



CHƯƠNG TRÌNH ĐÀO TẠO KHÓA 2025
NGÀNH KỸ THUẬT Y SINH
TRÌNH ĐỘ ĐẠI HỌC

(Kèm theo Quyết định số 1048/QĐ-ĐHQG-TT ngày 04 tháng 9 năm 2025 của Hiệu trưởng Trường Đại học Quốc tế)

1. Thông tin chung

- Tên ngành đào tạo:
- + Tiếng Việt: Kỹ thuật Y Sinh
- + Tiếng Anh: Biomedical Engineering
- Mã ngành đào tạo: 7520212
- Trình độ đào tạo: Đại học
- Loại hình đào tạo: Chính quy
- Thời gian đào tạo: 4,5 - 5 năm
- Tên văn bằng sau khi tốt nghiệp:
- + Tiếng Việt: Kỹ sư Kỹ Thuật Y Sinh
- + Tiếng Anh: Engineer in Biomedical Engineering
- 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: Nhóm ngành Kỹ thuật

d. Tổ hợp môn xét tuyển: Bao gồm ba tổ hợp môn xét tuyển:

A00: Toán – Vật lý – Hóa học

A01: Toán – Vật lý – Tiếng Anh

B00: Toán – Hóa học – Sinh học

B08: Toán – Sinh học – Tiếng Anh

D01: Toán – Ngữ văn – Tiếng Anh

D07: Toán – Hóa học – Tiếng Anh

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

Năm	2025	2026	2027	2028	2029	2030
Tuyển sinh	80	80	80	80	80	80
Quy mô đào tạo	640	640	640	640	640	640

3. Mục tiêu đào tạo

a. Mục tiêu chung:

Các kỹ sư tốt nghiệp từ chương trình đào tạo ngành KTYS được chuẩn bị để có thể:

- Thành công và hiệu quả khi giải quyết các vấn đề một cách định lượng và hệ thống, dựa trên kiến thức kỹ thuật y sinh và các lĩnh vực đa ngành liên quan;
- Không ngừng học tập mở rộng kiến thức, sáng tạo và đổi mới đóng góp cho sự phát triển của lĩnh vực kỹ thuật y sinh;
- Làm việc một cách có đạo đức và chuyên nghiệp ở cấp độ cao nhất trong các tổ chức công lập và tư nhân.

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
Thành công và hiệu quả khi giải quyết các vấn đề một cách định lượng và hệ thống, dựa trên kiến thức kỹ thuật y sinh và các lĩnh vực đa ngành liên quan.	Trường ĐHQT là trường đại học nghiên cứu thuộc tốp 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 cơ sở giáo dục quốc tế, mang bản sắc văn hóa Việt Nam. Cơ sở giáo dục đại học đi tiên phong trong đổi mới cơ chế quản trị đại học theo mô hình tự chủ và tiên tiến. Đào tạo chất lượng cao đa ngành – đa lĩnh vực. Đạt chuẩn kiểm định chất lượng giáo dục theo tiêu chuẩn quốc tế/khu vực cho tất cả các chương trình đào tạo. Giảng dạy và nghiên cứu thực hiện bằng tiếng Anh là điểm khác biệt nâng tầm quốc tế của nhà trường. Người học 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. Nghiên cứu cơ	Mục tiêu giáo dục nhằm phát triển toàn diện con người Việt Nam có đạo đức, tri thức, văn hóa, sức khỏe, thẩm mỹ và nghề nghiệp; có phẩm chất, năng lực và ý thức công dân; có lòng yêu nước, tinh thần dân tộc, trung thành với lý tưởng độc lập dân tộc và chủ nghĩa xã hội; phát huy tiềm năng, khả năng sáng tạo của mỗi cá nhân; nâng cao dân trí, phát triển nguồn nhân lực, bồi dưỡng nhân tài, đáp ứng yêu cầu của sự nghiệp xây dựng, bảo vệ Tổ quốc và hội nhập quốc tế.

		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 phục vụ cộng đồng.	
Không ngừng học tập mở rộng kiến thức, sáng tạo và đổi mới đóng góp cho sự phát triển của lĩnh vực kỹ thuật y sinh.	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 cơ sở giáo dục quốc tế, mang bản sắc văn hóa Việt Nam. Cơ sở giáo dục đại học đi tiên phong trong đổi mới cơ chế quản trị đại học theo mô hình tự chủ và tiên tiến. Đào tạo chất lượng cao đa ngành – đa lĩnh vực. Đạt chuẩn kiểm định chất lượng giáo dục theo tiêu chuẩn quốc tế/khu vực cho tất cả các chương trình đào tạo. Giảng dạy và nghiên cứu thực hiện bằng tiếng Anh là điểm khác biệt nâng tầm quốc tế của nhà trường. Người học được đào tạo và rèn luyện để trở thành công dân toàn cầu và có	Mục tiêu giáo dục nhằm phát triển toàn diện con người Việt Nam có đạo đức, tri thức, văn hóa, sức khỏe, thẩm mỹ và nghề nghiệp; có phẩm chất, năng lực và ý thức công dân; có lòng yêu nước, tinh thần dân tộc, trung thành với lý tưởng độc lập dân tộc và chủ nghĩa xã hội; phát huy tiềm năng, khả năng sáng tạo của mỗi cá nhân; nâng cao dân trí, phát triển nguồn nhân lực, bồi dưỡng nhân tài, đáp ứng yêu cầu của sự nghiệp xây dựng, bảo vệ Tổ quốc và hội nhập quốc tế.

		trách nhiệm với xã hội, dẫn dắt xã hội trong tương lai. 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 phục vụ cộng đồng.	
Làm việc một cách có đạo đức và chuyên nghiệp ở cấp độ cao nhất trong các tổ chức công lập và tư nhân.	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 cơ sở giáo dục quốc tế, mang bản sắc văn hóa Việt Nam. Cơ sở giáo dục đại học đi tiên phong trong đổi mới cơ chế quản trị đại học theo mô hình tự chủ và tiên tiến. Đào tạo chất lượng cao đa ngành – đa lĩnh vực. Đạt chuẩn kiểm định chất lượng giáo dục theo tiêu chuẩn quốc tế/khu vực cho tất cả các chương trình đào tạo. Giảng dạy và nghiên cứu thực hiện bằng tiếng Anh là điểm khác biệt nâng tầm quốc tế của nhà	Mục tiêu giáo dục nhằm phát triển toàn diện con người Việt Nam có đạo đức, tri thức, văn hóa, sức khỏe, thẩm mỹ và nghề nghiệp; có phẩm chất, năng lực và ý thức công dân; có lòng yêu nước, tinh thần dân tộc, trung thành với lý tưởng độc lập dân tộc và chủ nghĩa xã hội; phát huy tiềm năng, khả năng sáng tạo của mỗi cá nhân; nâng cao dân trí, phát triển nguồn nhân lực, bồi dưỡng nhân tài, đáp ứng yêu cầu của sự nghiệp xây dựng, bảo vệ Tổ quốc và hội nhập quốc tế.

		trường. Người học 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. 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 phục vụ cộng đồng.	

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

Mục tiêu cụ thể của CTĐT được xác định từ mục tiêu chung, bao gồm 7 mục tiêu, trong đó có 3 mục tiêu về kiến thức, 3 mục tiêu về kỹ năng và 1 mục tiêu về tự chủ và trách nhiệm, được trình bày như sau:

Kiến thức:

PO1: Sử dụng khối kiến thức cơ bản về khoa học và toán học một cách sáng tạo để giải quyết thực tiễn các vấn đề liên quan đến KTYS.

PO2: Có kiến thức và tầm nhìn sâu rộng về các nguyên tắc và xu hướng hiện hành của các nhóm ngành thuộc KTYS.

PO3: Có kiến thức về đạo đức và môi trường.

Kỹ năng:

PO4: Sử dụng chuyên môn của mình nhằm giải quyết các vấn đề về khoa học và kỹ thuật y dược sinh.

PO5: Sử dụng một cách sáng tạo các công cụ phục vụ mô phỏng, phân tích, thiết kế, tính toán và kiểm soát.

PO6: Thiết kế và thực hiện thí nghiệm với các hệ thống và thiết bị ở các mức độ phức tạp khác nhau, phân tích hiệu quả các kết quả tìm được và vạch ra đường hướng mới.

Tự chủ và trách nhiệm

PO7: Giao tiếp hiệu quả khi trao đổi với những chuyên gia đa ngành đa lĩnh vực ở cấp độ

quốc tế và làm việc có trách nhiệm với xã hội nhờ chuyên môn cao.

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

Chuẩn đầu ra của chương trình đào tạo: được xác định từ các mục tiêu cụ thể. Với mỗi nhóm mục tiêu kiến thức, kỹ năng, mức tự chủ và trách nhiệm cần xác định các chuẩn đầu ra tương ứng. Chuẩn đầu ra bảo đảm đầy đủ theo quy định về chuẩn đầu ra theo các bậc/trình độ tương ứng tại phụ lục “Bảng mô tả Khung trình độ Quốc gia Việt Nam” kèm theo Quyết định số 1982/QĐ-TTg ngày 18 tháng 10 năm 2016 của Thủ tướng Chính phủ)

- PLO1: Khả năng xác định và giải quyết các vấn đề kỹ thuật phức tạp bằng cách áp dụng các nguyên tắc kỹ thuật, khoa học, và toán học (PLO1: An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics);
- PLO2: Khả năng áp dụng thiết kế kỹ thuật để tạo ra các giải pháp đáp ứng các nhu cầu cụ thể, song song với việc nhận thức được các vấn đề trong chăm sóc sức khỏe, an toàn và phúc lợi cộng đồng cũng như các yếu tố toàn cầu, văn hóa, xã hội, môi trường và kinh tế (PLO2: 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);
- PLO3: Khả năng giao tiếp hiệu quả với nhiều đối tượng (PLO3: An ability to communicate effectively with a range of audiences);
- PLO4: Khả năng nhận biết trách nhiệm đạo đức và trách nhiệm nghề nghiệp trong các tình huống kỹ thuật và đưa ra những đánh giá sáng suốt về tác động của các giải pháp kỹ thuật một cách toàn diện trong bối cảnh toàn cầu, kinh tế, môi trường và xã hội (PLO4: 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);
- PLO5: Khả năng hoạt động hiệu quả trong một nhóm mà tất cả thành viên cùng nhau lãnh đạo, tạo ra một môi trường hợp tác và bình đẳng, thiết lập mục tiêu, lập kế hoạch thực hiện và đạt được các mục tiêu đề ra (PLO5: 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);
- PLO6: Khả năng phát triển và tiến hành thử nghiệm thích hợp, phân tích và giải thích dữ liệu và sử dụng phán đoán kỹ thuật để đưa ra kết luận (PLO6: An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions);
- PLO7: Khả năng tiếp thu và áp dụng kiến thức mới khi cần thiết, sử dụng các chiến lược học tập phù hợp (PLO7: An ability to acquire and apply new knowledge as needed, using appropriate learning strategies).

Các chuẩn đầu ra được đo lường theo trình độ năng lực như được trình bày ở bảng sau:

Chuẩn đầu ra (CDR)	Nội dung Chuẩn đầu ra	Trình độ năng lực*
Kiến thức		
PLO1	Khả năng xác định và giải quyết các vấn đề kỹ thuật phức tạp bằng cách áp dụng các nguyên tắc kỹ thuật,	4.5 → 4.5

	khoa học, và toán học.	
PLO2	Khả năng áp dụng thiết kế kỹ thuật để tạo ra các giải pháp đáp ứng các nhu cầu cụ thể, song song với việc nhận thức được các vấn đề trong chăm sóc sức khỏe, an toàn và phúc lợi cộng đồng cũng như các yếu tố toàn cầu, văn hóa, xã hội, môi trường và kinh tế.	4.5 → 5.0
PLO6	Khả năng phát triển và tiến hành thử nghiệm thích hợp, phân tích và giải thích dữ liệu và sử dụng phán đoán kỹ thuật để đưa ra kết luận.	3.5 → 4.0
Kỹ năng		
PLO3	Khả năng giao tiếp hiệu quả với nhiều đối tượng.	3.5 → 4.0
PLO5	Khả năng hoạt động hiệu quả trong một nhóm mà tất cả thành viên cùng nhau lãnh đạo, tạo ra một môi trường hợp tác và bình đẳng, thiết lập mục tiêu, lập kế hoạch thực hiện và đạt được các mục tiêu đề ra.	4.5 → 4.5
PLO7	Khả năng tiếp thu và áp dụng kiến thức mới khi cần thiết, sử dụng các chiến lược học tập phù hợp.	3.0 → 3.5
Mức tự chủ và trách nhiệm		
PLO4	Khả năng nhận biết trách nhiệm đạo đức và trách nhiệm nghề nghiệp trong các tình huống kỹ thuật và đưa ra những đánh giá sáng suốt về tác động của các giải pháp kỹ thuật một cách toàn diện trong bối cảnh toàn cầu, kinh tế, môi trường và xã hội.	3.0 → 3.5

*Trình độ năng lực theo thang Bloom

Trình độ năng lực	Mô tả
0.0 → 2.0	Có biết qua/ Có nghe qua
2.0 → 3.0	Có hiểu biết/ Có thể tham gia
3.0 → 3.5	Có khả năng ứng dụng
3.5 → 4.0	Có khả năng phân tích

4.0 → 4.5	Có khả năng tổng hợp
4.5 → 5.0	Có khả năng đánh giá

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	PO5	PO6	PO7
Kiến thức	PLO1	X			X			
	PLO2		X			X		
	PLO6	X			X	X	X	
Kỹ năng	PLO3							X
	PLO5	X			X			X
	PLO7		X					
Tự chủ và trách nhiệm	PLO4		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
Trung bình	Từ 50 đến cận 60	C	2,0
Yếu	Từ 40 đến cận 50	D+	1,5
Kém	Từ 30 đến cận 40	D	1,0
	Dưới 30	F	0,0

8. Khối lượng kiến thức toàn khoá

Tổng số tín chỉ: **151 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	49	47	2	32,45
	- Bắt buộc: 49 tín chỉ	49	47	2	32,45
	- Tự chọn: 0 tín chỉ	0	0	0	0
II	Khối kiến thức cơ sở ngành	35	29	6	23,18
	- Bắt buộc: 35 tín chỉ	35	29	6	23,18
	- Tự chọn: 0 tín chỉ	0	0	0	0
III	Kiến thức chuyên ngành	46	36	10	30,46
	- Bắt buộc: 16 tín chỉ	16	12	4	10,6
	- Tự chọn: 30 tín chỉ	30	24	6	19,87
IV	Kiến thức bổ trợ	3	3	0	1,99
	- Bắt buộc: 03 tín chỉ	3	3	0	1,99
	- Tự chọn: 0 tín chỉ	0	0	0	0
V	Thực tập, khóa luận/luận văn tốt nghiệp	18	0	18	11,92
	Tổng cộng	151	115	36	100

9. Nội dung chương trình đào tạo

Bảng 5: Khung CTĐT chung của nhóm ngành

STT	Mã MH	Tên MH		Loại MH (bắt buộc/ tự chọn)	Tín chỉ			Phòng TN
		Tiếng Việt	Tiếng Anh		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
I	Kiến thức giáo dục đại cương				38	32	6	
I.1	Lý luận Chính trị							
1	PE015IU	Triết học Mác-Lênin	Philosophy of Marxism and Leninism	Bắt buộc	3	3	0	
2	PE016IU	Kinh tế chính trị Mác-Lênin	Political Economics of Marxism and Leninism	Bắt buộc	2	2	0	

3	PE017IU	Chủ nghĩa xã hội khoa học	Scientific Socialism	Bắt buộc	2	2	0	
4	PE018IU	Lịch sử Đảng Cộng sản Việt Nam	History of Vietnamese Communist Party	Bắt buộc	2	2	0	
5	PE019IU	Tư tưởng Hồ Chí Minh	Ho Chi Minh's Thoughts	Bắt buộc	2	2	0	
I.2	Toán-Tin-Khoa học Tự nhiên							
6	MA001IU	Toán 1	Calculus 1	Bắt buộc	4	4	0	
7	MA003IU	Toán 2	Calculus 2	Bắt buộc	4	4	0	
8	PH013IU	Vật lý 1	Physics 1	Bắt buộc	2	2	0	
I.3	Khoa học xã hội - Nhân văn – Nghệ thuật							
9	PE021IU	Pháp luật đại cương	General Law	Bắt buộc	3	3	0	
I.4	Ngoại ngữ							
10	EN007IU	Tiếng Anh chuyên ngành 1 (kỹ năng viết)	Writing AE1	Bắt buộc	2	2	0	
11	EN008IU	Tiếng Anh chuyên ngành 1 (kỹ năng nghe)	Listening AE1	Bắt buộc	2	2	0	
12	EN011IU	Tiếng Anh chuyên ngành 2 (kỹ năng viết)	Writing AE2	Bắt buộc	2	2	0	
13	EN012IU	Tiếng Anh chuyên ngành 2 (kỹ năng nói)	Speaking AE2	Bắt buộc	2	2	0	
I.5	Giáo dục thể chất							
14	PT001IU	Giáo dục thể chất 1	Physical Training 1	Bắt buộc	3	0	3	
15	PT002IU	Giáo dục thể	Physical	Bắt	3	0	3	

		chất 2	Training 2	buộc				

Bảng 6. Các môn học thuộc CTĐT

STT	Mã MH	Tên 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			Bắt buộc	49	47	2	
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-Lênin	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	
6	PE021IU	General Law	Pháp luật đại cương	Bắt buộc	3	3	0	
7	PE022IU	Engineering Ethics and Critical Thinking	Đạo đức Kỹ thuật và Tư duy phản biện	Bắt buộc	3	3	0	
8	EN007IU	Writing AE1	Tiếng Anh học thuật 1 - Viết	Bắt buộc	2	2	0	
9	EN008IU	Listening AE1	Tiếng Anh học thuật 1 – Nghe	Bắt buộc	2	2	0	
10	EN011IU	Writing AE2	Tiếng Anh học thuật 2 - Viết	Bắt buộc	2	2	0	
11	EN012IU	Speaking AE2	Tiếng Anh học thuật 2 – Nói	Bắt buộc	2	2	0	
12	MA001IU	Calculus 1	Toán 1	Bắt buộc	4	4	0	
13	MA003IU	Calculus 2	Toán 2	Bắt buộc	4	4	0	
14	MA023IU	Calculus 3	Toán 3	Bắt buộc	4	4	0	
15	MA024IU	Differential Equations	Phương trình vi phân	Bắt buộc	4	3	1	

