	Lecture, In Class-Quiz, HW	
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
In-class exercises/quizzes (20%)	80% Pass	80% Pass	80% Pass	80% Pass	80% Pass
Homework exercises (10%)	90% Pass	90% Pass	90% Pass	90% Pass	90% Pass
Midterm exam (30%)	70% Pass	70% Pass	70% Pass	70% Pass	70% Pass
Final exam (40%)	80% Pass		80% Pass	80% Pass	

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

5. Rubrics

6. **Date revised:** 05/2025

7. Course coordinator/Lecturer

- School/Department: Dr. Lê Quang Phong- Department of Applied Chemistry
- Email: lqphong@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: Organic Chemistry 2

Course Code: **BTBC206IU**

1. General information

Course name	- (in English) Organic Chemistry 2. - (in Vietnamese) Hóa hữu cơ 2																																			
Course designation	<i>This course is specifically designed for students of Biochemistry. It is the second part of a 2- semester course in Organic Chemistry. This particular module provides fundamental information on functional groups, mechanisms of their common reactions with a biological emphasis.</i>																																			
Course type	☐ General knowledge ☒ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:.....																																			
Semester(s) in which the course is taught	3,4																																			
Person responsible for the course	Dr. Le Quang Phong																																			
Language	English																																			
Relation to curriculum	Compulsory																																			
Teaching methods	Lecture, lesson, homework, quiz.																																			
Workload (incl. contact hours, self-study hours)	<table><tr><td></td><td></td><td>Lecture</td><td>Lab</td><td></td><td></td><td></td></tr><tr><td></td><td>Credit</td><td>3</td><td></td><td></td><td></td><td></td></tr><tr><td>Contact hours</td><td>37.5</td><td>37.5</td><td>0</td><td></td><td></td><td></td></tr><tr><td>Self-Study hours</td><td>90</td><td>90</td><td>0</td><td></td><td></td><td></td></tr><tr><td>Total workload</td><td>127.5</td><td>127.5</td><td>0</td><td></td><td></td><td></td></tr></table>			Lecture	Lab					Credit	3					Contact hours	37.5	37.5	0				Self-Study hours	90	90	0				Total workload	127.5	127.5	0			
		Lecture	Lab																																	
	Credit	3																																		
Contact hours	37.5	37.5	0																																	
Self-Study hours	90	90	0																																	
Total workload	127.5	127.5	0																																	

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	- Previous course (Course code – Course name) BTBC201IU - Organic Chemistry 1.		
Course objectives	Students will be provided with skills of recognizing different types of functional groups and reactions. Students will be provided with the ability to analyze and draw reaction mechanisms.		
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 structures of alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, amines, enols and enolates and their properties, reactions	
	Skill	CLO2. Know how to draw the mechanism of the functional groups mentioned in the course.	
	Apply	CLO3. Able to predict and explain products of certain reactions.	
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
	Alcohols, Phenols	2	T, U
	Ethers, Epoxides, Thiols	1	T, U
	Aldehydes, ketones	2	T, U
	Carboxylic acids, Carboxylic acids derivatives:	3	T, U
	Enols and enolates	2	T, U
	Aldol condensation and Claisen condensation reactions	2	T, U
Amine	2	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 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] Organic Chemistry, 7th Edition, 2007, John McMurry [2] Organic Chemistry with a Biological Emphasis, LibreTexts Open Access, 2016, Timothy Soderberg [3] Organic Chemistry, 12th Edition, 2016, T.W. Graham Solomons, Craig B. Fryhle, Scott A. Snyder [4] Organic Chemistry, 8th Edition, 2013, L.G. Wade Jr.

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-4) and Intended Learning Outcomes (ILOs) (1-8) level of contribution of CLO to ILO (Low – Medium – High) is shown in the following table:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CL O	Assessments	Learning activities	Resources
1-2	Lecture 1 and 2: Alcohols, Phenols: Synthesis and reactions	1,2,3	Quiz1, HW1	Lecture, In Class-Quiz, HW	
3	Lecture 3: Ethers, Epoxides, Thiols: Synthesis and reactions	1,2,3	Quiz2, HW2	Lecture, In Class-Quiz, HW	
4-5	Lecture 4: Aldehydes, ketones: <u>Nucleophilic carbonyl addition reactions</u> Sugars as intramolecular hemiacetals and hemiketals Glycosidic bonds	1,2,3	Quiz3, HW3	Lecture, In Class-Quiz, HW	
6-7	Lecture 5: Carboxylic acids, Carboxylic acids derivatives: <u>Nucleophilic acyl substitution</u> Nucleophilic acyl substitution in the context of metabolism	1,2,3	Quiz4, HW4	Lecture, In Class-Quiz, HW	
8	Midterm Lecture 5: Carboxylic acids, Carboxylic acids derivatives: <u>Nucleophilic acyl substitution</u> Nucleophilic acyl substitution in the context of metabolism				

9-10	<i>Lecture 6: Enols and enolates: <u>Reaction at the α Carbon of carbonyl compounds</u></i>	2,3	Quiz5, HW5	Lecture, In Class-Quiz, HW	
11-12	<i>Lecture 7: Aldol condensation and Claisen condensation reactions. Biochemical aldol addition. Decarboxylation and fatty acid metabolism. Biochemical Claisen condensation reactions. Biotin-dependent carboxylation</i>	2,3	Quiz6, HW6	Lecture, In Class-Quiz, HW	
13-14	<i>Lecture 8: Amine: Synthesis and reactions</i>	1,2,3	Quiz7, HW7	Lecture, In Class-Quiz, HW	
15	<i>Final exam Review</i>	2,3	Quiz8	Review-Test	
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
In-class exercises/quizzes (20%)	80% Pass	80% Pass	80% Pass
Homework exercises (10%)	90% Pass	90% Pass	90% Pass
Midterm exam (30%)	70% Pass	70% Pass	70% Pass
Final exam (40%)	80% Pass	80% Pass	80% Pass

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

5. Rubrics

6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: Dr. Lê Quang Phong- Department of Applied Chemistry
- Email: lqphong@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: Organic Chemistry Lab

Course Code: **BTBC207IU**

1. General information

Course name	- (in English) <i>Organic Chemistry Lab</i> - (in Vietnamese) <i>Thực hành Hóa hữu cơ</i>																																			
Course designation	<i>The organic chemistry laboratory course introduces the student to fundamental techniques and procedures in extraction, purification, synthesis and characterization of organic compounds and simple reactions used in the organic chemistry laboratory. In addition, the student will be trained in the proper way to write a scientific laboratory report.</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	Dr. Le Quang Phong																																			
Language	English																																			
Relation to curriculum	☒ Compulsory ☐ Elective																																			
Teaching methods	lecture, lab work.																																			
Workload (incl. contact hours, self-study hours)	<table><tr><td></td><td></td><td>Lecture</td><td>Lab</td><td></td><td></td><td></td></tr><tr><td></td><td>Credit</td><td></td><td>2</td><td></td><td></td><td></td></tr><tr><td>Contact hours</td><td>50</td><td>0</td><td>50</td><td></td><td></td><td></td></tr><tr><td>Self-Study hours</td><td>60</td><td>0</td><td>60</td><td></td><td></td><td></td></tr><tr><td>Total workload</td><td>110</td><td>0</td><td>110</td><td></td><td></td><td></td></tr></table>			Lecture	Lab					Credit		2				Contact hours	50	0	50				Self-Study hours	60	0	60				Total workload	110	0	110			
		Lecture	Lab																																	
	Credit		2																																	
Contact hours	50	0	50																																	
Self-Study hours	60	0	60																																	
Total workload	110	0	110																																	

Credit points	2 credits (Theory: 0 + Practice: 1) 4.0 ECTS (<i>optional</i>)	
Number of periods	Theory: 0 Practice: 60	
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name): BTBC201IU - Organic chemistry 1	
Course objectives	The course will introduce and emphasize students on the techniques of purification, extraction, and characterization of organic compounds from plant, food, and other natural resources.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: Utilize basic knowledge gained from General Chemistry course to perform common calculations, including mass balance, limiting reagent, and percent yield. CLO2: Engage in safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately, using general guidelines and basic knowledge about the common hazards associated with them in an organic chemistry laboratory. CLO3: Predict the outcome of several common organic reaction types through a basic understanding of starting materials, functional groups, mechanism, and typical reaction conditions. Characterize prepared substances by physical/spectroscopic means.
	Skill	CLO4: Develop laboratory skills in handling chemicals, assembling glassware and performing the following techniques as a part of synthetic procedures: distillation, reflux, separation, isolation, and crystallization.
	Attitude	CLO5: Ability to analyze, predict, and explain many aspects of everyday life using laboratory skills and organic chemistry concepts.

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>Lab 1: Laboratory safety</td><td>1</td><td>I, T</td></tr><tr><td>Lab 2: Melting point determination</td><td>1</td><td>I, T,U</td></tr><tr><td>Lab 3: Recrystallization</td><td>1</td><td>I, T,U</td></tr><tr><td>Lab 4: Thin layer chromatography</td><td>1</td><td>I, T,U</td></tr><tr><td>Lab 5: Column chromatography</td><td>1</td><td>I, T,U</td></tr><tr><td>Lab 6: Simple distillation</td><td>1</td><td>I, T,U</td></tr><tr><td>Lab 7: Reflux extraction</td><td>1</td><td>I, T,U</td></tr><tr><td>Lab 8: Liquid – liquid extraction</td><td>1</td><td>I, T,U</td></tr><tr><td>Lab 9: Fischer ester synthesis</td><td>1</td><td>I, T,U</td></tr><tr><td>Lab 10: Solvent effects in an SN1 Solvolysis reaction a kinetics study</td><td>1</td><td>I, T,U</td></tr></table>	Topic	Weight	Level	Lab 1: Laboratory safety	1	I, T	Lab 2: Melting point determination	1	I, T,U	Lab 3: Recrystallization	1	I, T,U	Lab 4: Thin layer chromatography	1	I, T,U	Lab 5: Column chromatography	1	I, T,U	Lab 6: Simple distillation	1	I, T,U	Lab 7: Reflux extraction	1	I, T,U	Lab 8: Liquid – liquid extraction	1	I, T,U	Lab 9: Fischer ester synthesis	1	I, T,U	Lab 10: Solvent effects in an SN1 Solvolysis reaction a kinetics study	1	I, T,U
Topic	Weight	Level																																
Lab 1: Laboratory safety	1	I, T																																
Lab 2: Melting point determination	1	I, T,U																																
Lab 3: Recrystallization	1	I, T,U																																
Lab 4: Thin layer chromatography	1	I, T,U																																
Lab 5: Column chromatography	1	I, T,U																																
Lab 6: Simple distillation	1	I, T,U																																
Lab 7: Reflux extraction	1	I, T,U																																
Lab 8: Liquid – liquid extraction	1	I, T,U																																
Lab 9: Fischer ester synthesis	1	I, T,U																																
Lab 10: Solvent effects in an SN1 Solvolysis reaction a kinetics study	1	I, T,U																																
Examination forms	Multiple-choice questions, short-answer questions																																	
Study and examination requirements	<i>Students are expected to spend at least 8 hours per week studying this course. This time should be made up of reading, working on exercises and problems, group assignments and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted. The Organic Chemistry Lab requires full attendance in order to pass the course.</i>																																	
Reading list	[1] “Organic Chemistry” by Francis A. Carey, Robert M. Giuliano (8th Edition, 2011). [2] “Organic Chemistry” by T.W. Graham Solomons, Craig B. Fryhle, Scott A. Snyder (11th Edition 2013). [3] “Organic Chemistry” by Jonathan Clayden, Nick Greeves, Stuart Warren and Peter Wothers (2008) [4] Department of Applied Chemistry – Organic Chemistry Lab Manual.																																	

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				L				
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	Lab 1: Orientations: Laboratory safety	1		Lecture presentation Group forming	[1],[2],[3],[4]
2	Lecture 2: Melting point determination	1,2,3	Group report	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
3	Lecture 3: Recrystallization	1,2,3	Group report	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
4	Lecture 4: Thin layer chromatography	1,2,3	Group report	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
5	Lecture 5: Column chromatography	1,2,3	Group report	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
6	Lecture 6: Simple distillation	1,2,3	Group report	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
7	Midterm test Lab 7: Reflux extraction (continued)				
8	Lab 7: Reflux reaction	1,2,3	Group report	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]

9	Lab 8: Liquid – liquid extraction	1,2,3	Group report	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
10	Lab 9: Fischer ester synthesis	1,2,3	Group report	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
11	Lab 10: Solvent effects in an SN1 Solvolysis reaction a kinetics study	1,2,3	Group report	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
12	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Assignment (70%): Performance (10%), Report (40%), Midterm test (20%)	Test 70%Pass	Test, Report 70%Pass	Performance 90%Pass	Test 50%Pass	Test 50%Pass
Final (30%)	80%Pass	80%Pass	80%Pass	80%Pass	80%Pass

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

5. Rubrics

6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: Dr. Le Quang Phong - Department of Applied Chemistry
- Email: lqphong@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: FUNDAMENTALS OF ANALYTICAL CHEMISTRY

Course Code: **BTBC213IU**

1. General information

Course name	Fundamental of Analytical chemistry (in English) Nguyên lý Hóa phân tích (in Vietnamese)
Course designation	This course is designed to provide the fundamentals of analytical chemistry along with practical principles for working in laboratories, as a requirement for students of biochemistry
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	<i>Pham Thi Hoa</i>
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	<i>lecture, assignments, presentation</i>

Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 135h</i> <i>Contact hours (lecture, exercise): 45</i> <i>Private study including examination preparation, specified in hours¹: 90</i>	
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). - Corequisites: (Course code – Course name) - Previous course (Course code – Course name)	
Course objectives	This course is designed to provide the fundamentals of analytical chemistry along with practical principles for working in laboratories, as a requirement for students of biochemistry	
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 principles of analytical chemistry CLO2. Apply principles of analytical chemistry in chemical analysis
	Skill	CLO3. Construct analysis with acid-based titration and redox titration
	Attitude	CLO4. Demonstrate ethical and responsibility of chemist in providing analytical data.

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	0.5	I, T
	Chemical measurement	1	T, U
	Statistics	2	T, U
	Quality assurance	1	T
	Chemical equilibrium	1	T, U
	Acid-base titration	1	T
	Fundamental of electrochemistry	2	T, U
Redox titration	1.5	T	
Examination forms	<i>e.g. oral presentation, essay, etc.</i> Multiple-choice questions, short-answer questions		
Study and examination requirements	<i>Requirements for successfully passing the module</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. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	<i>Names of textbooks, articles, etc.</i> 1. “Quantitative chemical analysis” By Harris, Daniel C. Macmillan (9th Edition, 2016) Chapter 0 to Chapter 17		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Intended Learning Outcomes (ILOs) (1 -11) and level of contribution of CLO to ILO (Low – Medium – High) is shown in the following table:

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	The Analytical process	1		Lecture, Discussion	[1]. 0
2	Chemical measurement	1, 4	Quiz 1	Lecture, Discussion, Inclass-Quiz	[1]. 1
3-4	Experimental error	1, 4	Quiz 2	Lecture, Discussion, Inclass-Quiz	[1]. 3
5-6	Statistical analysis	2	Quiz 3	Lecture, Discussion, Inclass-Quiz	[1]. 4
7-8	Quality assurance and calibration methods Midterm exam	2	Quiz 4	Lecture, Discussion, Inclass-Quiz	[1]. 5
9-10	Chemical equilibrium	2	Quiz 5	Lecture, Discussion, Inclass-Quiz	[1]. 6
11-12	Acid-base Titration	2, 3	Quiz 6	Lecture, Discussion, Inclass-Quiz	[1]. 7, 9, 11
13	Fundamental of Electrochemistry	2		Lecture, Discussion	[1]. 14
14	Redox titration	2, 3	Quiz 7	Lecture, Discussion, Inclass-Quiz	[1]. 16
15	Revision			Review - test	
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class exercises/quizzes (30%)	X	X	X	X
Midterm exam (30%)	X	X		X
Final exam (40%)		X	X	X

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

5. Rubrics

6. Date revised: 05/2025

7. Course coordinator/Lecturer:

- School/Department: School of BT. Department of Applied Chemistry.
- Email: pthoa@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



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

COURSE SYLLABUS

Course Name: FUNDAMENTAL OF ANALYTICAL CHEMISTRY LAB

Course Code: BTBC214IU

1. General information

Course name	Fundamental of Analytical chemistry laboratory (in English) Thực hành Nguyên lý Hóa phân tích (in Vietnamese)
Course designation	This course is designed to provide the practical skills in making chemical analysis and applied theory learned in the course “Fundamental of analytical chemistry”
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	<i>Pham Thi Hoa</i>
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	<i>lecture, coaching, assignment/report</i>

Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 55</i> <i>Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 25</i> <i>Private study including examination preparation, specified in hours¹: 30</i>		
Credit points	1 (equivalent to 2 ECTS)		
Number of periods	Theory: 0 Practice: 30		
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code– Course name) BTBCIU213IU – Fundamental of Analytical Chemistry. - Corequisites: (Course code – Course name) - Previous course (Course code – Course name)		
Course objectives	This course is designed to provide practical skills of analytical chemistry along with practicing principles for working in laboratories, as a requirement for students of biochemistry		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Applied principles of analytical chemistry in chemical analysis (applied)	
	Skill	CLO2. Exercise analysis with acid-base titration and redox titration (apply)	
	Attitude	CLO3. Demonstrate ethical and responsibility of chemist in providing analytical data (apply)	
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
	Calibration of volumetric glassware	2	T
	Gravimetric determination of Calcium as CaC2O4.H2O	2	T
	Preparing standard acid and base	2	T
	Using a pH electrode for an acid-base titration	2	T
	Analysis of an acid-base: Grant plot	2	T

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.

Examination forms	<i>e.g. oral presentation, essay, etc.</i> Reports, Multiple-choice questions, short-answer questions
Study and examination requirements	<i>Requirements for successfully passing the module</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. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	<i>Names of textbooks, articles, etc.</i> 1. Lab manual

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-3) and Intended Learning Outcomes (ILOs) (1 -11) and level of contribution of CLO to ILO (Low – Medium – High) is shown in the following table:

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Calibration of volumetric glassware	1, 2, 3	Report 1	Lecture, Practice, homework	[1]. 1
2	Gravimetric determination of Calcium as $\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$	1, 2, 3	Report 2	Lecture, Practice, homework	[1]. 2
3	Preparing standard acid and base	1, 2, 3	Report 3	Lecture, Practice, homework	[1]. 3
4	Using a pH electrode for an acid-base titration	1, 2, 3	Report 4	Lecture, Practice, homework	[1]. 4
5	Analysis of an acid-	1, 2, 3	Report 5	Lecture,	[1]. 5

	base: Grant plot			Practice, homework	
6	Final test	1, 2, 3	Examination	Examination	

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Class participation (20%)			X
Reports (60%)	X	X	X
Final exam (20%)	X	X	X

Note: %Pass: Target that 70% of students having scores greater than 60 out of 100.

5. Rubrics

6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: School of BT. Department of Applied Chemistry.
- Email: pthoa@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: INSTRUMENTAL ANALYSIS

Course Code: **BTBC215IU**

1. General information

Course name	Instrumental Analysis (in English) Phân tích dụng cụ (in Vietnamese)
Course designation	This course is designed to provide the fundamentals of instrumental analysis along with practical principles for working in laboratories, as a requirement for students of biochemistry.
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	<i>Pham Thi Hoa</i>
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	<i>lecture, assignments, presentation</i>
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 180 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 (lecture, exercise) Private study including examination preparation, specified in hours: 90

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) BTBCIU213IU – Fundamentals of analytical chemistry. - Corequisites: (Course code – Course name) - Previous course (Course code – Course name)	
Course objectives	This course is designed to provide the fundamentals of instrumental analysis along with practical principles for working in laboratories, as a requirement for students of biochemistry.	
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 principles of spectroscopy and analytical separation in analytical chemistry CLO2. Describe the application of spectroscopy and analytical separation in different instruments
	Skill	CLO3. Exercise analysis with different spectrophotometer and chromatography
	Attitude	CLO4. Demonstrate ethical and responsibility of chemists in providing analytical data using instrumental analysis.

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 Instrumental analysis</td><td>0.5</td><td>I, T</td></tr><tr><td>Spectroscopy</td><td>2</td><td>T</td></tr><tr><td>Application of spectrophotometry</td><td>1.5</td><td>T</td></tr><tr><td>Atomic spectroscopy</td><td>1</td><td>T</td></tr><tr><td>Mass spectroscopy</td><td>1</td><td>T</td></tr><tr><td>Introduction to analytical separation</td><td>2</td><td>T</td></tr><tr><td>Gas chromatography</td><td>1</td><td>T</td></tr><tr><td>Liquid chromatography</td><td>1</td><td>T</td></tr></table>	Topic	Weight	Level	Introduction to Instrumental analysis	0.5	I, T	Spectroscopy	2	T	Application of spectrophotometry	1.5	T	Atomic spectroscopy	1	T	Mass spectroscopy	1	T	Introduction to analytical separation	2	T	Gas chromatography	1	T	Liquid chromatography	1	T
Topic	Weight	Level																										
Introduction to Instrumental analysis	0.5	I, T																										
Spectroscopy	2	T																										
Application of spectrophotometry	1.5	T																										
Atomic spectroscopy	1	T																										
Mass spectroscopy	1	T																										
Introduction to analytical separation	2	T																										
Gas chromatography	1	T																										
Liquid chromatography	1	T																										
Examination forms	<i>e.g. oral presentation, essay, etc.</i> Multiple-choice questions, short-answer questions																											
Study and examination requirements	<i>Requirements for successfully passing the module</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. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																											
Reading list	<i>Names of textbooks, articles, etc.</i> 1. “Quantitative chemical analysis” By Harris, Daniel C. Macmillan (9th Edition, 2016) Chapter 0 to Chapter 17																											

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-4) and Intended Learning Outcomes (ILO) (1-8) is shown in the following table:

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Instrumental analysis	1		Lecture, Discussion,	[1]. 1
2-3	Spectroscopy	1, 3	Quiz 1	Lecture, Discussion, In Class-Quiz	[1]. 18, 20
4-5	Application of spectrophotometry	2, 3	Quiz 2	Lecture, Discussion, In Class-Quiz	[1]. 19
6-7	Atomic spectroscopy	2	Quiz 3	Lecture, Discussion, In Class-Quiz	[1]. 21
8	Mass spectroscopy	2		Lecture, Discussion,	[1]. 22
9	Midterm				
9	Mass spectroscopy	2	Quiz 4	Lecture, Discussion, In Class-Quiz	
10-11	Introduction to analytical separation	1	Quiz 5	Lecture, Discussion, In Class-Quiz	[1]. 23
12-13	Gas chromatography	2	Quiz 6	Lecture, Discussion, In Class-Quiz	[1]. 24
14-15	Liquid chromatography	2	Quiz 7	Lecture, Discussion, In Class-Quiz	[1]. 25
16	Revision			Review - test	
17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class exercises/quizzes (30%)	X	X	X	X
Midterm exam (30%)	X	X		X
Final exam (40%)		X	X	X

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

5. Rubrics

6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: School of BT. Department of Applied Chemistry.
- Email: pthoa@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

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., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: INSTRUMENTAL ANALYSIS LAB

Course Code: **BTBC216IU**

1. General information

Course name	Instrumental Analysis Lab (in English) Thực hành Phân tích dụng cụ (in Vietnamese)
Course designation	This course is designed to provide the practical skills in making instrumental chemical analysis and applied theory learned in the course “Instrumental Analysis”
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	<i>Pham Thi Hoa</i>
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	<i>lecture, coaching, assignment/report</i>

Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 55</i> <i>Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 25</i> <i>Private study including examination preparation, specified in hours¹: 30</i>	
Credit points	1 (equivalent to 2 ECTS)	
Number of periods	Theory: 0 Practice: 30	
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code– Course name) BTBC215IU – Instrumental Analysis. - Corequisites: (Course code – Course name) - Previous course (Course code – Course name)	
Course objectives	This course is designed to provide practical skills of instrumental analysis along with practicing principles for using instruments for chemical analysis in laboratories, as a requirement for students of biochemistry	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Applied principles of instrumental analysis for measuring of chemicals (applied)
	Skill	CLO2. Exercise analysis with spectrophotometer, chromatography, Kjeldahl nitrogen (apply)
	Attitude	CLO3. Demonstrate ethical and responsibility of chemist in providing analytical data (apply)

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.

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>SPECTROPHOTOMETRIC DETERMINATION OF IRON IN VITAMIN TABLETS</td><td>2</td><td>T</td></tr><tr><td>SPECTROPHOTOMETRIC ANALYSIS OF A MIXTURE: CAFFEINE AND BENZOIC ACID IN SOFT DRINKS</td><td>2</td><td>T</td></tr><tr><td>THIN LAYER CHROMATOGRAPHY OF VEGETABLES</td><td>2</td><td>T</td></tr><tr><td>DETERMINATION OF VITAMIN C IN FRUITS BY HPLC</td><td>2</td><td>T</td></tr><tr><td>MEASUREMENT OF NITROGEN CONTENT IN FOOD BY KJELDAHL METHOD</td><td>2</td><td>T</td></tr></table>	Topic	Weight	Level	SPECTROPHOTOMETRIC DETERMINATION OF IRON IN VITAMIN TABLETS	2	T	SPECTROPHOTOMETRIC ANALYSIS OF A MIXTURE: CAFFEINE AND BENZOIC ACID IN SOFT DRINKS	2	T	THIN LAYER CHROMATOGRAPHY OF VEGETABLES	2	T	DETERMINATION OF VITAMIN C IN FRUITS BY HPLC	2	T	MEASUREMENT OF NITROGEN CONTENT IN FOOD BY KJELDAHL METHOD	2	T
Topic	Weight	Level																	
SPECTROPHOTOMETRIC DETERMINATION OF IRON IN VITAMIN TABLETS	2	T																	
SPECTROPHOTOMETRIC ANALYSIS OF A MIXTURE: CAFFEINE AND BENZOIC ACID IN SOFT DRINKS	2	T																	
THIN LAYER CHROMATOGRAPHY OF VEGETABLES	2	T																	
DETERMINATION OF VITAMIN C IN FRUITS BY HPLC	2	T																	
MEASUREMENT OF NITROGEN CONTENT IN FOOD BY KJELDAHL METHOD	2	T																	
Examination forms	<i>e.g. oral presentation, essay, etc.</i> Reports, Multiple-choice questions, short-answer questions																		
Study and examination requirements	<i>Requirements for successfully passing the module</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. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																		
Reading list	<i>Names of textbooks, articles, etc.</i> 1. Lab manual																		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-3) and Intended Learning Outcomes (ILOs) (1 -11) and level of contribution of CLO to ILO (Low – Medium – High) is shown in the following table:

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

3. Planned learning activities and teaching methods.

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Spectrophotometric determination of iron in vitamin tablets	1, 2, 3	Report 1	Lecture, Practice, homework	[1]. 1
2	Spectrophotometric analysis of a mixture: caffeine and benzoic acid in soft drinks	1, 2, 3	Report 2	Lecture, Practice, homework	[1]. 2
3	Thin layer chromatography of vegetables	1, 2, 3	Report 3	Lecture, Practice, homework	[1]. 3
4	Determination of vitamin c in fruits by HPLC	1, 2, 3	Report 4	Lecture, Practice, homework	[1]. 4
5	Measurement of nitrogen content in food by Kjeldahl method	1, 2, 3	Report 5	Lecture, Practice, homework	[1]. 5
6	Final test	1, 2, 3	Examination	Examination	

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Class participation (20%)			X
Reports (60%)	X	X	X
Final exam (20%)	X	X	X

Note: %Pass: Target that 70% of students having scores greater than 60 out of 100.

5. Rubrics

6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: School of BT. Department of Applied Chemistry.
- Email: pthoa@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: Introduction to Biochemistry

Course Code: BTBC102IU

1. General information

Course name	- (in English) <i>Introduction to biochemistry</i> - (in Vietnamese) <i>Nhập môn chuyên ngành Hóa sinh</i>
Course designation	Biochemistry is the study of the molecular basis of life. This one-semester course is designed for Biochemistry students who are pursuing a Bachelor degree in Biochemistry.
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	II
Person responsible for the course	TS. Lê Quang Phong, PGS. TS. Nguyễn Tấn Khôi, PGS. TS. Phạm Thị Hoa, TS. Vũ Thanh Ngọc, ThS. Lê Trần Hồng Ngọc
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, inquiry and project-based learning
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 85 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 25 Private study including examination preparation, specified in hours ¹ : 60
Credit points	2 credits (Theory: 2 + Practice: 0) 3.08 ECTS (<i>optional</i>)

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: 30 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)	
Course objectives	This course will emphasize on the fundamental concepts and applications of biochemistry. Five subspecialties of biochemistry will be introduced in this course, including Biochemical Pharmacology, Nutritional Biochemistry, Cosmetics, Agriculture and Industrial Biochemistry. This course will also provide an introduction to some of the biochemistry careers available, looking at jobs and opportunities available to those who study biochemistry.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. • Discuss how biochemistry brings together the natural sciences to describe the chemical basis of living systems. • Describe events and scientists that have been significant during the historical development of biochemistry. • Discuss different field of studies in Biochemistry and their applications • Explore the wide range of jobs and career opportunities that become possible with a training in biochemistry. CLO2. Understanding where biochemistry will play a key role in scientific advances in the future.
	Skill	CLO3. Development of their critical thinking and problem-solving skills.
	Attitude	CLO4. Ability to explain many aspects of everyday life using biochemistry concepts.

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 the course</td><td>0.5</td><td>I, T</td></tr><tr><td>Pharmaceutical biochemistry</td><td>1.5</td><td>I, T, U</td></tr><tr><td>Agricultural biochemistry</td><td>2</td><td>I, T, U</td></tr><tr><td>Nutritional biochemistry</td><td>2</td><td>I, T, U</td></tr><tr><td>Biochemistry in cosmetics</td><td>2</td><td>I, T, U</td></tr></table>	Topic	Weight	Level	Introduction to the course	0.5	I, T	Pharmaceutical biochemistry	1.5	I, T, U	Agricultural biochemistry	2	I, T, U	Nutritional biochemistry	2	I, T, U	Biochemistry in cosmetics	2	I, T, U
	Topic	Weight	Level																
	Introduction to the course	0.5	I, T																
	Pharmaceutical biochemistry	1.5	I, T, U																
Agricultural biochemistry	2	I, T, U																	
Nutritional biochemistry	2	I, T, U																	
Biochemistry in cosmetics	2	I, T, U																	
Examination forms	Multiple choice, short answer, essay																		
Study and examination requirements	Students are expected to spend at least 4 hours per week studying this course. This time should be made up of reading, working on exercises and problems, group assignments and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.																		
Reading list	<i>1. Nelson, D. L., Lehninger, A. L., & Cox, M. M. (2008). Lehninger principles of biochemistry. Macmillan.</i> <i>2. Berg, J. M., Tymoczko, J. L., & Stryer, L. (2007). Biochemistry. Macmillan.</i> <i>3. Voet, D., Voet, J. G., & Pratt, C. W. (2016). Fundamentals of biochemistry: life at the molecular level. John Wiley & Sons.</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:

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	TS. Lê Quang Phong: Introduction to the course Pharmaceutical biochemistry	1, 2, 3, 4	Quiz /HW/ Project	Lecture, presentation, class discussion	[1-3]
2	TS. Lê Quang Phong: Pharmaceutical biochemistry	1, 2, 3, 4	Quiz /HW/ Project	Lecture, presentation, class discussion	[1-3]

3-4	TS. Vũ Thanh Ngọc: Nutritional biochemistry	1, 2, 3, 4	Quiz /HW/ Project	Lecture, presentation, class discussion	[1-3]
5-6	ThS. Lê Trần Hồng Ngọc: Biochemistry in cosmetics	1, 2, 3, 4	Quiz /HW/ Project	Lecture, presentation, class discussion	[1-3]
7-8	PGS. TS. Phạm Thị Hoa: Agricultural biochemistry	1, 2, 3, 4	Quiz /HW/ Project	Lecture, presentation, class discussion	[1-3]
Midterm examination					
9-10	PGS. TS. Nguyễn Tấn Khôi: Industrial application of Biochemistry	1, 2, 3, 4	Quiz /HW/ Project	Lecture, presentation, class discussion	[1-3]
Final examination		1, 2, 3, 4			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Quiz, Homework, Project (25%)	Quiz, HW 60% Pass	Quiz, HW 60% Pass	Project 60% Pass	Project 60% Pass
Midterm exam (30%)	... 60% Pass	... 60% Pass	... 60% Pass	... 60% Pass
Final exam (45%)	... 60% Pass	... 60% Pass	... 60% Pass	... 60% Pass

Note: %Pass: Target that % of students having scores at least 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Part 1..... (....%)			
Criterion 1:			
Criterion 2:			
Criterion 3:			
Criterion:			
Part 2..... (....%)			
Criterion 1:			
Criterion:			
Part 3..... (....%)			
Criterion 1:			
Criterion:			
Part (....%)			
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 the task are included.
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.
2	Demonstrates little understanding of the problem. Many requirements of the 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 one's 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 the audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to the audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and the speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and the speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and the speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and the 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:** May 30th, 2025

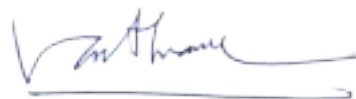
7. **Course coordinator/Lecturer**

- School/Department: School of Biotechnology
- Email:

Ho Chi Minh city, 06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

**Course Name: EXPERIMENTAL DESIGN AND TECHNICAL
COMMUNICATION**

Course Code: **BTBC217IU**

1. General information

Course name	- <i>Experimental design and technical communication</i> - <i>Thiết kế thí nghiệm và kỹ năng báo cáo trong ngành kỹ thuật</i>
Course designation	<i>This subject will provide knowledge on following:</i> - <i>Introduction to scientific research, hypothesis testing and experimental design in chemical science.</i> - <i>Structure of a research paper and how to complete a research writing.</i> <i>Course projects that are used to evaluate how theory is applied in practice as well as to develop interpersonal skills.</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	<i>Assoc. Prof. Nguyen Tan Khoi</i>
Language	English
Relation to curriculum	☒ <i>Compulsory</i> ☐ <i>Elective</i>
Teaching methods	Lecture, lesson, homework, quiz

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours Credit3 Contact hours37.537.5 Self-Study hour9090 Total workload127.5127.5		
Credit points	3 credits (Theory: 3) 4.62 ECTS (optional)		
Number of periods	Theory: 45 Practice: 0		
Required and recommended prerequisites for joining the course	- Prerequisites: ENE1019IU, ENE10120U (applied statistics and its lab)		
Course objectives	• After studying this course, the students will be able to: • Understand scientific research process, research requirements and principles of experimental design in scientific research. • Apply common designs in scientific research. • Obtain practical experience in research implementation, data collection and analysis, oral presentation. • Perform effective technical communication in various contexts. • Enhance teamwork and problem-solving skills.		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Apply common designs of experiments to address specific research hypotheses in the regime of physical sciences. CLO2. Learn strategies to write a scientific report	
	Skill	CLO3. Analyze and interpret data, and apply statistical reasoning to reach appropriate conclusions. CLO4. Communicate effectively with a range of audiences.	
	Attitude	CLO5. Synthesize the existing knowledge and findings in the literature to generate new research ideas.	

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 the constituents of an experimental design</td><td>2</td><td>T, U</td></tr><tr><td>Models of experiments (CRD, BRD, Split-plot designs)</td><td>2</td><td>T, U</td></tr><tr><td>Reviews on statistical tests</td><td>1</td><td>T, U</td></tr><tr><td>Modeling and Optimization</td><td>3</td><td>T, U</td></tr><tr><td>Case studies</td><td>1</td><td>T, U</td></tr><tr><td>Introduction to Scientific Writing & Editing</td><td>1</td><td>I, T</td></tr><tr><td>Guidelines for writing a piece of technical communication in various contexts</td><td>5</td><td>T, U</td></tr><tr><td>Guidelines for oral presentations & poster presentations</td><td>1</td><td>T, U</td></tr></table>	Topic	Weight	Level	Introduction to the constituents of an experimental design	2	T, U	Models of experiments (CRD, BRD, Split-plot designs)	2	T, U	Reviews on statistical tests	1	T, U	Modeling and Optimization	3	T, U	Case studies	1	T, U	Introduction to Scientific Writing & Editing	1	I, T	Guidelines for writing a piece of technical communication in various contexts	5	T, U	Guidelines for oral presentations & poster presentations	1	T, U
Topic	Weight	Level																										
Introduction to the constituents of an experimental design	2	T, U																										
Models of experiments (CRD, BRD, Split-plot designs)	2	T, U																										
Reviews on statistical tests	1	T, U																										
Modeling and Optimization	3	T, U																										
Case studies	1	T, U																										
Introduction to Scientific Writing & Editing	1	I, T																										
Guidelines for writing a piece of technical communication in various contexts	5	T, U																										
Guidelines for oral presentations & poster presentations	1	T, U																										
Examination forms	Written test (experimental design, data analysis, discussion)																											
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory. Students will also be assessed on the basis of their class performance and participation. Assignments/Examination: Students must have more than 50/100 points overall to pass this module.																											
Reading list	Textbook: - Gary W. Oehlert, A First Course in Design and Analysis of Experiments, University of Minnesota, 2010 References - Ruxton G.D. & Colegrave N. (2016) Experimental Design for the Life Sciences. Fourth Edition. Oxford University Press, UK. - Academic Writing for Graduate Students, 2nd edition, by J. M. Swales & C. B. Feak (The University of Michigan Press, 2005 or 2004) ISBN: 0-472-08856-4 [AWG] - Academic Writing Up Research: Experimental Research Report Writing for Students of English by R. Weissberg & S. Buker (Prentice Hall, 1990) ISBN: 0-13-970831-6 [W&B]																											

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	ILO							
	1	2	3	4	5	6	7	8
1	M							
2							M	M
3	M							
4							M	
5		M						

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities
1-2	Introduction to the constituents of an experimental design	1,3	Case studies	Lecture, discussion
3	Models of experiments (CRD, BRD, Split-plot designs)	1,3	Case studies	Lecture, discussion
4	Reviews on statistical tests	1,3	Case studies	Lecture, discussion
5,6,7	Modeling (multivariable fittings) and Optimization (PSA, PSD and RSM techniques)	1,3	Case studies	Lecture, discussion
8	Case studies	1,3,5	Group assignment	Lecture, discussion
9-10	Midterm			
11	Introduction and course overview. Needs Evaluation. Diagnostic writing. Common practices in handling plagiarism and citation.	2,4	Case studies	Lecture, discussion
12	Introduction to Literature Review, Annotated Bibliography. Discussion of sample reviews of literature. Paraphrase, evaluation, citations. Summaries and comparative summaries (critiques). Short Paper Peer Critiques	2,4	Case studies	Lecture, discussion
13	Continue with literature reviews, meta-discourse of the research world. The use of tense in reviewing literature, indicating a gap. Quoting and elaboration on quotations. Documentation of sources.	2,4	Case studies	Lecture, discussion
14	Abstract writing conventions. Thesis/Dissertation Acknowledgments. Methods and materials	2,4	Case studies	Lecture, discussion
15	Writing up results and discussing different formats. Language focus as needed	2,4	Case studies	Lecture, discussion
16	Writing conference abstracts. Discussion of sample conference abstracts. IWP Peer Critiques	2,4	Case studies	Lecture, discussion
17	Continue with writing of various kinds of academic correspondence. Review, self-evaluation letter (in-class writing).	2,4	Case studies Group assignment	Lecture, discussion
18-20	Reserve week and Final exam			

4. Assessment plan

Course assessment policy

Methods	Frequency	(%)
Assignment	2	30
Mid-term exam	1	35
Final exam	1	35

Course assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Assignment 1 (20%)	Report (design) 70%Pass		Report (writing) 70%Pass		Report (idea) 70%Pass
Assignment 2 (20%)		Report (writing) 70%Pass		Group Presentation 90%Pass	
Midterm exam (30%)	Midterm exam (Q. 1) 70%Pass		Midterm exam (Q. 2-4) 70%Pass		
Final exam (30%)		Final exam 70%Pass	Final exam 70%Pass		

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

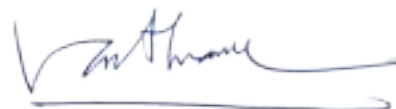
5. Date revised: May 2025.....

6. Course coordinator/Lecturer

- School/Department: School of BT. Department of Applied Chemistry.
- Email: ntkhoi@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: BIOCHEMISTRY 1

Course Code: **BTBC209IU**

1. General information

Course name	- (in English) <i>Biochemistry 1</i> - (in Vietnamese) <i>Hóa sinh 1</i>
Course designation	This course is part of two-part general biochemistry designed for students who are pursuing the bachelor's degree in biochemistry. Course covers some central concepts in general biochemistry. Topics include the sources, classification, structure, properties and functions of carbohydrates, lipids, proteins, nucleic acids and vitamins.
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	III
Person responsible for the course	Vũ Thanh Ngọc, PhD
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, inquiry and project-based learning

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) 4.62 ECTS (<i>optional</i>)	
Number of periods	Theory: 45 Practice: 0	
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name) - Corequisites: (Course code – Course name) - Previous course (Course code – Course name) BT311IU	
Course objectives	The Biochemistry 1 course will provide students an understanding of sources, classification, structure, properties and functions of carbohydrate, lipid, protein, nucleic acid and vitamin	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Upon successful completion of this course, the students should be able to demonstrate basic knowledge of the sources, classification, structure, properties and functions of carbohydrate, lipid, protein, nucleic acid and vitamin
	Skill	CLO2. Determine the function and relationship of different molecules in the human body. CLO3. Analyze biochemical parameters in the human body with different backgrounds.

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) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction to chemistry of life and biological molecules</td><td>1</td><td>I, T</td></tr><tr><td>Carbohydrates: sources, classification, structure, properties, functions.</td><td>2</td><td>I, T</td></tr><tr><td>Lipids and membranes: sources, classification, structure, properties, functions</td><td>3</td><td>I, T</td></tr><tr><td>Amino acids, protein: sources, classification, structure, properties, functions</td><td>3</td><td>T, U</td></tr><tr><td>Nucleic acid: sources, classification, structure, properties, functions</td><td>3</td><td>T, U</td></tr><tr><td>Vitamins: sources, classification, structure, properties, functions</td><td>3</td><td>T, U</td></tr></table>	Topic	Weight	Level	Introduction to chemistry of life and biological molecules	1	I, T	Carbohydrates: sources, classification, structure, properties, functions.	2	I, T	Lipids and membranes: sources, classification, structure, properties, functions	3	I, T	Amino acids, protein: sources, classification, structure, properties, functions	3	T, U	Nucleic acid: sources, classification, structure, properties, functions	3	T, U	Vitamins: sources, classification, structure, properties, functions	3	T, U
Topic	Weight	Level																				
Introduction to chemistry of life and biological molecules	1	I, T																				
Carbohydrates: sources, classification, structure, properties, functions.	2	I, T																				
Lipids and membranes: sources, classification, structure, properties, functions	3	I, T																				
Amino acids, protein: sources, classification, structure, properties, functions	3	T, U																				
Nucleic acid: sources, classification, structure, properties, functions	3	T, U																				
Vitamins: sources, classification, structure, properties, functions	3	T, U																				
Examination forms	Multiple choice, true/false, matching, short answer, essay																					
Study and examination requirements	<i>Requirements for successfully passing the module:</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. All absence, if not emergent, requires approval of the instructor(s) in advance. Absence for exams requires in-advanced approval of the Office of Academic Affairs. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.																					
Reading list	[1] Voet, Voet and Pratt, Fundamentals of Biochemistry, Third Edition, Wiley, 2008 [2] Lehninger: Principles in 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:

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to chemistry of life and biological molecules	1	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2

2, 3	Carbohydrates: sources, classification, structure, properties, functions.	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2
4-6	Lipids and membranes: sources, classification, structure, properties, functions.	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2
7, 8	Amino acids and proteins: sources, classification, structure, properties, functions	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2
8	Midterm exam				
9	Amino acids and proteins: sources, classification, structure, properties, functions	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2
10-12	Nucleic acid: sources, classification, structure, properties, functions	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2
13-15	Vitamins: sources, classification, structure, properties, functions	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2
16	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Quiz/assignment (30%)		x	x
Midterm exam (30%)	x	x	x
Final exam (40%)	x	x	x

Note: Target that at least 50% of students having scores of at least 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Part 1..... (....%)			
Criterion 1:			
Criterion 2:			
Criterion 3:			
Criterion			
Part 2..... (....%)			
Criterion 1:			
Criterion:			
Part 3..... (....%)			
Criterion 1:			
Criterion:			

Part (....%)			
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 the task are included.
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.
2	Demonstrates little understanding of the problem. Many requirements of the 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 one's 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:

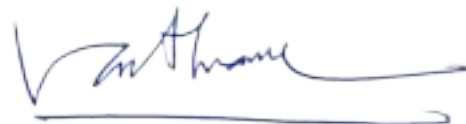
	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific 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 the audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to the audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and the speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and the speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and the speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and the 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:** May 30th, 2025
7. **Course coordinator/Lecturer**
- School/Department: School of Biotechnology
 - Email: vtngoc@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY

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

Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: BIOCHEMISTRY 2

Course Code: BTBC211IU

1. General information

Course name	- (in English) <i>Biochemistry 2</i> - (in Vietnamese) <i>Hóa sinh 2</i>
Course designation	This course is designed to provide the basic understanding of metabolic pathways with emphasis on the reactions, bioenergetics, regulation and disease relevance.
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	IV
Person responsible for the course	Vũ Thanh Ngọc, PhD
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, inquiry and project-based learning
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

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) 4.62 ECTS (<i>optional</i>)		
Number of periods	Theory: 45 Practice: 0		
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name) - Corequisites: (Course code – Course name) - Previous course (Course code – Course name) BT311IU, BTBC209IU		
Course objectives	This course is designed to provide the basic understanding of metabolic pathways with emphasis on the reactions, bioenergetics, regulation and disease relevance.		
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 reactions, bioenergetics and regulation of different metabolic pathways.	
	Skill	CLO2. Propose the approach to study metabolic pathway, predict the outcome of metabolic homeostasis disturbance and solution for certain metabolic abnormality. CLO3. Compose a mini-review, present and discuss about a topic related to metabolic pathways.	
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 metabolism	1	I, T, U
	Principles of bioenergetics, glycolysis, gluconeogenesis, pentose phosphate pathways	2	I, T, U
	Principle of metabolic regulation, fatty acid catabolism, citric acid cycle, fatty acid oxidation	3	I, T, U
	Amino acid oxidation and urea cycle	2	I, T, U
	Oxidative phosphorylation	2	I, T, U
	Biosynthesis of carbohydrates, lipids, amino acids, and nucleotides	4	I, T, U
	Integration of metabolism	1	I, T, U
	Examination forms	Multiple choice, true/false, matching, short answer, essay	

Study and examination requirements	<i>Requirements for successfully passing the module:</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. All absence, if not emergent, requires approval of the instructor(s) in advance. Absence for exams requires in-advanced approval of the Office of Academic Affairs. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.
Reading list	[1] Voet, Voet and Pratt, Fundamentals of Biochemistry, Third Edition, Wiley, 2008 [2] Lehninger: Principles in 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:

	PLO							
CLOs	1	2	3	4	5	6	7	8
1			L					
2		H						
3								H

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to metabolism	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2
2, 3	Principles of bioenergetics, glycolysis, gluconeogenesis, pentose phosphate pathways	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2
4-6	Principle of metabolic regulation, fatty acid catabolism, citric acid cycle, fatty acid oxidation	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2
7, 8	Amino acid oxidation and urea cycle	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2
8	Midterm				
9, 10	Oxidative phosphorylation	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2
11-14	Biosynthesis of carbohydrates, lipids, amino acids, and nucleotides	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2
15	Integration of metabolism	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2
17	Final exam				

4. Assessment plan

Assessment type	CLO1	CLO2	CLO3
Quiz/assignment (30%)			X
Midterm exam (30%)	X	X	
Final exam (40%)	X	X	

Note: Target that at least 50% of students having scores of at least 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Part 1..... (....%)			
Criterion 1:			
Criterion 2:			
Criterion 3:			
Criterion:			
Part 2..... (....%)			
Criterion 1:			
Criterion:			
Part 3..... (....%)			
Criterion 1:			
Criterion:			
Part (....%)			
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 the task are included.
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.
2	Demonstrates little understanding of the problem. Many requirements of the 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 one's 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 the audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to the audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and the speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and the speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and the speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and the 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:** May 30th, 2025

7. **Course coordinator/Lecturer**

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

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: BIOCHEMISTRY 2 LAB

Course Code: **BTBC212IU**

1. General information

Course name	- (in English) <i>Biochemistry 2 laboratory</i> - (in Vietnamese) <i>Thực hành hóa sinh 2</i>
Course designation	This course is designed to build proficiency in laboratory techniques and give hands-on experience of concepts related to Biochemistry courses..
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	IV
Person responsible for the course	Vũ Thanh Ngọc, PhD
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, inquiry and project-based learning
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 170 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 60 Private study including examination preparation, specified in hours ¹ : 60

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	2 credits (Theory: 0 + Practice: 2) 4 ECTS (<i>optional</i>)		
Number of periods	Theory: 0 Practice: 60		
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name) - Parallel course: (Course code – Course name) BTBC211IU – Biochemistry 2 - Previous course (Course code – Course name)		
Course objectives	This course is designed to provide the basic understanding of metabolic pathways with emphasis on the reactions, bioenergetics, regulation and disease relevance.		
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 principles and procedure of some analytical techniques/methods in biochemistry	
	Skill	CLO2. Apply analytical techniques/methods in biochemistry to evaluate enzyme activity or quantify certain molecules in biological samples/products. CLO3. Appropriately perform the experiments, analyze, interpret data and make proper conclusions about the experimental results.	
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
	Orientations (Introduce the safety, regulation, apparatus in biochemistry field)	1	I, T
	Pipette Calibration	1	I, T, U
	Quantification of Reducing Sugars	1	I, T, U
	Hydrolysis of Starch by Salivary Amylase	1	I, T, U
	Quantification of Protein in Soy Bean	1	I, T, U
	Enzymatic Activity of Bromelain	1	I, T, U
	Cheese Production from Milk	1	I, T, U
	Quantification of Calcium in Powdered Milk	1	I, T, U
	Quantification of Ascorbic Acid in Fruits	1	I, T, U
	Determination of Total Phenol Content in Different Sorts Of Tea	1	I, T, U

Examination forms	Multiple choice, true/false, matching, short answer
Study and examination requirements	<i>Requirements for successfully passing the module:</i> Attendance: Attendance of 100 percent is compulsory for the laboratory sessions. Students will be assessed on the basis of their participation. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.
Reading list	[1] Ninfa, A. J., Ballou, D. P., & Benore, M. (2009). <i>Fundamental laboratory approaches for biochemistry and biotechnology</i>. John Wiley & Sons. [2] Rover, M. R., Johnston, P. A., Lamsal, B. P., & Brown, R. C. (2013). Total water-soluble sugars quantification in bio-oil using the phenol-sulfuric acid assay. <i>Journal of Analytical and Applied Pyrolysis</i>, 104, 194-201. [3] Mishra, P. J., Ragunath, C., & Ramasubbu, N. (2002). The mechanism of salivary amylase hydrolysis: Role of residues at subsite S2'. <i>Biochemical and biophysical research communications</i>, 292(2), 468-473. [4] Gautam, S. S., Mishra, S. K., Dash, V., Goyal, A. K., & Rath, G. (2010). Comparative study of extraction, purification and estimation of bromelain from stem and fruit of pineapple plant. <i>Thai Journal of Pharmaceutical Sciences</i>, 34(2). [5] Aleandri, R., Schneider, J. C., & Buttazzoni, L. G. (1989). Evaluation of milk for cheese production based on milk characteristics and Formagraph measures. <i>Journal of Dairy Science</i>, 72(8), 1967-1975. [6] Wu, D., Nie, P., He, Y., & Bao, Y. (2012). Determination of calcium content in powdered milk using near and mid-infrared spectroscopy with variable selection and chemometrics. <i>Food and Bioprocess Technology</i>, 5(4), 1402-1410. [7] Al-Ani, M., Opara, L. U., Al-Bahri, D., & Al-Rahbi, N. (2007). Spectrophotometric quantification of ascorbic acid contents of fruit and vegetables using the 2, 4-dinitrophenylhydrazine method. <i>Journal of Food Agriculture and Environment</i>, 5(3/4), 165. [8] Wang, H., Provan, G. J., & Helliwell, K. (2000). Tea flavonoids: their functions, utilisation and analysis. <i>Trends in Food Science & Technology</i>, 11(4-5), 152-160.