16	PH013IU	Physics 1	Lý 1	Bắt buộc	2	2	0	
17	PH014IU	Physics 2	Lý 2	Bắt buộc	2	2	0	
18	CH011IU	Chemistry for Engineers	Hóa học cho kỹ sư	Bắt buộc	3	3	0	
19	CH012IU	Chemistry Laboratory	Thực hành hóa học	Bắt buộc	1	0	1	BT
20	PT001IU	Physical Training 1	Giáo dục thể chất 1	Bắt buộc	3(0)*	0	3	
21	PT002IU	Physical Training 2	Giáo dục thể chất 2	Bắt buộc	3(0)*	0	3	
22	-	Military Training	Giáo dục quốc phòng	Bắt buộc	Certificate			
II	Kiến thức cơ sở ngành			Bắt buộc	35	29	06	
23	BM111IU	Introduction to BME	Giới thiệu về Kỹ thuật Y Sinh	Bắt buộc	3	3	0	
24	CH014IU	Chemistry for Biomedical Engineering	Hóa học cho Kỹ thuật Y Sinh	Bắt buộc	3	3	0	
25	BM098IU	Chemistry for Biomedical Engineering Laboratory	Thực hành Hóa học cho Kỹ thuật Y Sinh	Bắt buộc	1	0	1	LA1.407
26	BM090IU	Biology for Biomedical Engineering	Sinh học cho Kỹ thuật Y Sinh	Bắt buộc	4	3	1	LA1.406
27	BM053IU	Principles of Electricity in Biomedical Engineering	Nguyên lý điện trong Kỹ thuật Y Sinh	Bắt buộc	3	3	0	
28	BM054IU	Principles of Electricity in Biomedical Engineering Laboratory	Thực hành Nguyên lý điện trong Kỹ thuật Y Sinh	Bắt buộc	1	0	1	LA2.201
29	BM030IU	Machine design	Thiết kế máy cơ khí	Bắt buộc	3	3	0	
30	BM064IU	Applied Informatics	Tin học ứng dụng	Bắt buộc	4	3	1	IT
31	BM096IU	AI for Healthcare	Trí tuệ nhân tạo trong y tế	Bắt buộc	3	3	0	LA1.513
32	BM101IU	Mechanical design and manufacturing processes in Biomedical Engineering	Phương pháp thiết kế và chế tạo cơ khí trong Kỹ thuật Y Sinh	Bắt buộc	2	2	0	

33	BM102IU	Mechanical design and manufacturing processes in Biomedical Engineering Laboratory	Thực hành thiết kế và chế tạo cơ khí trong Kỹ thuật Y Sinh	Bắt buộc	2	0	2	LA1.404
34	BM005IU	Statistics for health science	Thống kê cho khoa học sức khỏe	Bắt buộc	3	3	0	
35	BM091IU	Human Anatomy and Physiology	Giải phẫu và sinh lý người	Bắt buộc	3	3	0	
III	Kiến thức chuyên ngành			Bắt buộc/Tự chọn	46	36	10	
36	BM082IU	Biomaterials	Vật liệu sinh học	Bắt buộc	4	3	1	LA1.406
37	BM009IU	BME Capstone Design	Thiết kế thượng đỉnh trong Kỹ thuật Y Sinh	Bắt buộc	4	3	1	LA1.408
38	BM011IU	Engineering Challenges in Medicine I	Thách thức kỹ thuật trong Y khoa 1	Bắt buộc	3	3	0	
39	BM013IU	Entrepreneurship in Biomedical Engineering	Kinh doanh trong Kỹ thuật Y Sinh	Bắt buộc	3	3	0	
40	BM068IU	Project 1	Đồ án 1	Bắt buộc	1	0	1	
41	BM003IU	Pre-Thesis	Đồ án chuẩn bị Luận văn tốt nghiệp	Bắt buộc	1	0	1	
42	BM__IU	Technical Electives 1 (**)	Môn tự chọn chuyên ngành 1	Tự chọn	4	3	1	
43	BM__IU	Technical Electives 2 (**)	Môn tự chọn chuyên ngành 2	Tự chọn	4	3	1	
44	BM__IU	Technical Electives 3 (**)	Môn tự chọn chuyên ngành 3	Tự chọn	4	3	1	
45	BM__IU	Technical Electives 4 (**)	Môn tự chọn chuyên ngành 4	Tự chọn	4	3	1	
46	BM__IU	Technical Electives 5 (**)	Môn tự chọn chuyên ngành 5	Tự chọn	4	3	1	
47	BM__IU	Technical Electives 6 (**)	Môn tự chọn chuyên ngành 6	Tự chọn	4	3	1	

48	BM__IU	Technical Electives 7 (**)	Môn tự chọn chuyên ngành 7	Tự chọn	3	3	0	
49	BM__IU	Technical Electives 8 (**)	Môn tự chọn chuyên ngành 8	Tự chọn	3	3	0	
IV	Kiến thức bổ trợ			Tự chọn	3	3	0	
50	____IU	Free Elective I	Môn tự chọn	Tự chọn	3	3	0	
V	Thực tập, khóa luận/luận văn tốt nghiệp			Bắt buộc	18	0	18	
51	BM050IU	Practice 1: Reverse Engineer	Thực hành 1: Kỹ thuật đảo ngược	Bắt buộc	1	0	1	
52	BM067IU	Practice 2: Animal Cells and Microbiologies	Thực hành 2: Tế bào động vật và vi sinh vật	Bắt buộc	1	0	1	
53	BM052IU	Practice 3: Electronic Design	Thực hành 3: Thiết kế mạch điện	Bắt buộc	1	0	1	
54	BM017IU	Medical Design	Thiết kế y tế	Bắt buộc	1	0	1	
55	BM069IU	Projec 2	Đồ án 2	Bắt buộc	1	0	1	
56	BM020IU	Internship	Thực tập	Bắt buộc	3	0	3	
57	BM004IU	Thesis	Luận văn tốt nghiệp	Bắt buộc	10	0	10	
	Tổng số (tín chỉ)				151	115	36	

Ghi chú:

- (*): Môn giáo dục thể chất là 6 tín chỉ (2 môn x 3 tín chỉ), tuy nhiên số tín chỉ này không được tính vào tổng số tín chỉ tích lũy của chương trình đào tạo.
- (**): Xem danh sách các môn tự chọn chuyên ngành (Bảng 5.2).
- (***): Môn học bất kỳ có tín chỉ trong chương trình đào tạo của trường ĐH Quốc Tế.
- (#): Sinh viên cần đạt chuẩn đầu ra trình độ tiếng Anh mới được đăng kí Thesis.
- Số tín chỉ các môn toán-khoa học cơ bản là 35, môn kỹ thuật là 90, môn khác là 26 (theo yêu cầu của ABET, số tín chỉ tối thiểu của các môn toán-khoa học cơ bản và kỹ thuật lần lượt là 30 và 45).

Bảng 7. Danh sách môn học tự chọn chuyên ngành (Technical Electives)

Stt	Mã MH	Tên môn học (MH)		Tín chỉ		
		Tiếng Anh	Tiếng Việt	Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm
1	BM010IU	Biosignal Processing	Xử lý tín hiệu Y Sinh	4	3	1

2	BM033IU	Information Technology in the Health Care System	Công nghệ thông tin trong hệ thống chăm sóc sức khỏe	3	3	0
3	BM058IU	Biomedical Image Processing	Xử lý hình ảnh Y Sinh	4	3	1
4	BM060IU	Digital Systems	Hệ thống số	3	3	0
5	BM061IU	Digital Systems Laboratory	Thực hành Hệ thống số	1	0	1
6	BM062IU	Micro-electronic Devices	Thiết bị vi điện tử	3	3	0
7	BM063IU	Micro-electronic Devices Laboratory	Thực hành thiết bị vi điện tử	1	0	1
8	BM070IU	Information Technology in the Health Care System Laboratory	Thực hành công nghệ thông tin trong hệ thống chăm sóc sức khỏe	1	0	1
9	BM071IU	Computer Aided Diagnosis	Chẩn đoán hỗ trợ bằng máy tính	4	3	1
10	BM075IU	Biomedical Photonics	Quang học Y Sinh	3	3	0
11	BM076IU	Biomedical Photonics Lab	Thực hành Quang học Y Sinh	1	0	1
12	BM080IU	Nanotechnology for Drug Delivery Systems	Công nghệ nano cho hệ vận chuyển thuốc	4	3	1
13	BM083IU	Applications of Biomaterials in Regenerative Medicine	Ứng dụng vật liệu sinh học trong y học tái tạo	4	3	1
14	BM085IU	Characterization and Properties of Biomaterials	Đặc tính và tính chất của vật liệu sinh học	4	3	1
15	BM086IU	Methods and Process in Fabrication of Scaffold	Phương pháp và quy trình xây dựng scaffold	4	3	1
16	BM089IU	Electronic Devices for Biomedical Design	Thiết bị điện tử cho Kỹ thuật Y Sinh	4	3	1
17	BM092IU	Cell/Tissue – Biomaterial interaction	Tương tác sinh học mô/ tế bào	4	3	1
18	BM094IU	Principle of clinical tests and instrumentation	Nguyên lý và thiết bị xét nghiệm lâm sàng	4	3	1
19	BM095IU	Medical Instrumentation	Thiết bị Y tế	4	3	1
20	BM099IU	Stem Cell Technology	Công nghệ Tế bào gốc	4	3	1
21	BM100IU	Principles of Neuroengineering	Nguyên Lý Kỹ thuật Thần kinh	4	3	1
22	BM103IU	Advanced Artificial	Trí tuệ nhân tạo nâng	4	3	1

		Intelligence for Healthcare	cao trong y tế			
23	BM104IU	Microfluidics	Vì lưu	4	3	1
24	BM105IU	Biosensors	Cảm biến sinh học	4	3	1
25	BM106IU	Rehabilitation Engineering	Kỹ thuật phục hồi chức năng	4	3	1
26	BM107IU	Information system analysis and design	Phân tích và thiết kế hệ thống thông tin	4	3	1
27	BM108IU	Medical Bioinformatics	Tin sinh học y khoa	4	3	1
28	BM109IU	Medical software engineering	Kỹ thuật phần mềm y tế	4	3	1
29	BM110IU	Object-oriented programming	Lập trình hướng đối tượng	4	3	1

10. Dự kiến kế hoạch giảng dạy

Tùy vào trình độ tiếng Anh của người học đạt hoặc chưa đạt trình độ AE1, kế hoạch giảng dạy các môn học được cụ thể tương ứng được trình bày trong các Bảng 8, và Bảng 9 (tham khảo).

Bảng 8. Kế hoạch giảng dạy theo từng học kỳ đối với người học đạt trình độ tiếng Anh tốt (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: 19(16)*)	EN007IU	Writing AE1	Tiếng Anh học thuật 1 - Viết	Bắt buộc	2	2	0	Không
	EN008IU	Listening AE1	Tiếng Anh học thuật 1 – Nghe	Bắt buộc	2	2	0	Không
	PH013IU	Physics 1	Lý 1	Bắt buộc	2	2	0	Không
	MA001IU	Calculus 1	Toán 1	Bắt buộc	4	4	0	Không
	PE021IU	General Law	Pháp luật đại cương	Bắt buộc	3	3	0	Không
	PE015IU	Philosophy of Marxism and Leninism	Triết học Mác-Lênin	Bắt buộc	3	3	0	Không
	PT001IU	Physical Training 1	Giáo dục thể chất 1	Bắt buộc	3(0)*	0	3	Không
Tổng cộng					19(16)*	16	3(0)*	
II (tổng tín chỉ: 21(18)*)	EN011IU	Writing AE2	Tiếng Anh học thuật 2 - Viết	Bắt buộc	2	2	0	Không
	EN012IU	Speaking AE2	Tiếng Anh học thuật 2 – Nói	Bắt buộc	2	2	0	Không
	PH014IU	Physics 2	Lý 2	Bắt buộc	2	2	0	Không
	MA003IU	Calculus 2	Toán 2	Bắt buộc	4	4	0	Không
	PE022IU	Engineering Ethics and Critical Thinking	Đạo đức Kỹ thuật và Tư duy phản biện	Bắt buộc	3	3	0	Không
	PE017IU	Scientific socialism	Chủ nghĩa Xã hội khoa học	Bắt buộc	2	2	0	Không
	BM111IU	Introduction to BME	Giới thiệu về Kỹ thuật Y Sinh	Bắt buộc	3	3	0	Không
	PT002IU	Physical Training 2	Giáo dục thể chất 2	Bắt buộc	3(0)*	0	3	Không
Tổng cộng					21(18)*	18	3(0)*	
Hè năm 1 (tổng tín chỉ: 06)	PE018IU	History of Vietnamese Communist Party	Lịch sử Đảng Cộng sản Việt Nam	Bắt buộc	2	2	0	Không
	PE019IU	Ho Chi Minh's Thoughts	Tư tưởng Hồ Chí Minh	Bắt buộc	2	2	0	Không

	PE016IU	Political economics of Marxism and Leninism	Kinh tế chính trị Mác-Lênin	Bắt buộc	2	2	0	SH: PE015IU , Philosophy of Marxism and Leninism
Tổng cộng					6	6	0	
III (tổng tín chỉ: 21)	MA023IU	Calculus 3	Toán 3	Bắt buộc	4	4	0	Không
	CH011IU	Chemistry for Engineers	Hóa học cho kỹ sư	Bắt buộc	3	3	0	SH: CH012IU , Chemistry Laboratory
	CH012IU	Chemistry Laboratory	Thực hành hóa học	Bắt buộc	1	0	1	SH: CH011IU, Chemistry for Engineers
	BM090IU	Biology for BME	Sinh học cho Kỹ thuật Y Sinh	Bắt buộc	4	3	1	Không
	BM005IU	Statistics for health science	Thống kê cho khoa học sức khỏe	Bắt buộc	3	3	0	Không
	BM064IU	Applied Informatics	Tin học ứng dụng	Bắt buộc	4	3	1	Không
	BM050IU	Practice 1: Reverse Engineer	Thực hành 1: Kỹ thuật đảo ngược	Bắt buộc	1	0	1	Không
	BM067IU	Practice 2: Animal Cells and Microbiologies	Thực hành 2: Tế bào động vật và vi sinh vật	Bắt buộc	1	0	1	HT: BM050IU , Laboratory 1A- Biomedical Instrumentations
Tổng cộng					21	16	5	
IV (tổng tín chỉ: 20)	MA024IU	Differential Equations	Phương trình vi phân	Bắt buộc	4	3	1	Không
	CH014IU	Chemistry for BME	Hóa học cho Kỹ thuật Y Sinh	Bắt buộc	3	3	0	Không
	BM098IU	Chemistry for BME Laboratory	Thực hành Hóa học cho Kỹ thuật Y Sinh	Bắt buộc	1	0	1	Không
	BM082IU	Biomaterials	Vật liệu sinh học	Bắt buộc	4	3	1	Không
	BM091IU	Human Anatomy and Physiology	Giải phẫu và sinh lý người	Bắt buộc	3	3	0	TQ: BM090IU , Biology for BME
	BM053IU	Principles of Electricity in Biomedical Engineering	Nguyên lý điện trong Kỹ Thuật Y Sinh	Bắt buộc	3	3	0	HT: MA001IU , Calculus 1
	BM054IU	Principles of Electricity in	Thực hành Nguyên lý điện	Bắt buộc	1	0	1	HT: MA001IU ,

		Biomedical Engineering Lab	trong Kỹ Thuật Y Sinh					Calculus 1
	BM052IU	Practice 3: Electronic Design	Thực hành 3: Thiết kế mạch điện	Bắt buộc	1	0	1	Không
Tổng cộng					20	15	5	
Hệ năm 2 (tổng tín chỉ: 0)	MP001IU	Military Training	Giáo Dục Quốc Phòng	Bắt buộc	0	0	0	Không
Tổng cộng					0	0	0	
V (tổng tín chỉ: 15)	BM096IU	AI for Healthcare	Trí tuệ nhân tạo trong y tế	Bắt buộc	3	3	0	Không
	BM101IU	Mechanical design and manufacturing processes in biomedical engineering	Phương pháp thiết kế và chế tạo cơ khí trong kỹ thuật y sinh	Bắt buộc	2	2	0	Không
	BM102IU	Mechanical design and manufacturing processes in biomedical engineering Lab	Thực hành thiết kế và chế tạo cơ khí trong kỹ thuật y sinh	Bắt buộc	2	0	2	Không
	BM011IU	Engineering Challenges in Medicine I	Thách thức kỹ thuật trong Y khoa 1	Bắt buộc	3	3	0	Không
	BM__IU	Technical Electives 1 (**)	Môn tự chọn chuyên ngành 1	Tự chọn	4	3	1	Không
	BM017IU	Medical Design	Thiết kế y tế	Bắt buộc	1	0	1	Không
Tổng cộng					15	11	4	
VI (tổng tín chỉ: 16)	BM030IU	Machine Design	Thiết kế máy cơ khí	Bắt buộc	3	3	0	Không
	BM__IU	Technical Electives 2 (**)	Môn tự chọn chuyên ngành 2	Tự chọn	4	3	1	Không
	BM__IU	Technical Electives 3 (**)	Môn tự chọn chuyên ngành 3	Tự chọn	4	3	1	Không
	BM__IU	Technical Electives 4 (**)	Môn tự chọn chuyên ngành 4	Tự chọn	4	3	1	Không
	BM068IU	Project 1	Đề án 1	Bắt buộc	1	0	1	Không
Tổng cộng					16	12	4	
Hệ năm 3 (tổng tín chỉ: 3)	BM020IU	Internship	Thực tập	Bắt buộc	3	0	3	Không

Tổng cộng					3	0	3	
VII (tổng tín chỉ: 15)	BM013IU	Entrepreneurship in Biomedical Engineering	Kinh thầu trong Kỹ thuật Y Sinh	Bắt buộc	3	3	0	Không
	BM__IU	Technical Electives 5 (**)	Môn tự chọn chuyên ngành 5	Tự chọn	4	3	1	Không
	BM__IU	Technical Electives 6 (**)	Môn tự chọn chuyên ngành 6	Tự chọn	4	3	1	Không
	BM069IU	Projec 2	Đồ án 2	Bắt buộc	1	0	1	Không
	IU	Free Elective I	Môn tự chọn	Tự chọn	3	3		Không
Tổng cộng					15	12	3	
VIII (tổng tín chỉ: 12)	BM009IU	BME Capstone Design	Thiết kế thương đỉnh trong Kỹ thuật Y Sinh	Bắt buộc	4	3	1	Không
	BM__IU	Technical Electives 7 (**)	Môn tự chọn chuyên ngành 7	Tự chọn	4	3	1	Không
	BM__IU	Technical Electives 8 (**)	Môn tự chọn chuyên ngành 8	Tự chọn	3	3	0	Không
	BM003IU	Pre-Thesis	Đồ án chuẩn bị Luận văn tốt nghiệp	Bắt buộc	1	0	1	Không
Tổng cộng					12	9	3	
IX (tổng tín chỉ: 10)	BM004IU	Thesis	Luận văn tốt nghiệp	Bắt buộc	10	0	10	Không
Tổng cộng					10	0	10	
	Tổng				151	115	36	

Bảng 9. Kế hoạch giảng dạy theo từng học kỳ đối với người học đạt trình độ tiếng Anh kém (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: 12(9)*)	MA001IU	Calculus 1	Toán 1	Bắt buộc	4	4	0	Không
	PH013IU	Physics 1	Lý 1	Bắt buộc	2	2	0	Không
	PE015IU	Philosophy of Marxism and Leninism	Triết học Mác-Lênin	Bắt buộc	3	3	0	Không
	PT001IU	Physical Training 1	Giáo dục thể chất 1	Bắt buộc	3(0)*	0	3	Không
Tổng cộng					12(9)*	9	3(0)*	
II (tổng tín chỉ: 15(12)*)	MA003IU	Calculus 2	Toán 2	Bắt buộc	4	4	0	Không
	PE022IU	Engineering Ethics and Critical Thinking	Đạo đức Kỹ thuật và Tư duy phản biện	Bắt buộc	3	3	0	Không
	PE017IU	Scientific socialism	Chủ nghĩa Xã hội khoa học	Bắt buộc	2	2	0	Không
	BM111IU	Introduction to BME	Giới thiệu về Kỹ Thuật Y Sinh	Bắt buộc	3	3	0	Không
	PT002IU	Physical Training 2	Giáo dục thể chất 2	Bắt buộc	3(0)*	0	3	Không
Tổng cộng					15(12)*	15	3(0)*	
Hè năm 1 (tổng tín chỉ: 06)	PE018IU	History of Vietnamese Communist Party	Lịch sử Đảng Cộng sản Việt Nam	Bắt buộc	2	2	0	Không
	PE019IU	Ho Chi Minh's Thoughts	Tư tưởng Hồ Chí Minh	Bắt buộc	2	2	0	Không
	PE016IU	Political economics of Marxism and Leninism	Kinh tế chính trị Mác-Lênin	Bắt buộc	2	2	0	SH: PE015IU , Philosophy of Marxism and Leninism
Tổng cộng					6	6	0	
III (tổng tín chỉ: 15)	EN007IU	Writing AE1	Tiếng Anh học thuật 1 - Viết	Bắt buộc	2	2	0	Không
	EN008IU	Listening AE1	Tiếng Anh học thuật 1 – Nghe	Bắt buộc	2	2	0	Không

	MA023IU	Calculus 3	Toán 3	Bắt buộc	4	4	0	Không
	PH014IU	Physics 2	Lý 2	Bắt buộc	2	2	0	Không
	BM090IU	Biology for BME	Sinh học cho Kỹ Thuật Y Sinh	Bắt buộc	4	3	1	Không
	BM050IU	Practice 1: Reverse Engineer	Thực hành 1: Kỹ thuật đảo ngược	Bắt buộc	1	0	1	Không
Tổng cộng					15	13	2	
IV (tổng tín chỉ: 20)	EN011IU	Writing AE2	Tiếng Anh học thuật 2 - Viết	Bắt buộc	2	2	0	Không
	EN012IU	Speaking AE2	Tiếng Anh học thuật 2 – Nói	Bắt buộc	2	2	0	Không
	MA024IU	Differential Equations	Phương trình vi phân	Bắt buộc	4	3	1	Không
	CH011IU	Chemistry for Engineers	Hóa học cho kỹ sư	Bắt buộc	3	3	0	SH: CH012IU , Chemistry Laboratory
	CH012IU	Chemistry Laboratory	Thực hành hóa học	Bắt buộc	1	0	1	SH: CH011IU, Chemistry for Engineers
	BM005IU	Statistics for health science	Thống kê cho khoa học sức khỏe	Bắt buộc	3	3	0	Không
	BM053IU	Principles of Electricity in Biomedical Engineering	Nguyên lý điện trong Kỹ Thuật Y Sinh	Bắt buộc	3	3	0	HT: MA001IU , Calculus 1
	BM054IU	Principles of Electricity in Biomedical Engineering Lab	Thực hành Nguyên lý điện trong Kỹ Thuật Y Sinh	Bắt buộc	1	0	1	HT: MA001IU , Calculus 1
	BM067IU	Practice 2: Animal Cells and Microbiologies	Thực hành 2: Tế bào động vật và vi sinh vật	Bắt buộc	1	0	1	HT: BM050IU , Lab 1A- Biomedical Instrumentations
Tổng cộng					20	15	5	
Hè năm 2 (tổng tín chỉ: 0)	MP001IU	Military Training	Giáo Dục Quốc Phòng	Bắt buộc	0	0	0	Không
Tổng cộng					0	0	0	

V (tổng tín chỉ: 20)	CH014IU	Chemistry for BME	Hóa học cho Kỹ thuật Y Sinh	Bắt buộc	3	3	0	Không
	BM098IU	Chemistry for BME Laboratory	Thực hành Hóa học cho Kỹ thuật Y Sinh	Bắt buộc	1	0	1	Không
	BM082IU	Biomaterials	Vật liệu sinh học	Bắt buộc	4	3	1	Không
	BM091IU	Human Anatomy and Physiology	Giải phẫu và sinh lý người	Bắt buộc	3	3	0	TQ: BM090IU , Biology for BME
	BM064IU	Applied Informatics	Tin học ứng dụng	Bắt buộc	4	3	1	Không
	BM__IU	Technical Electives 1 (**)	Môn tự chọn chuyên ngành 1	Tự chọn	4	3	1	Không
	BM052IU	Practice 3: Electronic Design	Thực hành 3: Thiết kế mạch điện	Bắt buộc	1	0	1	HT: BM067IU , Lab 1B- Invitro Studies
Tổng cộng					20	15	5	
VI (tổng tín chỉ: 19)	BM096IU	AI for Healthcare	Trí tuệ nhân tạo trong y tế	Bắt buộc	3	3	0	Không
	BM101IU	Mechanical design and manufacturing processes in biomedical engineering	Phương pháp thiết kế và chế tạo cơ khí trong kỹ thuật y sinh	Bắt buộc	2	2	0	Không
	BM102IU	Mechanical design and manufacturing processes in biomedical engineering Lab	Thực hành thiết kế và chế tạo cơ khí trong kỹ thuật y sinh	Bắt buộc	2	0	2	Không
	BM011IU	Engineering Challenges in Medicine I	Thách thức kỹ thuật trong Y khoa 1	Bắt buộc	3	3	0	Không
	BM__IU	Technical Electives 2 (**)	Môn tự chọn chuyên ngành 2	Tự chọn	4	3	1	Không
	BM017IU	Medical Design	Thiết kế y tế	Bắt buộc	1	0	1	HT: BM052IU , Design 2A- Electronic Design
	BM068IU	Project 1	Đồ án 1	Bắt buộc	1	0	1	Không
	PE021IU	General Law	Pháp luật đại cương	Bắt buộc	3	3	0	Không
Tổng cộng					19	14	5	
Hè năm 3 (tổng tín chỉ: 3)	BM020IU	Internship	Thực tập	Bắt buộc	3	0	3	Không
Tổng cộng					3	0	3	

VII (tổng tín chỉ: 19)	BM030IU	Machine Design	Thiết kế máy cơ khí	Bắt buộc	3	3	0	Không
	BM__IU	Technical Electives 3 (**)	Môn tự chọn chuyên ngành 3	Tự chọn	4	3	1	Không
	BM__IU	Technical Electives 4 (**)	Môn tự chọn chuyên ngành 4	Tự chọn	4	3	1	Không
	BM__IU	Technical Electives 5 (**)	Môn tự chọn chuyên ngành 5	Tự chọn	4	3	1	Không
	BM069IU	Projec 2	Đồ án 2	Bắt buộc	1	0	1	Không
	IU	Free Elective I	Môn tự chọn	Tự chọn	3	3	0	Không
Tổng cộng					19	15	4	
VIII (tổng tín chỉ: 18)	BM009IU	BME Capstone Design	Thiết kế thượng đỉnh trong Kỹ thuật Y Sinh	Bắt buộc	4	3	1	Không
	BM013IU	Entrepreneurship in Biomedical Engineering	Kinh doanh trong Kỹ thuật Y Sinh	Bắt buộc	3	3	0	Không
	BM__IU	Technical Electives 6 (**)	Môn tự chọn chuyên ngành 6	Tự chọn	4	3	1	Không
	BM__IU	Technical Electives 7 (**)	Môn tự chọn chuyên ngành 7	Tự chọn	4	3	1	Không
	BM__IU	Technical Electives 8 (**)	Môn tự chọn chuyên ngành 8	Tự chọn	3	3	0	Không
	BM003IU	Pre-Thesis	Đồ án chuẩn bị Luận văn tốt nghiệp	Bắt buộc	1	0	1	Không
Tổng cộng					18	14	4	
IX (tổng tín chỉ: 10)	BM004IU	Thesis	Luận văn tốt nghiệp	Bắt buộc	10	0	10	Không
Tổng cộng					10	0	10	
Tổng					151	115	36	

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 Kỹ thuật Y Sinh được trình bày như Bảng 10.

Bảng 10. Đóng góp của các môn học vào CDR của CTĐT

Học kỳ	Mã môn học	Tên môn học ⁽⁴⁾	Chuẩn đầu ra của CTĐT ⁽⁵⁾						
			1		2		3		4
			PLO1	PLO6	PLO4	PLO7	PLO3	PLO5	PLO2
1	PE021IU	General Law						x	
1	MA001IU	Calculus 1	x						
1	PH013IU	Physics 1	x						
1	EN007IU	Writing AE1							
1	EN008IU	Listening AE1						x	
1	EN011IU	Writing AE2							
1	EN012IU	Speaking AE2						x	
2	MA003IU	Calculus 2	x						
2	PH014IU	Physics 2	x						
2	PE022IU	Engineering Ethics and Critical Thinking							
2	BM111IU	Introduction to BME							
3	BM050IU	Practice 1: Reverse Engineering				x			
3	CH011IU	Chemistry for Engineers	x						
3	CH012IU	Chemistry Lab	x	x					
3	BM090IU	Biology for BME	x						
3	BM067IU	Practice 2: Animal Cell and Microbiologies		x					
3	MA023IU	Calculus 3	x						
3	CH014IU	Chemistry for BME	x				x		x
3	BM098IU	Chemistry for BME Laboratory		x	x				
3	BM064IU	Applied Informatics	x	x			x		x
3	BM005IU	Statistics for Health Science		x	x				
4	BM053IU	Principles of Electricity in BME	x						
4	BM054IU	Principles of Electricity in BME Laboratory		x	x				
4	BM091IU	Human Anatomy and Physiology	x		x				
4	BM052IU	Practice 3: Electronic Design		x	x				
4	MA024IU	Differential Equations	x						

4	BM082IU	Biomaterials	x	x			x		x
4-8	BM010IU	Biosignal Processing	x	x			x		x
4-8	BM060IU	Digital Systems	x	x			x		x
4-8	BM061IU	Digital Systems Laboratory	x	x	x				
4-8	BM062IU	Micro-electronic Devices		x			x	x	x
4-8	BM063IU	Micro-electronic Devices Lab			x				
4-8	BM089IU	Electronic Devices for Biomedical Design	x	x	x		x		x
4-8	BM033IU	Information Technology in the Health Care System		x	x		x		x
4-8	BM070IU	Information Technology in the Health Care System Lab		x	x				
4-8	BM075IU	Biomedical Photonics	x	x	x		x		x
4-8	BM076IU	Biomedical Photonics Lab		x			x	x	x
4-8	BM058IU	Biomedical Image Processing		x			x		x
4-8	BM073IU	Medical Imaging	x	x			x		x
4-8	BM074IU	Brain - Computer Interface		x			x		x
4-8	BM071IU	Computer Aided Diagnosis	x	x	x				
4-8	BM077IU	Pharmaceutical Engineering 1		x			x		x
4-8	BM078IU	Pharmaceutical Engineering 2	x	x			x		x
4-8	BM079IU	Principle of Pharmacokinetics	x	x					
4-8	BM080IU	Nanotechnology for Drug Delivery Systems		x	x		x		x
4-8	BM081IU	Drug Delivery Systems	x	x			x		x
4-8	BM083IU	Applications of Biomaterials in Regenerative Medicine		x					
4-8	BM084IU	Biocompatibility and Biodegradation of Biomaterials	x	x			x		x
4-8	BM085IU	Characterization and Properties of Biomaterials	x	x			x		x
4-8	BM086IU	Methods and	x	x			x		x

		Process in Fabrication of Scaffold							
4-8	BM092IU	Cell/Tissue – Biomaterial interaction	x	x			x		x
4-8	BM093IU	Tissue engineering I					x		x
4-8	BM094IU	Principle of clinical tests and instrumentation	x	x	x		x		x
4-8	BM106IU	Rehabilitation Engineering	x		x		x	x	x
4-8	BM107IU	Information system analysis and design	x	x		x			x
4-8	BM108IU	Medical Bioinformatics	x	x		x			x
4-8	BM109IU	Medical software engineering	x	x		x			x
4-8	BM110IU	Object-oriented programming	x		x		x		x
5	BM011IU	Engineering Challenges in Medicine I	x		x				
5	BM101IU	Mechanical design and manufacturing processes in BME	x			x		x	
5	BM102IU	Mechanical design and manufacturing processes in BME Lab				x			x
5	BM068IU	Project 1	x			x			
6	BM017IU	Medical Design	x	x			x	x	x
6	BM030IU	Machine Design	x				x		x
6	BM069IU	Project 2	x		x	x			
6-8	BM020IU	Internship			x	x			
7	BM013IU	Entrepreneurship in BME			x	x		x	
8	BM009IU	BME Capstone Design	x		x	x	x	x	x
8	BM003IU	Pre-Thesis	x	x		x			
9	BM004IU	Thesis	x	x	x	x			

12. Mô tả vắn tắt nội dung và khối lượng các môn học

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)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: The course provides students with basic knowledge of Marxism-Leninism.

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)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học song song PE015IU - Philosophy of Marxism and Leninism
- Mô tả nội dung môn học: The program content includes 6 chapters: In which chapter 1 discusses the subject, research method and function of Marxist-Leninist political economy. From chapter 2 to chapter 6, the core content of Marxist-Leninist political economy is presented according to the objectives of the subject. Specifically, issues such as: Goods, markets and the role of subjects in the market economy; surplus value production in the socialist-oriented market economy and economic interest relations in Vietnam, 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)
- Môn học trước/môn học song hành/ môn học tiên quyết: 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)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước 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)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước PE017IU - Scientific socialism
- Mô tả nội dung môn học: The subject equips students with basic knowledge about: Objects, research methods and significance of studying Ho Chi Minh's ideology, about the foundation, process of formation and development of Ho Chi Minh's ideology, about national independence and socialism, about the Communist Party and the State of Vietnam, about national unity and international solidarity, about culture, ethics and people.

12.6. General Law, Pháp luật đại cương

- Mã môn học: PE021IU
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: The course will introduce students to Vietnamese legal systems.

In particular, students will understand their rights and obligations in the Constitution, Criminal law, administrative law, civil law, labor law and enterprise law of Vietnam. From this, students will raise awareness towards their responsibility to ensure justice, including ending corruption, in society.

12.7. Engineering Ethics and Critical Thinking, Đạo đức Kỹ thuật và Tư duy phản biện

- Mã môn học: PE022IU
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course is designed to introduce engineering students to the concepts, theory and practice of engineering ethics. It will allow students to explore the relationship between ethics and engineering, and apply classical moral theory and decision making for engineering issues encountered in academic and professional careers. This course also provides students with the professional skills: sharing ideas and concepts, team working, and presentation skills.

12.8. Writing AE1, Tiếng Anh học thuật 1 - Viết

- Mã môn học: EN007IU
- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- 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 description, cause-effect, comparison-contrast, argumentative, and paraphrase-sum and paraphrase-summary essays. 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, proofreading, documentation and editing, this course prepares the students for research paper writing in the next level of AE2 writing.

12.9. Listening AE1, Tiếng Anh học thuật 1 - Nghe

- Mã môn học: EN008IU
- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- 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 AE2, Tiếng Anh học thuật 2 - Viết

- Mã môn học: EN011IU
- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- 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. Students are required to work on the tasks selected to maximize their exposure to written communication and are expected to become competent writers in the particular genre: the research paper. As writing is part of an integrated skill of reading and writing where reading serves as input to trigger writing, this course is designed.

12.11. Speaking AE2, Tiếng Anh học thuật 2 - Nói

- Mã môn học: EN012IU
- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- 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. However, this may be seen as a nerve-racking task, especially when presented in a foreign language. Speaking AE2 provides the students with the knowledge and skills needed to deliver effective presentations. To do this, the course covers many aspects of giving presentation: preparing and planning, using the appropriate language, applying effective visual aids, building up confidence, performing body language, dealing with questions and responding, etc.