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Orientations (Introduce the safety/ regulation and equipment/machines in biochemistry field)	1, 2, 3	Instruction, discussion, performing experiments, data collection	Quiz	1

2	Pipette Calibration	1, 2, 3	Instruction, discussion, performing experiments, data collection	Quiz, performance, report	2
3	Quantification of Soluble Carbohydrate	1, 2, 3	Instruction, discussion, performing experiments, data collection	Quiz, performance, report	2
4	Hydrolysis of Starch by Salivary Amylase	1, 2, 3	Instruction, discussion, performing experiments, data collection	Quiz, performance, report	3
5-6	Protein Quantification	1, 2, 3	Instruction, discussion, performing experiments, data collection	Quiz, performance, report	1, 4
7	Midterm				
8	Enzymatic Activity of Bromelain	1, 2, 3	Instruction, discussion, performing experiments, data collection	Quiz, performance, report	4
9	Cheese Production from Milk	1, 2, 3	Instruction, discussion, performing experiments, data collection	Quiz, performance, report	5
10	Quantification of Calcium in Powdered Milk	1, 2, 3	Instruction, discussion, performing experiments, data collection	Quiz, performance, report	6
11	Quantification of Ascorbic Acid in Fruits	1, 2, 3	Instruction, discussion, performing experiments, data collection	Quiz, performance, report	7
12	Determination of Total Phenol Content in Different Sorts Of Tea	1, 2, 3	Instruction, discussion, performing experiments, data collection	Quiz, performance, report	8
13	Final exam				

4. Assessment plan

Assessment type	CLO1	CLO2	CLO3
In-class quizzes/ Lab performance/ Written lab report (60%)			x
Midterm exam (20%)	x	x	
Final exam (20%)	x	x	

Note: Target that at least 50% of students having scores of at least 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 (70%)			
Abstract clearly identifies purpose and summarizes principal content	5		

Introduction demonstrates good knowledge of general background and clearly summarizes the aims/objectives of the experiment	5		
All materials and methods are listed and appropriate	5		
Results are appropriate; analysis and discussion demonstrates good subject mastery	50		
Conclusions are appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (10%)			
Correct spelling, grammar, and syntax	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 and quizzes	
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 one's 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

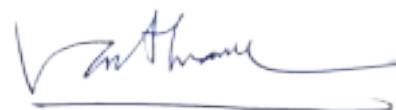
6. **Date revised:** May 30th, 2025

7. **Course coordinator/Lecturer**

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

Ho Chi Minh city, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: MICROBIAL BIOCHEMISTRY

Course Code: BTBC425IU

1. General information

Course name	- (in English) <i>Microbial biochemistry</i> - (in Vietnamese) <i>Hóa sinh Vi sinh vật</i>
Course designation	The course examines the structure and function of microbial cell components, approaches to microbial systematics as well as microbial growth, metabolism, signal transduction, homeostasis and genetics
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	V
Person responsible for the course	Vũ Thanh Ngọc, PhD
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, inquiry and project-based learning
Workload (incl. contact hours, self-study hours)	((Estimated) Total workload: 85 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 25 Private study including examination preparation, specified in hours ¹ : 60

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	2 credits (Theory: 2 + Practice: 0) 3.08 ECTS (<i>optional</i>)		
Number of periods	Theory: 30 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) BTBC209IU - Biochemistry 1, BTBC211IU - Biochemistry 2		
Course objectives	This course provides basic knowledge of the structure and function of microbial cell components, approaches to microbial systematics, as well as microbial growth, metabolism, signal transduction, homeostasis, and genetics.		
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 structure and function of microbial cell components, approaches to microbial systematics as well as microbial growth, metabolism, signal transduction, homeostasis and genetics.	
	Skill	CLO2. Propose plausible biochemical strategies through which microbes adapt to diverse environments. CLO3. Present and discuss a research topic related to microbial biochemistry.	
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
	Microbial cell components: structure and function	1	I, T, U
	Approaches to microbial systematics	1	I, T, U
	Microbial growth	1	I, T, U
	Microbial metabolism	4	I, T, U
	Signal transduction and homeostasis	1	I, T, U
Microbial genetics	2	I, T, U	
Examination forms	Multiple choice, true/false, matching, short answer, essay		

Study and examination requirements	<i>Requirements for successfully passing the module:</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. All absence, if not emergent, requires approval of the instructor(s) in advance. Absence for exams requires in-advanced approval of the Office of Academic Affairs. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.
Reading list	[1] G. N. Cohen, 2014. <i>Microbial Biochemistry</i>, 3rd Edition. [2] Selected research and review articles related to the topics.

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Microbial cell components: structure and function	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
2	Approaches to microbial systematics	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
3	Microbial growth	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
4-7	Microbial metabolism	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
8	Midterm				
9	Signal transduction and homeostasis	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
10,11	Microbial genetics	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
12	Final exam				

4. Assessment plan

Assessment type	CLO1	CLO2	CLO3
Quiz/assignment (30%)		X	X
Midterm exam (30%)	X	X	
Final exam (40%)	X	X	

Note: Target that at least 50% of students having scores of at least 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports

Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Part 1..... (....%)			
Criterion 1:			
Criterion 2:			
Criterion 3:			
Criterion:			
Part 2..... (....%)			
Criterion 1:			
Criterion:			
Part 3..... (....%)			
Criterion 1:			
Criterion:			
Part (....%)			
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 the task are included.
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.
2	Demonstrates little understanding of the problem. Many requirements of the 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 one's 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 the audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to the audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and the speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and the speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and the speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and the 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:** May 30th, 2025
7. **Course coordinator/Lecturer**
 - School/Department: School of Biotechnology
 - Email: vtngoc@hcmiu.edu.vn

Ho Chi Minh city, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



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

COURSE SYLLABUS

Course Name: MICROBIAL BIOCHEMISTRY LAB

Course Code: **BTBC426IU**

1. General information

Course name	- (in English) <i>Microbial biochemistry laboratory</i> - (in Vietnamese) <i>Thực hành Hóa sinh Vi sinh vật</i>
Course designation	This course provides hands-on experience with microbial cultures, cell counting, and the examination of microbial morphology, growth, and characteristics.
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	V
Person responsible for the course	Vũ Thanh Ngọc, PhD
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, inquiry and project-based learning
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 85 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 30 Private study including examination preparation, specified in hours ¹ : 30
Credit points	1 credit (Theory: 0 + Practice: 1) 2 ECTS (<i>optional</i>)

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: 0 Practice: 30		
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name) - Parallel course: (Course code – Course name): BTBC425IU - Microbial Biochemistry - Previous course (Course code – Course name)		
Course objectives	This course provides hands-on experience with microbial cultures, cell counting, and the examination of microbial morphology, growth, and characteristics.		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Understand basic knowledge related to microbial cultures, cell counting, and the examination of microbial morphology, growth, and characteristics.	
	Skill	CLO2. Identify and solve problems related to experimental work. CLO3. Appropriately perform the experiments, collect, analyze and interpret data, and make proper conclusions.	
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 microbial culture	1	I, T, U
	Examination of microbial morphology	1	I, T, U
	Microbial cell counting	1	I, T, U
	Gram staining	1	I, T, U
	Determination of microbial growth curve	1	I, T, U
	Examination of biofilm formation	1	I, T, U
Examination forms	Multiple choice, true/false, matching, short answer		
Study and examination requirements	<i>Requirements for successfully passing the module:</i> Attendance: Attendance of 100 percent is compulsory for the laboratory sessions. Students will be assessed on the basis of their participation. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.		
Reading list	1. <i>Microbial biochemistry laboratory manual</i> 2. <i>Selected scientific articles related to the topic</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	PLO							
	1	2	3	4	5	6	7	8
1			L					
2		H						
3				H				

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to microbial culture	1, 2, 3	Quiz, performance, report	Instruction, discussion, performing experiments, data collection	1, 2
2	Examination of microbial morphology	1, 2, 3	Quiz, performance, report	Instruction, discussion, performing experiments, data collection	1, 2
3	Microbial cell counting	1, 2, 3	Quiz, performance, report	Instruction, discussion, performing experiments, data collection	1, 2
4	Gram staining	1, 2, 3	Quiz, performance, report	Instruction, discussion, performing experiments, data collection	1, 2
5	Determination of microbial growth curve	1, 2, 3	Quiz, performance, report	Instruction, discussion, performing experiments, data collection	1, 2
6	Examination of biofilm formation	1, 2, 3	Quiz, performance, report	Instruction, discussion, performing experiments, data collection	1, 2
7	Final exam				

4. Assessment plan

Assessment type	CLO1	CLO2	CLO3
In-class quizzes/ Lab performance/ Written lab report (70%)			x
Final exam (30%)	x	x	x

Note: Target that at least 50% of students having scores of at least 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 (70%)			
Abstract clearly identifies purpose and summarizes principal content	5		

Introduction demonstrates good knowledge of general background and clearly summarizes the aims/objectives of the experiment	5		
All materials and methods are listed and appropriate	5		
Results are appropriate; analysis and discussion demonstrates good subject mastery	50		
Conclusions are appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (10%)			
Correct spelling, grammar, and syntax	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 and quizzes	
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 one's 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

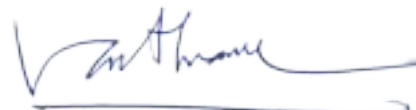
6. **Date revised:** May 30th, 2025

7. **Course coordinator/Lecturer**

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

Ho Chi Minh city, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: MOLECULAR CELL BIOLOGY

Course Code: **BTBC218IU**

1. General information

Course name	- <i>(in English) Molecular cell biology</i> - <i>(in Vietnamese) Sinh học phân tử của tế bào</i>
Course designation	This course is designed with emphasis on the structure of cells and its constituents as well as basic molecular cell mechanisms and their regulation. Some molecular genetic techniques are also introduced in the course.
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	VI
Person responsible for the course	Vũ Thanh Ngọc, PhD
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, inquiry and project-based learning
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

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) 4.62 ECTS (<i>optional</i>)	
Number of periods	Theory: 45 Practice: 0	
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name) - Corequisites: (Course code – Course name) - Previous course (Course code – Course name) BT311IU - Biology, BTBC209IU - Biochemistry 1, BTBC313IU - Methods in Biochemistry	
Course objectives	This course is designed to provide a basic understanding of the structure of cells and its constituents, molecular cell mechanisms and their regulation as well as molecular genetic techniques.	
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 structure of the cells and its constituents as well as basic molecular cell mechanisms and their regulation.
	Skill	CLO2. Propose solutions for problems related to molecular cell biology CLO3. Compose a review and discuss about a topic in molecular cell biology

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>Protein, Gene and Chromosome Structure</td><td>1</td><td>I, T, U</td></tr><tr><td>DNA Replication, Mutation, Repair and Recombination</td><td>1</td><td>I, T, U</td></tr><tr><td>Transcription, RNA Processing and Translation</td><td>1</td><td>I, T, U</td></tr><tr><td>Regulation of Gene Expression</td><td>1</td><td>I, T, U</td></tr><tr><td>Molecular Genetic Techniques and Genomics</td><td>1</td><td>I, T, U</td></tr><tr><td>Biomembranes and Cell Architecture</td><td>1</td><td>I, T, U</td></tr><tr><td>Integrating Cells into Tissues</td><td>1</td><td>I, T, U</td></tr><tr><td>Transport Across Cell Membrane</td><td>1</td><td>I, T, U</td></tr><tr><td>Vesicular Traffic, Secretion and Endocytosis</td><td>1</td><td>I, T, U</td></tr><tr><td>Signal transduction</td><td>1</td><td>I, T, U</td></tr><tr><td>Cytoskeleton and Cell Movement</td><td>1</td><td>I, T, U</td></tr><tr><td>Cell Cycle, Regulation of Eukaryotic Cell Cycle</td><td>1</td><td>I, T, U</td></tr><tr><td>Cell Birth, Lineage, Death and Its Regulation</td><td>1</td><td>I, T, U</td></tr><tr><td>Cancer</td><td>1</td><td>I, T, U</td></tr></table>	Topic	Weight	Level	Protein, Gene and Chromosome Structure	1	I, T, U	DNA Replication, Mutation, Repair and Recombination	1	I, T, U	Transcription, RNA Processing and Translation	1	I, T, U	Regulation of Gene Expression	1	I, T, U	Molecular Genetic Techniques and Genomics	1	I, T, U	Biomembranes and Cell Architecture	1	I, T, U	Integrating Cells into Tissues	1	I, T, U	Transport Across Cell Membrane	1	I, T, U	Vesicular Traffic, Secretion and Endocytosis	1	I, T, U	Signal transduction	1	I, T, U	Cytoskeleton and Cell Movement	1	I, T, U	Cell Cycle, Regulation of Eukaryotic Cell Cycle	1	I, T, U	Cell Birth, Lineage, Death and Its Regulation	1	I, T, U	Cancer	1	I, T, U		
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Cancer	1	I, T, U																																														
Examination forms	Multiple choice, true/false, matching, short answer, essay																																															
Study and examination requirements	<i>Requirements for successfully passing the module:</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. All absence, if not emergent, requires approval of the instructor(s) in advance. Absence for exams requires in-advanced approval of the Office of Academic Affairs. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.																																															
Reading list	[1] Harvey Lodish, Arnold Berk, Chris A. Kaiser, Monty Krieger, Anthony Bretscher, Hidde Ploegh, Kelsey C. Martin, Michael Yaffe, Angelika Amon, 2021. <i>Molecular Cell Biology</i> , 9 th Edition. [2] Bruce Alberts, 2015. <i>Molecular biology of the cell</i> , 6 th Edition. [3] Selected research and review articles related to the topics.																																															

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Protein, Gene and Chromosome Structure	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
2	DNA Replication, Mutation, Repair and Recombination	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
3	Transcription, RNA Processing and Translation	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
4	Regulation of Gene Expression	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
5	Molecular Genetic Techniques and Genomics	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
6	Biomembranes and Cell Architecture	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
7	Integrating Cells into Tissues	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
8	Midterm				
9	Transport Across Cell Membrane	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
10	Vesicular Traffic, Secretion and Endocytosis	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
11	Signal transduction	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
12	Cytoskeleton and Cell Movement	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
13	Cell Cycle, Regulation of Eukaryotic Cell Cycle	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
14	Cell Birth, Lineage, Death and Its Regulation	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2], [3]

15	Cancer	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2], [3]
16	Final exam				

4. Assessment plan

Assessment type	CLO1	CLO2	CLO3
Quiz/assignment (30%)			x
Midterm exam (30%)	x	x	
Final exam (40%)	x	x	

Note: Target that at least 50% of students having scores of at least 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Part 1..... (....%)			
Criterion 1:			
Criterion 2:			
Criterion 3:			
Criterion:			
Part 2..... (....%)			
Criterion 1:			
Criterion:			
Part 3..... (....%)			
Criterion 1....:			
Criterion:			
Part (....%)			
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 the task are included.
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.
2	Demonstrates little understanding of the problem. Many requirements of the 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 one's 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

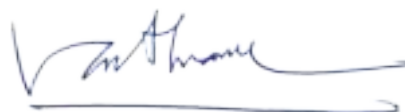
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced 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 the audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to the audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and the speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and the speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and the speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and the 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:** May 30th, 2025
7. **Course coordinator/Lecturer**
 - School/Department: School of Biotechnology
 - Email: vtngoc@hcmiu.edu.vn

Ho Chi Minh city, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



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

COURSE SYLLABUS

Course Name: MOLECULAR CELL BIOLOGY LAB

Course Code: BTBC219IU

1. General information

Course name	- (in English) <i>Molecular cell biology laboratory</i> - (in Vietnamese) <i>Thực hành Sinh học phân tử của tế bào</i>
Course designation	This course is designed to give hands-on experience with techniques related to Molecular Cell Biology.
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	VI
Person responsible for the course	Vũ Thanh Ngọc, PhD
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, inquiry and project-based learning
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 85 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 30 Private study including examination preparation, specified in hours ¹ : 30
Credit points	1 credit (Theory: 0 + Practice: 1) 2 ECTS (<i>optional</i>)

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: 0 Practice: 30		
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name) - Parallel course: (Course code – Course name) BTBC218IU – Molecular Cell Biology - Previous course (Course code – Course name)		
Course objectives	This course is designed to give hands-on experience with techniques related to Molecular Cell Biology.		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Understand basic knowledge in terms of expression system generation.	
	Skill	CLO2. Identify and propose solutions for problems emerged from the practice regarding expression system generation. CLO3. Appropriately perform the experiments, analyze, interpret data and make proper conclusions about the experimental results.	
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
	Isolation and quantification of expression plasmid	2	I, T, U
	Generation of competent cells and DNA transformation	2	I, T, U
	Validation of expression system by colony PCR	2	I, T, U
Examination forms	Multiple choice, true/false, matching, short answer		
Study and examination requirements	<i>Requirements for successfully passing the module:</i> Attendance: Attendance of 100 percent is compulsory for the laboratory sessions. Students will be assessed on the basis of their participation. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.		
Reading list	<i>1. Sambrook J. Molecular Cloning: A Laboratory Manual, Third Edition. 3rd edition ed. Cold Spring Harbor, N.Y: Cold Spring Harbor Laboratory Press; 2001 2001/01/15/. 2344 p.</i> <i>2. Current protocols in molecular biology, edited by M. Ausubel, R. Brent, R.E. Kingston, D.D. Moore, J.G. Seidman, J.A. Smith, and K. Struhl. Volumes 1 and 2. John Wiley & Sons, Inc., Media, PA, 1988, Mol Reprod Dev. 1989</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	PLO							
	1	2	3	4	5	6	7	8
1			L					
2		H						
3				H				

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1, 2	Introduction of the laboratory safety/regulation and common equipment/apparatus in molecular cell biology. Overview of expression system generation Isolation and quantification of expression plasmid	1, 2, 3	Quiz, performance, report	Instruction, discussion, performing experiments, data collection	1, 2
3, 4	Generation of competent cells and DNA transformation	1, 2, 3	Quiz, performance, report	Instruction, discussion, performing experiments, data collection	1, 2
5, 6	Validation of expression system by colony PCR	1, 2, 3	Quiz, performance, report	Instruction, discussion, performing experiments, data collection	1, 2
7	Final exam				

4. Assessment plan

Assessment type	CLO1	CLO2	CLO3
In-class quizzes/ Lab performance/ Written lab report (70%)			x
Final exam (30%)	x	x	

Note: Target that at least 50% of students having scores of at least 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 (70%)			
Abstract clearly identifies purpose and summarizes principal content	5		
Introduction demonstrates good knowledge of general background and clearly summarizes the aims/objectives of the experiment	5		

All materials and methods are listed and appropriate	5		
Results are appropriate; analysis and discussion demonstrates good subject mastery	50		
Conclusions are appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (10%)			
Correct spelling, grammar, and syntax	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 and quizzes	
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 one's 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: May 30th, 2025

7. Course coordinator/Lecturer

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

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: ENZYMOLOGY

Course Code: **BTBC315IU**

1. General information

Course name	- <i>Enzymology</i> - <i>Enzyme học</i>
Course designation	<i>Provides students with knowledge on the structure and function of enzymes, with special reference to molecular mechanisms underlying the catalytic activity, and mechanisms of inhibition and modulation</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	8
Person responsible for the course	<i>Assoc. Prof. Nguyen Tan Khoi</i>
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	<i>lecture, lesson.</i>
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours <i>Credit</i> 3 <i>Contact hours</i> 37.5 37.5 <i>Self-Study hours</i> 90 90 <i>Total workload</i> 127.5 127.5

Credit points	3 credits (Theory: 3) 4.62 ECTS (<i>optional</i>)	
Number of periods	Theory: 45 Practice: 0	
Required and recommended prerequisites for joining the course	- Prerequisites: BTBC302IU - Biophysical Chemistry.	
Course objectives	• Provides students with knowledge on the structure and function of enzymes, with special reference to molecular mechanisms underlying the catalytic activity, and mechanisms of inhibition and modulation. • Provides introduction to some of the basic techniques for the extraction, purification and characterization of the enzymes. • Discussions on some typical enzymes are also introduced to students on this occasion.	
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 concepts, key points of enzymology. CLO2. Able to distinguish different mechanisms of enzymatic processes.
	Skill	CLO3. Know how to formulate and solve different kinetic models of enzymatic processes. CLO4. Know how to solve enzyme inhibition processes.
	Attitude	CLO5. Able to solve practical problems and analyze the solutions.

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
	Lecture 1: Basic concepts (CLO1, CLO2)	5	T
	Lecture 2: (CLO1, CLO3, CLO4) The EC naming system, isoenzymes, multienzyme systems.	5	T
	Lecture 3: Enzyme kinetics: (CLO1, CLO3, CLO4).	10	T,U
	Lecture 4: Structural aspects of enzymes (CLO1, CLO2, CLO3, CLO4)	10	T,U
	Lecture 5: Structural aspects of enzymes, cont (CLO1, CLO2, CLO3, CLO4))	10	T,U
	Lecture 6: protein folding (CLO1, CLO2)	10	T,U
	Lecture 7, 8: Enzyme kinetics (CLO1, CLO2, CLO3)	10	T,U
	Lecture 9, 10: Two-substrate reaction, activation and inhibition of enzymes, factors affecting enzyme action, pre-steady state kinetics, techniques.. (CLO1, CLO2)	10	T,U
	Lecture 11, 12: Enzyme regulation: (CLO1, CLO2, CLO4, CLO5)	10	T,U
	Lecture 13: Enzymes in living things (CLO1, CLO2))	10	T,U
	Lecture 14: Compartmentation of metabolic pathways, enzymes in membrane, multienzyme complex. (CLO1, CLO2, CLO5)	10	T,U
Examination forms	<i>Written exams (Midterm+Final)</i>		
Study and examination requirements	Students are expected to spend at least 8 hours per week studying this course. This time should be made up of reading, working on exercises and problems, group assignments and attending class lectures and tutorials. University regulations indicate that students may be refused to take final assessment if they attend less than 80% of scheduled classes. Regular attendance is essential for successful performance and learning in this course, particular in the view of the interactive teaching and learning approach adopted.		
Reading list	Textbooks: Price, N.C. Fundamentals of enzymology: the cell and molecular biology of catalytic protein. 3rd edition. Oxford: Oxford University Press, 1999 References: Fersht, A. Structure and mechanism in protein science: A guide to enzyme catalysis and protein folding. W.H. Freeman and Co., 1998. Cornish-Bowden, A.C. Fundamentals of enzyme kinetics. Portland Press, 1995 Fell, D. Understanding the control of metabolism. Portland Press, 1997		

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Lecture 1: Basic concepts (CLO1, CLO2) - Introduction to enzymes Catalytic power, specificity, regulation of enzyme activity, cofactors, classification of enzymes	CLO1, CLO2	5%	- Lecture presentation - Group forming. - Class discussion - Read book & lecture 2.	
2	Lecture 2: The EC naming system, isoenzymes, multienzyme systems	CLO1, CLO3, CLO4	5%	- Lecture presentation - Class discussion - Read book & lecture 3.	
3	Lecture 3: Enzyme kinetics: (CLO1, CLO3, CLO4) Enzyme kinetics Kinetic data and analyses, stability of the transition state, one-substrate reactions, two-substrate reactions, activation and inhibition of enzymes, factors affecting enzyme action, pre-steady state kinetics, techniques.	CLO1, CLO3, CLO4	10%	- Lecture presentation - Class discussion - Read book & lecture 4.	
4	Lecture 4: Structural aspects of enzymes (CLO1, CLO2, CLO3, CLO4) -Structure of enzyme -Determination of molecular weight, mass spectroscopy,	CLO1, CLO2, CLO3, CLO4	10%	- Class discussion - Read book & lecture 5.	
5	Lecture 5: Structural aspects of enzymes, cont (CLO1, CLO2, CLO3, CLO4) - Determination of amino acid composition,	CLO1, CLO2	5%	- Lecture presentation - Class discussion - Read book & lecture 6.	

	determination of primary, secondary structures.				
6	Lecture 6: protein folding	CLO1, CLO2	5%	- Lecture presentation - Class discussion - Read book & lecture 7	
7,8	Lecture 7, 8: Enzyme kinetics (CLO1, CLO2, CLO3) Kinetic data and analyses, stability of the transition state, one-substrate reactions	CLO1, CLO2, CLO3	10%	- Lecture presentation - Class discussion - Read book & lecture 9	
8	Midterm				
9, 10	Lecture 9, 10: Two-substrate reaction, activation and inhibition of enzymes, factors affecting enzyme action, pre-steady state kinetics, techniques.	CLO1, CLO2	15%	- Lecture presentation - Class discussion - Read book & lecture 11.	
11, 12	Lecture 11, 12: Enzyme regulation: Specificity from Molecular Recognition, Controls over enzymatic activity, allosteric regulation of enzyme activity, allosteric model.	CLO1, CLO2, CLO4, CLO5	15%	- Lecture presentation - Class discussion - Read book & lecture 13.	
13, 14	Lecture 13: Enzymes in living things. Organized enzyme system, enzymes in the cell, localization pathways.	CLO1, CLO2	10%	- Lecture presentation - Class discussion	
15	Lecture 14: Compartmentation of metabolic pathways, enzymes in membrane, multienzyme complex.	CLO1, CLO2, CLO5	10%	- Lecture presentation - Class discussion	
17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Written exam (70%)	50%Pass	50%Pass	50%Pass	50%Pass	50%Pass
Quiz (20%)	50%Pass	50%Pass	50%Pass	50%Pass	50%Pass

Class participation (10%)	50%Pass	50%Pass	50%Pass	50%Pass	50%Pass

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

5. Date revised: May 2025

6. Course coordinator/Lecturer

- School/Department: School of BT. Department of Applied Chemistry.
- Email: ntkhoi@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: ENZYMOLOGY LAB

Course Code: BTBC316IU

1. General information

Course name	- <i>ENZYMOLOGY LAB</i> - <i>Thực hành Enzyme học</i>
Course designation	<i>This course aims to:</i> - <i>Provide students with knowledge on the structure and function of enzymes, with special reference to molecular mechanisms underlying the catalytic activity, and mechanisms of inhibition and modulation.</i> - <i>Provide introduction to some of the basic techniques for the extraction, purification and characterization of the enzymes.</i> - <i>Provide discussions on some typical enzymes.</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
Person responsible for the course	MSc. Le Tran Hong Ngoc
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Labwork

Workload (incl. contact hours, self-study hours)			Lecture	Lab
		Credit		1
	Contact hours	30	0	30
	Self-Study hours	20	0	20
	Total workload	50	0	50
Credit points	1 credits (Theory: 0 + Practice: 1) 2 ECTS (optional)			
Number of periods	Theory: 0 Practice: 30			
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name): BTBC315IU – Enzymology			
Course objectives	Students will be able to: - perform basic techniques for the extraction, purification and characterization of the enzymes. - identify conditions affecting enzyme activities.			
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 concepts, structures, and functions of enzymes CLO2. Have knowledge of available methods for enzyme extraction, purification and application		
	Skill	CLO3. Able to perform basic techniques for enzyme extraction, purification, and quantification and evaluate conditions affecting enzyme activities		
	Attitude	CLO4. Develop critical thinking skills to be able to solve practical problems, analyze different situations, and combine various techniques in future research/industrial applications.		