12.12. Calculus 1, Toán 1

- Mã môn học: MA001IU
- Số tín chỉ: 4 tín chỉ (4 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: Functions; Limits; Continuity; Derivatives, Differentiation, Derivatives of Basic Elementary Functions, Differentiation Rules; Applications of Differentiation: l'Hôpital's Rule, Optimization, Newton's Method; Anti-derivatives; Indefinite Integrals, Definite Integrals, Fundamental Theorem of Calculus; Techniques of Integration; Improper Integrals; Applications of Integration.

12.13. Calculus 2, Toán 2

- Mã môn học: MA003IU
- Số tín chỉ: 4 tín chỉ (4 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước MA001IU - Calculus 1
- Mô tả nội dung môn học: Sequence and Series; Convergence Tests; Power Series; Taylor and Maclaurin Series; Cartesian Coordinates; Lines, Planes and Surfaces; Derivatives and Integrals of Vector Functions, Arc Length and Curvature, Parametric Surfaces; Functions of Several Variables; Limits, Continuity, Partial Derivatives, Tangent Planes; Gradient Vectors; Extreme; Lagrange Multipliers; Multiple Integrals: Double Integrals, Triple Integrals, Techniques of Integration; Vector Fields, Line Integrals, Surface Integrals.

12.14. Calculus 3, Toán 3

- Mã môn học: MA023IU
- Số tín chỉ: 4 tín chỉ (4 lý thuyết + 0 thực hành)

- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước MA003IU - Calculus 2

- Mô tả nội dung môn học: Complex numbers, complex series, complex functions, complex derivatives; Laplace transform, z-transform, Fourier series, Fourier transform, the inverse transform, transforms of derivatives and integrals, first-order differential equations, second-order differential equations, difference equations, applications to electrical circuits and signal processing.

12.15. Differential Equations, Phương trình vi phân

- Mã môn học: MA024IU

- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)

- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước MA003IU - Calculus 2

- Mô tả nội dung môn học: First-order differential equations, second-order linear differential equations, undetermined coefficients, variation of parameters, applications, higher-order linear differential equations, systems of first-order linear equations, elementary partial differential equations and the method of separation of variables.

12.16. Physics 1, Lý 1

- Mã môn học: PH013IU

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

- Môn học trước/môn học song hành/ môn học tiên quyết: Không

- Mô tả nội dung môn học: An introduction to mechanics including: planar forces, free body diagrams, planar equilibrium of rigid bodies, friction, distributed forces, internal forces, shear force and bending moment diagrams, simple stress and strain and associated material properties, kinematics and kinetic of particles, work and energy, motion of rigid bodies in a plane.

12.17. Physics 2, Lý 2

- Mã môn học: PH014IU

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

- Môn học trước/môn học song hành/ môn học tiên quyết: Không

- Mô tả nội dung môn học: This course provides students with basic knowledge of fluid mechanics; macroscopic description of gases; heat and the first law of thermodynamics; heat engines and the second law of thermodynamics; microscopic description of gases and the kinetic theory of gases.

12.18. Chemistry for Engineers, Hóa học cho kỹ sư

- Mã môn học: CH011IU

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

- Môn học trước/môn học song hành/ môn học tiên quyết: Môn song hành CH012IU - Chemistry Laboratory

- Mô tả nội dung môn học: This one-semester course is designed for engineering students those who are pursuing a non-chemistry engineering degree such as information technology, bio-technology, civil, biomedical, electronic and telecommunication

engineering. The course will introduce the basic principles of chemistry and connect those principles to issues in engineering professions.

12.19. Chemistry Laboratory, Thực hành hóa học

- Mã môn học: CH012IU
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn song hành CH011IU - Chemistry for Engineers
- Mô tả nội dung môn học: Chemistry Laboratory is an accompanied part for the Chemistry for Engineers, which is designed for engineering students those who are pursuing a non-chemistry engineering degree such as information technology, bio- technology, civil, biomedical, electronic and telecommunication engineering.

12.20. Introduction to BME, Giới thiệu về kỹ thuật Y Sinh

- Mã môn học: BM111IU
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course consists of three main parts: (1) fundamental engineering technologies and methodologies, (2) their clinical applications and (3) topics related to the department orientations. In the first part students learn different engineering techniques and methods including mathematical modeling and simulation of a dynamic system, design methodology, geometric optics, kinematics, and statistics. In the second part students learn how these techniques or methods are applied in medical field. Case studies focus on specific organs such as eye, ear, and lung. In each study three aspects are covered: physiological, clinical, and instrumentation aspects. These 2 parts emphasize on the activities of the Medical Instrumentation orientation. In the third part other activities of the Department will be briefly introduced including Signal and Image Processing, Pharmaceutical Engineering and Regenerative Medicine. Besides, a semester long project is assigned. The project requires students to conceive, design and build a working device related to Biomedical Engineering field. This course is accompanied by lab works which introduce students by hands-on ways to topics related to different research orientations of the Department.

12.21. Chemistry for BME, Hóa học cho Kỹ thuật Y Sinh

- Mã môn học: CH014IU
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước CH011IU - Chemistry for Engineers
- Mô tả nội dung môn học: This course is designed for non-chemistry majors, as it is intended for students pursuing a degree in biomedical engineering. The course covers The basic principles of analytical chemistry, introduces modern analytical chemistry and instrumental techniques with emphasis on techniques relevant to analysis in biomedical engineering. Applications of each technique will be discussed.

12.22. Chemistry laboratory for BME, Thực hành Hóa học cho Kỹ thuật Y Sinh

- Mã môn học: BM098IU
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: The course covers the basic principles of analytical chemistry, introduces modern analytical chemistry and instrumental techniques with emphasis on techniques relevant to analysis in biomedical engineering. Applications of each technique will be discussed.

12.23. Biology for BME, Sinh học cho Kỹ Thuật Y Sinh

- Mã môn học: BM090IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course covers basic concepts and universal principles of biological molecules, cells, genetics, and biotechnology. The laboratory activities are designed to further investigate and illuminate each topic area in BME research settings.

12.24. Principles of Electricity in Biomedical Engineering, Nguyên lý điện trong kỹ thuật y sinh

- Mã môn học: BM053IU
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước MA001IU - Calculus 1
- Mô tả nội dung môn học: In the lecture, students will learn the DC electricity where the sources are constant with respect to time. In this domain, students learn all basic elements such as resistor, Op-Amp, capacitor and inductor as well as common analysis techniques to analyze circuits that contain those elements. With capacitor and inductor, students get familiar with the time variable notion. The lecture also covers the AC circuit where the sources vary periodically with respect to time. These notions are particularly useful for students in BME to understand the origins, generations, conductions and functioning of electrical signals in human physiology. Each lecture includes examples highlighting the specific impacts of electricity and electrical engineering in biomedical engineering.

12.25. Principles of Electricity in Biomedical Engineering Lab, Thực hành nguyên lý điện trong kỹ thuật y sinh

- Mã môn học: BM054IU
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước MA001IU - Calculus 1
- Mô tả nội dung môn học: In the lectures students study common circuit elements such as resistors, capacitors, inductors, and operational amplifiers, and different circuit analysis methods in DC and AC steady state. In the labs, students practice with Bread- board, Power supply, Signal generator, Multi-meter, Oscilloscope, and Electrical elements.

12.26. Machine Design, Thiết kế máy cơ khí

- Mã môn học: BM030IU

- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước PH013IU - Physics 1
- Mô tả nội dung môn học: Introduction to the principles of design and analysis of machines and machine components. Design for functionality, motion, force, strength and reliability. The laboratory experience provides open-ended projects to reinforce the design process.

12.27. Applied Informatics, Tin học ứng dụng

- Mã môn học: BM064IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course focuses on how to apply programming languages to solve engineering problems targeting towards biomedical fields. C-programming language provides students basic programming skills to develop and implement medical devices. MATLAB-programming language supports effective tools for mathematical calculations and graphical visualization of dataset.

12.28. AI for Healthcare, Trí tuệ nhân tạo trong y tế

- Mã môn học: BM096IU
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course provides an introduction to how we apply artificial intelligence in healthcare. Several typical problems of applied artificial intelligence in healthcare are introduced, such as diagnosis/segmentation/abnormality detection in CT, OCT, fundus, endoscope images, detecting diseases by signals, e.g., EEG, blood pressure, heart rate. The course offers artificial intelligence methods that are frequently utilized in healthcare systems, including k-nearest neighbor, support vector machine (SVM), neural network, convolutional neural network, recurrent neural network, generative adversarial network. There are lab activities in which students work on programming to build practical schemes.

12.29. Mechanical design and Manufacturing processes in Biomedical Engineering, Phương pháp thiết kế và chế tạo cơ khí trong kỹ thuật y sinh

- Mã môn học: BM101IU
- Số tín chỉ: 2 tín chỉ (2 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: Introduction to fundamental knowledge of mechanical design and manufacturing processes in biomedical engineering.

12.30. Mechanical design and Manufacturing processes in Biomedical Engineering Lab, Thực hành thiết kế và chế tạo cơ khí trong kỹ thuật y sinh

- Mã môn học: BM102IU
- Số tín chỉ: 2 tín chỉ (0 lý thuyết + 2 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: Learn skills of mechanical design and manufacturing processes

in biomedical engineering.

12.31. Statistics for health sciences, Thống kê trong khoa học sức khỏe

- Mã môn học: BM005IU
- Số tín chỉ: 3 tín chỉ (2 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước BM007IU - Introduction to Biomedical Engineering.
- Mô tả nội dung môn học: This course focuses on intermediate statistical methods which are often used in bioengineering and biomedicine. The course emphasizes the appropriateness, practical application and interpretation of a variety of analytic methods. Working with SPSS (Statistical package for the social sciences) supports students to deal with practical problems in statistical analysis.

12.32. Human Anatomy and Physiology, Giải phẫu và sinh lý người

- Mã môn học: BM091IU
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn tiên quyết BM090IU - Biology for BME
- Mô tả nội dung môn học: This subject explains the physical and chemical factors that are responsible for the origin, development, and progression of life. This subject explains the specific characteristics and mechanisms of the human body that make it a living being. This subject explains the functions of tissues, organs and systems with the regulation and control mechanisms of the body.

12.33. Biomaterials, Vật liệu sinh học

- Mã môn học: BM082IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: An engineer of tissue engineering major should understand biomaterials, and its surface modification for specific applications. Also, an engineer must understand how to choose materials and how to design a scaffold for a specific implantation zone.

12.34. BME Capstone Design Course, Thiết kế thượng đỉnh trong Kỹ thuật Y Sinh

- Mã môn học: BM009IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước BM007IU - Introduction to Biomedical Engineering
- Mô tả nội dung môn học: The course has three components: class lectures, laboratories, and projects. The lectures are built upon all previous BME coursework. They emphasize on the design principles of medical instrumentation and biomedical signal analysis. Topics include the origin of bioelectric potentials; the characteristics of various biological signals, transducers, instrumentation amplifiers, analogue and digital devices; and computer interfaces. Labs include the design, construction and testing of electrical circuits and computer interfaces to measure diverse biological signals. The semester- long group

project consists of designing an instrument.

12.35. Engineering Challenges in Medicine I, Thách thức kỹ thuật trong Y khoa 1

- Mã môn học: BM011IU
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước BM091IU - Human Anatomy and Physiology
- Mô tả nội dung môn học: Engineering Challenges in Medicine (ECM) exposes students to technical issues encountered by physicians in hospitals that prevent them to advance in medical diagnosis and treatment. In this course, physician instructors will demonstrate pathophysiology, advantages and disadvantages of current medical management of common diseases, and ask students to propose their own solutions to overcome these challenges. ECM I covers basic principles of diagnostic imaging, electrocardiography and common diseases of the musculoskeletal, neurological, and cardiovascular systems.

12.36. Entrepreneurship in Biomedical Engineering, Kinh doanh trong Kỹ thuật Y Sinh

- Mã môn học: BM013IU
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước EN011IU - Writing AE2
- Mô tả nội dung môn học: This course introduces various stages of the entrepreneurial process and provides knowledge of start-up development. Students will expose to this process by working on some key steps in establishing a start-up for a biomedical product or service. The main goal of the course is to prepare students with an entrepreneurial mindset so that they realize the importance of developing a biomedical product or service that meets the customer demand and can be commercialized.

12.37. Project 1, Đồ án 1

- Mã môn học: BM068IU
- Số tín chỉ: 1 tín chỉ (1 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước EN011IU - Writing AE2
- Mô tả nội dung môn học: Students will explore a specific topic in the medical fields. Students will learn how to do research through various skills of doing experiments, searching and identifying scientific journals as references related to the experiments from e-library, analyz.

12.38. Pre-thesis, Đồ án chuẩn bị Luận văn tốt nghiệp

- Mã môn học: BM003IU
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước BM068IU - Project 1
- Mô tả nội dung môn học: From previous experience and knowledge, under the potential thesis advisor supervision, the student will focus on a specific research topic to pave the way

and establish a plan for the thesis.

12.39. Practice 1: Reverse Engineering, Thực hành 1: Kỹ thuật đảo ngược

- Mã môn học: BM050IU
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This is the course of general knowledge in medicine and medical instrumentation. Students will learn how to take vital signs, do CPR and some common first aids as well as explore some common medical devices in our department's labs such as ECG, Ultrasound, X ray machine... They learn how to use mechanical tools to open these medical devices, disassemble and reassemble them, explore their working principles and block diagrams. As one of the first courses for BME students, it also covers the soft skills required for presentation, literature searching and report writing.

12.40. Practice 2: Animal Cell and Microbiologies, Thực hành 2: Tế bào động vật và vi sinh vật

- Mã môn học: BM067IU
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước BM050IU - Practice 1: Reverse Engineering
- Mô tả nội dung môn học: This course introduces students to the essential theory and techniques for working with microorganism and animal cells. As these are among the most important model systems in biomedical engineering, this knowledge will enable students to conduct engineering and scientific projects using these systems. If students would like to further study these topics, they can consider taking courses such as Clinical Test, Tissue Engineering, Cell/tissue - Biomaterial Interaction and Biomaterials.

12.41. Practice 3: Electronic Design, Thực hành 3: Thiết kế mạch điện

- Mã môn học: BM052IU
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước Practice 2: Animal Cell and Microbiologies
- Mô tả nội dung môn học: Students will study essential skills for medical device design. In the first half of the semester, students will study how to design an electrical schematic and PCB using Orcad. They also have a chance to make their own PCB using tools in our department's labs. Upon finishing the third semester, students can design the electrical part of a medical device.

12.42. Medical Design, Thiết kế y tế

- Mã môn học: BM017IU
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước BM052IU – Practice 3: Electronic Design
- Mô tả nội dung môn học: Students will explore important software used by engineers to build, analyze, and test the engineering design of a medical instrument. In the first half of

the course, students will learn LABVIEW together with medical sensors supported by National Instruments (NI) to develop a prototype of medical devices. In the second half of the course, students will learn SOLIDWORK as a computer-aided design (CAD) tool to help engineers construct a 3-D model of medical devices.

12.43. Project 2, Đồ án 2

- Mã môn học: BM069IU
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước BM017IU – Medical Design
- Mô tả nội dung môn học: Students will do biomedical engineering projects. They will have a chance to apply what they have learned in previous semesters in designing, performing experiments, collecting and analyzing experimental data. In addition, students will improve their presenting, writing skills in a scientific manner.

12.44. Internship, Thực tập

- Mã môn học: BM020IU
- Số tín chỉ: 3 tín chỉ (0 lý thuyết + 3 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: Students will work in either companies, hospitals or research institutions in the country or abroad to acquire practical experiences in the real world.

12.45. Thesis, Luận văn tốt nghiệp

- Mã môn học: BM004IU
- Số tín chỉ: 10 tín chỉ (0 lý thuyết + 10 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước BM003IU - Pre-thesis.
- Mô tả nội dung môn học: Students will carry on to the success of the works planned in the pre-thesis course. The final results will be presented in front of a formal examiner panel.

12.46. Biosignal Processing, Xử lý tín hiệu Y Sinh

- Mã môn học: BM010IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Môn học trước BM064IU - Applied Informatics
- Mô tả nội dung môn học: The course provides students the fundamental knowledge to process and analyze biosignals. The knowledge of Fourier transform, signal sampling, analog to digital conversion, and stochastic signal processing are covered in the class. The course also provides insight to different characteristics of typical biological signals including Electrocardiogram (ECG), Electroencephalogram (EEG), Electromyogram (EMG).

12.47. Information Technology in the Health Care System, Công nghệ thông tin trong hệ thống chăm sóc sức khỏe

- Mã môn học: BM033IU
- Số tín chỉ: 3 tín chỉ (0 lý thuyết + 3 thực hành)

- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course will teach students how to analyze and apply various management programs and technology systems currently available to health care professionals. Lectures and tutorials will offer experiential learning opportunities. The tutorials will introduce the knowledge and software toolsets that will be used by the students to design an original health care delivery system application. Knowledge will include those used by professionals to design information healthcare systems, automated decision support systems and healthcare standards.

12.48. Biomedical Image Processing, Xử lý hình ảnh Y Sinh

- Mã môn học: BM058IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: The goal of this course is to introduce techniques to enhance biomedical images to help physicians in diagnosis and treatment. This subject also introduces the principle of tomography techniques such as X-ray, CT, MRI and PET/CT. Moreover, it provides students essential knowledge of digital image processing including image acquisition, image formation, linear system, low-level image processing, image enhancement in frequency domain, pattern recognition, etc. A series of exercises and labs also provide students practical experience in working with biomedical image data.

12.49. Digital Systems, Hệ thống số

- Mã môn học: BM060IU
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course provides the student to understand about digital systems in order to design digital circuits or systems. This course represents the following parts: Binary arithmetic, Boolean algebra, K-maps, Combinational Logic Circuit, Flip-Flops, Digital Arithmetic, Counters and Registers, Memory Devices, AD- DA Conversions and PLD.