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>Aseptic Technique: Bacterial Culturing for Enzyme Synthesis & Chemical Preparation</td><td>1</td><td>I, T, U</td></tr><tr><td>Enzyme extraction from plant source</td><td>1</td><td>I, T, U</td></tr><tr><td>Biosynthesis of Enzymes from Fungi and Bacteria</td><td>1</td><td>I, T, U</td></tr><tr><td>Enzyme extraction from Bacteria</td><td>1</td><td>I, T, U</td></tr><tr><td>Effect of Enzyme Concentration on Enzyme Activity</td><td>1</td><td>I, T, U</td></tr><tr><td>Effect of Heat Stability on Enzyme Activity</td><td>1</td><td>I, T, U</td></tr><tr><td>Effect of pH Stability on Enzyme Activity</td><td>1</td><td>I, T, U</td></tr></table>	Topic	Weight	Level	Aseptic Technique: Bacterial Culturing for Enzyme Synthesis & Chemical Preparation	1	I, T, U	Enzyme extraction from plant source	1	I, T, U	Biosynthesis of Enzymes from Fungi and Bacteria	1	I, T, U	Enzyme extraction from Bacteria	1	I, T, U	Effect of Enzyme Concentration on Enzyme Activity	1	I, T, U	Effect of Heat Stability on Enzyme Activity	1	I, T, U	Effect of pH Stability on Enzyme Activity	1	I, T, U
Topic	Weight	Level																							
Aseptic Technique: Bacterial Culturing for Enzyme Synthesis & Chemical Preparation	1	I, T, U																							
Enzyme extraction from plant source	1	I, T, U																							
Biosynthesis of Enzymes from Fungi and Bacteria	1	I, T, U																							
Enzyme extraction from Bacteria	1	I, T, U																							
Effect of Enzyme Concentration on Enzyme Activity	1	I, T, U																							
Effect of Heat Stability on Enzyme Activity	1	I, T, U																							
Effect of pH Stability on Enzyme Activity	1	I, T, U																							
Examination forms	Short answers, Multiple Choice Questions, Calculation, Critical thinking questions.																								
Study and examination requirements	It is compulsory for all students to attend all class sessions. Failure to be present in any session without reason will immediately result in being dropped from the course. Students will be assessed on the basis of their class participation and lab techniques. Questions and comments are strongly encouraged.																								
Reading list	<i>[1] Yon-Kahn, J. Hervé, G. Molecular and Cellular Enzymology. Springer-Verlag Berlin Heidelberg 2010</i> <i>[2] Cornish-Bowden, A.C. Fundamentals of enzyme kinetics. Portland Press, 1995</i> <i>[3] Department of Applied Chemistry - Enzymology Lab Manual.</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:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources

1	Aseptic Technique: Bacterial Culturing for Enzyme Synthesis & Chemical Preparation	1, 2, 3, 4	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
2	Enzyme extraction from Plants	1,2, 3, 4	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[2], [3]
3	Biosynthesis of Enzymes from Fungi and Bacteria	1,2, 3, 4	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[2], [3]
4	Effect of Enzyme Concentration on Enzyme Activity	1,2, 3, 4	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
5	Effect of Heat Stability on Enzyme Activity	1,2, 3, 4	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
6	Effect of pH Stability on Enzyme Activity	1,2, 3, 4	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
	Final exam		Short answer questions		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class Quizzes (10%)	Qz 1-3 60%Pass	Qz 1-3 60%Pass	Qz 4-5 60%Pass	Qz 1-5 50%Pass
Lab Reports (30%)	Report 1-3 70%Pass	Report 1-3 70%Pass	Report 4-5 70%Pass	Report 1-5 60%Pass
Final Exam (60%)	60%Pass	60%Pass	60%Pass	60%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 content (65%)			
Abstract clearly identifies purpose and summarizes principal content	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	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (15%)			
Correct spelling, grammar, and syntax	5		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		
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 the task are included.		
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.		
2	Demonstrates little understanding of the problem. Many requirements of the 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.

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 one's 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	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.

	acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	(perspective, thesis/hypothesis).		
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

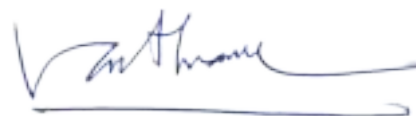
6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: MSc. Le Tran Hong Ngoc - Department of Applied Chemistry
- Email: lthngoc@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: METHODS IN BIOCHEMISTRY

Course Code: **BTBC313IU**

1. General information

Course name	- (in English) <i>Methods in biochemistry</i> - (in Vietnamese) <i>Kỹ thuật Hóa sinh</i>
Course designation	This course is designed to provide a basic understanding of the principles, overall work-flow and applications of common techniques in biochemistry.
Course type	☐ General knowledge ☒ Fundamental ☐ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	IV
Person responsible for the course	Vũ Thanh Ngọc, PhD
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lecture, inquiry and project-based learning
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

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) 4.62 ECTS	
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, BTBC209IU - Biochemistry 1	
Course objectives	This course is designed to provide a basic understanding of the principles, overall work-flow and applications of common techniques in biochemistry.	
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 principles, work-flow and applications of different techniques/methods in biochemistry
	Skill	CLO2. Appropriately select or access the suitability of certain biochemistry methods for specific applications and propose the solution for problems emerged from certain applications. CLO3. Compose a mini-review, present and discuss about a topic related to a method/technique in biochemistry.

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 nucleic acid, purification & quantification of nucleic acid</td><td>1</td><td>I, T, U</td></tr><tr><td>DNA amplification (PCR) and electrophoresis</td><td>1</td><td>I, T, U</td></tr><tr><td>DNA cloning and hybridization</td><td>1</td><td>I, T, U</td></tr><tr><td>DNA sequencing and genome mapping</td><td>1</td><td>I, T, U</td></tr><tr><td>DNA mutagenesis and gene inactivation</td><td>1</td><td>I, T, U</td></tr><tr><td>Introduction to protein technology & amino acid analysis</td><td>1</td><td>I, T, U</td></tr><tr><td>Protein quantification and sequencing</td><td>1</td><td>I, T, U</td></tr><tr><td>Protein gel electrophoresis</td><td>1</td><td>I, T, U</td></tr><tr><td>Immunoassays</td><td>1</td><td>I, T, U</td></tr><tr><td>Recombination protein expression</td><td>1</td><td>I, T, U</td></tr><tr><td>Protein purification</td><td>1</td><td>I, T, U</td></tr><tr><td>Mass spectrometry and proteomics</td><td>1</td><td>I, T, U</td></tr><tr><td>Protein structure determination and peptide synthesis</td><td>1</td><td>I, T, U</td></tr><tr><td>Introduction to carbohydrate and lipid technology</td><td>1</td><td>I, T, U</td></tr></table>	Topic	Weight	Level	Introduction to nucleic acid, purification & quantification of nucleic acid	1	I, T, U	DNA amplification (PCR) and electrophoresis	1	I, T, U	DNA cloning and hybridization	1	I, T, U	DNA sequencing and genome mapping	1	I, T, U	DNA mutagenesis and gene inactivation	1	I, T, U	Introduction to protein technology & amino acid analysis	1	I, T, U	Protein quantification and sequencing	1	I, T, U	Protein gel electrophoresis	1	I, T, U	Immunoassays	1	I, T, U	Recombination protein expression	1	I, T, U	Protein purification	1	I, T, U	Mass spectrometry and proteomics	1	I, T, U	Protein structure determination and peptide synthesis	1	I, T, U	Introduction to carbohydrate and lipid technology	1	I, T, U
	Topic	Weight	Level																																											
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	Protein purification	1	I, T, U																																											
Mass spectrometry and proteomics	1	I, T, U																																												
Protein structure determination and peptide synthesis	1	I, T, U																																												
Introduction to carbohydrate and lipid technology	1	I, T, U																																												
Examination forms	Multiple choice, true/false, matching, short answer, essay																																													
Study and examination requirements	<i>Requirements for successfully passing the module:</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. All absence, if not emergent, requires approval of the instructor(s) in advance. Absence for exams requires in-advanced approval of the Office of Academic Affairs. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.																																													

Reading list	1. Garrett RH, Grisham CM. <i>Biochemistry</i>. 5th edition ed. Belmont, CA: Cengage Learning; 2012 2012/01/05/. 1280 p. 2. Nelson DL, Cox MM. <i>Lehninger Principles of Biochemistry</i> 5th (fifth) edition Text Only. 5th edition ed: W.H. Freeman & Company; 2008 2008/01/01/. 3. Sambrook J. <i>Molecular Cloning: A Laboratory Manual, Third Edition</i>. 3rd edition ed. Cold Spring Harbor, N.Y: Cold Spring Harbor Laboratory Press; 2001 2001/01/15/. 2344 p. 4. <i>Current protocols in molecular biology</i>, edited by M. Ausubel, R. Brent, R.E. Kingston, D.D. Moore, J.G. Seidman, J.A. Smith, and K. Struhl. Volumes 1 and 2. John Wiley & Sons, Inc., Media, PA, 1988, Mol Reprod Dev. 1989 1989;1(2):146-. en. 5. <i>Protein Biochemistry and Proteomics - 1st Edition</i> [updated 2022/04/18/07:51:54]. Available from: https://www.elsevier.com/books/protein-biochemistry-and-proteomics/rehm/978-0-12-088545-9.

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to nucleic acid, purification & quantification of nucleic acid	1, 2	Lecture, discussion, quiz/assignment	Quiz/assignment	1-4
2	DNA amplification (PCR) and electrophoresis	1, 2	Lecture, discussion, quiz/assignment	Quiz/assignment	1-4
3	DNA cloning and hybridization	1, 2	Lecture, discussion, quiz/assignment	Quiz/assignment	1-4
4	DNA sequencing and genome mapping	1, 2	Lecture, discussion, quiz/assignment	Quiz/assignment	1-4
5	DNA mutagenesis and gene inactivation	1, 2	Lecture, discussion, quiz/assignment	Quiz/assignment	1-4
6	Introduction to protein technology & amino acid analysis	1, 2	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2, 4, 5
7	Protein quantification and sequencing	1, 2	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2, 4, 5



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

COURSE SYLLABUS

Course Name: BIOPHYSICAL CHEMISTRY

Course Code: **BTBC302IU**

1. General information

Course name	- <i>Biophysical Chemistry</i> - <i>Hoá Lý Sinh học</i>								
Course designation	<i>This course is aimed to provide students with physical insights into the biochemical phenomena including protein folding and binding phenomena.</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								
Person responsible for the course	<i>Assoc. Prof. Nguyen Tan Khoi</i>								
Language	English								
Relation to curriculum	☒ Compulsory ☐ Elective								
Teaching methods	<i>lecture, lesson.</i>								
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours <table style="margin-left: auto; margin-right: auto;"> <tr> <td><i>Credit</i></td> <td><i>3</i></td> </tr> <tr> <td><i>Contact hours</i></td> <td><i>37.5 37.5</i></td> </tr> <tr> <td><i>Self-Study hours</i></td> <td><i>90 90</i></td> </tr> <tr> <td><i>Total workload</i></td> <td><i>127.5 127.5</i></td> </tr> </table>	<i>Credit</i>	<i>3</i>	<i>Contact hours</i>	<i>37.5 37.5</i>	<i>Self-Study hours</i>	<i>90 90</i>	<i>Total workload</i>	<i>127.5 127.5</i>
<i>Credit</i>	<i>3</i>								
<i>Contact hours</i>	<i>37.5 37.5</i>								
<i>Self-Study hours</i>	<i>90 90</i>								
<i>Total workload</i>	<i>127.5 127.5</i>								
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: BTBC211IU - Biochemistry 2. - Previous course (Course code – Course name) BTBC201IU Organic Chemistry; BT405IU Physical Chemistry.	
Course objectives	• Organization. Biological macromolecules and the forces that stabilize them. • Biomacromolecules structure determination: X -ray and NMR • Intermolecular interactions: Protein-drug, protein-protein, protein-DNA, protein-RNA. • Thermodynamics of biomolecules: Entropy, enthalpy, free energy and equilibrium. • The reactions of the oxidase and reductases in biology. • Macromolecules in solution: Gibbs-Duhem equation. Molal osmotic coefficients. Activity coefficients. Solute-solute interactions. • Macromolecules in solution: Hydrophobic interactions. Protein folding and unfolding. • Electrochemical equilibrium. Membrane potentials. Membrane biophysics. Dynamic structure of lipid bilayer membrane. • Ion channels and transporters. Ion pumps. Bioenergetics. • Respect different opinions • Understanding (of other's needs) Active in finding solution for challenges or problems	
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 concepts, key points of biophysical phenomena. CLO2. Be able to distinguish different mechanisms of biophysical phenomena.
	Skill	CLO3. Be able to break a biophysical phenomenon down into a mathematical model to quantify it. CLO4. How to set up an experiment to quantify biophysical phenomena.
	Attitude	CLO5. Able to solve practical problems and analyze the solutions.

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>Lecture 1: (CLO1, CLO2) Organization. Biological macromolecules and the forces that stabilize them.</td><td>5</td><td>T</td></tr><tr><td>Lecture 2: (CLO1, CLO3, CLO4) Biomacromolecules structure determination</td><td>5</td><td>T</td></tr><tr><td>Lecture 3: (CLO1, CLO3, CLO4) Intermolecular interactions: Protein-drug, protein-protein, protein-DNA, protein-RNA.</td><td>10</td><td>T,U</td></tr><tr><td>Lecture 4: (CLO1, CLO2, CLO3, CLO4) Thermodynamics of biomolecules: Entropy, enthalpy, free energy and equilibrium</td><td>10</td><td>T,U</td></tr><tr><td>Lecture 5: Free energy and equilibrium (CLO1, CLO2, CLO3, CLO4)</td><td>10</td><td>T,U</td></tr><tr><td>Lecture 6: The reactions of the oxidase and reductases in biology (CLO1, CLO2)</td><td>10</td><td>T,U</td></tr><tr><td>Lecture 7, 8: Macromolecules in solution: Gibbs-Duhem equation. Molal osmotic coefficients (CLO1, CLO2, CLO3)</td><td>10</td><td>T,U</td></tr><tr><td>Lecture 9, 10: Activity coefficients. Solute-solute interactions. (CLO1, CLO2)</td><td>10</td><td>T,U</td></tr><tr><td>Lecture 11, 12: Macromolecules in solution: Hydrophobic interactions. Protein folding and unfolding. (CLO1, CLO2, CLO4, CLO5)</td><td>10</td><td>T,U</td></tr><tr><td>Lecture 13: Electrochemical equilibrium. Membrane potentials. Membrane biophysics. Dynamic structure of lipid bilayer membrane. (CLO1, CLO2)</td><td>10</td><td>T,U</td></tr><tr><td>Lecture 14: Ion channels and transporters. Ion pumps. Bioenergetics. (CLO1, CLO2, CLO5)</td><td>10</td><td>T,U</td></tr></table>	Topic	Weight	Level	Lecture 1: (CLO1, CLO2) Organization. Biological macromolecules and the forces that stabilize them.	5	T	Lecture 2: (CLO1, CLO3, CLO4) Biomacromolecules structure determination	5	T	Lecture 3: (CLO1, CLO3, CLO4) Intermolecular interactions: Protein-drug, protein-protein, protein-DNA, protein-RNA.	10	T,U	Lecture 4: (CLO1, CLO2, CLO3, CLO4) Thermodynamics of biomolecules: Entropy, enthalpy, free energy and equilibrium	10	T,U	Lecture 5: Free energy and equilibrium (CLO1, CLO2, CLO3, CLO4)	10	T,U	Lecture 6: The reactions of the oxidase and reductases in biology (CLO1, CLO2)	10	T,U	Lecture 7, 8: Macromolecules in solution: Gibbs-Duhem equation. Molal osmotic coefficients (CLO1, CLO2, CLO3)	10	T,U	Lecture 9, 10: Activity coefficients. Solute-solute interactions. (CLO1, CLO2)	10	T,U	Lecture 11, 12: Macromolecules in solution: Hydrophobic interactions. Protein folding and unfolding. (CLO1, CLO2, CLO4, CLO5)	10	T,U	Lecture 13: Electrochemical equilibrium. Membrane potentials. Membrane biophysics. Dynamic structure of lipid bilayer membrane. (CLO1, CLO2)	10	T,U	Lecture 14: Ion channels and transporters. Ion pumps. Bioenergetics. (CLO1, CLO2, CLO5)	10	T,U
	Topic	Weight	Level																																		
	Lecture 1: (CLO1, CLO2) Organization. Biological macromolecules and the forces that stabilize them.	5	T																																		
	Lecture 2: (CLO1, CLO3, CLO4) Biomacromolecules structure determination	5	T																																		
	Lecture 3: (CLO1, CLO3, CLO4) Intermolecular interactions: Protein-drug, protein-protein, protein-DNA, protein-RNA.	10	T,U																																		
	Lecture 4: (CLO1, CLO2, CLO3, CLO4) Thermodynamics of biomolecules: Entropy, enthalpy, free energy and equilibrium	10	T,U																																		
	Lecture 5: Free energy and equilibrium (CLO1, CLO2, CLO3, CLO4)	10	T,U																																		
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Lecture 11, 12: Macromolecules in solution: Hydrophobic interactions. Protein folding and unfolding. (CLO1, CLO2, CLO4, CLO5)	10	T,U																																			
Lecture 13: Electrochemical equilibrium. Membrane potentials. Membrane biophysics. Dynamic structure of lipid bilayer membrane. (CLO1, CLO2)	10	T,U																																			
Lecture 14: Ion channels and transporters. Ion pumps. Bioenergetics. (CLO1, CLO2, CLO5)	10	T,U																																			
Examination forms	<i>Written exams (Midterm+Final)</i>																																				
Study and examination requirements	Students are expected to spend at least 8 hours per week studying this course. This time should be made up of reading, working on exercises and problems, group assignments and attending class lectures and tutorials. University regulations indicate that students may be refused to take final assessment if they attend less than 80% of scheduled classes. Regular attendance is essential for successful performance and learning in this course, particular in the view of the interactive teaching and learning approach adopted.																																				

Reading list	Textbooks: David Eisenberg and Donald Crothers, “Physical Chemistry with Applications to the Life Sciences”, The Benjamin Cummings Publishing Company, Inc., 1979 References: Kensal E. van Holde, W. Curtis Johnson, and Pui Shing Ho, “Principles of Physical Biochemistry” (Second Edition 2006), Pearson Prentice Hall, Upper Saddle River, New Jersey 07458 (ISBN 0-13-046427-9)

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Lecture 1: Organization. Biological macromolecules and the forces that stabilize them.	CLO1, CLO2	5%	- Lecture presentation - Group forming. - Class discussion - Read book & lecture 2.	
2	Lecture 2: Biomacromolecules structure determination	CLO1, CLO3, CLO4	5%	- Lecture presentation - Class discussion - Read book & lecture 3.	
3	Lecture 3: Intermolecular interactions: Protein-drug, protein-protein, protein-DNA, protein-RNA.	CLO1, CLO3, CLO4	10%	- Lecture presentation - Class discussion - Read book & lecture 4.	
4	Lecture 4: Thermodynamics of biomolecules: Entropy, enthalpy, free energy and equilibrium	CLO1, CLO2, CLO3, CLO4	10%	- Class discussion - Read book & lecture 5.	
5	Lecture 5: Free energy and equilibrium.	CLO1, CLO2	5%	- Lecture presentation - Class discussion - Read book & lecture 6.	
6	Lecture 6: The reactions of the oxidase and reductases in biology	CLO1, CLO2	5%	- Lecture presentation - Class discussion - Read book & lecture 7.	
7,8	Lecture 7, 8: Macromolecules in solution: Gibbs-Duhem	CLO1, CLO2, CLO3	10%	- Lecture presentation - Class discussion - Read book & lecture 10.	

	equation. Molal osmotic coefficients				
8	Midterm				
9, 10	Lecture 9, 10: Activity coefficients. Solute-solute interactions.	CLO1, CLO2	15%	- Lecture presentation - Class discussion - Read book & lecture 12.	
11, 12	Lecture 11, 12: Macromolecules in solution: Hydrophobic interactions. Protein folding and unfolding.	CLO1, CLO2, CLO4, CLO5	15%	- Lecture presentation - Class discussion - Read book & lecture 13.	
13,4	Lecture 13: Electrochemical equilibrium. Membrane potentials. Membrane biophysics. Dynamic structure of lipid bilayer membrane.	CLO1, CLO2	10%	- Lecture presentation - Class discussion	
15	Lecture 14: Ion channels and transporters. Ion pumps. Bioenergetics..	CLO1, CLO2, CLO5	10%	- Lecture presentation - Class discussion	
17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Written exam (70%)	50%Pass	50%Pass	50%Pass	50%Pass	50%Pass
Quiz (20%)	50%Pass	50%Pass	50%Pass	50%Pass	50%Pass
Class participation (10%)	50%Pass	50%Pass	50%Pass	50%Pass	50%Pass

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

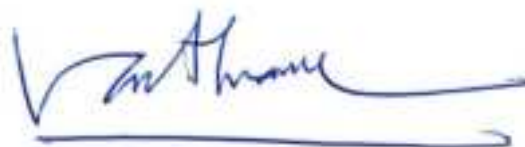
5. Date revised: May 2025

6. Course coordinator/Lecturer

- School/Department: School of BT. Department of Applied Chemistry.
- Email: ntkhoi@hcmiu.edu.vn

Hochiminh city, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan

8	Midterm				
9	Protein gel electrophoresis	1, 2	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2, 4, 5
10	Immunoassays	1, 2	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2, 4, 5
11	Recombination protein expression	1, 2	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2, 4, 5
12	Protein purification	1, 2	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2, 4, 5
13	Mass spectrometry and proteomics		Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2, 4, 5
14	Protein structure determination and peptide synthesis	1, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2, 4
15	Introduction to carbohydrate and lipid technology	1, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	1, 2, 4
16	Final exam				

4. Assessment plan

Assessment type	CLO1	CLO2	CLO3
Quiz/assignment (30%)			x
Midterm exam (30%)	x	x	
Final exam (40%)	x	x	

Note: Target that at least 50% of students having scores of at least 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Part 1..... (....%)			
Criterion 1:			
Criterion 2:			
Criterion 3:			
Criterion:			
Part 2..... (....%)			
Criterion 1 ...:			
Criterion:			
Part 3..... (....%)			

Criterion 1....:			
Criterion:			
Part (....%)			
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 the task are included.
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.
2	Demonstrates little understanding of the problem. Many requirements of the 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 one's 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 the audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to the audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and the speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and the speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and the speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and the 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:** May 30th, 2025
7. **Course coordinator/Lecturer**
- School/Department: School of Biotechnology
 - Email: vtngoc@hcmiu.edu.vn

Ho Chi Minh city, 06/2025

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., Dr. Nguyen Van Thuan



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

COURSE SYLLABUS

Course Name: METHODS IN BIOCHEMISTRY LAB

Course Code: BTBC314IU

1. General information

Course name	- <i>METHODS IN BIOCHEMISTRY LAB</i> - <i>Thực hành Kỹ thuật Hóa sinh</i>
Course designation	<i>This course aims to provide a basic understanding and the accurate execution of different techniques in biochemistry.</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	MSc. Le Tran Hong Ngoc
Language	English
Relation to curriculum	☒ Compulsory ☐ Elective
Teaching methods	Lab work, lab project

Workload (incl. contact hours, self-study hours)				
			Lecture	Lab
		<i>Credit</i>		2
	Contact hours	60	0	60
	Self-Study hours	60	0	60
	Total workload	120	0	120
Credit points	2 credits (Theory: 0 + Practice: 2) 4 ECTS (<i>optional</i>)			
Number of periods	Theory: 0 Practice: 60			
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name): BTBC313IU - Methods in Biochemistry			
Course objectives	Students will be able to perform common techniques such as qualitative and quantitative analysis and characterization of macromolecules. In addition, students will have a chance to learn the techniques in protein preparation such as separation, recombinant, and sequences.			
Course learning outcomes	Upon the successful completion of this course students will be able to:			
	Competency level	Course learning outcome (CLO)		
	Knowledge	CLO1. Understanding concepts of genes and all the components and their functions in living organisms. CLO2. Know different methods for protein identification and quantification as well as electrophoresis.		
	Skill	CLO3. Able to perform different methods for protein identification and quantification as well as electrophoresis. CLO4. Able to create competent cells and perform recombination in bacterial cells.		
	Attitude	CLO5. Develop critical thinking skills to be able to solve practical problems, explain things and analyze different situations.		

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: Lab work (5 periods) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Basic biochemistry calculations and techniques</td><td>1</td><td>I, T, U</td></tr><tr><td>Introduction to techniques</td><td>1</td><td>I, T, U</td></tr><tr><td>Quantitative determination of protein concentration</td><td>1</td><td>I, T, U</td></tr><tr><td>Protein electrophoresis (SDS-PAGE)</td><td>1</td><td>I, T, U</td></tr><tr><td>Preparation for Transformation</td><td>1</td><td>I, T, U</td></tr><tr><td>Transformation Techniques</td><td>1</td><td>I, T, U</td></tr><tr><td>Plasmid Preparation</td><td>1</td><td>I, T, U</td></tr><tr><td>PCR & DNA Electrophoresis</td><td>2</td><td>I, T, U</td></tr></table>	Topic	Weight	Level	Basic biochemistry calculations and techniques	1	I, T, U	Introduction to techniques	1	I, T, U	Quantitative determination of protein concentration	1	I, T, U	Protein electrophoresis (SDS-PAGE)	1	I, T, U	Preparation for Transformation	1	I, T, U	Transformation Techniques	1	I, T, U	Plasmid Preparation	1	I, T, U	PCR & DNA Electrophoresis	2	I, T, U
Topic	Weight	Level																										
Basic biochemistry calculations and techniques	1	I, T, U																										
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Protein electrophoresis (SDS-PAGE)	1	I, T, U																										
Preparation for Transformation	1	I, T, U																										
Transformation Techniques	1	I, T, U																										
Plasmid Preparation	1	I, T, U																										
PCR & DNA Electrophoresis	2	I, T, U																										
Examination forms	Written exam																											
Study and examination requirements	It is compulsory for all students to attend all class sessions. Failure to be present in any session without reason will immediately result in being dropped from the course. Students will be assessed on the basis of their class participation and lab techniques. Questions and comments are strongly encouraged.																											
Reading list	[1] Keith Wilson, John Walker. <i>Principles and Techniques of Biochemistry and Molecular Biology</i>. 7th Ed. Cambridge University Press. 2010. [2] Department of Applied Chemistry - <i>Methods in Biochemistry Lab Manual</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:

	ILOs							
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	Assessments	Learning activities	Resources
1	Basic biochemistry calculations and techniques	1, 2, 3, 4	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2]
2	Introduction to techniques	1, 3, 4, 5	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2]
3	Quantitative determination of protein concentration	1, 3, 4, 5	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2]
4	Protein electrophoresis (SDS-PAGE)	1, 3, 4, 5	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2]
5	DNA Isolation from Cheek Cells	1,5	Lab skills	- Lecture - Lab demo - Group forming. - Lab practice	[2]
	Midterm Exam		Short answer Questions MCQ Data analysis		
6	Bacterial Isolation and Culturing	1, 3, 4, 5	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[2]
7	Preparation for Transformation	1, 3, 4, 5	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2]
8	Transformation Techniques	1, 3, 4, 5	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2]
9	Plasmid Preparation	1, 3, 4, 5	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2]

10	DNA Purification	1, 3, 4, 5	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2]
11	PCR	1, 3, 4, 5	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2]
12	DNA Electrophoresis	1, 3, 4, 5	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2]
	Final exam		Short answer Questions MCQ Data analysis		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
In-class Quizzes (10%)	Qz 1-11 60%Pass	Qz 1-11 60%Pass	Qz 1-5 60%Pass	Qz 5-11 60%Pass	
Lab Reports (40%)	Report 1-11 70%Pass	Report 1-11 70%Pass	Report 1-5 70%Pass	Report 5-11 70%Pass	Report 1-11 70%Pass
Midterm Exam (20%)	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

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (65%)			
Abstract clearly identifies purpose and summarizes principal content	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	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (15%)			
Correct spelling, grammar, and syntax	5		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		
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 the task are included.		
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.		
2	Demonstrates little understanding of the problem. Many requirements of the 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.