12.50. Digital Systems Laboratory, Thực hành Hệ thống số

- Mã môn học: BM061IU
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course provides the student to understand about digital systems in order to design digital circuits or systems. This course represents the following parts: Binary arithmetic, Boolean algebra, K-maps, Combinational Logic Circuit, Flip-Flops, Digital Arithmetic, Counters and Registers, Memory Devices, AD- DA Conversions and PLD.

12.51. Micro-electronic Devices, Thiết bị vi điện tử

- Mã môn học: BM062IU
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không

- Mô tả nội dung môn học: The course is an introduction to microcontrollers including basic architecture, programming and applications of MCS-51 family and other MCS platforms.

12.52. Micro-electronic Devices Laboratory, Thực hành thiết bị vi điện tử

- Mã môn học: BM063IU

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

- Môn học trước/môn học song hành/ môn học tiên quyết: Không

- Mô tả nội dung môn học: The course the lab session to apply the knowledge learnt in the Micro-electronic Devices class with the focus on basic architecture, programming and applications of MCS-51 family and other MCS platforms.

12.53. Information Technology in the Health Care System Laboratory, Thực hành công nghệ thông tin trong hệ thống chăm sóc sức khỏe

- Mã môn học: BM070IU

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

- Môn học trước/môn học song hành/ môn học tiên quyết: Không

- Mô tả nội dung môn học: This course will teach students how to analyze and apply various management programs and technology systems currently available to health care professionals. Lectures and tutorials will offer experiential learning opportunities. The tutorials will introduce the knowledge and software toolsets that will be used by the students to design an original health care delivery system application. Knowledge will include those used by professionals to design information healthcare systems, automated decision support systems and healthcare standards.

12.54. Computer Aided Diagnosis, Chẩn đoán hỗ trợ bằng máy tính

- Mã môn học: BM071IU

- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)

- Môn học trước/môn học song hành/ môn học tiên quyết: Không

- Mô tả nội dung môn học: This course is an introduction to diagnostic imaging and an overview of how computerized analysis of medical images has been employed to assist physicians in detecting or classifying lesions and screening for differential diagnosis. Topics include typical pathological abnormal patterns of various diagnostic imaging modalities with an emphasis on ECG, Ultrasound, and CT scan. Lab activities focus on interpreting ECG, CT scan and performing an Ultrasound exam.

12.55. Biomedical Photonics, Quang học Y Sinh

- Mã môn học: BM075IU

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

- Môn học trước/môn học song hành/ môn học tiên quyết: Không

- Mô tả nội dung môn học: This course introduces some of the basic concepts of applying light in biomedical applications. This course is especially tailored for engineers who have no prior knowledge in biomedical sciences. The course first introduces some basic concepts in biomedical sciences so that students can be familiar with the techniques and the terminologies used in the field. Subsequently, the course would consider biological tissues

as an optical material with some unique properties different from other conventional material, such as semiconductors, when light interacts with it. Several important research topics including microscopy, optical detection techniques.

12.56. Biomedical Photonics Laboratory, Thực hành Quang học Y Sinh

- Mã môn học: BM076IU
- Số tín chỉ: 1 tín chỉ (0 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course introduces some of the basic concepts of applying light in biomedical applications. This course is especially tailored for engineers who have no prior knowledge in biomedical sciences. The course first introduces some basic concepts in biomedical sciences so that students can be familiar with the techniques and the terminologies used in the field. Subsequently, the course would consider biological tissues as an optical material with some unique properties different from other conventional material, such as semiconductors, when light interacts with it. Several important research topics including microscopy, optical detection techniques, and optical disease detection techniques will be discussed. Engineering students who take.

12.57. Nanotechnology for Drug Delivery Systems, Công nghệ nano cho hệ vận chuyển thuốc

- Mã môn học: BM080IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: Since nanoparticulate drug delivery systems present very small size, they are promising in targeted therapy of diseased tissue, organ and hence, leading to the increased drug concentration at those places through biological barriers to increase the effectiveness of the treatment. The course depicts nanoparticles and technologies applied to targeted drug delivery to diseased cells.

12.58. Applications of Biomaterials in Regenerative Medicine, Ứng dụng vật liệu sinh học trong y học tái tạo

- Mã môn học: BM083IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course is the basis for the student in biomedical engineering. It equips students with the basic knowledge about the types of tissues in the human body. This course will introduce some kinds of tissue in the human body, including: heart, liver, lungs, stomach, eyes, bones, blood vessels, etc.

12.59. Characterization and Properties of Biomaterials, Đặc tính và tính chất của vật liệu sinh học

- Mã môn học: BM085IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This is a course for students majoring in biological materials. It

equips students with the knowledge of how to determine the required properties and characteristics of biomaterials. Case studies and specific applications will be investigated. According to the specific damages to be repaired, the biomaterials must be fabricated to match the required properties and characteristics.

12.60. Methods and Process in Fabrication of Scaffold, Phương pháp và quy trình xây dựng scaffold

- Mã môn học: BM086IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course will introduce students to some common methods to fabricate the biomaterials that are used worldwide. During the course, students will create their own new materials according to their purposes.

12.61. Electronic Devices for Biomedical Design, Thiết bị điện tử cho Kỹ thuật Y Sinh

- Mã môn học: BM089IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: Fundamentals of semiconductor devices and microelectronic circuits, characteristics of p-n, Zener diodes, and analog diode circuits. Principles of MOSFET and BJT operation, biasing, transistor analysis at midband frequencies.

12.62. Cell/Tissue – Biomaterial interaction, Tương tác sinh học mô/ tế bào

- Mã môn học: BM092IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: A crucial concept to understand about the tissue-biomaterial interface is that a lot of things happen there. The environment inside the body is chemically, electrically, and mechanically active, and the interface between an implanted biomaterial and the body is the location of a variety of dynamic biochemical processes and reactions. This course will introduce students to the molecular level events that happen at the tissue-implant interface, explore selected biological and physiological consequences of these events, methods to characterize interaction between cell/tissue and materials and specifically, design novel biomaterials that truly integrate with the body's natural tissues.

12.63. Principle of clinical tests and instrumentation, Nguyên lý và thiết bị xét nghiệm lâm sàng

- Mã môn học: BM094IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: The laboratory plays a crucial role in healthcare because it provides physicians and other health professionals with information to: (1) detect disease or predisposition to disease; (2) confirm or reject a diagnosis; (3) establish prognosis; (4) guide patient management; and (5) monitor efficacy of therapy. Therefore, a fundamental understanding of the principles of laboratory tests and instrumentation used in clinical

laboratories is essential. This course will provide students an overview of medical laboratories, principles of a wide range of analytical tests and instrumentations ranging from haematology to molecular pathology.

12.64. Medical Instrumentation, Thiết bị Y tế

- Mã môn học: BM095IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course covers the basic and advanced principles, concepts, and operations of medical sensors and devices. The origin and nature of measurable physiological signals are studied, including chemical, electrochemical, optical, and electromagnetic signals.

12.65. Stem Cell Technology, Công nghệ Tế bào gốc

- Mã môn học: BM099IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: Stem cells, tissue engineering and regenerative medicine are fast moving fields with vastly transformative implications for the future of health care and capital markets. Stem cells, which located in many tissues and organs in human body, are presented as miracle cells that can do anything. When administered to a patient with some serious diseases they will rebuild the damaged tissues and make the patient recover and live longevity. Understanding of stem cell characteristics, intrinsic regulations, and functions helps generating novel therapies for many acute and chronic diseases as well as developing the new strategies for tissue engineering. This course will focus on the science of stem cells to explore the.

12.66. Principles of Neuroengineering, Nguyên Lý Kỹ thuật Thần kinh

- Mã môn học: BM100IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: Covers how to innovate technologies for brain analysis and engineering, for accelerating the basic understanding of the brain, and leading to new therapeutic insight and inventions. Focuses on using physical, chemical and biological principles to understand technology design criteria governing ability to observe and alter brain structure and function. Topics include optogenetics, noninvasive brain imaging and stimulation, nanotechnologies, stem cells and tissue engineering, and advanced molecular and structural imaging technologies. Design projects by students.

12.67. Advanced Artificial Intelligence for Healthcare, Trí tuệ nhân tạo nâng cao trong y tế

- Mã môn học: BM103IU
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course provides AI fundamental algorithms such as random

forest, decision tree, support vector machine (SVM), boosting, Adaboost, XGBoost, artificial neural network (ANN), convolutional neural network, recurrent neural network. The real signal processing problems applied in healthcare are introduced such as applying SVM or randomforest, ANN to predict the EEG, blood pressure, or heart rate. This course also introduces the computer vision problems that can apply in healthcare such as segmentation, and object detection. There are lab activities in which students work on programing to build practical schemes.

12.68. Microfluidics, Vi lru

- Mã môn học: BM104IU
- Số tín chỉ: 3 tín chỉ (3 lý thuyết + 0 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: Microfluidics is both the science which studies the behavior of fluids through microchannels, and the technology of manufacturing microminiaturized devices containing chambers and tunnels through which fluids flow or are confined. Microfluidics deal with very small volumes of fluids (10⁻⁹ to 10⁻¹⁸ L), using channels with dimensions from several to hundreds of micrometers, which can be expanded even to millimeters. The key concept related to microfluidics is to integrate in a simple micro-sized system operations that commonly solicits a whole laboratory. This multidisciplinary field embraces research in physics, chemistry, medicine, engineering, materials science, and biology supporting the design of various microfluidic devices (known as Lab-on-a-chip/Organ-on-a-chip devices for (portable)diagnostics, drug related studies such as disease modeling, drug discovery, and drug delivery, as well as regenerative medicine and tissue engineering. In this course, student will be introduced to: (1) Microfluidics (its definition and scientific aspects), (2) Fluid dynamic Theory to understand fluid behaviors at microscopic scale, (3) Various microfarication techniques with focus on low-cost, simple techniques for microfluidics, (4) Design of microfluidic devices for common biological/biomedical applications.

12.69. Biosensors, Cảm biến sinh học

- Mã môn học: BM105IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học:

12.70. Rehabilitation Engineering, Kỹ thuật phục hồi chức năng

- Mã môn học: BM106IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: This course provides an overview of rehabilitation engineering, focusing on the application of engineering principles to develop technologies that restore or enhance functional abilities for people with disabilities. Topics include assistive devices, rehabilitation robotics, wearable systems, virtual reality, and functional electrical stimulation. Students will explore design considerations, user-centered engineering, and evaluation methods through lectures and hands-on projects.

12.71. Information system analysis and design, Phân tích và thiết kế hệ thống thông tin

- Mã môn học: BM107IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không
- Mô tả nội dung môn học: A student who successfully fulfills the course requirements will demonstrate the ability to define the fundamentals of systems analysis and design; understand and apply the project management principles early in the systems development process; understand and apply the comparative study of various development methodologies, including structured, object-oriented, and agile approaches; highlight the role of IT in meeting business needs in today's highly competitive landscape; and gain practical insights into designing systems that drive organizational success.

12.72. Medical Bioinformatics, Tin sinh học y khoa

- Mã môn học: BM108IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Biology in BME, AI in healthcare
- Mô tả nội dung môn học: This course explores the role of bioinformatics in solving healthcare-related challenges, focusing on the integration of biological data and computational tools to advance medical research, diagnosis, and treatment. Students will learn how to analyze genomic, transcriptomic, and proteomic data, discover biomarkers, and identify therapeutic targets using bioinformatics approaches. The course emphasizes the application of bioinformatics in tackling complex healthcare problems such as cancer, infectious diseases, and genetic disorders. Topics include genome and protein analysis, next-generation sequencing (NGS), systems biology, and the use of artificial intelligence (AI) in clinical decision-making and drug discovery.

12.73. Medical software engineering, Kỹ thuật phần mềm y tế

- Mã môn học: BM109IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Object-oriented Programming in Biomedical Engineering
- Mô tả nội dung môn học: "Medical Software Engineering" introduces the principles and practices of software development for medical applications, emphasizing Python programming. The course covers essential concepts such as medical data processing, visualization, algorithm development, and software validation tailored to healthcare needs. Students will engage in both theoretical lectures and practical laboratory sessions to build and test medical software systems, preparing them for real-world challenges in biomedical engineering.

12.74. Object-oriented programming, Lập trình hướng đối tượng

- Mã môn học: BM110IU
- Số tín chỉ: 4 tín chỉ (3 lý thuyết + 1 thực hành)
- Môn học trước/môn học song hành/ môn học tiên quyết: Không

- Mô tả nội dung môn học: This course introduces object-oriented programming (OOP) principles and their applications in biomedical engineering, focusing on designing robust and reusable software solutions. Core concepts like encapsulation, inheritance, and polymorphism are taught alongside advanced topics such as design patterns and software architecture. The lecture component (3 credits) spans 15 weeks, covering Python programming, algorithmic thinking, and problem-solving strategies applied to biomedical challenges like patient monitoring and medical imaging. The laboratory (1 credit) spans 8 weeks, offering hands-on experience in projects involving data analysis, physiological simulations, and medical data visualization. By course end, students will proficiently design modular, efficient software and gain skills essential for healthcare technology and biomedical research careers.

TRƯỜNG KHOA



Nguyễn Thị Hiệp

**KT. HIỆU TRƯỞNG
PHÓ HIỆU TRƯỞNG**



Đinh Đức Anh Vũ

Phụ lục 1
NỘI DUNG ĐIỀU CHỈNH
CHƯƠNG TRÌNH ĐÀO TẠO NGÀNH KỸ THUẬT Y SINH KHÓA 2025 SO
VỚI KHÓA 2024

(Kèm theo Quyết định số 1048/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

- Loại bỏ môn học BM007IU - Introduction to Biomedical Engineering (4 tín chỉ) khỏi chương trình đào tạo, thay thế bằng môn học BM111IU Introduction to Biomedical Engineering (3 tín chỉ) và BM112IU - Introduction to Biomedical Engineering lab (1 tín chỉ). Sinh viên Khóa 2025 về sau chỉ cần học môn BM111IU - Introduction to Biomedical Engineering (3 tín chỉ). Sinh viên Khóa 2024 về trước phải học hai môn học BM111IU - Introduction to Biomedical Engineering (3 tín chỉ) và BM112IU - Introduction to Biomedical Engineering lab (1 tín chỉ).
- Tăng số tín chỉ nhóm chuyên ngành tự chọn từ 26 tín chỉ lên thành 30 tín chỉ.

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

Stt	Mã MH	Tên môn học (MH)		Loại MH (bắt buộc/ tự chọn)	Tín chỉ		
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm
1	BM106IU	Rehabilitation Engineering	Kỹ thuật phục hồi chức năng	Tự chọn	4	3	1
2	BM107IU	Information system analysis and design	Phân tích và thiết kế hệ thống thông tin	Tự chọn	4	3	1
3	BM108IU	Medical Bioinformatics	Tin sinh học y khoa	Tự chọn	4	3	1
4	BM109IU	Medical software engineering	Kỹ thuật phần mềm y tế	Tự chọn	4	3	1
5	BM110IU	Object-oriented programming	Lập trình hướng đối tượng	Tự chọn	4	3	1
6	BM111IU	Introduction to BME	Giới thiệu về kỹ thuật y sinh	Bắt buộc	3	3	0
7	BM112IU	Introduction to BME lab	Thực hành về kỹ thuật y sinh	Bắt buộc	1	0	1

8	PE022IU	Engineering Ethics and Critical Thinking	Đạo đức Kỹ thuật và Tư duy phản biện	Bắt buộc	3	3	0

3. Các điều chỉnh khác

Đào tạo theo 3 hướng chuyên ngành, bao gồm Thiết bị y tế (Medical Instrumentations), Kỹ thuật mô và y học tái tạo (Tissue Engineering and regenerative medicine), và Trí tuệ nhân tạo trong chăm sóc sức khỏe (Artificial intelligence for healthcare).

Tự chọn chuyên ngành	Mã môn học	Tên môn học	Tín chỉ		
			Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm
Hướng chuyên ngành: Thuyết bị Y tế			30		
Tự chọn chuyên ngành 1	BM089IU	Electronic Device	4	3	1
Tự chọn chuyên ngành 2	BM095IU	Medical Instrumentation	4	3	1
Tự chọn chuyên ngành 3	BM060IU + BM061IU	Digital systems + Digital systems lab	4	3	1
Tự chọn chuyên ngành 4	BM033IU + BM034IU	Information technology for healthcare system + Information technology for healthcare system lab	4	3	1
Tự chọn chuyên ngành 5,6,7 (chọn 3 môn)	BM075IU + BM076IU	Biomedical photonics + Biomedical photonics lab	4	3	1
	BM062IU + BM063IU	Micro-electronic devices + Micro-electronic devices lab	4	3	1
	BM104IU	Micro-fluidics	4	3	1
	BM071IU	Computer-aided diagnosis	4	3	1
	BM106IU	Rehabilitation Engineering	4	3	1
Tự chọn chuyên ngành 8	BM____IU	Can choose any technical elective in the School of BME	4	3	1
Hướng chuyên ngành: Kỹ thuật Mô và Y học Tái tạo			30		
Tự chọn chuyên ngành 1	BM085IU	Characterization and Properties of Biomaterials	4	3	1
Tự chọn chuyên ngành 2	BM086IU	Methods and Process in Fabrication of Scaffold	4	3	1
Tự chọn chuyên ngành 3	BM092IU	Cell/Tissue - Biomaterial Interaction	4	3	1
Tự chọn chuyên ngành 4	BM094IU	Principles of Clinical Test and Instrumentation	4	3	1
Tự chọn chuyên ngành 5,6,7 (chọn 3 môn)	BM083IU	Applications of Biomaterials in Regenerative Medicine	4	3	1
	BM080IU	Stem Cell Technology	4	3	1
	BM105IU	Biosensors	4	3	1
	BM080IU	Nanotechnology for Drug Delivery Systems	4	3	1
Tự chọn chuyên ngành 8	BM____IU	Can choose any technical elective in the School of BME	4	3	1
Hướng chuyên ngành: Trí tuệ nhân tạo trong chăm sóc sức khỏe			30		
Tự chọn chuyên ngành	BM010IU	Biosignal processing	4	3	1

ngành 1					
Tự chọn chuyên ngành 2	BM058IU	Biomedical image processing	4	3	1
Tự chọn chuyên ngành 3	BM103IU	Advanced AI for healthcare	4	3	1
Tự chọn chuyên ngành 4	BM107IU	Information system analysis and design	4	3	1
Tự chọn chuyên ngành 5,6,7 (chọn 3 môn)	BM100IU	Principles of neuroengineering	4	3	1
	BM033IU + BM034IU	Information technology for healthcare system + Information technology for healthcare system lab	4	3	1
	BM108IU	Medical Bioinformatics	4	3	1
	BM109IU	Medical software engineering	4	3	1
	BM110IU	Object-oriented programming in BME	4	3	1
Tự chọn chuyên ngành 8	BM__IU	Can choose any technical elective in the School of BME	4	3	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

Công nhận tương đương các môn học mới thêm vào thay thế cho các môn học cũ cho các khóa, cụ thể:

- Công nhận tương đương môn học BM007IU - Introduction to Biomedical Engineering (4 tín chỉ) bằng hai môn học BM111IU - Introduction to Biomedical Engineering (3 tín chỉ) và BM112IU - Introduction to Biomedical Engineering lab (1 tín chỉ).
- Đối với Khóa 2024 về trước, công nhận tương đương môn học PE008IU - Critical Thinking (3 tín chỉ) và học PE022IU - Engineering Ethics and Critical Thinking (3 tín chỉ).



Phụ lục 2
ĐỀ CƯƠNG CHI TIẾT CÁC MÔN HỌC

(Kèm theo Quyết định số 1048/QĐ-ĐHQT ngày 04 tháng 9 năm 2025
của Hiệu trưởng Trường Đại học Quốc tế)

COURSE SYLLABUS

Course Name: Philosophy of Marxism and Leninism

Course Code: PE015IU

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

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

1. Thông tin tổng quát

- Tên môn học:

- Tiếng Việt
- Tiếng Anh

- Mã số môn học: PE015IU

- Thuộc khối kiến thức/kỹ năng:

- ☒ Kiến thức cơ bản/giáo dục đại cương
- ☐ Kiến thức chuyên ngành
- ☐ Môn học chuyên về kỹ năng chung

- Số tín chỉ:

- Lý thuyết
- Thực hành (thuyết trình)

- Môn học tiên quyết: Không

- Môn học trước: Không

- Môn học song hành: Không

Triết học Mác-Lênin

Philosophy of Marxism – Leninism

☐ Kiến thức cơ sở ngành

☐ Kiến thức khác

☐ Môn học đồ án/luận văn tốt nghiệp

03

30 (trên lớp)

15 (trên lớp)

90 (về nhà)

2. Mô tả môn học

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

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

3. Tài liệu học tập

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

Giáo trình:

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

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

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

Tài liệu khác:

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

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

Phần mềm:**4. Mục tiêu môn học**

(các mục tiêu tổng quát của môn học, thể hiện sự liên quan với các chuẩn đầu ra (X.x.x) của CTĐT và trình độ năng lực (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, phân biện, tranh luận, hùng biện những tri thức lý luận đang học tập, nghiên cứu dựa trên thực tiễn.	U
G2.3	Sinh viên vận dụng trong giao tiếp xã hội, hợp tác và làm việc nhóm, chia sẻ tri thức và kinh nghiệm, khả năng điều hành nhóm làm việc.	U
G3.1	Sinh viên phân tích, đánh giá được những nền tảng khoa học và cách mạng của chủ nghĩa duy vật biện chứng và chủ nghĩa duy vật lịch sử.	U
G3.2	Sinh viên vận dụng lập trường mácxít nhằm đấu tranh chống lại các quan điểm sai trái, xuyên tạc triết học Mác – Lênin.	U

(1): Ký hiệu CDR của môn học

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

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

6. Đánh giá môn học

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

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

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

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

(2): các bài đánh giá

(3): các CDR được đánh giá.

(4): tiêu chí đánh giá.

(5): chuẩn đánh giá

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

7. Kế hoạch giảng dạy chi tiết

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

Lý thuyết

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

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

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

	2. <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 I. 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.

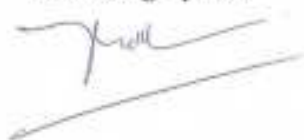
9. Phụ trách môn học

- 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

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

KT. Trưởng Bộ môn
Phó trưởng Bộ môn



TS. Mạc Thị Khánh Trinh

KT. TRƯỞNG KHOA
PHÓ TRƯỞNG KHOA



TS. Nguyễn Đình Quốc Cường

COURSE SYLLABUS

Course Name: Political economics of Marxism and Leninism

Course Code: PE016IU

ĐẠI HỌC QUỐC GIA TP.HCM
KHOA CHÍNH TRỊ - HÀNH CHÍNH

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

ĐỀ CƯƠNG CHI TIẾT MÔN HỌC

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

1. Thông tin tổng quát

- Tên môn học: • Tiếng Việt • Tiếng Anh - 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:	Kinh tế chính trị Mác - Lênin Political economics of Marxism and Leninism PE016IU ☐ Kiến thức cơ sở ngành ☐ Kiến thức khác ☐ Môn học đồ án/luận văn tốt nghiệp 02 21 (trên lớp) 09 (trên lớp) 60 (về nhà) Triết học Mác – Lênin

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 CTDT và TĐNL 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

1/4

QA HANH

★

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. Tiến 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	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.	G.1.5 G.2.3 G.3.1 G.3.2	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. <i>- Bảo vệ lợi ích hợp pháp, tạo môi trường thuận lợi cho hoạt động tìm kiếm lợi ích của các chủ thể kinh tế.</i> <i>- Điều hòa lợi ích giữa cá nhân – doanh nghiệp – xã hội.</i> <i>- Kiểm soát, ngăn ngừa các quan hệ lợi ích có ảnh hưởng tiêu cực đối với sự phát triển của xã hội.</i> 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. <i>- Khái quát về cách mạng công nghiệp</i> <i>- Công nghiệp hóa và các mô hình công nghiệp hóa trên thế giới</i>	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 để 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

- Khou/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

COURSE SYLLABUS
Course Name: Scientific socialism
Course Code: PE017IU

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:

Chủ nghĩa xã hội khoa học

Scientific socialism

PA21GEP03

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

☐ Kiến thức cơ sở ngành

☐ Kiến thức khác

☐ Môn học đồ án/luận văn tốt nghiệp

Số tín chỉ:

Lý thuyết

Thực hành

2 (30 tiết)

30 tiết

Môn học tiên quyết:

Môn học trước:

Môn học song hành:

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 (TĐNL) được phân bổ cho môn học)

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

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

(3), (4): Ký hiệu CDR của CTĐT và TĐNL 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. Chuyên cần A1.2. Thuyết trình nhóm, bài tập lớn, thu hoạch...	G1.1 - G1.7, G2.1 - G2.3, G3.1- G3.3	30%
A2. Đánh giá giữa kỳ (Quiz)	A2.1. Trắc nghiệm (đề đóng) hoặc tự luận (được tham khảo tài liệu) thời gian làm bài 45 phút	G1.1 - G1.3, G2.1 - G2.3, G3.1- G3.3	20%
A3. Đánh giá cuối kỳ (FEX)	A3.1. Thi đề chung. Đề thi bao quát toàn bộ nội dung môn học bằng hình thức tự luận (đề mở). Thời gian 60 phút.	G1.1 - G1.7, G2.1 - G2.3, G3.1- G3.3	50%

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

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

	TRONG THỜI 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: VẤN 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, chấm phần biện. Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: Ôn tập thi cuối kỳ	G1.7 G2.1 G2.2 G3.1 G3.1 G3.3

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

Lý thuyết

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

Thực hành

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

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

7. Quy định của môn học

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

8. Phụ trách môn học

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

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



TS. Mạch Thị Khánh Trinh

Tp. Hồ Chí Minh, ngày 04 tháng 08 năm 2023

KT. TRƯỞNG KHOA
PHÓ TRƯỞNG KHOA



TS. Nguyễn Đình Quốc Cường



COURSE SYLLABUS

Course Name: History of Vietnamese Communist Party

Course Code: PE018IU

ĐẠI HỌC QUỐC GIA TP. HCM
KHOA CHÍNH TRỊ - HÀNH CHÍNH

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

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 tiền 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	<i>Về kiến thức</i> 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 1	G1.1 G2.1 G2.2 G3.1 G3.2
	Chương 1 ĐẢNG CỘNG SẢN VIỆT NAM RA ĐỜI VÀ LÃNH ĐẠO	Hoạt động dạy: - Trình chiếu, thuyết giảng mục	

TH.
KH
STH
VQ

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) <i>1. Bối cảnh lịch sử</i> <i>2. Nguyễn Ái Quốc chuẩn bị các điều kiện để thành lập Đảng</i>	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) <i>3. Thành lập Đảng Cộng sản Việt Nam và Cương lĩnh chính trị đầu tiên của Đảng</i> <i>4. Ý nghĩa lịch sử của việc thành lập Đảng Cộng sản Việt Nam</i>	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 3,4 phần I của chương 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) <i>1. Phong trào cách mạng 1930-1935 và khôi phục phong trào 1932-1935</i> <i>2. Phong trào dân chủ 1936-1939</i>	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. Tính chất, ý nghĩa và kinh nghiệm của Cách mạng Tháng Tám năm 1945	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 3, 4 phần II của chương 1 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước mục 1,2 phần I của chương 2	G1.2 G1.3 G2.1 G2.2 G3.1 G3.2
6/2 tiết	Chương 2 ĐẢNG LÃNH ĐẠO HAI CUỘC KHÁNG CHIẾN, HOÀN THÀNH GIẢI PHÓNG DÂN TỘC, THỐNG NHẤT ĐẤT NƯỚC (1945-1975) I. Lãnh đạo xây dựng, bảo vệ chính quyền cách mạng, kháng chiến chống thực dân Pháp xâm lược 1945-1954 1. Xây dựng và bảo vệ chính quyền cách mạng 1945-1946 2. Đường lối kháng chiến toàn quốc và quá trình tổ chức thực hiện từ năm 1946 đến năm 1950	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 1, 2 phần I của chương 2 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước mục 3, 4 phần I của chương 2	G1.3 G2.1 G2.2 G3.1 G3.2
7/2 tiết	Chương 2 (tiếp theo) I. Lãnh đạo xây dựng, bảo vệ chính quyền cách mạng, kháng chiến chống thực dân Pháp xâm lược 1945-1954 (tt) 3. Đẩy mạnh cuộc kháng chiến đến thắng lợi 1951-1954 4. Ý nghĩa lịch sử và kinh nghiệm của Đảng trong lãnh đạo kháng chiến chống Pháp và can thiệp Mỹ	Hoạt động dạy: - Trình chiếu, thuyết giảng mục 3, 4 phần I của chương 2 - Đặt vấn đề và giải quyết vấn đề Hoạt động học: - Nghe giảng, thuyết trình, thảo luận nhóm. - Đọc trước mục 1 phần II của chương 2	G1.3 G2.1 G2.2 G3.1 G3.2

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

		phần I của chương 3	
11/2 tiết	Chương 3 (tiếp theo) I. Lãnh đạo cả nước xây dựng chủ nghĩa xã hội và bảo vệ tổ quốc (1975-1986) (tt) 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

100

COURSE SYLLABUS
Course Name: Ho Chi Minh's Thoughts
Course Code: PE019IU

ĐẠI HỌC QUỐC GIA TP.HCM
KHOA CHÍNH TRỊ - HÀNH CHÍNH

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

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 tri thức</i> đối với mỗi nội dung và tư duy có hệ thống.	T, U	G2.1; G2.2; G2.3	
8	CHP8	Vận dụng kiến thức học phần để trình bày, thuyết	U	G2.1; G2.2;	

		minh, phân 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%	

HỌ TÊN
ĐA
HÀNH CHỮ
HỌ TÊN

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 CĐR 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	ĐG1.1; ĐG1.3; ĐG1.5;

									luận nhóm	DG1.6; DG2
	Tổng cộng số tiết		22	...	...	08	...	...		

9. Tài liệu học tập

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

10. Quy định của môn học

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

KT. Trưởng Bộ môn
Phó trưởng Bộ môn



Lê Văn Thống

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

KT. TRƯỞNG KHOA
PHÓ TRƯỞNG KHOA



TS. Nguyễn Đình Quốc Cường



VIETNAM NATIONAL UNIVERSITY HCMC INTERNATIONAL UNIVERSITY

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.
Content	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.
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 six hours per week studying this course. This time should be made up of reading, research, working on exercises and problems, and attending classes. In periods where they need to complete assignments or prepare for examinations, the workload may be greater. Over-commitment has been a cause of failure for many students. They should take the required workload into account when planning how to balance study with part-time jobs and other activities. General Conduct and Behaviour The students are expected to conduct themselves with consideration and respect for the needs of fellow students and teaching staff. Conduct which unduly disrupts or interferes with a class, such as ringing or talking on mobile phones, is not acceptable and students will be asked to leave the class. The use of laptops is also encouraged during law lessons only to search for materials online. More information on student conduct is available on the university webpage. Keeping informed The students should take note of all announcements made in lectures or on the course's Blackboard, and another announced mean of communications. From time to time, the university will send important announcements to their university e-mail addresses without providing a paper copy. The students will be deemed to have received this information. Academic honesty and plagiarism Plagiarism is the presentation of the thoughts or work of another as one's own. Students are also reminded that careful time management is an important part of the study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and	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 Tests 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 Tests 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)

	Other Resources, Support and Information 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 YNU + Central Library. Recommended articles will be duly informed to the students. Books: • Nguyen Phu Trong, <i>Kiến 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:

SLO	PLO/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 1 - 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 1 - 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.

Hồ Chí 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: 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 hour 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
	Paraphrasing	1	T, U
	From Paragraph to Essay	4	T, U
	Process Essays	4	T, U
	Cause/Effect Essays	4	T, U
	Comparison/ Contrast Essays	6	T, U
	Argumentative Essays	6	T, U
	Test, Review & Correction	4	U
Examination forms	Essay writing		
Study and examination requirements	<i>Attendance</i> Regular on-time attendance in this course is expected. A student will be allowed no more than three absences. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination.		

	<i>Missed Tests</i> Students are not allowed to miss any of the tests (both Mid-term and Final). There are very few exceptions. Only with extremely reasonable excuses (eg. certified paper from doctors), students may re-take the examination. <i>Class Behaviors</i> Students are required to treat their studying in college as a full-time job and spend an adequate amount of time for this Writing AEI course with approximately 8-10 hours per week (both in class and self-study). Accordingly, students are supposed to follow the obligations below: - Prepare thoroughly for each class in accordance with the course syllabus and complete home assignments as the instructor's request. - Participate fully and constructively in all course activities and discussions (if any). - Display appropriate courtesy to all involved in the class. - Provide constructive feedback to faculty members regarding their performance. <i>Plagiarism</i> Students are warned not to copy from other books or from their peers for all assessment tasks. Committing plagiarism will result in 0 point for the task. Students who plagiarize twice will be prohibited from sitting the final examination. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	[1] Oshima, A., & Hogue, A. (2017). <i>Longman Academic Writing Series, Level 4: Essays</i> (5th ed.). New Jersey, NJ: Pearson Longman. [2] Oshima, A., & Hogue, A. (2006). <i>Longman Academic Writing Series, Level 4: Essays</i> (4th ed.). New Jersey, NJ: Pearson Longman.

2. Learning Outcomes Matrix (optional)

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	The process of Academic Writing Step 1: Creating (Prewriting) Step 2: Planning (Outlining) Step 3: Writing Step 4: Polishing <i>Using Outside Sources</i> Paraphrasing	1, 5	Lecture Group work Individual writing	Ongoing assessment & Midterm test	[2] pp. 265-279 [1] pp. 58- 65

Week	Topic	CLO	Learning activities	Assessments	Resources
	Plagiarism and how to avoid plagiarism				
2 & 3	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 test	[1] pp. 74– 100
4	Process Essays Introduction Analyzing the models Thesis statements for process essays Transitional signals	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Midterm test	[1] pp. 101-115
5	Process Essays (Cont'd) <i>In-class Assignment 1</i> Review/ Correction: Lecturer gives feedback to one or two students' writings in class.	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Midterm test	[1] pp. 101-115
6	Cause/ Effect Essays Introduction Analyzing the models Organization Signal words and phrases	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Midterm test	[1] pp. 116-132
7	Cause/ Effect Essays (Cont'd) In-class practice Review/ Correction: Lecturer gives feedback to students' writings in class.	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Midterm test	[1] pp. 116 - 132
8	MIDTERM TEST				
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) In-class practice Review/ Correction: Lecturer gives feedback to students' writings in class.	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Final exam	[1] pp. 133-151
11	Comparison/ Contrast Essays (Cont'd) In-class Assignment 2 Review/ Correction: Lecturer gives feedback to one or two students' writings in class.	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Final exam	[1] pp. 133-151
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	Argumentative Essays (Cont'd): In-class practice: - A summary of the opposing arguments - Rebutting an argument - Timed writing	2,4	Lecture Group work Individual writing	Ongoing assessment & Final exam	[1] pp. 152-168

Week	Topic	CLO	Learning activities	Assessments	Resources
14	Argumentative Essays (Cont'd) Review/ Correction: Lecturer gives feedback to one or two students' writings in class.	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 test (20%)	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 (optional)

5.1. Midterm test 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	o The topic sentence introduces the topic and the controlling idea (1), starting with a transition signal*.	CLO 3
Topic sentence 2 10 pts	o The topic sentence introduces the topic and the controlling idea (2), starting with a transition signal*.	CLO 3
Topic sentence 3 10 pts	o The topic sentence introduces the topic and the controlling idea (3), starting with a transition signal*.	CLO 3
Restatement 10 pts	o 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, punctuations are correct.	10	CLO 2

Answers/ Criteria	Parts/ Points	CLO
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 <i>Introduction:</i> The introduction ends with a thesis statement. (10) <i>Body:</i> 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) <i>Conclusion:</i> The conclusion summarizes the main points/paraphrases the thesis statement, begins with a conclusion signal, and leaves the readers with the writer's thoughts on the topic. (5)	30	CLO 1,3,5
Total	60	