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	Issue/problem to be considered critically is stated without clarification or description.

			backgrounds unknown.	
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 one's 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	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes	Conclusion is logically tied to information (because information is chosen to fit the desired	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences

	to place evidence and perspectives discussed in priority order.	(consequences and implications) are identified clearly.	conclusion); some related outcomes (consequences and implications) are identified clearly.	and implications) are oversimplified.

Source: Association of American Colleges and Universities

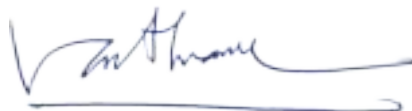
6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: MSc. Le Tran Hong Ngoc - Department of Applied Chemistry
- Email: lthngoc@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan

Appendix:

MỨC ĐỘ ĐÁP ỨNG KHUNG NĂNG LỰC SỐ

Làm thí nghiệm thực hành tại lớp và xử lý dữ liệu viết báo cáo thí nghiệm nhóm (Tính toán, chuẩn bị hóa chất, thao tác thí nghiệm với dụng cụ và thiết bị, thu thập và xử lý số liệu để đưa ra kết luận ban đầu)

Mô tả hoạt động: Nhóm sinh viên thực hiện các thí nghiệm trong phòng thí nghiệm, sử dụng các thiết bị như máy quang phổ, kính hiển vi, máy ly tâm, và máy PCR để thu thập dữ liệu, sau đó xử lý dữ liệu thông qua các phần mềm phân tích (như Excel hoặc Origin), chia sẻ kết quả qua nền tảng số, và trình bày báo cáo qua bài báo cáo.

Tích hợp năng lực số:

1. Miền I: Khai thác dữ liệu và thông tin (3 năng lực)

- **1.1. Tìm kiếm thông tin** (Bậc 4): Tìm kiếm tài liệu về phương pháp theo từng bài học để hiểu được cơ chế cơ bản trên Google Scholar, PubMed hoặc ResearchGate và so sánh với phương pháp đã được điều chỉnh trong Lab manual.
- **1.2. Đánh giá dữ liệu/thông tin** (Bậc 4): Đánh giá độ tin cậy của tài liệu dựa trên tạp chí khoa học và phương pháp thực nghiệm.
- **1.3. Lưu trữ và quản lý thông tin** (Bậc 4): Lưu trữ dữ liệu thí nghiệm vào hệ thống quản lý dữ liệu của bản thân và cả nhóm (như Google Drive hoặc iCloud).
- **Lý do:** Yêu cầu tìm kiếm và quản lý dữ liệu thực nghiệm, phù hợp với sinh viên năm 2-3.

2. Miền II: Giao tiếp và hợp tác trong môi trường số (6 năng lực)

- **2.1. Tương tác thông qua công nghệ số** (Bậc 4): Sử dụng Zoom, Microsoft Team hoặc Google Meet để thảo luận kết quả thí nghiệm cùng các thành viên trong nhóm.
- **2.2. Chia sẻ thông tin và nội dung số** (Bậc 4): Chia sẻ dữ liệu qua các công cụ Google như Sheets, Drive hoặc email, đảm bảo trích dẫn nguồn.
- **2.4. Hợp tác thông qua công nghệ số** (Bậc 4): Phân công nhiệm vụ (đo lường, phân tích, trình bày) qua nền tảng số.
- **2.5. Thực hiện quy tắc ứng xử trên mạng** (Bậc 4): Giao tiếp chuyên nghiệp, tôn trọng trong nhóm trực tuyến.
- **Lý do:** Hợp tác nhóm trong thí nghiệm đòi hỏi giao tiếp và phối hợp chặt chẽ qua công cụ số.

3. Miền III: Sáng tạo nội dung số (4 năng lực)

- **3.1. Phát triển nội dung số** (Bậc 4): Tạo bảng (Table) hoặc biểu đồ (Graph) trình bày kết quả thí nghiệm. Sử dụng Xác suất thống kê để xử lý dữ liệu, dựng model mô phỏng hoặc đưa ra kết luận.
- **3.2. Tích hợp và tạo lập lại nội dung số** (Bậc 4): Kết hợp dữ liệu thực nghiệm với tài liệu tham khảo để tạo báo cáo khoa học.
- **Lý do:** Yêu cầu tạo nội dung số phức tạp hơn và xử lý dữ liệu thực nghiệm, phù hợp với sinh viên năm 2-3.

4. **Miền IV: An toàn** (4 năng lực)

- **4.1. Bảo vệ thiết bị** (Bậc 4): Đảm bảo máy móc thiết bị và máy tính được bảo vệ khỏi lỗi kỹ thuật hoặc phần mềm độc hại.
- **4.3. Bảo vệ sức khỏe** (Bậc 4): Tuân thủ quy định an toàn phòng thí nghiệm và quản lý thời gian làm việc trên máy tính.
- **4.4. Nhận thức tác động môi trường** (Bậc 4): Xử lý chất thải hóa học từ thí nghiệm đúng cách và tiết kiệm năng lượng khi sử dụng thiết bị.
- **Lý do:** Yêu cầu an toàn trong phòng thí nghiệm và môi trường số, phù hợp với sinh viên năm 2-3..

5. **Miền V: Giải quyết vấn đề** (4 năng lực)

- **5.1. Nhận diện vấn đề kỹ thuật** (Bậc 4): Xác định lỗi khi sử dụng máy, từ lỗi kỹ thuật đến việc máy cho kết quả sai lệch và tìm cách khắc phục (như hiệu chỉnh thiết bị, yêu cầu kỹ thuật hoặc biên độ đo).
- **5.2. Tùy chỉnh môi trường số** (Bậc 4): Tùy chỉnh thiết bị và phần mềm phân tích để phù hợp với dữ liệu mà mục đích sử dụng.
- **5.3. Sử dụng sáng tạo công nghệ số** (Bậc 4): Sử dụng công cụ trực quan hóa để trình bày dữ liệu một cách sáng tạo.
- **Lý do:** Yêu cầu xử lý vấn đề kỹ thuật và sáng tạo trong phân tích dữ liệu, phù hợp với sinh viên năm 2-3.

6. **Miền VI: Ứng dụng trí tuệ nhân tạo (AI)** (3 năng lực)

- **6.1. Hiểu về AI** (Bậc 3): Hiểu cách công cụ AI hỗ trợ phân tích tính toán dữ liệu.
- **Lý do:** Sử dụng AI ở mức trung bình, phù hợp với sinh viên làm quen với công nghệ tiên tiến.

Trình độ cụ thể: Bậc 3-4 (trung bình), phù hợp với sinh viên năm 2-3 ngành Hóa sinh, vì hoạt động này đòi hỏi xử lý độc lập hơn, sử dụng công cụ số trong thực nghiệm, và hợp tác nhóm chặt chẽ.



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

COURSE SYLLABUS
Course Name: PHYSICAL CHEMISTRY
Course Code: **BT405IU**

1. General information

Course name	- <i>Physical Chemistry</i> - <i>Hóa Lý</i>
Course designation	<i>This subject will provide knowledge on following:</i> - <i>Working mechanism of physical chemical phenomena.</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	3, 4
Person responsible for the course	<i>Assoc. Prof. Nguyen Tan Khoi</i>
Language	English
Relation to curriculum	☒ <i>Compulsory</i> ☐ <i>Elective</i>
Teaching methods	Lecture, lesson
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours <i>Credit</i> 3 <i>Contact hours</i> 37.5 37.5 <i>Self-Study hours</i> 90 90 <i>Total workload</i> 127.5 127.5
Credit points	3 credits (Theory: 3) 4.62 ECTS (<i>optional</i>)

Number of periods	Theory: 45 Practice: 0	
Required and recommended prerequisites for joining the course	- Prerequisites: CH11IU - Chemistry for Engineers Recommended previous courses: Organic Chemistry 1, Biochemistry 1, Analytical Chemistry.	
Course objectives	- Provides students with knowledge on Diffusion, Effusion, collision volume, mean free path. Equilibrium Conditions, Partial Molar Quantities. Solutions, Ideal Solutions & Colligative Properties, Non-Ideal Solutions, Ionic Solutions ; properties of gases. Pressure, ideal gas law; Kinetic Molecular theory and its derivation. Molecular speed measurements Zeroth Law of Thermodynamics and Thermometry, First Law of Thermodynamics. Thermochemistry, Second Law of Thermodynamics & Entropy. Chemical Equilibrium, Electrochemistry, Phase Equilibria, Gravitational, Electric, Magnetic, Surface Work; Kinetics. - Analyzing the underlying working mechanism of physical chemical phenomena; Oral presentation; Teamwork and problem-solving.	
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 concepts, key points of physical chemical phenomena CLO2. Able to distinguish different mechanisms of physical chemical phenomena.
	Skill	CLO3. Know how to analytically break a phenomena down into mathematical models. CLO4. Know how to design an experiment to measure a desired quantity.
	Attitude	CLO5. Able to solve practical problems and analyze the solutions.

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
	properties of gases, liquids and solids.	2	T, U
	Zeroth Law of Thermodynamics and Thermometry, First Law of Thermodynamics.	2	T, U
	Thermochemistry, Second Law of Thermodynamics & Entropy	1	T, U
	Legendre Transforms & the Gibbs Function, Maxwell Relations	2	T, U
	Macromolecules in solution: Gibbs-Duhem equation. Molal osmotic coefficients.	1	T, U
	Equilibrium Conditions, Partial Molar Quantities	2	I, T
	Solutions, Ideal Solutions & Colligative Properties, Non-Ideal Solutions, Ionic Solutions.	3	T, U
	Chemical Equilibrium, Electrochemistry, Phase Equilibria, Gravitational, Electric, Magnetic, Surface Work.	2	T, U
Examination forms	<i>Written exams (Midterm+Final)</i>		
Study and examination requirements	Students are expected to spend at least 8 hours per week studying this course. This time should be made up of reading, working on exercises and problem, group assignment and attending class lectures and tutorials. University regulations indicate that students may be refused to take final assessment if they attend less than 80% of scheduled classes. Regular attendance is essential for successful performance and learning in this course, particular in the view of the interactive teaching and learning approach adopted.		
Reading list	Textbook: • Textbooks: Physical Chemistry, 9th Ed.; Peter Atkins and Julio de Paula; Freeman; 2009 References: Physical Chemistry, 3rd Ed.; Gilbert Castellan; Addison-Wesley; 1983. 2. Physical Chemistry, 2nd Ed; J. Philip Bromberg; Allyn & Bacon; 1984. 3. Physical Chemistry, 6th Ed.; Ira N. Levine; McGraw Hill; 2009		

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Lecture 1: properties of gases.	CLO1, CLO2	5%	- Lecture presentation - Group forming. - Class discussion - Read book & lecture 2.	
2	Lecture 2: Properties of liquids and solids.	CLO1, CLO3, CLO4	5%	- Lecture presentation - Class discussion - Read book & lecture 3.	
3	Lecture 3: Zeroth Law of Thermodynamics and Thermometry, First Law of Thermodynamics.	CLO1, CLO3, CLO4	10%	- Lecture presentation - Class discussion - Read book & lecture 4.	
4	Lecture 4: Thermochemistry, Second Law of Thermodynamics & Entropy	CLO1, CLO2, CLO3, CLO4	10%	- Class discussion - Read book & lecture 5.	
5	Lecture 5: Third Law of Thermodynamics	CLO1, CLO2	5%	- Lecture presentation - Class discussion - Read book & lecture 6.	
6	Lecture 6: Legendre Transforms & the Gibbs Function, Maxwell Relations	CLO1, CLO2	5%	-Lecture presentation - Class discussion - Read book & lecture 7	
7,8	Lecture 7, 8: Macromolecules in solution: Gibbs-Duhem equation. Molal osmotic coefficients.	CLO1, CLO2, CLO3	10%	- Lecture presentation - Class discussion - Read book & lecture 9	
9	Midterm				
10, 11	Lecture 9, 10: Equilibrium Conditions, Partial Molar Quantities.	CLO1, CLO2	15%	- Lecture presentation - Class discussion - Read book & lecture 11.	
12, 13	Lecture 11: Solutions, Ideal Solutions & Colligative Properties, Non-Ideal Solutions, Ionic Solutions.	CLO1, CLO2, CLO4, CLO5	15%	- Lecture presentation - Class discussion - Read book & lecture 12.	
14	Lecture 12, 13: Chemical Equilibrium, Electrochemistry, Phase Equilibria, Gravitational,	CLO1, CLO2	10%	- Lecture presentation - Class discussion	

	Electric, Magnetic, Surface Work.				
15	Lecture 14 : Kinetics.	CLO1, CLO2, CLO5	10%	- Lecture presentation - Class discussion	
17	Final exam				

4. Assessment plan

Course assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Written exam (70%)	50%Pass	50%Pass	50%Pass	50%Pass	50%Pass
Quiz (20%)	50%Pass	50%Pass	50%Pass	50%Pass	50%Pass
Class participation (10%)	50%Pass	50%Pass	50%Pass	50%Pass	50%Pass

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

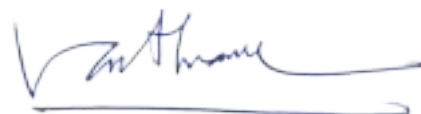
5. Date revised: May 2025

6. Course coordinator/Lecturer

- School/Department: School of BT. Department of Applied Chemistry.
- Email: ntkhoi@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: COSMETICS AND COSMECEUTICALS 1

Course Code: BTBC409IU

1. General information

Course name	- <i>COSMETICS AND COSMECEUTICALS 1</i> - <i>Mỹ Phẩm Và Mỹ Dược 1</i>
Course designation	Cosmetics are designed for use on the hair and body, especially the face, to improve its appearance. Cosmeceuticals represent a marriage between cosmetics and pharmaceuticals. This course is designed to impart knowledge and skills necessary for the fundamental need for cosmetic and cosmeceutical products.
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	
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	lecture, lesson, project
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

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) 4.62 ECTS (<i>optional</i>)	
Number of periods	Theory: 45 Practice: 0	
Required and recommended prerequisites for joining the course	- Prerequisites: (Course code – Course name) - Corequisites: (Course code – Course name) - Previous course (Course code – Course name): BTBC206IU - Organic Chemistry 2	
Course objectives	The course will introduce and emphasize the concepts of cosmetics, anatomy of skin v/s hair, general excipients used in cosmetics and the key ingredients used in cosmetics and cosmeceuticals, also the building blocks for various formulations. The various key ingredients and basic science to develop cosmetics and cosmeceuticals will be focused on in this course.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understand basic knowledge of the following: • Understand the concepts of cosmetics, anatomy of skin v/s hair, general excipients used in cosmetics. • The key building blocks for various formulations. • The current technologies in the market CLO2. Understand the relationship between cosmetics and cosmeceuticals.
	Skill	CLO3. Apply their critical thinking and problem-solving skills for applying biochemistry in Cosmetics and cosmeceuticals.
	Attitude	CLO4. Evaluate quantity, quantitative, stability, side effects, toxicity using cosmetics and cosmeceuticals concepts.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: Lab work (5 periods)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Cosmetics & Cosmeceuticals- Biological Aspects	1	T, U
	Introduction to Dermatology	2	T, U
	Cosmetic Chemistry; toxicology of cosmetics; microbiological aspects of cosmetics & cosmeceuticals	1	T, U
	Cosmetic & Cosmeceutical Technology	2	T, U
	Formulation Building Blocks	1	T, U
	Classification of Cosmetic & Cosmeceutical Products	1	T, U
	Design of Cosmetic & Cosmeceutical Products	1	T, U
	Perfume and Colors	1	T, U
	Herbal Cosmetics & Cosmeceuticals	2	T, U
	Fundamentals of Cosmetic & Cosmeceutical Evaluation	1	T, U
	Cosmetic & Cosmeceutical Management	1	T, U
Cosmetic Jurisprudence	1	T, U	
Examination forms	Written exam Multiple-choice questions, short-answer 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. All absence, if not emergent, requires approval of the instructor(s) in advance. Absence for exams requires in-advanced approval of the Office of Academic Affairs.		
Reading list	<i>[1] Cosmetics - Formulation, manufacture and quality control PP.Sharma, 4th edition</i> <i>[2] Handbook of cosmetic science and Technology A.O.Barrel, M.Paye and H.I.Maibach. 3rd edition</i> <i>[3] Harry's Cosmeticology. 8th edition</i> <i>[4] Cosmeceuticals and Active Cosmetics: Drugs versus Cosmetics, Peter Elsner and Howard I. Maibach (Eds.), CRC Press (2005).</i> <i>[5] Plants in Cosmetics: Plants and Plant Preparations used as Ingredients for Cosmetic Products. Anton R., Patri F. Silano V., Council of Europe Publishing (2001).</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:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Cosmetics & Cosmeceuticals- Biological Aspects	1,2		Lecture presentation, Group forming, Class discussion	[1],[2],[3],[4],[5]
2,3	Introduction to Dermatology	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4],[5]
4	Cosmetic Chemistry; toxicology of cosmetics; microbiological aspects of cosmetics & cosmeceuticals	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4],[5]
5,6	Cosmetic & Cosmeceutical Technology	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4],[5]
7	Formulation Building Blocks	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4],[5]
8	Classification of Cosmetic & Cosmeceutical Products	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4],[5]
Midterm exam					
9	Design of Cosmetic & Cosmeceutical Products	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4],[5]
10	Perfume and Colors	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4],[5]
11,12	Herbal Cosmetics & Cosmeceuticals	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4],[5]
13	Fundamentals of Cosmetic & Cosmeceutical Evaluation	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4],[5]

14	Cosmetic & Cosmeceutical Management	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4],[5]
15	Cosmetic Jurisprudence	1,2,3,4		Lecture presentation, Class discussion	[1],[2],[3],[4],[5]
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Project (25%)			60% pass	60% pass
Midterm exam (25%)	60% pass	60% pass	60% pass	60% pass
Final exam (50%)	60% pass	60% pass	60% pass	60% pass

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

5. Rubrics

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 the task are included.
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.
2	Demonstrates little understanding of the problem. Many requirements of the 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.

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 one's 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

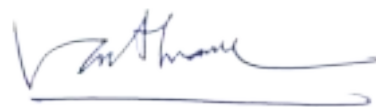
6. **Date revised:** 28/05/2025

7. **Course coordinator/Lecturer**

- School/Department: School of BT. Department of Applied Chemistry.
- Email:

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Applied Chemistry Department

COURSE SYLLABUS

Course Name: COSMETICS AND COSMECEUTICALS 2 LAB

Course Code: BTBC413IU

1. General information

Course name	- <i>COSMETICS AND COSMECEUTICALS 2 LAB</i> - <i>Thực hành Mỹ phẩm và mỹ dược 2</i>
Course designation	<i>Cosmetics are designed for use on the hair and body, especially the face, to improve its appearance. Cosmeceuticals represent a marriage between cosmetics and pharmaceuticals. This course is designed to impart knowledge and skills necessary for the fundamental need for cosmetic and cosmeceutical products.</i>
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	1
Person responsible for the course	MSc. Le Tran Hong Ngoc
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lab work, lab project

Workload (incl. contact hours, self-study hours)			Lecture	Lab
		<i>Credit</i>		1
	Contact hours	30	0	30
	Self-Study hours	30	0	30
	Total workload	60	0	60
Credit points	1 credits (Theory: 0 + Practice: 1) 2 ECTS (<i>optional</i>)			
Number of periods	Theory: 0 Practice: 30			
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name): BTBC410IU – Cosmetics and Cosmeceuticals 2			
Course objectives	In this course, there will be a clear study about formulation, manufacturing, analysis and marketing of functional products. Emphasis will be on the study of raw materials, testing methods and laboratory procedures that are most commonly used at the moment along with toxicological aspects and functional and physicochemical evaluations following current regulations.			
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 concepts, key points and primary challenges of Cosmetics and Cosmeceuticals CLO2. Able to distinguish cosmetic & cosmeceutical products and the regulations for each type of product as well as the available equipment for production.		
	Skill	CLO3. Know the function of each ingredient, how to combine them to create new cosmetic formulations and compare them to available products on the market. Know how to apply different tests for Quality assurance and Quality control during R&D and scale-up process		
	Attitude	CLO4. Develop critical thinking skills to be able to solve practical problems and analyze different situations while maintaining ethical integrity.		

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: Lab work (5 periods) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Techniques in Making Whipped Body Butter	1	I, T, U
	Eye Products – Formulation of Mascara	1	I, T, U
	Lip Products – Techniques in Making Lip Balm and Lipstick	1	I, T, U
	Facial Masks – Formulation of Clay Masks	1	I, T, U
	Perfume – Introduction to Perfume & Scent Combination into Bath Bomb	1	I, T, U
	Aromatherapy	1	I, T, U
Examination forms	Written exam, Data analysis Questions		
Study and examination requirements	It is compulsory for all students to attend all class sessions. Failure to be present in any session without reason will immediately result in being dropped from the course. Students will be assessed based on their class participation and lab techniques. Questions and comments are strongly encouraged.		
Reading list	<i>[1] Keith Wilson, John Walker. Principles and Techniques of Biochemistry and Molecular Biology. 7th Ed. Cambridge University Press. 2010.</i> <i>[2] Department of Applied Chemistry - Methods in Biochemistry Lab Manual.</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:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Wee k	Topic	CLO	Assessments	Learning activities	Resources
1	Techniques in Making Whipped Body Butter	1, 2, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
2	Eye Products – Formulation of Mascara	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[2], [3]
3	Lip Products – Techniques in Making Lip Balm and Lipstick	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[2], [3]
4	Facial Masks – Formulation of Clay Masks	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
5	Perfume – Introduction to Perfume – Scent Combination in Bath Bomb	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
6	Aromatherapy	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
	Final exam		Written Questions Data analysis		

4. Assessment plan



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

COURSE SYLLABUS

Course Name: COSMETICS AND COSMECEUTICALS 1 LAB

Course Code: BTBC429IU

1. General information

Course name	- <i>COSMETICS AND COSMECEUTICALS 1 LAB</i> - <i>Thực hành Mỹ phẩm và mỹ dược 1</i>
Course designation	<i>Cosmetics are designed for use on the hair and body, especially the face, to improve its appearance. Cosmeceuticals represent a marriage between cosmetics and pharmaceuticals. This course is designed to impart knowledge and skills necessary for the fundamental need for cosmetic and cosmeceutical products.</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
Person responsible for the course	MSc. Le Tran Hong Ngoc
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lab work, lab project

Workload (incl. contact hours, self-study hours)				
			Lecture	Lab
		<i>Credit</i>		1
	Contact hours	30	0	30
	Self-Study hours	30	0	30
	Total workload	60	0	60
Credit points	1 credits (Theory: 0 + Practice: 1) 2 ECTS (<i>optional</i>)			
Number of periods	Theory: 0 Practice: 30			
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name): BTBC409IU – Cosmetics and Cosmeceuticals 1			
Course objectives	In this course, there will be a clear study about formulation, manufacturing, analysis and marketing of functional products. Emphasis will be on the study of raw materials, testing methods and laboratory procedures that are most commonly used at the moment along with toxicological aspects and functional and physicochemical evaluations following current regulations.			
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 concepts, key points and primary challenges of Cosmetics and Cosmeceuticals CLO2. Able to distinguish cosmetic & cosmeceutical products and the regulations for each type of products as well as the available equipment for production.		
	Skill	CLO3. Know the function of each ingredient, how to combine them to create new cosmetic formulations and compare them to available products on the market. Know how to apply different tests for Quality assurance and Quality control during R&D and scale-up process		
	Attitude	CLO4. Develop critical thinking skills to be able to solve practical problems and analyze different situations while maintaining ethical integrity.		

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: Lab work (5 periods) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction to Course Formulation & Techniques in Soap Making	1	I, T, U
	Techniques in Making Milk Soap	1	I, T, U
	Detergents – QA & QC Testing	1	I, T, U
	Formulation, QA & QC Testing of Shampoo & Conditioner	1	I, T, U
	Formulation, QA & QC Testing of Lotion	1	I, T, U
	Formulation, QA & QC Testing of Cream	1	I, T, U
Examination forms	Written exam, Data analysis Questions.		
Study and examination requirements	It is compulsory for all students to attend all class sessions. Failure to be present in any session without reason will immediately result in being dropped from the course. Students will be assessed on the basis of their class participation and lab techniques. Questions and comments are strongly encouraged.		
Reading list	<i>[1] Keith Wilson, John Walker. Principles and Techniques of Biochemistry and Molecular Biology. 7th Ed. Cambridge University Press. 2010.</i> <i>[2] Department of Applied Chemistry - Methods in Biochemistry Lab Manual.</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:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Course Formulation & Techniques in Soap Making	1, 2, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
2	Techniques in Making Milk Soap	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[2], [3]
3	Detergents – QA & QC Tests	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[2], [3]
4	Formulation, QA & QC Tests of Shampoo & Conditioner	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
5	Formulation, QA & QC Tests of Lotion	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
6	Formulation, QA & QC Tests of Cream	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
	Final exam		Written Questions Data analysis		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class Quizzes (10%)	Qz 1-5 60%Pass	Qz 1-5 60%Pass	Qz 1-5 60%Pass	Qz 1-5 60%Pass
Lab Reports (50%)	Report 1-5 70%Pass	Report 1-5 70%Pass	Report 1-5 70%Pass	Report 1-5 70%Pass
Final Exam (4%)	60%Pass	60%Pass	60%Pass	60%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 content (65%)			
Abstract clearly identifies purpose and summarizes principal content	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	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (15%)			
Correct spelling, grammar, and syntax	5		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		
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 the task are included.
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.
2	Demonstrates little understanding of the problem. Many requirements of the 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.