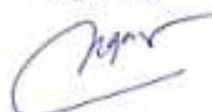
5.2. Final exam rubrics: Write an argumentative essay: 100 points

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

the relationship among ideas and to link paragraphs. (10)		
<i>Conclusion:</i>	10	
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	

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: Listening AE1

Course Code: EN008IU

1. General information

Course name	- (in English) LISTENING AE1 (Listening and Note-taking) - (in Vietnamese) Nghe AE1 (Nghe và ghi chú)
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 (optional)
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 AEI 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
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																																						
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

1. **Content accuracy (16 pts):** All statements are accurate and relevant. Summary includes main idea and important details of the given lecture.
2. **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 ☐ Elective
Teaching methods	Lectures, lesson Individual practice Discussion Pair work Group work 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)

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	Previous course: Writing AE1 (EN007IU)	
Course objectives	Students are required to work on the tasks selected to maximize their exposure to written communication and are expected to become competent writers in the particular genre: the research paper. As writing is part of an integrated skill of reading and writing where reading serves as input to trigger writing, this course is designed to familiarize non-native students with academic literature in their major study by having them 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. Apply knowledge about conceptual categories-classifications, the structure of a research paper and appropriate academic language in writing a research paper
	Skill	CLO2: Perform skills and strategies for reading critically, analyzing, and annotating academic texts in written summary CLO3. Demonstrate research writing skills to present an argument, a comparison, or a contrast in their academic study.
	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>Unit 1: The Academic Writing Process Introduction</td><td>4</td><td>I, T, U</td></tr><tr><td>Unit 2: Researching and Writing</td><td>2</td><td>T, U</td></tr><tr><td>Unit 3: Fundamentals & Feedback</td><td>2</td><td>T, U</td></tr><tr><td>Unit 4: Definitions, Vocabulary & Clarity</td><td>2</td><td>T, U</td></tr><tr><td>Unit 5: Generalizations, Facts and Honesty</td><td>4</td><td>T, U</td></tr><tr><td>Unit 6: Seeing Ideas and Sharing Texts</td><td>2</td><td>T, U</td></tr><tr><td>Unit 7: Description, Methods & Reality</td><td>2</td><td>T, U</td></tr><tr><td>Unit 8: Results, Discussion & Relevance</td><td>2</td><td>T, U</td></tr><tr><td>Unit 9: The Whole Academic Text</td><td>2</td><td>T, U</td></tr><tr><td>Unit 10: Creating the Whole Text</td><td>4</td><td>T, U</td></tr><tr><td>Course Review</td><td>2</td><td>U</td></tr></table>	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
	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"> <thead> <tr> <th>Degree of magnitude</th><th>Description</th></tr> </thead> <tbody> <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> </tbody> </table> Notes: Part of the test is marked as it is if no plagiarism is detected. Students who plagiarize over 40%~~twice~~ 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] Cornack, 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 Thinking about writing processes Distinguishing between academic and personal styles of writing Grammar of academic discourse	1, 3	Lecture Group work Individual task	Ongoing assessment & Midterm test	[1] pp. 15-22

Week	Topic	CLO	Learning activities	Assessments	Resources
2	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 test	[1] pp. 25-31
3	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 test	[1] pp. 35-44
4	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 test	[1] pp. 45-49
5	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 test	[1] pp. 50-59
6	Unit 5: Generalizations, Facts and Honesty Honesty principle The language of generalization	1, 2, 3	Lecture Group work Individual task	Ongoing assessment & Midterm test	[1] pp. 60-68
7	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 test	[1] pp. 69-74
8	MIDTERM TEST				
9	Unit 6: Seeing Ideas and Sharing Texts Writing about events in time Connecting events Reading and writing about visuals	1, 3	Lecture Group work Individual task	Ongoing assessment & Final exam	[1] pp. 75-88

Week	Topic	CLO	Learning activities	Assessments	Resources
	Learning about peer reviews				
10	Unit 7: Description, Methods & Reality Describing processes and products The language for writing about processes Writing the Methods section Giving and getting formal peer feedback	1, 3	Lecture Group work Individual task	Ongoing assessment & Final exam	[1] pp. 89-103
11	Unit 8: Results, Discussion & Relevance What is an argument? The language of argument The Results and Discussion sections Finding an academic voice	1, 3	Lecture Group work Individual task	Ongoing assessment & Final exam	[1] pp. 104-118
12	Unit 9: The Whole Academic Text S-P-S-E: Focus on structure S-P-S-E in the introduction The language of coherence and connection Teacher evaluation	1, 2, 3	Lecture Group work Individual task	Ongoing assessment & Final exam	[1] pp. 119-133
13	Unit 10: Creating the Whole Text Structure of the research paper Creating your own research	1, 2, 3	Lecture Group work Individual task	Ongoing assessment & Final exam	[1] pp. 134-139
14	Unit 10: Creating the Whole Text Plagiarism Creating citations Paraphrase and summary Authorial identity	1-4	Lecture Group work Individual task	Ongoing assessment & Final exam	[1] pp. 140-148
15	Sample final exam + Correction	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	60% Pass
Midterm test (20%)	Part 1 60% Pass		Part 2 60% Pass	
Final exam (50%)		Part 1 60% Pass	Part 2 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 1: (30 pts) Read a given text and create a graphic display or an outline that categorises the two-level classifications made in the text. (CLO1)

Part 2: (70 pts) Write a comparison/ contrast essay of about 350 words on ONE of the given topics. Pay attention to the use of academic language and a clear text structure.

Content	All main points relevant to the topic The essay question fully answers	20	CLO 3
Organization	Topic and purpose of the essay discussed in the introduction Each main point discussed in a paragraph All main points summarized and rephrased in the conclusion	20	CLO 3
Coherence	Paragraphs are ordered in a systematic manner based on, for example, importance, priority, etc. Compare/contrast transitions are properly used.	15	CLO 3
Style and Tone	Formal writing with full forms Polite writing Academic vocabulary	15	CLO 3

5.2. Rubrics for Final Exam

Part 1: (30 pts) Write a summary of a given text.

CATEGORIES	CRITERIA	POINTS	CLO
Accuracy and completeness of the content (10 pts)	- The summary contains all of the key ideas in the original, reflecting complete and accurate information about the source.	10	CLO2
Paraphrasing (10 pts)	- All sentences should reveal students' ability in varying the language to avoid repetition.	10	CLO2
Organization (5 pts)	- The summary starts with a general evaluation and includes several sub-topics that explain key ideas from the original.	3	CLO2
	- The summary is organized and coherent.	2	

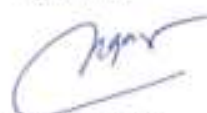
Grammar, usage and mechanics (5 pts)	- All sentences are clear, accurate and complete.	3	CLO2
	- The summary contains one or two minor errors, but these do not obscure the meaning.	2	
Total		30	

Part 2: (70 pts) Write an argumentative essay of about 350 words on ONE of the given topics. Pay attention to the use of academic language and a clear text structure.

Content	All main points relevant to the topic The essay question fully answers	20	CLO 3
Organization	Topic and purpose of the essay discussed in the introduction Each main point discussed in a paragraph All main points summarized and rephrased in the conclusion	20	CLO 3
Coherence	Paragraphs are ordered in a systematic manner based on, for example, importance, priority, etc. Compare/contrast transitions are properly used.	15	CLO 3
Style and Tone	Formal writing with full forms Polite writing Academic vocabulary	15	CLO 3

Date revised: 2 June, 2025

Hồ Chí Minh City, 6 June, 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: 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 (optional)
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	2	I, T, U
	Needs analysis		
	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

COURSE SYLLABUS

Course Name: Calculus 1

Course Code: MA001IU

1. General Information

- a. *Course name*
 - Vietnamese: Toán 1
 - English: Calculus I
- b. *Course number:*
MA001IU
- c. *Course type:*
General
- d. *Number of credits : 4*
 - Lecture: 4
 - Laboratory: 0

2. Text book, title, author, and year

[1] J. Stewart, Calculus. Concepts and Contexts, 5th ed., Thomson Learning, 2005.

a. *other supplemental materials*

- [1] J. Rogawski, Calculus, Early Transcendentals 3rd edition, W.H. Freeman, 2015.
 [2] R.N. Greenwell, N.P. Ritchey, and M.L. Lial, Calculus with Applications for the Life Sciences, Addition Wesley, 2003.

3. Specific course information

- a. *brief description of the content of the course (catalog description)*
 - To provide the students with the main ideas and techniques of calculus, concerning limits, continuity, differentiation and integration.
 - To provide an understanding of the practical meaning, significance and applications of these ideas and techniques, through practical examples taken from many areas of engineering, business and the life sciences
 - To develop skills in mathematical modelling and problem solving, in thinking logically, and in creatively applying existing knowledge to new situations
 - To develop confidence and fluency in discussing mathematics in English.
- b. *prerequisites or co-requisites*
None
- c. *indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program*
This is a required course.

4. Specific goals for the course

- a. *specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.*

Upon the successful completion of this course students will be able to:

1. Understanding of the practical meaning, significance and applications of these ideas and techniques, through practical examples taken from many areas of engineering, business and the life sciences Explain the role of a Data Science Process in data analytics.

2. Develop skills in mathematical modelling and problem solving, in thinking logically, and in creatively applying existing knowledge to new situations
3. Develop confidence and fluency in discussing mathematics in English

b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

The relationship between Course Outcomes (1-3) and Student Outcomes (1-6) is shown in the following table:

	1	2	3	4	5	6
1	x					
2	x					
3			x			

5. Brief list of topics to be covered

- Functions
- Limits
- Continuity
- Derivatives
- Differentiation
- Derivatives of Basic Elementary Functions
- Differentiation Rules
- Applications of Differentiation: l'Hôpital's Rule
- Optimization
- Newton's Method
- Anti-derivatives
- Indefinite Integrals
- Definite Integrals
- Fundamental Theorem of Calculus
- Techniques of Integration
- Improper Integrals
- Applications of Integration

6. Assessment plan

Assessment item	LO1	LO2	LO3
In-class exercises/quizzes (10%)	x	x	
Lab exercises (20%)			x

Midterm exam (30%)	x		
Final exam (40%)		x	x

LOi: Learning Outcomes (or Course Outcomes)

7. Course Policy

- Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problems and group assignment.
- Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination.
- Missed tests: 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, students may re-take the tests.)

8. Course Coordinator/Lecturer

- School/Department: Department of Mathematics
- Course Coordinator/Lecturer: Dr. Nguyen Ngoc Hai
- Email: nnhai@hcmiu.edu.vn

Vice Head of Department of
Mathematics


Tran Vinh Linh

Dean of School of
Industrial Engineering and
Management



COURSE SYLLABUS

Course Name: Calculus 2

Course Code: MA003IU

1. General Information

- a. *Course name*
 - Vietnamese: Toán 2
 - English: Calculus 2
- b. *Course number:*
MA003IU
- c. *Course type:*
General
- d. *Number of credits : 4*
 - Lecture: 4
 - Laboratory: 0

2. Text book, title, author, and year

[1] J. Stewart, Calculus. Concepts and Contexts, 5th ed., Thomson Learning, 2005.

a. *other supplemental materials*

- [1] J. Rogawski, Calculus, Early Transcendentals 3rd edition, W.H. Freeman, 2015
 [2] R.N. Greenwell, N.P. Ritchey, and M.L. Lial, Calculus with Applications for the Life Sciences, Addison Wesley, 2003.

3. Specific course information

- a. *brief description of the content of the course (catalog description)*
 To provide the students with the main notions and techniques of calculus of functions of several variables concerning limits, continuity, differentiation and integration; basic skills of computing the sum of series. Many applications explain how to use these notions and techniques in practical situations.
- b. *prerequisites or co-requisites* Calculus 1
- c. *indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program*
 This is a required course.

4. Specific goals for the course

- a. *specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.*

Upon the successful completion of this course students will be able to:

1. Understanding of the practical meaning, significance and applications of these ideas and techniques, through practical examples taken from many areas of engineering, business and the life sciences Explain the role of a Data Science Process in data analytics.
2. Develop skills in mathematical modelling and problem solving, in thinking logically, and in creatively applying existing knowledge to new situations
3. Develop confidence and fluency in discussing mathematics in English

- b. *explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*

The relationship between Course Outcomes (1-3) and Student Outcomes (1-6) is shown in the following table:

	1	2	3	4	5	6
1	x					
2	x					
3			x			

5. Brief list of topics to be covered

- Sequence and Series
- Convergence Tests
- Power Series
- Taylor and Maclaurin Series
- Cartesian Coordinates
- Lines, Planes and Surfaces
- Derivatives and Integrals of Vector Functions
- Arc Length and Curvature
- Parametric Surfaces
- Functions of Several Variables
- Limits, Continuity, Partial Derivatives, Tangent Planes
- Gradient Vectors; Extrema
- Lagrange Multiplier
- Multiple Integrals; Double Integrals, Triple Integrals, Techniques of Integration
- Vector Fields, Line Integrals, Surface Integrals

6. Assessment plan

Assessment item	LO1	LO2	LO3
In-class exercises/quizzes (10%)	x	x	
Lab exercises (20%)			x
Midterm exam (30%)	x		
Final exam (40%)		x	x

LO1: Learning Outcomes (or Course Outcomes)

7. Course Policy

- **Student responsibility:** Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problems and group assignment.
- **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination.
- **Missed tests:** 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 namer from doctors, students may re-take the tests.)

8. Course Coordinator/Lecturer

- School/Department: Department of Mathematics
- Course Coordinator/Lecturer: Dr. Mai Due Thanh
- Email: mdthanh@hcmiu.edu.vn

Vice Head of
Department of Mathematics



Tran Vinh Linh

Dean of School of Industrial
Engineering and Management





**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	Assoc. Prof. Phan Bào 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:

	Capsone	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 omission.	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 interpretative/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretative/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	Information is taken from source(s) with some interpretative/ evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as merely fact, with little questioning.	Information is taken from source(s) without any interpretative/ evaluation. Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyses own and others' assumptions and carefully evaluates the relevance of context 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.
Conclusion 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 inconsequently 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 Bao Ngoc



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

COURSE SYLLABUS

Course Name: Physics 2 (Fluid Mechanics and Thermal Physics)

Course Code: PH014IU

1. General information

Course designation	<i>This subject will provide a basic knowledge of fluid mechanics; macroscopic description of gases; heat and the first law of thermodynamics; heat engines and the second law of thermodynamics; microscopic description of gases and the kinetic theory of gases.</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 Fluid Mechanics and Thermal 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 fluid mechanics, laws of thermodynamics, and the kinetic theory of an ideal gas. 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: Fluid Mechanics	2	I, T,U
	Chapter 2: Temperature, Heat, and the First Law of Thermodynamics	4	I, T,U
	Chapter 3: The Kinetic Theory of Gases	5	I, T,U
	Chapter 4: Entropy and the Second Law of Thermodynamics	4	I, T,U
Examination forms	Short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.		
	Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		

Reading list	[1] 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:

CLO	ILO									
	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
1-2	Chapter 1: Fluid Mechanics - Fluids at Rest - Ideal Fluids in Motion - Bernoulli's Equation	1, 2	Assignment//Quiz Midterm	Lecture, Discussion, Inclass-Quiz	[1] 1 [2] 14
3-8	Chapter 2: Temperature, Heat, and First Law of Thermodynamics - Temperature and Zero th Law of Thermodynamics - Thermal Expansion - Heat and Absorption of Heat by Solids and Liquids - Work and Heat in Thermodynamic Processes - First Law of Thermodynamics and Its Some Special Cases - Heat Transfer Mechanisms	1, 2	Assignment//Quiz Midterm	Lecture, Discussion, Inclass-Quiz	[1] 2 [2] 18
	Midterm				
9-12	Chapter 3: Kinetic Theory of Gases - Ideal Gases: Experimental Laws, Equation of State - Molecular Model of an Ideal Gas. Mean Free Path - Boltzmann Distribution Law and	3, 4	Assignment//Quiz Final	Lecture, Discussion, Inclass-Quiz	[1] 2 [2] 19

	Distribution of Molecular Speeds - Molar Specific Heats of an Ideal Gas - Equipartition of Energy Theorem - Adiabatic Expansion of an Ideal Gas				
13-15	Chapter 4: Entropy and Second Law of Thermodynamics - Reversible, Irreversible Processes and Entropy - Second Law of Thermodynamics - Entropy in Real World: Engines - A Statistical View of Entropy	3, 4	Assignment//Quiz Final	Lecture, Discussion, Inclass-Quiz	[1] 4 [2] 20
	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 4	Milestone 3 2		Benchmark 1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

6. Date revised: December 27, 2022

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



Phan Bảo Ngọc

COURSE SYLLABUS
Course Name: Calculus 3
Course Code: MA023IU

A. COURSE OVERVIEW:

1. Course Objectives: To give the students:

1. Knowledge of complex numbers and series, complex functions, and complex derivatives
2. Knowledge of Laplace transforms, z-transforms, Fourier series and Fourier transforms, Fourier spectrum, frequency response, etc
3. Mathematical and computational skills needed in solving differential equations and in fields such as electric circuits, communications, signal processing and control, etc
4. To develop confidence and fluency in discussing mathematics in English.

2. Prerequisites: Calculus I, Calculus II

3. Main Content:

Complex numbers, complex series, complex functions, complex derivatives; Laplace transform, z-transform, Fourier series, Fourier transform, the inverse transform, transforms of derivatives and integrals, first-order differential equations, second-order differential equations, difference equations, applications to electrical circuits and signal processing.

4. Assessment:

Assignment and Class Attendance: 20% Midterm Test: 20%

Final Exam: 60%

5. Documents:

Main textbook: G. James, *Advanced Modern Engineering Mathematics*, 3rd ed., Prentice Hall, 2004.

Other textbooks:

1. E. Kreyszig, *Advanced Engineering Mathematics*, 9th ed., John Wiley & Sons, 2006.
2. R.C. Drof, J. A. Svoboda, *Introduction to Electric Circuits*, 6th ed., John Weley & Sons, 2004.
3. J.W. Nilsson and S.A. Riedel, *Electric Circuits*, 7th Ed, Prentice Hall, 2005.
4. J.H. McClellan, R.W. Schafer, M.A. Yoder, *Signal Processing First*, Prentice Hall, 2003.
5. A.V. Oppenheim, A.S. Willsky, *Signals & Systems*, 2nd ed., Prentice Hall, 1997.
6. B.P. Lathi, *Linear Systems and Signals*, Oxford University Press, 2005.