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 one's own and others' assumptions and carefully evaluates the relevance of contexts when	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	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some

	presenting a position.		one's own (or vice versa).	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

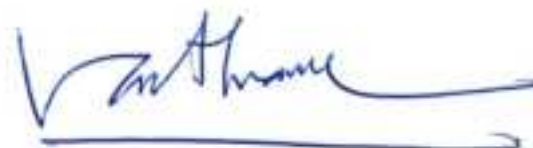
6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: MSc. Le Tran Hong Ngoc - Department of Applied Chemistry
- Email: lthngoc@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL



Assoc. Prof., Dr. Nguyen Van Thuan



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

COURSE SYLLABUS

Course Name: COSMETICS AND COSMECEUTICALS 2 LAB

Course Code: BTBC430IU

1. General information

Course name	- <i>COSMETICS AND COSMECEUTICALS 2 LAB</i> - <i>Thực hành Mỹ phẩm và mỹ dược 2</i>
Course designation	<i>Cosmetics are designed for use on the hair and body, especially the face, to improve its appearance. Cosmeceuticals represent a marriage between cosmetics and pharmaceuticals. This course is designed to impart knowledge and skills necessary for the fundamental need for cosmetic and cosmeceutical products.</i>
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	1
Person responsible for the course	MSc. Le Tran Hong Ngoc
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lab work, lab project

Workload (incl. contact hours, self-study hours)				
			Lecture	Lab
		<i>Credit</i>		1
	Contact hours	30	0	30
	Self-Study hours	30	0	30
	Total workload	60	0	60
Credit points	1 credits (Theory: 0 + Practice: 1) 2 ECTS (<i>optional</i>)			
Number of periods	Theory: 0 Practice: 30			
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name): BTBC410IU – Cosmetics and Cosmeceuticals 2			
Course objectives	In this course, there will be a clear study about formulation, manufacturing, analysis and marketing of functional products. Emphasis will be on the study of raw materials, testing methods and laboratory procedures that are most commonly used at the moment along with toxicological aspects and functional and physicochemical evaluations following current regulations.			
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 concepts, key points and primary challenges of Cosmetics and Cosmeceuticals CLO2. Able to distinguish cosmetic & cosmeceutical products and the regulations for each type of product as well as the available equipment for production.		
	Skill	CLO3. Know the function of each ingredient, how to combine them to create new cosmetic formulations and compare them to available products on the market. Know how to apply different tests for Quality assurance and Quality control during R&D and scale-up process		
	Attitude	CLO4. Develop critical thinking skills to be able to solve practical problems and analyze different situations while maintaining ethical integrity.		

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: Lab work (5 periods)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Techniques in Making Whipped Body Butter	1	I, T, U
	Eye Products – Formulation of Mascara	1	I, T, U
	Lip Products – Techniques in Making Lip Balm and Lipstick	1	I, T, U
	Facial Masks – Formulation of Clay Masks	1	I, T, U
	Perfume – Introduction to Perfume & Scent Combination into Bath Bomb	1	I, T, U
Aromatherapy	1	I, T, U	
Examination forms	Written exam, Data analysis Questions		
Study and examination requirements	It is compulsory for all students to attend all class sessions. Failure to be present in any session without reason will immediately result in being dropped from the course. Students will be assessed based on their class participation and lab techniques. Questions and comments are strongly encouraged.		
Reading list	<i>[1] Keith Wilson, John Walker. Principles and Techniques of Biochemistry and Molecular Biology. 7th Ed. Cambridge University Press. 2010.</i> <i>[2] Department of Applied Chemistry - Methods in Biochemistry Lab Manual.</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:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Wee k	Topic	CLO	Assessments	Learning activities	Resources
1	Techniques in Making Whipped Body Butter	1, 2, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
2	Eye Products – Formulation of Mascara	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[2], [3]
3	Lip Products – Techniques in Making Lip Balm and Lipstick	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[2], [3]
4	Facial Masks – Formulation of Clay Masks	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
5	Perfume – Introduction to Perfume – Scent Combination in Bath Bomb	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
6	Aromatherapy	1, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3]
	Final exam		Written Questions Data analysis		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class Quizzes (10%)	Qz 1-5 60%Pass	Qz 1-5 60%Pass	Qz 1-5 60%Pass	Qz 1-5 60%Pass
Lab Reports (50%)	Report 1-5 70%Pass	Report 1-5 70%Pass	Report 1-5 70%Pass	Report 1-5 70%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

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (65%)			
Abstract clearly identifies purpose and summarizes principal content	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	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (15%)			
Correct spelling, grammar, and syntax	5		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		
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 the task are included.		
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.		

2	Demonstrates little understanding of the problem. Many requirements of the 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.

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 one's 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.
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Source: Association of American Colleges and Universities

6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: MSc. Le Tran Hong Ngoc - Department of Applied Chemistry
- Email: lthngoc@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL



Assoc. Prof., Dr. Nguyen Van Thuan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class Quizzes (10%)	Qz 1-5 60%Pass	Qz 1-5 60%Pass	Qz 1-5 60%Pass	Qz 1-5 60%Pass
Lab Reports (50%)	Report 1-5 70%Pass	Report 1-5 70%Pass	Report 1-5 70%Pass	Report 1-5 70%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

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Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Technical content (65%)			
Abstract clearly identifies purpose and summarizes principal content	10		
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Summary and conclusions appropriate and complete	5		
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Presentation (15%)			
Correct spelling, grammar, and syntax	5		
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Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		
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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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 one's own and others' assumptions and carefully evaluates the relevance of contexts when	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	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to

	presenting a position.		one's own (or vice versa).	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.
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Source: Association of American Colleges and Universities

6. **Date revised:** 05/2025

7. **Course coordinator/Lecturer**

- School/Department: MSc. Le Tran Hong Ngoc - Department of Applied Chemistry
- Email: lthngoc@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

**HEAD/DEAN OF DEPARTMENT/SCHOOL
(Signature)**



Assoc. Prof., Dr. Nguyen Van Thuan



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: DRUG DISCOVERY AND DEVELOPMENT

Course Code: BTBC431IU

1. General information

Course name	- (in English) <i>Drug Discovery and Development.</i> - (in Vietnamese) <i>Nghiên cứu và Phát triển thuốc</i>																																								
Course designation	<i>This course will emphasize on the original and developmental process of herbal and synthetic drugs. Application of organic synthesis and modern methods towards the development of pharmaceutical drugs will be covered, followed by discussions of some relevant drug target. The course will provide the groundwork for learning medicinal chemistry and pharmaceutical technology.</i>																																								
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:																																								
Semester(s) in which the course is taught	6, 7																																								
Person responsible for the course	Dr. Le Quang Phong																																								
Language	English																																								
Relation to curriculum	Elective																																								
Teaching methods	Lecture, lesson, prelab, quiz.																																								
Workload (incl. contact hours, self-study hours)	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th><th></th><th>Lecture</th><th>Lab</th><th></th><th></th><th></th></tr> </thead> <tbody> <tr> <td></td><td><i>Credit</i></td><td>3</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Contact hours</td><td>37.5</td><td>37.5</td><td>0</td><td></td><td></td><td></td></tr> <tr> <td>Self-Study hours</td><td>90</td><td>90</td><td>0</td><td></td><td></td><td></td></tr> <tr> <td>Total workload</td><td>127.5</td><td>127.5</td><td>0</td><td></td><td></td><td></td></tr> </tbody> </table>								Lecture	Lab					<i>Credit</i>	3					Contact hours	37.5	37.5	0				Self-Study hours	90	90	0				Total workload	127.5	127.5	0			
		Lecture	Lab																																						
	<i>Credit</i>	3																																							
Contact hours	37.5	37.5	0																																						
Self-Study hours	90	90	0																																						
Total workload	127.5	127.5	0																																						

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	- Previous course (Course code – Course name) BTBC206IU - Organic Chemistry 2	
Course objectives	Students will be provided with knowledge of different stages of drug development, sources of pharmaceutical medicines and optimization of drug structures. Students will be provided with the ability to analyze and design synthetic strategies of medicinal compounds.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understand different stages of the drug development process.
		CLO2. Understand sources of pharmaceutical medicines.
	Skill	CLO3. Know how to distinguish the use of different reagents for the same/different drug transformation. CLO4. Able to analyze, optimize and design reasonable synthetic strategies of targeted medicinal compounds.
Altitude	CLO5. Able to work in a team and present ideas of chosen topics using course knowledge and digital competency.	

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 drug development</td><td>3</td><td>T, I</td></tr><tr><td>Herbal medicine development</td><td>1</td><td>T, I</td></tr><tr><td>Functional groups transformation. Part 1: Common reactions in drug synthesis</td><td>1</td><td>T, U</td></tr><tr><td>Functional groups transformation. Part 2: Common heterocycles in drugs and their synthesis</td><td>1</td><td>T, U</td></tr><tr><td>Drug target interaction optimization</td><td>1</td><td>T, I</td></tr><tr><td>Drug design: drug access to the target optimization</td><td>1</td><td>T, I</td></tr><tr><td>Retrosynthetic analysis</td><td>2</td><td>T, U</td></tr><tr><td>Combinatorial chemistry</td><td>2</td><td>T, I</td></tr><tr><td>Presentation: <i>Development of a drug with AI application</i></td><td>3</td><td>T, U</td></tr></table>	Topic	Weight	Level	Introduction to drug development	3	T, I	Herbal medicine development	1	T, I	Functional groups transformation. Part 1: Common reactions in drug synthesis	1	T, U	Functional groups transformation. Part 2: Common heterocycles in drugs and their synthesis	1	T, U	Drug target interaction optimization	1	T, I	Drug design: drug access to the target optimization	1	T, I	Retrosynthetic analysis	2	T, U	Combinatorial chemistry	2	T, I	Presentation: <i>Development of a drug with AI application</i>	3	T, U
Topic	Weight	Level																													
Introduction to drug development	3	T, I																													
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Drug design: drug access to the target optimization	1	T, I																													
Retrosynthetic analysis	2	T, U																													
Combinatorial chemistry	2	T, I																													
Presentation: <i>Development of a drug with AI application</i>	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 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] [The Organic Chemistry of Drug Design and Drug Action, 2nd Edition, R. B. Silverman (Elsevier)] [2] An Introduction to Medicinal Chemistry, 4th Edition, G. L. Patrick (Oxford) [3] Strategies for Organic Drug Synthesis and Design, 2nd Edition, Daniel Lednicer (Wiley-Interscience) [4] An Introduction to Drug synthesis, G. L. Patrick (Oxford)																														

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-4) and Intended Learning Outcomes (ILOs) (1-8) level of contribution of CLO to ILO (Low – Medium – High) is shown in the following table:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1-2	<i>Lecture 1: Introduction to drug development</i>	1	Quiz1, HW1	Lecture, In Class-Quiz, HW	
3	<i>Lecture 2: Herbal medicine development</i>	2	Quiz2, HW2	Lecture, In Class-Quiz, HW	
4-5	<i>Lecture 3: Functional groups transformation. Part 1: Common reactions in drug synthesis</i>	3	Quiz3, HW3	Lecture, In Class-Quiz, HW	
6	<i>Lecture 3: Functional groups transformation. Part 2: Common heterocycles in drugs and their synthesis</i>	3	Quiz4, HW4	Lecture, In Class-Quiz, HW	
7	<i>Lecture 4: Drug target interaction optimization</i>	3,4	Quiz5, HW5	Lecture, In Class-Quiz, HW	
8	Midterm <i>Lecture 5: Drug design: drug access to the target optimization</i>	3,4		Lecture, In Class-Quiz, HW	
9	<i>Lecture 5: Drug design: drug access to the target optimization (continued)</i>	3,4	Quiz6, HW6	Lecture, In Class-Quiz, HW	
10-11	<i>Lecture 6: Retrosynthetic analysis</i>	3,5	Quiz7, HW5	Lecture, In Class-Quiz, HW	
12-13	<i>Lecture 7: Combinatorial chemistry</i>	3,5	Quiz8, HW6	Lecture, In Class-Quiz, HW	
14-15	<i>Presentation: Development of a drug with AI application</i>	1,2,3, 4,5	Quiz9	Lecture, In Class-Quiz, HW	
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Drug dev writing (10%)	90% Pass	90% Pass	90% Pass	90% Pass	90% Pass
In-class exercises/quizzes (10%)	80% Pass	80% Pass	80% Pass	80% Pass	80% Pass
Presentation (10%)	90% Pass	90% Pass	90% Pass	90% Pass	90% Pass
Midterm exam (30%)	70% Pass	70% Pass	70% Pass	70% Pass	

Final exam (40%)			80% Pass	80% Pass	80% Pass

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

5. Rubrics

6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: Dr. Lê Quang Phong- Department of Applied Chemistry
- Email: lqphong@hcmiu.edu.vn

Hochiminh city, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: DRUG DISCOVERY AND DEVELOPMENT LAB

Course Code: BTBC432IU

1. General information

Course name	- (in English) <i>Drug Discovery and Development Lab.</i> - (in Vietnamese) <i>Thực hành Nghiên cứu và Phát triển thuốc</i>
Course designation	<i>The drug development laboratory course will emphasize on the application of organic synthesis towards the development of pharmaceutical targets. The important organic reactions in drug synthesis are covered, together with several drug syntheses. The course will provide the groundwork for learning medicinal chemistry and pharmaceutical technology. In addition, the student will be trained in the proper way to write a scientific laboratory report.</i>
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	6, 7
Person responsible for the course	Dr. Le Quang Phong
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, lesson, prelab, quiz.

Workload (incl. contact hours, self-study hours)		Lecture	Lab	Project	Internship	Thesis
	<i>Credit</i>	0	1			
	Contact hours	25	0	25	0	0
	Self-Study hours	30	0	30	0	0
	Total workload	55	0	55	0	0
Credit points	1 credits (Theory: 0 + Practice: 1) 2.0 ECTS (<i>optional</i>)					
Number of periods	Theory: 0 Practice: 30					
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name) BTBC206IU - Organic Chemistry 2					
Course objectives	The Laboratory equips students with the skills to design and execute synthetic routes for small-molecule drug candidates, and purity, purify compounds using recrystallization and chromatography, analyze products with NMR, IR, apply safe chemical handling practices, document experiments accurately in a lab notebook, and collaborate on multi-step synthesis projects.					

Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Utilize basic knowledge gained from General Chemistry course to perform common calculations, including mass balance, limiting reagent, and percent yield. CLO2. Draw the mechanism and understand the fuctions of reagents in drug synthesis reactions. Characterize prepared substances by physical/spectroscopic means.	
	Skill	CLO3. Develop laboratory skills in handling chemicals, assembling glassware and performing the following techniques as a part of synthetic procedures: distillation, reflux, separation, isolation, and crystallization. CLO4. Ability to analyze, predict, and explain many aspects of everyday life using laboratory skills and organic chemistry concepts.	
	Altitude	CLO5. Engage in teamwork with responsibilities, safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately, using general guidelines and basic knowledge about the common hazards associated with them in an organic chemistry laboratory.	
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
	Lab 1: Synthesis of aspirin	1	T, U
	Lab 2: Synthesis of paracetamol	1	T,U
	Lab 3: Synthesis of levodopa	1	T,U
	Lab 4: Synthesis of salicylanilide	1	T,U
	Lab 5: Synthesis of bromsalicylanilide	1	T,U
Examination forms	Multiple-choice questions, short-answer questions		

Study and examination requirements	Student is expected that you will spend at least 8 hours per week studying this course. This time should be made up of reading, working on exercises and problem, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted. The Organic Chemistry Lab requires full attendance in order to pass the course. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	[1] Contemporary Drug Synthesis, Jie-Jack Li, Douglas S. Johnson, Drago R. Sliskovic, Bruce R. Roth (Wiley-Interscience) [2] The Organic Chemistry of Drug Design and Drug Action, 2nd Edition, R. B. Silverman (Elsevier) [3] The Art of Writing Reasonable Organic Reaction Mechanisms, 2nd Edition, Robert B. Grossman (Springer-Verlag) [4] Department of Applied Chemistry – Drug Development Lab Manual.

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-4) and Intended Learning Outcomes (ILOs) (1-8) level of contribution of CLO to ILO (Low – Medium – High) is shown in the following table:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Lab 1: Synthesis of aspirin	1,2,3, 4, 5	Group report Prelab quizzes	Lecture presentation Group forming	[1],[2],[3],[4]
2	Lab 2: Assay of aspirin	1,2,3, 4, 5	Group report Prelab quizzes	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
3	Lab 3: Synthesis of paracetamol	1,2,3, 4, 5	Group report Prelab quizzes	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
4	Lab 4: Synthesis of the anticonvulsant drug diphenylhydantoin	1,2,3, 4, 5	Group report Prelab quizzes	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]

5	Lab 5: Spectroscopic characterization of aspirin and paracetamol	1,2,3, 4, 5	Group report Prelab quizzes	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Assignment (70%): Performance (10%), Report (40%), Quizzes (20%)	Test 70%Pass	Test, Report 70%Pass	Performance 90%Pass	Test 50%Pass	Test 50%Pass
Final (30%)	80%Pass	80%Pass	80%Pass	80%Pass	80%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 content (60%)			
Abstract clearly identifies purpose and summarizes principal content	5		
Introduction demonstrates thorough knowledge of relevant background and prior work	5		
Summary of methods and experiment procedures	5		
Results contain enough information of experiments	20		
Analysis and discussion demonstrate good subject mastery	20		
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, citation and syntax	10		
Clear lab notes and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: Dr. Lê Quang Phong- Department of Applied Chemistry
- Email: lqphong@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY

A handwritten signature in blue ink, appearing to read 'Van Thuan', with a horizontal line underneath.

Assoc. Prof., Dr. Nguyen Van Thuan

COURSE SYLLABUS

Course Name: Pharmaceutical Fermentation

Course Code: BTBC433IU

1. General information

Course name	- (in English) <i>Pharmaceutical Fermentation.</i> - (in Vietnamese) <i>Lên men Dược phẩm</i>																																			
Course designation	The course is designed to equip biochemistry students with knowledge of fermentation technology in the research, development and production of biological chemicals and pharmaceuticals. The course will cover the principles of fermentation technology (e.g. the processes of fermentation, fermentation types and fermentation design), microbial growth kinetics and selection of potential microbes used in pharmaceutical substances production, and the major methods for industrial fermentation product recovery and purification. Theory and practical aspects (from development, design, scale-up and operation) of fermentation for producing pharmaceutical substances is emphasized.																																			
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:																																			
Semester(s) in which the course is taught	1,2																																			
Person responsible for the course	Assoc. Prof. Pham Thi Hoa																																			
Language	English																																			
Relation to curriculum	☐ Compulsory ☒ Elective																																			
Teaching methods	lecture, lesson, project																																			
Workload (incl. contact hours, self-study hours)	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td></td><td></td><td>Lecture</td><td>Lab</td><td></td><td></td><td></td></tr> <tr> <td></td><td>Credit</td><td>3</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Contact hours</td><td>37.5</td><td>37.5</td><td>0</td><td></td><td></td><td></td></tr> <tr> <td>Self-Study hours</td><td>90</td><td>90</td><td>0</td><td></td><td></td><td></td></tr> <tr> <td>Total workload</td><td>127.5</td><td>127.5</td><td>0</td><td></td><td></td><td></td></tr> </table>			Lecture	Lab					Credit	3					Contact hours	37.5	37.5	0				Self-Study hours	90	90	0				Total workload	127.5	127.5	0			
		Lecture	Lab																																	
	Credit	3																																		
Contact hours	37.5	37.5	0																																	
Self-Study hours	90	90	0																																	
Total workload	127.5	127.5	0																																	

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	- Previous course (Course code – Course name) BT311IU - Biology	
Course objectives	Students will learn the fermentation processes as well as the affected factors, methods and characteristics of microorganisms. Major methods and applications of fermentation technology focus on pharmaceutical substances production are introduced and emphasized in this course.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Obtain an understanding of: • Chronological development of pharmaceutical fermentation industry • Processes of fermentation • Characteristics of industrial microorganisms • Methods for microbial growth and their metabolite measurements • Secondary metabolites used in the pharmaceutical industry • Advantages and disadvantages of different fermentation modes (solid state vs submerged fermentation, batch vs fed batch fermentation) • Factors affecting fermentation processes and strategy for product enhancement. • Fermenter operation • Principles of the major methods used for product recovery and purification in industrial fermentation of pharmaceutical substance. CLO2. Applications of fermentation technology in pharmaceutical science
	Skill	CLO3. Development of their critical thinking and problem-solving skills.
	Attitude	CLO4. Ability to explain how pharmaceutical substances can be produced by fermentation.

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 fermentation processes and chronological development of pharmaceutical fermentation	1	I, T
	Industrial microorganisms and selection of microorganisms used in pharmaceutical industry	1	T, U
	Microbial growth kinetics	2	T, U
	Media for pharmaceutical industrial fermentation	2	T, U
	Culture preservation and inoculum development	1	T, U
	Fermenter design	2	T, U
	Sterilization, aeration, and agitation	1	T, U
Recovery and purification of pharmaceutical substances fermentation products	1	T, U	
Group project	2	T, U	
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Students must attend at least 80% of the classes in order to qualify for siting the midterm and final exams. All absence, if not emergent, requires approval of the instructor(s) in advance. Absence for exams requires in-advanced approval of the Office of Academic Affairs.		
Reading list	[1] Fermentation and Biochemical Engineering Handbook (3rd Edition) by Celeste M. Todaro and Henry C. Vogel; 2016. [2] Principles of fermentation technology (3rd Edition) by Peter Stanbury, Allan Whitaker and Steve Hall; 2014.		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-4) and Intended Learning Outcomes (ILOs) (1-8) level of contribution of CLO to ILO (Low – Medium – High) is shown in the following table:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction of fermentation processes and chronological development of pharmaceutical fermentation	1		Lecture presentation, Group forming, Class discussion	[1],[2]
2,3	Industrial microorganisms and selection of microorganisms used in pharmaceutical industry	1,2,3,4	Quiz	Lecture presentation, Class discussion	[1],[2]
4, 5	Microbial growth kinetics	1,2,3,4	Quiz	Lecture presentation, Class discussion	[1],[2]
6, 7	Media for pharmaceutical industrial fermentation	1,2,3,4	Quiz	Lecture presentation, Class discussion	[1],[2]
8	Culture preservation and inoculum development Midterm exam	1,2,3,4	Quiz	Lecture presentation, Class discussion	[1],[2]
9, 10	Fermenter design	1,2,3,4	Quiz	Lecture presentation, Class discussion	[1],[2]
11, 12	Sterilization, aeration, and agitation	1,2,3,4	Quiz	Lecture presentation, Class discussion	[1],[2]
13, 14	Recovery and purification of pharmaceutical substances fermentation products	1,2,3,4	Quiz	Lecture presentation, Class discussion	[1],[2]
15	Group project presentation	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2]
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Quiz, Project (30%)	Quiz, HW 60%Pass	Quiz, HW 60%Pass	Project 60%Pass	Project 60%Pass
Midterm exam (30%)	... 60%Pass	... 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. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Part 1..... (....%)			
Criterion 1:			
Criterion 2:			
Criterion 3:			
Criterion ...:			
Part 2..... (....%)			
Criterion 1 ...:			
Criterion ...:			
Part 3..... (....%)			
Criterion 1...:			
Criterion ...:			
Part (....%)			
TOTAL SCORE	100		

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description

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

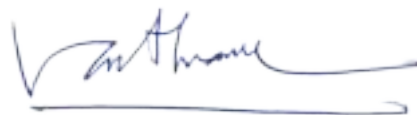
6. Date revised: June 4th, 2025

7. Course coordinator/Lecturer

- School/Department: Assoc. Prof. Phạm Thị Hoa- Department of Applied Chemistry
- Email: pthoa@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department of Applied Chemistry – School of Biotechnology

COURSE SYLLABUS

Course Name: PHARMACEUTICAL FERMENTATION LAB

Course Code: BTBC434IU

1. General information

Course name	- <i>PHARMACEUTICAL FERMENTATION LAB</i> - <i>Thực hành Lên Men Dược Phẩm</i>
Course designation	<i>This Pharmaceutical Fermentation course is designed for the applied chemistry major interested in learning about biological processes and fermented products. The course will equip students with the principles of fermentation technology and major methods for industrial fermentation product recovery and purification.</i>
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	1, 2
Person responsible for the course	MSc. Le Tran Hong Ngoc
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lab work, lab project

Workload (incl. contact hours, self-study hours)			Lecture	Lab
		Credit		1
	Contact hours	30	0	30
	Self-Study hours	15	0	15
	Total workload	45	0	45
Credit points	1 credits (Theory: 0 + Practice: 1) 2 ECTS (optional)			
Number of periods	Theory: 0 Practice: 30			
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name): BTBC433IU – Pharmaceutical Fermentation			
Course objectives	Equip students with the understanding of fermentation technology (e.g. the processes of fermentation, fermentation types and fermentation design), microbial growth kinetics and selection of potential microbes used in industry and principles of major methods for industrial fermentation product recovery and purification. Introduce products (biofuels, food and pharmaceutical substances) produced by using fermentation technology.			
Course learning outcomes	Upon the successful completion of this course students will be able to:			
	Competency level	Course learning outcome (CLO)		
	Knowledge	CLO1. Know various types of culture media and their purposes CLO2. Understand how stress/environmental effects trigger different responses in fungi and bacteria, and how to take advantage of those conditions while using a fermenter		
		CLO3. Practice aseptic technique, using stress/environmental effects trigger different responses in fungi and bacteria, and how to take advantage of those conditions with a fermenter and measure cellulase activity		
	Attitude	CLO4. Develop critical thinking skills and a deep understanding of fermentation techniques to be able to interpret collected data and apply into various fields while complying with safety and ethical standards.		

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 Course & Medium Preparation	0.5	I, T, U
	Aseptic Technique and Culture Preparation	1	I, T, U
	Counting Viable Cells Using a Hemocytometer	1	I, T, U
	Cellulase Production Using Solid and Submerged Fermentation – Using a Bioreactor	1	I, T, U
	Measure of Cellulase Activity	1	I, T, U
	Effects of Sugar Types and Concentration on Yeast Activity	1	I, T, U
Examination forms	Project Report, Lab report, Written Exam.		
Study and examination requirements	It is compulsory for all students to attend all class sessions. Failure to be present in any session without reason will immediately result in being dropped from the course. Students will be assessed based on their class participation and lab techniques. Questions and comments are strongly encouraged.		
Reading list	<i>[1] Peter F Stanbury, Allan Whitaker, Stephen J. Hall. Principles of Fermentation Technology. 3rd Edition. 2017</i> <i>[2] Department of Applied Chemistry - Fermentation Technology Lab Manual.</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:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Course & Medium Preparation	1, 2, 3	Quiz /Lab skills/ Lab report	- Lecture - Lab demo - Group discussion - Lab practice	[1], [2]
2	Aseptic Technique and Culture Preparation	1, 2, 3, 4	Quiz /Lab skills/ Lab report	- Lecture - Lab demo - Group discussion - Lab practice	[1], [2]
3	Counting Viable Cells Using a Hemocytometer	1, 2, 3, 4	Quiz /Lab skills/ Lab report	- Lecture - Lab demo - Group discussion - Lab practice	[1], [2]
4	Cellulase Production Using Solid and Submerged Fermentation – Using a	1, 2, 3, 4	Quiz /Lab skills/ Lab report	- Lecture - Lab demo - Group discussion - Lab practice	[1], [2]
5	Measure of Cellulase Activity	1, 2, 3, 4	Lab skills/Lab Report	- Lecture - Lab demo - Group discussion - Lab practice	[1], [2]
6	Effects of Sugar Types and Concentration on Yeast Activity	1, 2, 3, 4	Lab skills/Lab Report	- Lecture - Lab practice	[2]
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class Quizzes (10%)	Qz 1-5 60%Pass	Qz 1-5 60%Pass	Qz 1-5 60%Pass	Qz 1-5 60%Pass
Lab Techniques (20%)	60%Pass	60%Pass	60%Pass	60%Pass
Project Report (70%)	70%Pass	70%Pass	70%Pass	70%Pass

Final Exam	60%Pass	60%Pass	60%Pass	60%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 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		

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 the task are included.
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.
2	Demonstrates little understanding of the problem. Many requirements of the 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.

6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: MSc. Le Tran Hong Ngoc - Department of Applied Chemistry
- Email: lthngoc@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)

A handwritten signature in blue ink, appearing to read 'Van Thuan', with a horizontal line underneath.

Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: BIOCHEMISTRY OF CANCER

Course Code: **BTBC427IU**

1. General information

Course name	- <i>BIOCHEMISTRY OF CANCER</i> - <i>Hóa sinh Ung thư</i>
Course designation	The course covers the characteristics and biochemical mechanisms of cancer, along with approaches to diagnosis, prevention and treatment.
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
Person responsible for the course	Dr. Vu Thanh Ngoc
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lecture, inquiry and project-based learning.

Workload (incl. contact hours, self-study hours)				
			Lecture	Lab
		<i>Credit</i>		
	Contact hours	45	45	0
	Self-Study hours	90	90	0
	Total workload	135	135	0
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	- Previous course (Course code – Course name): BTBC209IU - Biochemistry 1, BTBC211IU - Biochemistry 2			
Course objectives	The course provides insights into the characteristics and biochemical mechanisms of cancer, along with approaches to diagnosis, prevention and treatment.			
Course learning outcomes	Upon the successful completion of this course students will be able to:			
	Competency level	Course learning outcome (CLO)		
	Knowledge	CLO1. Understand and explain the knowledge related to the characteristics and biochemical mechanisms of cancer.		
	Skill	CLO2. Propose approaches for diagnosis, prevention and treatment on the basis of characteristics and biochemical mechanisms of cancer. CLO3. Compose a mini-review, present and discuss a topic related to cancer diagnosis, prevention and treatment.		

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
	Characteristics of cancer	2	I, T, U
	Genetic alterations and DNA repair	2	I, T, U
	Oncogenes and tumor suppressor genes	1	I, T, U
	Cell cycle, cell death and signal transduction	4	I, T, U
	Metastasis	1	I, T, U
	Angiogenesis	1	I, T, U
Tumor immunology	1	I, T, U	
Cancer diagnosis, prevention and treatment	3	I, T, U	
Examination forms	Multiple choice, true/false, matching, short answer, essay.		
Study and examination requirements	<i>Requirements for successfully passing the module:</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. All absence, if not emergent, requires approval of the instructor(s) in advance. Absence for exams requires in-advanced approval of the Office of Academic Affairs. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.		
Reading list	<i>[1] Raymond W. Ruddon 2007. Cancer Biology, 4th Edition.</i> <i>[2] Selected research and review articles related to the topics.</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:

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1, 2	Characteristics of cancer	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]

3, 4	Genetic alterations and DNA repair	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
5	Oncogenes and tumor suppressor genes	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
6-8	Cell cycle and cell death	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
8	Midterm				
9	Signal transduction	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
10	Metastasis	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
11	Angiogenesis	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
12	Tumor immunology	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
13-15	Cancer diagnosis, prevention and treatment	1, 2, 3	Lecture, discussion, quiz, assignment	Quiz/assignment	[1], [2]
16	Final exam				

4. Assessment plan

Assessment type	CLO1	CLO2	CLO3
Quiz/assignment (30%)			x
Midterm exam (30%)	x	x	
Final exam (40%)	x	x	

Note: Target that at least 50% of students having scores of at least 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:	HW/Assignment:		
Date:	Evaluator:		
	Max.	Score	Comments
Part 1..... (....%)			
Criterion 1:			
Criterion 2:			
Criterion 3:			
Criterion:			
Part 2..... (....%)			
Criterion 1:			
Criterion:			
Part 3..... (....%)			
Criterion 1....:			
Criterion:			
Part (....%)			
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 the task are included.
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.
2	Demonstrates little understanding of the problem. Many requirements of the 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 one's 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	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and	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.	transitions) is clearly and consistently observable within the presentation.	transitions) is intermittently observable within the presentation.	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 the audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to the audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and the speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and the speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and the speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and the 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:** 05/2025

7. **Course coordinator/Lecturer**

- School/Department: Dr. Vu Thanh Ngoc - Department of Applied Chemistry
- Email: vtngoc@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



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

COURSE SYLLABUS

Course Name: BIOCHEMISTRY OF CANCER LAB

Course Code: BTBC428IU

1. General information

Course name	- <i>BIOCHEMISTRY OF CANCER LAB</i> - <i>Thực hành Hóa sinh Ung thư</i>
Course designation	<i>This course provides hands-on experience in illustrating, exploring and analyzing cancer data using artificial intelligence tools.</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
Person responsible for the course	Dr. Vu Thanh Ngoc
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lecture, inquiry and project-based learning.

Workload (incl. contact hours, self-study hours)				
			Lecture	Lab
		<i>Credit</i>		1
	Contact hours	30	0	30
	Self-Study hours	30	0	30
	Total workload	60	0	60
Credit points	1 credit (Theory: 0 + Practice: 1) 2 ECTS (<i>optional</i>)			
Number of periods	Theory: 0 Practice: 30			
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name): BTBC427IU - Biochemistry of Cancer			
Course objectives	This course provides hands-on experience in illustrating, exploring and analyzing cancer data using artificial intelligence tools.			
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 basics of using artificial intelligence tools to illustrate, analyze, and explore cancer data		
	Skill	CLO2. Use artificial intelligence tools appropriately for illustrating, analyzing, and exploring cancer data. CLO3. Interpret the data appropriately and draw the proper conclusions.		

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
	Illustration and statistical analysis of cancer data	2	I, T, U
	Analysis of differential gene expression in normal, tumor, and metastatic tissues	2	I, T, U
	Single study exploration/query and patient view	1	I, T, U
	Comparison of clinical and genomic features between user-defined groups of patients/samples	1	I, T, U
Examination forms	Written, computer-based		
Study and examination requirements	<i>Requirements for successfully passing the module:</i> Attendance: Attendance of 100 percent is compulsory for the laboratory sessions. Students will be assessed on the basis of their participation. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.		
Reading list	<i>[1] Bartha Á, Györfy B. TNMplot.com: A Web Tool for the Comparison of Gene Expression in Normal, Tumor and Metastatic Tissues. Int J Mol Sci. 2021 Mar 5;22(5):2622. doi: 10.3390/ijms22052622.</i> <i>[2] Gao J, Aksoy BA, Dogrusoz U, Dresdner G, Gross B, Sumer SO, Sun Y, Jacobsen A, Sinha R, Larsson E, Cerami E, Sander C, Schultz N. Integrative analysis of complex cancer genomics and clinical profiles using the cBioPortal. Sci Signal. 2013 Apr 2;6(269):pl1. doi: 10.1126/scisignal.2004088.</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:

	PLO							
CLOs	1	2	3	4	5	6	7	8
1			L					
2						H		
3				H				

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1, 2	Illustration and statistical analysis of cancer data	1, 2, 3	Quiz/ practice/ report	Instruction, discussion, assignment	1, 2

3, 4	Analysis of differential gene expression in normal, tumor and metastatic tissues	1, 2, 3	Quiz/ practice/ report	Instruction, discussion, assignment	1, 2
5	Single study exploration/query and patient view	1, 2, 3	Quiz/ practice/ report	Instruction, discussion, assignment	1, 2
6	Comparison of clinical and genomic features between user-defined groups of patients/samples	1, 2, 3	Quiz/ practice/ report	Instruction, discussion, assignment	1, 2
7	Final exam				

4. Assessment plan

Assessment type	CLO1	CLO2	CLO3
Quiz/practice/report (70%)	x	x	x
Final exam (30%)	x	x	x

Note: Target that at least 50% of students having scores of at least 50 out of 100.

5. Rubrics

5.1. Holistic rubric

Holistic rubric for evaluating the entire document and quizzes	
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 the task are included.
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.
2	Demonstrates little understanding of the problem. Many requirements of the 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 <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 one's 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	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications)

			and implications) are identified clearly.	are oversimplified.

Source: Association of American Colleges and Universities

6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: Dr. Vu Thanh Ngoc - Department of Applied Chemistry
- Email: vtngoc@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: CLINICAL BIOCHEMISTRY

Course Code: BTBC413IU

1. General information

Course name	- <i>CLINICAL BIOCHEMISTRY</i> - <i>Hóa sinh lâm sàng</i>
Course designation	<i>This course aims to provide a basic understanding of the techniques in diagnostics of various diseases. You will be able to analyze the complex structure of biomolecules in the human body such as glucose, bilirubin, creatinine, ALT, AST and 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	1,2
Person responsible for the course	Dr. Hoang Le Son
Language	English
Relation to curriculum	☐ <i>Compulsory</i> ☒ <i>Elective</i>
Teaching methods	lecture, lesson, project

Workload (incl. contact hours, self-study hours)			Lecture	Lab			
		<i>Credit</i>	3				
	Contact hours	37.5	37.5	0			
	Self-Study hours	90	90	0			
	Total workload	127.5	127.5	0			
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	None						
Course objectives	Clinical biochemistry provides basic information about its importance in laboratory diagnostics of various diseases and monitoring the clinical status of patients during the treatment. At the conclusion of the course, students should achieve the following: An understanding of: • The role of clinical biochemistry in health care • Functions of organs in human body • Biochemical disorders and biochemical indexes • Techniques in assay biochemical indexes • Evaluation of biochemical indexes						
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 principle of Clinical Biochemistry: • The role of clinical biochemistry in health care • Functions of organs in human body • Biochemical disorders and biochemical indexes • Techniques in assay biochemical indexes • Evaluation of biochemical indexes					

		CLO2: Apply basic information about its importance in laboratory diagnostics of various diseases and monitoring the clinical status of patients during the treatment.
	Skill	CLO3: Calculate parameters and estimate pathology in Clinical Biochemistry.
	Attitude	CLO4: Estimate the risks related to disorders in everyday life using clinical biochemistry concepts.

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 clinical biochemistry ● Collection of biological samples- ● Anticoagulants preservatives for urine ● Physical examination of urine ● Tests of urinary normal and abnormal constituents </td><td>2</td><td>I, T, U</td></tr><tr><td> ● Blood glucose ● Fasting and postprandial levels ● Glucose tolerance test ● Abnormalities in diabetes mellitus ● Galactosemia and fructose urea </td><td>2</td><td>T, U</td></tr><tr><td> ● Gastric function and fractional test meal ● Differentiation of digestive ● Absorptive dysfunction in steatorrhea </td><td>1</td><td>T, U</td></tr><tr><td> ● Tests in pancreatic disease ● Composition of pancreatic juice ● Functions of pancreas </td><td>1</td><td>T, U</td></tr><tr><td> ● Functions of liver ● Metabolism of bilirubin ● Gallstones ● Jaundice ● Classification </td><td>2</td><td>T, U</td></tr><tr><td> ● Causes ● Differential diagnosis ● Tests in liver ● Biliary tract diseases ● Determination of serum enzyme in liver-disorders </td><td>2</td><td>T, U</td></tr><tr><td> ● Kidney functions ● Tests clearance ● Creatinine ● Urea and phenol red tests ● Tests for urea uric acid-creatinine and protein levels in plasma </td><td>2</td><td>T, U</td></tr><tr><td> ● Inborn errors of metabolism-reference of fanconi's syndrome-phenylketonuria – von-gierke's disease – cystinuria – galactosemia – albinism </td><td>1</td><td>T, U</td></tr><tr><td> ● Calcium and phosphorous laboratory ● Diagnostic test for hypo and hyperparathyroidism - tetany – rickets – renal failure ● Bone disease – iron deficiency – tests for anemia </td><td>2</td><td>T, U</td></tr></table>	Topic	Weight	Level	● Introduction to clinical biochemistry ● Collection of biological samples- ● Anticoagulants preservatives for urine ● Physical examination of urine ● Tests of urinary normal and abnormal constituents	2	I, T, U	● Blood glucose ● Fasting and postprandial levels ● Glucose tolerance test ● Abnormalities in diabetes mellitus ● Galactosemia and fructose urea	2	T, U	● Gastric function and fractional test meal ● Differentiation of digestive ● Absorptive dysfunction in steatorrhea	1	T, U	● Tests in pancreatic disease ● Composition of pancreatic juice ● Functions of pancreas	1	T, U	● Functions of liver ● Metabolism of bilirubin ● Gallstones ● Jaundice ● Classification	2	T, U	● Causes ● Differential diagnosis ● Tests in liver ● Biliary tract diseases ● Determination of serum enzyme in liver-disorders	2	T, U	● Kidney functions ● Tests clearance ● Creatinine ● Urea and phenol red tests ● Tests for urea uric acid-creatinine and protein levels in plasma	2	T, U	● Inborn errors of metabolism-reference of fanconi's syndrome-phenylketonuria – von-gierke's disease – cystinuria – galactosemia – albinism	1	T, U	● Calcium and phosphorous laboratory ● Diagnostic test for hypo and hyperparathyroidism - tetany – rickets – renal failure ● Bone disease – iron deficiency – tests for anemia	2	T, U
	Topic	Weight	Level																												
	● Introduction to clinical biochemistry ● Collection of biological samples- ● Anticoagulants preservatives for urine ● Physical examination of urine ● Tests of urinary normal and abnormal constituents	2	I, T, U																												
	● Blood glucose ● Fasting and postprandial levels ● Glucose tolerance test ● Abnormalities in diabetes mellitus ● Galactosemia and fructose urea	2	T, U																												
	● Gastric function and fractional test meal ● Differentiation of digestive ● Absorptive dysfunction in steatorrhea	1	T, U																												
	● Tests in pancreatic disease ● Composition of pancreatic juice ● Functions of pancreas	1	T, U																												
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● Inborn errors of metabolism-reference of fanconi's syndrome-phenylketonuria – von-gierke's disease – cystinuria – galactosemia – albinism	1	T, U																													
● Calcium and phosphorous laboratory ● Diagnostic test for hypo and hyperparathyroidism - tetany – rickets – renal failure ● Bone disease – iron deficiency – tests for anemia	2	T, U																													
Examination forms	Multiple-choice questions, short-answer questions																														

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. All absence, if not emergent, requires approval of the instructor(s) in advance. Absence for exams requires in-advanced approval of the Office of Academic Affairs.</i>
Reading list	<i>[1] Medical laboratory Technology, Ramnik Sood: Jaypee Brothers Medical Publishers, 2009.</i> <i>[2] Textbook of Biochemistry with Clinical Correlations. Devlin, TM, (Ed.) 5th ed. WILEY-Liss, 2001.</i> <i>[3] Tietz Fundamentals of Clinical Chemistry, 6th Edition, Elsevier, 2008</i> <i>[4] Harper's Illustrated Biochemistry by Nelson and Cox, 4th Edition McGraw Hill, 2009.</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:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1,2	Introduction to clinical biochemistry Collection of biological samples Anticoagulants preservatives for urine Physical examination of urine Tests of urinary normal and abnormal constituents	1,2,3,4	Project	Lecture presentation, Group forming, Class discussion	[1],[2],[3],[4]
3,4	Blood glucose Fasting and postprandial levels	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4]

	Glucose tolerance test Abnormalities in diabetes mellitus Galactosemia and fructose urea				
5	Gastric function and fractional test meal Differentiation of digestive Absorptive dysfunction in steatorrhea	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4]
6	Tests in pancreatic disease Composition of pancreatic juice Functions of pancreas	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4]
7,8	Functions of liver Metabolism of bilirubin Gallstones Jaundice Classification	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4]
9	Midterm exam				
10,11	Causes Differential diagnosis Tests in liver Biliary tract diseases Determination of serum enzyme in liver-disorders	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4]
12,13	Kidney functions	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4]

	Tests clearance Creatinine Urea and phenol red tests Tests for urea uric acid-creatinine and protein levels in plasma				
14	Inborn errors of metabolism-reference of fanconi's syndrome-phenylketonuria – von-gierke's disease – cystinuria – galactosemia – albinism	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4]
15,16	Calcium and phosphorous laboratory Diagnostic test for hypo and hyperparathyroidism - tetany – rickets – renal failure Bone disease – iron deficiency – tests for anemia	1,2,3,4	Project	Lecture presentation, Class discussion	[1],[2],[3],[4]
17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Project (25%)			x	x
Midterm exam (25%)	x	x	x	x
Final exam (50%)	x	x	x	x

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

5. Rubrics

6. **Date revised:** 05/2025

7. **Course coordinator/Lecturer**

- School/Department: Dr. Hoang Le Son - Department of Applied Chemistry
- Email:

Ho Chi Minh City, 06/2025

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., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: CLINICAL BIOCHEMISTRY LAB

Course Code: BTBC414IU

1. General information

Course name	- <i>CLINICAL BIOCHEMISTRY LAB</i> - <i>Thực hành Hóa sinh lâm sàng</i>																																			
Course designation	<i>This course covers various experimental aspects related with clinical biochemistry such as urinary analysis of bioorganic constituents and estimation of proteins, urea, uric acid, minerals, etc., in urine which is essential for early diagnosis of a disease and also assessment of its therapy efficacy.</i>																																			
Course type	☐ General knowledge ☐ Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:																																			
Semester(s) in which the course is taught	1,2																																			
Person responsible for the course	MSc. Bui Ngoc Yen Tram																																			
Language	English																																			
Relation to curriculum	☐ Compulsory ☒ Elective																																			
Teaching methods	Lecture, coaching, assignment/report																																			
Workload (incl. contact hours, self-study hours)	<table border="1"> <thead> <tr> <th></th><th></th><th>Lecture</th><th>Lab</th><th></th><th></th><th></th></tr> </thead> <tbody> <tr> <td></td><td><i>Credit</i></td><td>0</td><td>1</td><td></td><td></td><td></td></tr> <tr> <td>Contact hours</td><td>25</td><td>0</td><td>25</td><td></td><td></td><td></td></tr> <tr> <td>Self-Study hours</td><td>30</td><td>0</td><td>30</td><td></td><td></td><td></td></tr> <tr> <td>Total workload</td><td>55</td><td>0</td><td>55</td><td></td><td></td><td></td></tr> </tbody> </table>			Lecture	Lab					<i>Credit</i>	0	1				Contact hours	25	0	25				Self-Study hours	30	0	30				Total workload	55	0	55			
		Lecture	Lab																																	
	<i>Credit</i>	0	1																																	
Contact hours	25	0	25																																	
Self-Study hours	30	0	30																																	
Total workload	55	0	55																																	

Credit points	1 credits (Theory: 0 + Practice: 1) 2.0 ECTS (<i>optional</i>)	
Number of periods	Theory: 0 Practice: 30	
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name): BTBC413IU - Clinical Biochemistry	
Course objectives	Students will be provided with skills and standard methods to monitor disease and treatment by biochemical methods. Laboratory investigations pertaining to clinical biochemistry provide useful information to help students know the diagnosis of illness and the monitoring of treatment. Through this unit, students will become acquainted with the challenges of biochemistry quantification in order to become specialists or technicians in hospitals.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: Know about mechanism of diseases, pathway of tested elements in human body, methods to diagnosis, use of devices, analyze results.
	Skill	CLO2: An ability to use the techniques, skills and devices to measure concentration of elements in the human body via urine, take urine, prepare samples, recognize types of errors in tests and give conclusions for the diagnosis.
	Attitude	CLO3: An understanding of professional and ethical responsibility when using human samples on the clinic side, communicating and working with group members effectively, and developing a life-long learning attitude.

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
	Orientations (Introduce the safety, regulation, apparatus in clinical biochemistry field)		I, T
	Quantitative Determination of Uric Acid in Human Urines	2	T, U
	Quantitative Determination of Protein and Sugar in Human Urines	2	T, U
	Quantitative Determination of Urea in Human Urines	2	T, U
	Quantitative Determination of Creatinine in Human Urines	2	T, U
	Quantitative Determination of Minerals in Human Urines	1	T, U
Field trip	1	T, U	
Examination forms	Performance, reports, oral		
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	<i>[1] Kumar, V., & Gill, K. D. (2018). Basic concepts in clinical biochemistry: a practical guide. Springer Singapore.</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:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources

1	Orientations (Introduce the safety, regulation, apparatus in clinical biochemistry field)	1	Prelab, report	Lecture, Practice, homework	[1].1-7
2	Quantitative Determination of Uric Acid in Human Urines	2,3	Prelab, report	Lecture, Practice, homework	[1].20
3	Quantitative Determination of Protein and Sugar in Human Urines	2,3	Prelab, report	Lecture, Practice, homework	[1].9, 12
4	Quantitative Determination of Urea in Human Urines	2,3	Prelab, report	Lecture, Practice, homework	[1].16
5	Quantitative Determination of Creatinine in Human Urines	2,3	Prelab, report	Lecture, Practice, homework	[1].18
6	Quantitative Determination of Minerals in Human Urines	2,3	Prelab, report	Lecture, Practice, homework	[1].21
7	Field trip	1, 3	Prelab, report	Lecture, instruction	
8	Examination				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Prelab (30%)	x		
Report (40%)	x	x	x
Final exam (30%)	x	x	x

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

5. Rubrics

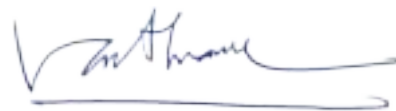
6. **Date revised:** 05/2025

7. Course coordinator/Lecturer

- School/Department: MSc. Bui Ngoc Yen Tram - Department of Applied Chemistry
- Email:

Ho Chi Minh City, 06/2025

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., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: NUTRITIONAL BIOCHEMISTRY

Course Code: BTBC317IU

1. General information

Course name	- <i>NUTRITIONAL BIOCHEMISTRY</i> - <i>Hóa sinh dinh dưỡng</i>
Course designation	<i>This course provides a basic understanding of the structure, properties, function, digestion, absorption and metabolism of macronutrients. The course also focuses on energy balance, vitamins, minerals, water, nutritional needs, nutritional assessment, nutrition in health promotion and disease prevention and treatment along with dietary guidelines.</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	Dr. Vu Thanh Ngoc
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lecture, inquiry and project-based learning.

Workload (incl. contact hours, self-study hours)			Lecture	Lab
		<i>Credit</i>		
	Contact hours	45	45	0
	Self-Study hours	90	90	0
	Total workload	135	135	0
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	- Previous course (Course code – Course name): BTBC209IU - Biochemistry 1, BTBC211IU - Biochemistry 2			
Course objectives	This course is designed to provide a basic understanding of the principles, overall work-flow and applications of common techniques in biochemistry.			
Course learning outcomes	Upon the successful completion of this course students will be able to:			
	Competency level	Course learning outcome (CLO)		
	Knowledge	CLO1. Describe and explain knowledge related to the structure, properties, function, digestion, absorption and metabolism of macronutrients, energy balance, vitamins, minerals, water, and dietary guidelines.		
	Skill	CLO2. Describe and explain nutritional needs in the life cycle, nutritional assessment methods and the role of nutrition in health promotion and disease prevention and treatment.		
	Attitude	CLO3. Balance the diet based on nutritional needs.		

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 Nutritional Biochemistry</td><td>1</td><td>I, T</td></tr><tr><td>Macronutrients: Structure, Properties, Function, Digestion and Absorption</td><td>3</td><td>T, U</td></tr><tr><td>Metabolism of Macronutrients</td><td>3</td><td>T, U</td></tr><tr><td>Energy</td><td>1</td><td>T, U</td></tr><tr><td>Vitamins</td><td>2</td><td>T, U</td></tr><tr><td>Minerals and Water</td><td>2</td><td>T, U</td></tr><tr><td>Nutritional Needs During the Life Cycle</td><td>1</td><td>T, U</td></tr><tr><td>Nutritional Assessment</td><td></td><td></td></tr><tr><td>Nutrition in Health Promotion and Disease Prevention and Treatment</td><td>1</td><td>T, U</td></tr><tr><td>Dietary Guidelines</td><td>1</td><td>T, U</td></tr></table>	Topic	Weight	Level	Introduction to Nutritional Biochemistry	1	I, T	Macronutrients: Structure, Properties, Function, Digestion and Absorption	3	T, U	Metabolism of Macronutrients	3	T, U	Energy	1	T, U	Vitamins	2	T, U	Minerals and Water	2	T, U	Nutritional Needs During the Life Cycle	1	T, U	Nutritional Assessment			Nutrition in Health Promotion and Disease Prevention and Treatment	1	T, U	Dietary Guidelines	1	T, U
Topic	Weight	Level																																
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Nutritional Assessment																																		
Nutrition in Health Promotion and Disease Prevention and Treatment	1	T, U																																
Dietary Guidelines	1	T, U																																
Examination forms	Multiple choice, true/false, matching, short answer, essay.																																	
Study and examination requirements	<i>Requirements for successfully passing the module:</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. All absence, if not emergent, requires approval of the instructor(s) in advance. Absence for exams requires in-advanced approval of the Office of Academic Affairs. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.																																	
Reading list	<i>[1] Biochemical and physiological aspects of human nutrition by Martha H Stipanuk, Marie A. Caudill, 4th Edition, Saunders Elsevier, 2018.</i> <i>[2] Modern nutrition in health and disease by Maurice E Shils, Moshe Shike, A. Catharine Ross, Benjamin Caballero, Robert J Cousins, 10th Edition, Lippincott Williams & Wilkins, 2006.</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:

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources

1	Introduction to Nutritional Biochemistry	1, 2	Lecture, discussion, quiz/assignment	Quiz/assignment	[1], [2]
2-4	Macronutrients: Structure, Properties, Function, Digestion and Absorption	1, 2, 3, 4	Lecture, discussion, quiz/assignment	Quiz/assignment	[1], [2]
5-7	Metabolism of Macronutrients	1, 2, 3, 4	Lecture, discussion, quiz/assignment	Quiz/assignment	[1], [2]
8	Midterm exam				
8	Energy	1, 2, 3, 4	Lecture, discussion, quiz/assignment	Quiz/assignment	[1], [2]
9, 10	Vitamins	1, 2, 3, 4	Lecture, discussion, quiz/assignment	Quiz/assignment	[1], [2]
11, 12	Minerals and Water	1, 2, 3, 4	Lecture, discussion, quiz/assignment	Quiz/assignment	[1], [2]
13	Nutritional Needs During the Life Cycle Nutritional Assessment	1, 2, 3, 4	Lecture, discussion, quiz/assignment	Quiz/assignment	[1], [2]
14	Nutrition in Health Promotion and Disease Prevention and Treatment	1, 2, 3, 4	Lecture, discussion, quiz/assignment	Quiz/assignment	[1], [2]
15	Dietary Guidelines	1, 2, 3, 4	Quiz/ Assignment/ Presentation	Quiz/assignment	[1], [2]
16	Midterm exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Quiz/assignment (30%)		x	x
Midterm exam (30%)	x		x
Final exam (40%)	x	x	x

Note: Target that at least 50% of students having scores of at least 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Part 1..... (....%)			
Criterion 1:			
Criterion 2:			
Criterion 3:			
Criterion:			
Part 2..... (....%)			

Criterion 1:			
Criterion:			
Part 3..... (....%)			
Criterion 1....:			
Criterion:			
Part (....%)			
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 the task are included.
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.
2	Demonstrates little understanding of the problem. Many requirements of the 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 one's 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	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications)

			and implications) are identified clearly.	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 the audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to the audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and the speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and the speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and the speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and the speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies,	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from

	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.	relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	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

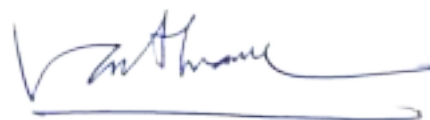
6. **Date revised:** 05/2025

7. **Course coordinator/Lecturer**

- School/Department: Dr. Vu Thanh Ngoc - Department of Applied Chemistry
- Email: vtngoc@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Applied Chemistry Department

COURSE SYLLABUS

Course Name: NUTRITIONAL BIOCHEMISTRY LAB

Course Code: BTBC318IU

1. General information

Course name	- <i>NUTRITIONAL BIOCHEMISTRY LAB</i> - <i>Thực hành Hóa sinh Dinh Dưỡng</i>
Course designation	<i>This course aims to</i> - <i>Provide students with introductory knowledge on different types of Nutrients.</i> - <i>Provide instructions on some of the basic techniques and applications for different methods in testing and isolating nutrients.</i> - <i>Understand the analysis of data to reach sound scientific conclusions.</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	MSc. Le Tran Hong Ngoc
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lab work, lab project

Workload (incl. contact hours, self-study hours)			Lecture	Lab			
		<i>Credit</i>	0	1			
	Contact hours	25	0	25			
	Self-Study hours	30	0	30			
	Total workload	55	0	55			
Credit points	1 credits (Theory: 0 + Practice: 1) 2.0 ECTS (<i>optional</i>)						
Number of periods	Theory: 0 Practice: 30						
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name): BTBC317IU - Nutritional Biochemistry						
Course objectives	Students will be provided with skills in using methods and devices to quantify macro nutrients in foods. Through this unit, students will become acquainted with the challenges of nutrition analysis and impact of foods in the human body.						
Course learning outcomes	Upon the successful completion of this course students will be able to:						
	Competency level	Course learning outcome (CLO)					
	Knowledge	CLO1. Describe methods and the skill sets needed to use biochemistry devices to analyze nutrients, and have the ability to apply knowledge of food science in health.					
	Skill	CLO2. An ability to design and conduct experiments, as well as to analyze and interpret data in nutrition research, function on multi-disciplinary teams, use the techniques, skills, and modern engineering tools necessary in biochemistry for nutritional practice.					
	Attitude	CLO3. An understanding of the professional and ethical responsibility of biochemistry science in nutrition.					

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: Lab work (5 periods) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Estimation of Ascorbic Acid in a Citrus Fruit</td><td>1</td><td>I, T</td></tr><tr><td>Estimation of calcium in milk</td><td>1</td><td>T, U</td></tr><tr><td>Estimation of glucose by Benedict’s method in honey</td><td>1</td><td>T, U</td></tr><tr><td>Variation in Plant Protein</td><td>1</td><td>T, U</td></tr><tr><td>Preparation of Casein and Lactalbumin from Milk</td><td>1</td><td>T, U</td></tr><tr><td>Final Exam</td><td></td><td></td></tr></table>	Topic	Weight	Level	Estimation of Ascorbic Acid in a Citrus Fruit	1	I, T	Estimation of calcium in milk	1	T, U	Estimation of glucose by Benedict’s method in honey	1	T, U	Variation in Plant Protein	1	T, U	Preparation of Casein and Lactalbumin from Milk	1	T, U	Final Exam		
Topic	Weight	Level																				
Estimation of Ascorbic Acid in a Citrus Fruit	1	I, T																				
Estimation of calcium in milk	1	T, U																				
Estimation of glucose by Benedict’s method in honey	1	T, U																				
Variation in Plant Protein	1	T, U																				
Preparation of Casein and Lactalbumin from Milk	1	T, U																				
Final Exam																						
Examination forms	Written exam, data analysis, experimental design																					
Study and examination requirements	It is compulsory for all students to attend all class sessions. Failure to be present in any session without reason will immediately result in being dropped from the course. Students will be assessed on the basis of their class participation and lab techniques. Questions and comments are strongly encouraged.																					
Reading list	[1] Practice in Nutraceuticals Lab Manual – International University																					

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Estimation of Ascorbic Acid in a Citrus Fruit	1, 2, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming - Group discussion	[1]

2 + 3	Estimation of calcium in milk	1, 2, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming - Group discussion - Lab practice	[1]
4	Estimation of glucose by Benedict's method in honey	1, 2, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming - Group discussion - Lab practice	[1]
5	Variation in Plant Protein	1, 2, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming - Group discussion - Lab practice	[1]
6	Preparation of Casein and Lactalbumin from Milk	1, 2, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming - Group discussion - Lab practice	[1]
	Final exam		Written Questions Data analysis		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
In-class Quizzes (10%)	Qz 1-6 60%Pass	Qz 1-6 60%Pass	Qz 1-6 60%Pass
Lab Reports (30%)	Report 1-6 70%Pass	Report 1-6 70%Pass	Report 1-6 70%Pass
Final Exam (60%)	60%Pass	60%Pass	60%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 content (65%)			
Abstract clearly identifies purpose and summarizes principal content	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	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (15%)			
Correct spelling, grammar, and syntax	5		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		
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 the task are included.		
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.		
2	Demonstrates little understanding of the problem. Many requirements of the 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.

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 one's 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:** 05/2025

7. **Course coordinator/Lecturer**

- School/Department: MSc. Le Tran Hong Ngoc - Department of Applied Chemistry
- Email: lthngoc@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

HEAD/DEAN OF DEPARTMENT/SCHOOL

(Signature)



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: NUTRACEUTICALS

Course Code: BTBC421IU

1. General information

Course name	- <i>NUTRACEUTICALS</i> - <i>Dưỡng dược</i>
Course designation	<i>This course provides the basic knowledge on nutraceuticals, including the definition, classification, absorption, distribution, metabolism, excretion, physicochemical characteristics, preparation, health benefits, and regulation.</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	Dr. Vu Thanh Ngoc
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lecture, inquiry and project-based learning.

Workload (incl. contact hours, self-study hours)				
			Lecture	Lab
		<i>Credit</i>		
	Contact hours	45	45	0
	Self-Study hours	90	90	0
	Total workload	135	135	0
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	- Previous course (Course code – Course name): BTBC206IU - Organic Chemistry 2, BTBC209IU - Biochemistry 1			
Course objectives	This course provides the basic knowledge on nutraceuticals, including the definition, classification, absorption, distribution, metabolism, excretion, physicochemical characteristics, preparation, health benefits, and regulation.			
Course learning outcomes	Upon the successful completion of this course students will be able to:			
	Competency level	Course learning outcome (CLO)		
	Knowledge	CLO1. Describe and explain knowledge related to definition, classification, absorption, distribution, metabolism, excretion, physicochemical characteristics, preparation and health benefits of nutraceuticals.		
	Skill	CLO2. Compose a review, present and discuss a topic related to nutraceuticals.		
	Attitude	CLO3. Understand the safety of nutraceuticals for personal use and the associated regulations.		

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 nutraceuticals</td><td>1</td><td>I, T</td></tr><tr><td>Absorption, distribution, metabolism, and excretion of nutraceuticals</td><td>1</td><td>T, U</td></tr><tr><td>Herbs and phytochemicals</td><td>2</td><td>T, U</td></tr><tr><td>Marine nutraceuticals</td><td>2</td><td>T, U</td></tr><tr><td>Probiotics and prebiotics</td><td>2</td><td>T, U</td></tr><tr><td>Nutraceutical preparation</td><td>4</td><td>T, U</td></tr><tr><td>Nutraceuticals for human health</td><td>2</td><td>T, U</td></tr><tr><td>Regulations on nutraceuticals</td><td>1</td><td>T, U</td></tr></table>	Topic	Weight	Level	Introduction to nutraceuticals	1	I, T	Absorption, distribution, metabolism, and excretion of nutraceuticals	1	T, U	Herbs and phytochemicals	2	T, U	Marine nutraceuticals	2	T, U	Probiotics and prebiotics	2	T, U	Nutraceutical preparation	4	T, U	Nutraceuticals for human health	2	T, U	Regulations on nutraceuticals	1	T, U
Topic	Weight	Level																										
Introduction to nutraceuticals	1	I, T																										
Absorption, distribution, metabolism, and excretion of nutraceuticals	1	T, U																										
Herbs and phytochemicals	2	T, U																										
Marine nutraceuticals	2	T, U																										
Probiotics and prebiotics	2	T, U																										
Nutraceutical preparation	4	T, U																										
Nutraceuticals for human health	2	T, U																										
Regulations on nutraceuticals	1	T, U																										
Examination forms	Multiple choice, true/false, matching, short answer, essay.																											
Study and examination requirements	<i>Requirements for successfully passing the module:</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. All absence, if not emergent, requires approval of the instructor(s) in advance. Absence for exams requires in-advanced approval of the Office of Academic Affairs. Assignments/Examination: Students must have at least 50/100 points overall to pass this course.																											
Reading list	<i>[1] Coates PM, et al. Encyclopedia of dietary supplements. 2-nd ed. New York, London: Informa Healthcare, 2010.</i> <i>[2] Kramer K., Hoppe P., Packer L. Nutraceuticals in health and disease prevention, Marcel Dekker Inc., 2001.</i> <i>[3] Lockwood B.: Nutraceuticals, Ed. a 2-a, Pharmaceutical Press, 2007.</i> <i>[4] Wildman R.E.C.: Handbook of Nutraceuticals and Functional Foods, Ed. a 2-a, CRC Press, 2007.</i> <i>[5] Ildman, Robert. (2007) Nutraceuticals and Functional Foods, second edition. Taylor and Francis Group.</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:

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Introduction to nutraceuticals	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	[1-5]
2	Absorption, distribution, metabolism, and excretion of nutraceuticals	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	[1-5]
3, 4	Herbs and phytochemicals	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	[1-5]
5, 6	Marine nutraceuticals	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	[1-5]
7, 8	Probiotics and prebiotics	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	[1-5]
8	Mid-term exam				
9-12	Nutraceutical preparation	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	[1-5]
13, 14	Nutraceuticals for human health	1, 2, 3	Lecture, discussion, quiz/assignment	Quiz/assignment	[1-5]
15	Regulations on nutraceuticals	3	Lecture, discussion, quiz/assignment	Quiz/assignment	[1-5]
16	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Quiz/assignment (30%)		x	
Midterm exam (30%)	x		x
Final exam (40%)	x		x

Note: Target that at least 50% of students having scores of at least 50 out of 100.

5. Rubrics

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Part 1..... (....%)			
Criterion 1:			
Criterion 2:			
Criterion 3:			
Criterion:			
Part 2..... (....%)			

Criterion 1:			
Criterion:			
Part 3..... (....%)			
Criterion 1:			
Criterion:			
Part (....%)			
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 the task are included.
3	Demonstrates partial understanding of the problem. Most requirements of the task are included.
2	Demonstrates little understanding of the problem. Many requirements of the 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 one's 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	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications)

			(consequences and implications) are identified clearly.	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 the audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to the audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to the audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and the speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and the speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and the speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and the 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: 05/2025

7. Course coordinator/Lecturer

- School/Department: Dr. Vu Thanh Ngoc - Department of Applied Chemistry
- Email: vtngoc@hcmiu.edu.vn

Ho Chi Minh City, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Applied Chemistry Department

COURSE SYLLABUS

Course Name: NUTRACEUTICALS LAB

Course Code: BTBC422IU

1. General information

Course name	- <i>NUTRACEUTICALS LAB</i> - <i>Thực hành Dưỡng Dược</i>
Course designation	<i>This course aims to:</i> - <i>Provide students with knowledge on the Phytochemical testing, identification of antioxidant activities.</i> - <i>Provide instructions on some of the basic techniques and applications for different methods in UV spectrometry.</i> - <i>Understand the analysis of data to reach sound scientific conclusions.</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	2
Person responsible for the course	MSc. Le Tran Hong Ngoc
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	Lab work, lab project

Workload (incl. contact hours, self-study hours)			Lecture	Lab			
		<i>Credit</i>	0	1			
	Contact hours	25	0	25			
	Self-Study hours	30	0	30			
	Total workload	55	0	55			
Credit points	1 credits (Theory: 0 + Practice: 1) 2.0 ECTS (<i>optional</i>)						
Number of periods	Theory: 0 Practice: 30						
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name): BTBC421IU - Nutraceuticals						
Course objectives	Apply scientific methods and lab equipment to the quantification of total phenolic and flavonoid contents, and the determination of antioxidant capacity in fruits. Through this unit, students will become acquainted with the current techniques used in nutraceutical production in order to become specialists in research institutes or factories.						
Course learning outcomes	Upon the successful completion of this course students will be able to:						
	Competency level	Course learning outcome (CLO)					
	Knowledge	CLO1. Gain fundamental knowledge the role of phenolic, flavonoid and antioxidant					
	Skill	CLO2. Capable of using various techniques, skills, and modern engineering tools necessary in biochemistry to design and conduct experiments in order to quantify total phenolic, flavonoid contents and antioxidant potential in fruits					
	Attitude	CLO3. Develop an understanding of professional and ethical responsibility of biochemistry science in nutraceuticals.					

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: Lab work (5 periods) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction</td><td>1</td><td>I, T</td></tr><tr><td>Total phenolic content quantification</td><td>1</td><td>T, U</td></tr><tr><td>Total flavonoid content quantification</td><td>1</td><td>T, U</td></tr><tr><td>Determination of Antioxidant Capacity by DPPH</td><td>1</td><td>T, U</td></tr><tr><td>Determination of Antioxidant Capacity by ABTS</td><td>1</td><td>T, U</td></tr><tr><td>Identification of TPC & TFC in Green Juice Effervescent Tablets</td><td>1</td><td>T, U</td></tr><tr><td>Final Exam</td><td></td><td></td></tr></table>	Topic	Weight	Level	Introduction	1	I, T	Total phenolic content quantification	1	T, U	Total flavonoid content quantification	1	T, U	Determination of Antioxidant Capacity by DPPH	1	T, U	Determination of Antioxidant Capacity by ABTS	1	T, U	Identification of TPC & TFC in Green Juice Effervescent Tablets	1	T, U	Final Exam		
Topic	Weight	Level																							
Introduction	1	I, T																							
Total phenolic content quantification	1	T, U																							
Total flavonoid content quantification	1	T, U																							
Determination of Antioxidant Capacity by DPPH	1	T, U																							
Determination of Antioxidant Capacity by ABTS	1	T, U																							
Identification of TPC & TFC in Green Juice Effervescent Tablets	1	T, U																							
Final Exam																									
Examination forms	Written exam, data analysis, experimental design																								
Study and examination requirements	It is compulsory for all students to attend all class sessions. Failure to be present in any session without reason will immediately result in being dropped from the course. Students will be assessed on the basis of their class participation and lab techniques. Questions and comments are strongly encouraged.																								
Reading list	[1] Wang, L., & Weller, C. L. (2006). Recent advances in extraction of nutraceuticals from plants. <i>Trends in Food Science & Technology</i>, 17(6), 300-312. [2] Sánchez-Rangel, J. C., Benavides, J., Heredia, J. B., Cisneros-Zevallos, L., & Jacobo-Velázquez, D. A. (2013). The Folin–Ciocalteu assay revisited: improvement of its specificity for total phenolic content determination. <i>Analytical Methods</i>, 5(21), 5990-5999. [3] He, X., Liu, D., & Liu, R. H. (2008). Sodium borohydride/chloranil-based assay for quantifying total flavonoids. <i>Journal of Agricultural and Food Chemistry</i>, 56(20), 9337-9344. [4] Kedare, S. B., & Singh, R. P. (2011). Genesis and development of DPPH method of antioxidant assay. <i>Journal of food science and technology</i>, 48(4), 412-422. <i>Practice in Nutraceuticals Lab Manual – International University</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:

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

2				M				
3						M		

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Nutraceuticals Chemical Preparation	1, 2, 3	Lab skills	- Lecture - Lab demo - Group forming. - Group discussion	[1], [2], [3], [5]
2	Total phenolic content quantification	1, 2, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3], [5]
3	Total flavonoid content quantification	1, 2, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[1], [2], [3], [5]
4	Determination of Antioxidant Capacity by DPPH	1, 2, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[4], [5]
5	Determination of Antioxidant Capacity by ABTS	1, 2, 3	Quiz /Lab skills Lab Report	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[5]
6	Green Juice Effervescent Tablets	1, 2, 3	Quiz /Lab skills	- Lecture - Lab demo - Group forming. - Group discussion - Lab practice	[5]

	Final exam		Written Questions Data analysis		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
In-class Quizzes (10%)	Qz2-5 60%Pass	Qz2-5 60%Pass	Qz2-5 60%Pass
Lab Reports (30%)	Report 2-5 70%Pass	Report 2-5 70%Pass	Report 2-5 70%Pass
Final Exam (60%)	60%Pass	60%Pass	60%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 content (65%)			
Abstract clearly identifies purpose and summarizes principal content	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	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (15%)			
Correct spelling, grammar, and syntax	5		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

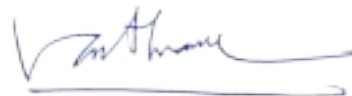
6. Date revised: 05/2025

7. Course coordinator/Lecturer

- School/Department: MSc. Le Tran Hong Ngoc - Department of Applied Chemistry
- Email: lthngoc@hcmiu.edu.vn

Ho Chi Minh City, 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.

Assoc. Prof., Dr. 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

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) 4.62 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: <table border="1"> <thead> <tr> <th>Competency level</th><th>Course learning outcome (CLO)</th></tr> </thead> <tbody> <tr> <td>Knowledge</td><td>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</td></tr> <tr> <td>Skill</td><td>CLO3. Apply molecular techniques in diagnosis factors in human, plant, animal, and food (design, setup, perform and explain the test)</td></tr> <tr> <td>Attitude</td><td>CLO4. Discerning the importance, ethical and privacy issues in molecular testing.</td></tr> </tbody> </table>	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.
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 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
	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	L							
2		M						
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 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@hcmiu.edu.vn

Dean of School of Biotechnology



Assoc. Prof. NGUYEN VAN THUAN



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

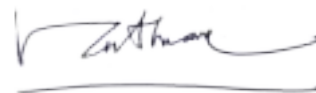
7. Course coordinator/Lecturer

- 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: BIOPROCESS ENGINEERING

Course Code: **BT365IU**

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 3.08 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)																																
	<table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction of Bioprocess: history of development and steps (upstream, fermentation, and downstream)</td><td>2</td><td>I, T</td></tr><tr><td>Overviews on important physiological characteristics of microbes and aseptic techniques; Properties of industrial microbes</td><td>1</td><td>I, T</td></tr><tr><td>Components of a typical fermentor, and types of fermentors</td><td>1</td><td>I, T</td></tr><tr><td>Fermentation types and steps for scaling up a culture</td><td>2</td><td>T, U</td></tr><tr><td>Microbial kinetics in batch, continuous and fed-batch processes</td><td>2</td><td>T, U</td></tr><tr><td>Statistical methods for fermentation optimization</td><td>2</td><td>T, U</td></tr><tr><td>Recovery and purification of industrial fermentation products</td><td>2</td><td>T, U</td></tr><tr><td>Paper discussion</td><td>1</td><td>I, U</td></tr><tr><td>Group presentation</td><td>2</td><td>I, U</td></tr></table>			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
	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

Week	Topic	CLO	Assessments	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				
16	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Assignment (25%)			HW 70%Pass	
Midterm exam (35%)	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 (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



Assoc. Prof., Dr. Nguyen Van Thuan



**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	1. Lab manual: to be uploaded on BB prior to the class start date 2. Article References: to be provided (Note: Articles will be updated every year) 3. 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
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: BIOCHEMISTRY INTERNSHIP

Course Code: **BTBC309IU**

1. General information

Course name	- (in English) <i>Biochemistry Internship.</i> - (in Vietnamese) <i>Thực tập Hóa Sinh.</i>
Course designation	• To those working at manufacturing factories: Observing and understanding the technological process of the main product(s) in the factories. Understanding the structure and operating manufacturing machines and equipment, and product QA and QC activities. • To those working at research institutes: Learning how to do a research: doing a research. Understanding research methods. Understanding analytical equipment and techniques. Operating research equipment and apparatus. Learning how to write a scientific paper. • To those working at health care service establishments: Observing and understanding procedures, regulations, structures of organizations providing health care services (clinical biochemistry, nutrition, drug preparation and development). Understanding different methods and standards.
Course type	☐ General knowledge ☐ Fundamental ☐ Specialized knowledge ☒ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	6,7,8
Person responsible for the course	Assoc. Prof. Nguyen Van Thuan Academic members of BT. IU (IU Supervisor) and On-site Supervisor
Language	English
Relation to curriculum	Compulsory

Teaching methods	This is a formal internship experience under an industry Site-Supervisor and apply their advanced biochemistry knowledge and training in a biochemistry laboratory.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: Student has to work for 2 months (176 hours)
Credit points	2 credits (Theory: 0 + Practice: 2) 4.0 ECTS (<i>optional</i>)
Number of periods	Theory: 0 Practice: 30
Required and recommended prerequisites for joining the course	Accumulated at least 90 Credits
Course objectives	It is an opportunity for students to: ● Gain practical experience in biochemistry processing, product development, biochemistry research and related areas. ● Apply classroom knowledge to practical situations through involvement in different levels of the organization. ● Evaluate their study plan and determine needed preparation for a career in Biochemistry for industry, Biochemistry for medicine and pharmacy, and Biochemistry for nutrition ● Gain exposure to a company or agency and a specific area of employment to determine whether they want that area for their life's work. ● Develop confidence in personal judgment and gain maturity and self-confidence. ● For employers, to: ● Interact with students and evaluate the potential of undergraduates for full-time employment upon graduation. ● Observe the quality of instructional programs of the Biochemistry Program and contribute to the IU's Biochemistry program by recommending possible adjustments in the curriculum.

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 biochemistry processing, product development, biochemistry 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 biochemistry 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. Students have to identify the internship opportunities by him/herself or with assistance from the Academic Advisor and faculty members of the department of Applied Chemistry.	
	3. Students have to work at organizations providing health care services, research institutes and biochemistry industry for a period of 2 months.	
	4. Students have to Fill the Form of Internship Confirmation after completion of the internship period with signature of the On-site Supervisor and submit it to the School of Biotechnology.	
	5. Students have 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. Students present the results of the internship to an internship committee consisting of 3 academic members of the department of applied chemistry.	
Examination forms	Oral presentation	
Study and examination requirements	Students must receive comments from the On-site Supervisor and approval by BT.IU supervisor.	
Reading list		

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLOs) (1-6) and Intended Learning Outcomes (ILOs) (1-8) level of contribution of CLO to ILO (Low – Medium – High) is shown in the following table:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Lab 1: Synthesis of aspirin	1,2,3, 4, 5	Group report Prelab quizzes	Lecture presentation Group forming	[1],[2],[3],[4]
2	Lab 2: Assay of aspirin	1,2,3, 4, 5	Group report Prelab quizzes	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
3	Lab 3: Synthesis of paracetamol	1,2,3, 4, 5	Group report Prelab quizzes	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
4	Lab 4: Synthesis of the anticonvulsant drug diphenylhydantoin	1,2,3, 4, 5	Group report Prelab quizzes	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
5	Lab 5: Spectroscopic characterization of aspirin and paracetamol	1,2,3, 4, 5	Group report Prelab quizzes	- Introduce practical procedure - Solve problems - Group working	[1],[2],[3],[4]
	Final exam				

4. Assessment plan

Methods	Frequency	(%)
Evaluation from BT.IU advisor	1	50
Evaluation from Site- Supervisor	1	50
Total		100

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

Criteria	Maximum marks
The internship objective	10

Quality of work (time spent, workload, content of work...)	30
Quality of report (Writing skill, format...)	20
Working attitude during internship	20
Learning quality (Answer of advisor's questions)	20
Total	100

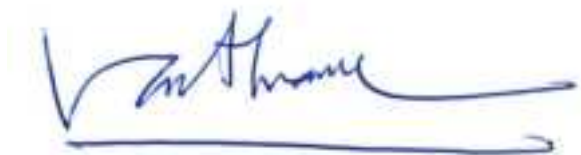
5. Date revised: 06/2025

6. Course coordinator/Lecturer

- School/Department: Assoc. Prof., Dr. Nguyen Van Thuan – School of Biotechnology
- Email: nvthuan@hcmiu.edu.vn

Hochiminh city, / /

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY

School of Biotechnology
Department of Applied Chemistry

COURSE SYLLABUS

Course Name: THESIS

Course Code: BTBC456IU

1. General information

Course name	- (in English) Thesis. - (in Vietnamese) Luận văn tốt nghiệp
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	☐ General knowledge ☐ Fundamental ☐ Specialized knowledge ☒ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	7, 8
Person responsible for the course	Assoc. Prof. Nguyen Van Thuan Academic members of BT. IU (IU Supervisor) and On-site Supervisor
Language	English
Relation to curriculum	Compulsory
Teaching methods	Projects should be original laboratory, field-based or survey research on a topic proposed by an adviser at IU. Students could also conduct your thesis project outside the University given that your proposal is approved with adequate supervision by an external supervisor.

Workload (incl. contact hours, self-study hours)	(Estimated): The student has four working months for the thesis. Total workload: 600 h (60 h x10 credit) Students are required to meet their advisor weekly to discuss the research progress meeting. (Before that, students are also encouraged to participate as volunteers in the labs from year 2 or 3 year to study more techniques and prepare for the thesis)								
Credit points	10 credits (Theory: 0 + Practice: 10) 24.0 ECTS (<i>optional</i>)								
Number of periods	Theory: 0 Practice: 180								
Required and recommended prerequisites for joining the course	- Accumulated at least 104 Credits and have IELTS at least 5.5 or equivalent.								
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.								
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. 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. </td></tr> <tr> <td>Skill</td><td> 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. </td></tr> <tr> <td>Attitude</td><td> 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. </td></tr> </tbody> </table>	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.
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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 relationship between Course Learning Outcomes (CLOs) (1-8) and Intended Learning Outcomes (ILOs) (1-8) level of contribution of CLO to ILO (Low – Medium – High) is shown in the following table:

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

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

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)
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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.

4. Assessment plan

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. Rubrics

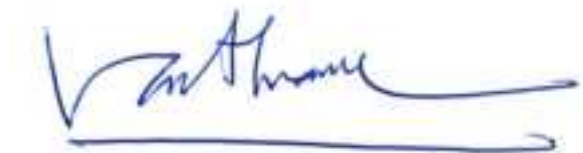
6. **Date revised:** 06/2025

7. Course coordinator/Lecturer

- School/Department: Assoc. Prof., Dr. Nguyen Van Thuan – School of Biotechnology
- Email: nvthuan@hcmiu.edu.vn

Hochiminh city, 06/2025

DEAN OF SCHOOL OF BIOTECHNOLOGY



Assoc. Prof., Dr. Nguyen Van Thuan