B. DETAILED OUTLINE:

Chapter name	Descriptions
Chapter 1. Complex Numbers and Functions	1.1 Introduction 1.2 The Argand diagram 1.3 The arithmetic of complex numbers 1.4 Polar form of a complex number 1.5 Euler's formula 1.6 Powers and roots of complex numbers 1.7 Circular and hyperbolic functions 1.8 Logarithm of a complex number 1.9 Complex functions and mappings 1.10 Complex differentiation. Cauchy-Riemann equations 1.11 Conjugate and harmonic functions 1.12 Power series. Taylor series 1.13 Laurent series

Chapter 2. Laplace Transforms	2.1 Definition and examples 2.2 Existence of the Laplace transform 2.3 Properties of the Laplace transform 2.4 The inverse transform 2.5 Transforms of derivatives and integrals 2.6 Differential equations 2.7 Engineering applications. 2.8 Step functions and Laplace transforms 2.9 The second shift theorem 2.10 Differential equations 2.11 Periodic functions 2.12 Impulse functions and Laplace transforms 2.13 Relationship between Heaviside step and impulse functions 2.14 Transfer functions. Stability. Impulse response 2.15 Initial-and final value-theorems 2.16 Convolution. System response to an arbitrary input 2.17 Engineering applications.
Chapter 3. The z Transform	3.1 Definition and examples 3.2 Properties of the z transform 3.3 The inverse z transform 3.4 Discrete-time systems and difference equations 3.5 z transfer functions 3.6 The impulse response. Stability 3.7 Convolution 3.8 The relationship between Laplace and z transforms 3.9 Engineering applications
Chapter 4. Fourier Series	4.1 Periodic functions. The Fourier coefficients 4.2 Functions of period 2π 4.3 Even and odd functions and harmonics 4.4 Linear property. Convergence of the Fourier series 4.5 Functions of period T 4.6 Functions defined over a finite interval 4.7 Differentiation and integration of Fourier series. 4.8 Coefficients in terms of jumps at discontinuities 4.9 Engineering applications 4.10 Complex form of Fourier series 4.11 The multiplication theorem and Parseval's theorem 4.12 Discrete frequency spectra. Power spectrum 4.13 Engineering applications

COURSE SYLLABUS

Course Name: Differential Equations

Course Code: MA024IU

A. COURSE OVERVIEW:

1. Course Objectives: ♦ To provide the students with the main ideas of the basic theory of differential equations and with techniques for solving some important types of differential equation.

♦ To study applications of differential equations through practical examples taken from many areas of engineering, business, social sciences, etc.

♦ To develop the ability to construct and analyze mathematical models based on differential equations.

2. Prerequisites: Calculus I, Calculus II

3. Main Content:

First-order differential equations, second-order linear differential equations, undetermined coefficients, variation of parameters, applications, higher-order linear differential equations, systems of first-order linear equations, elementary partial differential equations and the method of separation of variables.

4. Assessment:

Assignment and Class Attendance: 20% Midterm Test: 20%

Final Exam: 60%

5. Documents:

Textbook:

W.E. Boyce, R.C. DiPrima, *Elementary Differential Equations and Boundary Value Problems*, 8th ed., John Wiley & Sons, 2004.

B. A DETAILED OUTLINE:

Chapter name	Descriptions
Chapter 1. Introduction	1.1 Some Basic Mathematical Models; Direction Fields 1.2 Classification of Differential Equations
Chapter 2. First Order Differential Equations	2.1 Linear Equations; Method of Integrating Factors 2.2 Separable Equations 2.3 Modeling with First Order Equations 2.5 Exact Equations (skip Integrating Factors)
Chapter 3. Second Order Linear Equations	3.1 Second Order Equations 3.2 Fundamental Solutions of Linear Homogeneous Equations 3.3 Linear Independence and the Wronskian 3.4 Complex Roots of the Characteristic Equation 3.5 Repeated Roots 3.6 Nonhomogeneous Equations; Method of Undetermined Coefficients 3.7 Variation of Parameters 3.6 Applications of Second Order Linear Equations

Chapter 4. Higher Order Linear Equations	4.1 General Theory of nth Order Linear Equations 4.2 Homogeneous Equations with Constant Coefficients 4.3 The Method of Undetermined Coefficients
Chapter 5. Systems of First-Order Linear Equations	6.1 Review of Linear Algebra 6.2 Basic Theory of Systems of First Order Linear Equations 6.3 Homogeneous Linear Systems with Constant Coefficients 6.4 Complex Eigenvalues 6.5 Repeated Eigenvalues
Chapter 6. Introduction to Partial Differential Equations	6.1 Introduction 6.2 Review of Fourier Series 6.2 Separation of Variables. Heat Conduction Problems 6.3 Wave Equations 6.4 Laplace's Equations

COURSE SYLLABUS

Course Name: Chemistry for Engineers

Course Code: CH011IU

1. **Course title (code): CH011IU**
2. **Number of credits:** 3(3,0)
3. **Instructor:** Huynh Kim Lam (PhD)
4. **Prerequisite:** none
5. **Course objectives:**
 - a. To introduce students to general chemistry and to provide students with a firm foundation in chemistry for careers in science and engineering. Upon successful completion of this course, the students should be able to demonstrate basic knowledge of the following:
 - The role of chemistry for engineers
 - Measurements in chemistry
 - Matter and state of matter
 - Structure of atoms, molecules and ions
 - Periodicity
 - Chemical bonds
 - Intermolecular forces, liquid and solid
 - Gases, liquids, solids and their properties
 - Types and rates of chemical reactions
 - Chemical equilibrium
 - Electrolytes, acid-base, pH, buffer
 - Thermochemistry and thermodynamics
 - Electrochemistry
 - Nuclear chemistry
 - b. Development of their critical thinking and problem-solving skills for applying chemistry in an engineering context.
 - c. Ability to explain many aspects of everyday life using chemistry concepts.
 - Chemical reactions
 - pH and buffers
 - Oxidation-Reduction titration with KMnO_4
 - Chemical equilibrium
 - Factors affecting reaction rates
6. **Course description:**

This one-semester course is designed for engineering students those who are pursuing a non-chemistry engineering degree such as information technology, bio-technology, civil, biomedical, electronic and telecommunication engineering. The course will introduce the basic principles of chemistry and connect those principles to issues in engineering professions. The related lab-work is not included in this course.
7. **Course details:**
 - Lecture 1 (01 teaching hrs): Introduction to General Chemistry for Engineers: The role of general chemistry for engineers; Chapter outline
 - Lecture 2 (02 teaching hrs): Measurements in Chemistry: Physical quantities: number and unit; Measurement and significant figures; Scientific notation; Measuring mass; Measuring length and volume; Density; Measuring temperature; Rounding off numbers; Converting a quantity from one unit to another

- Lecture 3 (02 teaching hrs): Introduction to Matter: Matter and state of matter (gas, liquid, solid and plasma); General concepts of mass and energy; Matter and change: chemical change and physical change; Classification of matter: element, compound and mixture (homogeneous and heterogeneous)
- Lecture 4 (04 teaching hrs): Atoms, Molecules and Ions: Atoms and their structure, model of an atom; Nucleus of an atom; Electron cloud of an atom; Chemical symbols; Isotopes; Rules about electrons; Molecular compounds; Communicating molecular structure; Ions and ionic compounds; Monatomic ions and polyatomic ions; Hydrates; Chemical nomenclature
- Lecture 5 (02 teaching hrs): Periodicity: Classification of the elements; General periodic trends; Atomic size and trends in atomic size; Ionization energy; The first ionization energy with atomic number; Electron affinity; Electronegativity
- Lecture 6 (04 teaching hrs): Chemical Bonds: The concepts of chemical bonds; Classification of chemical bonds; Ionic bonds; Covalent bonds; Metallic bonds; Valence electrons; Bond and lone pairs; Molecular geometry, the VSEPR model and structure determination by VSEPR; Bond polarity; Polar and nonpolar molecules; Electronegativity and chemical bonds; Bond lengths and bond strengths
- Lecture 7 (04 teaching hrs): Intermolecular Forces: The concepts of intermolecular forces; Dipole-dipole forces; Hydrogen bonding; Ion-dipole forces; Induced dipole forces; Ion-induced dipole forces; Dipole-induced dipole forces; Induced dipole-induced dipole forces; Intermolecular forces and physical properties;
- Lecture 8 (02 teaching hrs): Gases and Their Properties: The concepts of gas and vapor; Properties of gases; Gas pressure; Boyle's law; Charles's law; Gay-Lussac's law; The combined gas law; Avogadro's law; Ideal gas law; Partial pressure (Dalton's law); Effusion (Graham's law)
- Lecture 9 (02 teaching hrs): Solutions and Their Properties: The concepts of solutions; Classification of solutions; The nature of solute in solutions; Energy changes and the solution process; Units of concentration; Factors affecting solubility; Henry's law; Physical behavior of solutions: colligative properties; Raoult's law; Osmosis and osmotic pressure
- Lecture 10 (02 teaching hrs): Solids and Their Properties: Solid and types of solid; Crystal structure and the unit cell; Unit cells and coordination number; Metals and alloys; Conductor, semiconductor and Insulator
- Lecture 11 (02 teaching hrs): Chemical Reactions: Chemical change; Chemical equation; Types of reactions
- Lecture 12 (02 teaching hrs): Chemical Kinetics: Rates of chemical reactions; Factors that affect the reaction rates; Rate laws; First order reaction; Second order reaction; Third order reaction; Zero order reaction
- Lecture 13 (02 teaching hrs): Chemical Equilibrium: The concepts of chemical equilibrium; Equilibrium constant; Equilibrium expression; Homogeneous and heterogeneous equilibrium; Le Chatelier's principle
- Lecture 14 (04 teaching hrs): Electrolytes, Acid-Base, pH and Buffer: Strong and weak electrolytes; Acid-base theories: Arrhenius, Bronsted-Lowry and Lewis theory; Conjugate pairs; Conjugate acid-base strength; Ionization of water, ion-product constant K_w for water; pH; Equilibrium constants for weak acids; Equilibrium constants for weak bases; Calculating pH from K_a ; Buffer, calculating pH of a buffer; Henderson-Hasselbalch equation; Buffer capacity
- Lecture 15 (04 teaching hrs): Thermochemistry and Thermodynamics: System and

surrounding; Energy and work; Internal energy: kinetic and potential energy; Energy and temperature; Heat and heat transfer mechanism; Conservation of energy; Heat of reaction and calorimetry; State of a system and state functions; The first law of thermodynamics; Enthalpy and enthalpy change; Enthalpy of reaction; Hess's law; Enthalpy of formation; Standard enthalpy Enthalpy from bond energy; Enthalpy of solution; Entropy and the second law of thermodynamics; The third law of thermodynamics; Standard entropy; Gibbs free energy

- Lecture 16 (04 teaching hrs): Electrochemistry: The concepts of electrochemistry; Oxidation number; Balancing redox equations; Galvanic cell; Standard reduction potentials; Nernst equation; Batteries; Corrosion; Rusting of iron; Electrolysis

- Lecture 17 (02 teaching hrs): Nuclear Chemistry: The concepts of radioactivity; Types of nuclear reactions; Types of radiation; Energy of nuclear reactions; Fission and fusion; Effect of radiation on matter; Detecting radiation; Radiation exposure and contamination; Rate of nuclear reactions; Radiocarbon dating; Radiation units

8. References:

- Required book(s)

- "Chemistry for Engineers – An Applied Approach" by Mary Jane Shultz (2007) "General Chemistry" by Darrell Ebbing and Steven D. Gammon (9th Ed., 2010)

- "Chemistry: A Molecular Approach" by Nivaldo J. Tro (2nd Ed., 2008) "Chemistry, Principles and Reactions" by Masterton and Hurley (6th Ed., 2009)

- On IU Blackboard: Link to course documents on BB

- Website(s): <https://sites.google.com/site/lkhclasses/>

9. Grading: projector and computer connected to the internet to use online tools.

- Midterm Exam (20-40%): 30%

- Final Exam (35-60%): 50%

- Others (10-30%): 1 20%

10. Policy

- Language

English only. Both students and instructors are encouraged to use English for all communications, either in or outside of class. At minimum English must be used when in class.

- Attendance

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.

- Safety

Both instructor(s) and students are requested to strictly follow the rules/regulations related to safety issued by the university and/or the school. Violation, no matter on intention or not, implies immediate dismission from class or lab-work session.

- Teaching hours

All classes start sharply at 08:00 in the morning and 13:00 in the afternoon. Each teaching period lasts for 45 mins and must be delivered in the presence of either the instructor(s) or his/her teaching assistant. Students that do not come on time can be considered as not attending the class.

- Communication

Conversation between instructor(s) and students is possible via in-person contact or email. It is recommended that students check with the instructor(s) first before attempting to use

telephone for communication.

- **Qualification of the instructor(s)**

Instructor(s) and his/her teaching assistant, once approved by the university and the school, i.e. names appear on the semester's official schedule, are qualified for teaching. They are fully responsible for the quality of teaching reflected via the preparation of this syllabus, available materials uploaded on IU-Blackboard, lecture notes or handouts and, if the course requires lab-work, lab manual. Without permission from the university and the school no other person could teach on behalf of the instructor(s)

- **Report**

Any matter related to the course should be directly reported and discussed with the instructor(s) before attempting to resolve it at the school or the university levels. Appointment to meet with the Dean of School could be made via the school's secretary or via email biotechnology@hcmiu.edu.vn. Students who wish to remain anonymous could write and drop their complaints in the White Box in front of the school's office.

COURSE SYLLABUS

Course Name: Chemistry Laboratory

Course Code: CH012IU

1. **Course title (code):** CH012IU
2. **Number of credits:** 1(0,1)
3. **Instructor:** Huynh Kim Lam, Ph.D.
4. **Responsible department:** School of Biotechnology
5. **Prerequisite:** none
6. **Course objectives:**

To introduce students to experiments on general chemistry and to provide students with a firm foundation in chemistry for careers in science and engineering (together with the Chemistry for Engineers class). Upon successful completion of this course, the students should be able to demonstrate lab skills and basic knowledge of the following:

- Chemical reactions
- pH and buffers
- Oxidation-Reduction titration with KMnO_4
- Chemical equilibrium
- Factors affecting reaction rates

7. **Course description:**

This course is designed for non-chemistry majors, as it is intended for students pursuing a degree in information technology, electronic and telecommunication. The course introduces the lab-work with emphasis on techniques relevant to engineering in chemistry.

8. **Course details:**

No.	Content	Teaching hour
		Practice
1	Laboratory orientation	04
2	Expt. 01 - Chemical Reactions	04
3	Expt. 02- pH and buffers	04
4	Expt. 03 - Redox Titration with KMnO_4	04
5	Expt. 04 - Chemical Equilibrium	04
6	Expt. 05 - Factors affecting reaction rates	04
TOTAL		24

9. **References:**

- “General Chemistry” by Darrell Ebbing and Steven D. Gammon (9th Ed., 2010)
- “Chemistry: A Molecular Approach” by Nivaldo J. Tro (2nd Ed., 2008)
- “Chemistry, Principles and Reactions” by Masterton and Hurley (6th Ed., 2009)

10. **Teaching equipment:** projector and computer connected to the internet to use online tools.

11. **Evaluation:**

Activity	Number	Percentage
relab	05	20
Reports	05	50
Final exam	01	30

12. Consultancy offered to students:

- Lectures and references will be introduced through the class website:
<https://sites.google.com/site/lkhclasses/>
- Group discussion by seminar, forum or email exchange.
- In-person consultancy according to the approved agenda of the School.



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Chemistry for BME

Course Code: CH014IU

1. General Information

- Course Title:
- + Vietnamese: Hóa học cho Kỹ thuật y sinh
- + English: Chemistry for BME
- Course ID: CH014IU
- Course type:

☐ General	☐ Fundamental
☐ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 3
- + Lecture: 3
- + Laboratory : 0
- Prerequisites: Chemistry for Engineers
- Parallel Courses:

2. Course Description

This course is designed for non-chemistry majors, as it is intended for students pursuing a degree in biomedical engineering. The course covers The basic principles of analytical chemistry, introduces modern analytical chemistry and instrumental techniques with emphasis on techniques relevant to analysis in biomedical engineering. Applications of each technique will be discussed.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	The course provides basic knowledge of analytical chemistry regarding fundamental principles, a wide range of techniques with the most important points involved in each technique and their most useful applications.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Understand basic principles of analytical chemistry and modern instrumental analysis (Program outcomes: (a), (d))	I, T, U
1.2	Understand the importance of sampling, pretreatment, calibration and data handling for the significance and reliability of derived results (Program outcomes: (a), (b), (f), (k))	I, T, U
G1.3	Solve quantitative and qualitative analytical problems (Program outcomes: (a), (b), (d), (f), (k))	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Chapter 1: Introduction to analytical chemistry	G1	in class	A1.1 A1.2
2	Chapter 2: Basic tools of analytical chemistry	G1	in class	A1.1 A1.2
3	Chapter 3: The language of analytical chemistry	G1	in class	A1.1 A1.2
4	Chapter 4: Evaluating analytical data	G1	in class	A1.1 A1.2
5	Chapter 5: Calibrations, Standardizations, and Blank Corrections	G1	in class	A1.1 A1.2

6	Chapter 7: Obtaining and preparing samples for analysis	G1	in class	A1.1 A1.2
7	Chapter 8: Gravimetric methods	G1	in class	A1.1 A1.2
8	Chapter 9: Titrimetric methods	G1	in class	A1.1 A1.2
9	Chapter 10: Spectroscopic methods	G1	in class	A1.1 A1.2
10	Chapter 11: Electrochemical methods	G1	in class	A1.1 A1.2
11	Chapter 12: Chromatographic methods	G1	in class	A1.1 A1.2

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Vong Binh Long
- Email: vblong@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

(Signature)



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Chemistry laboratory for BME

Course Code: BM098IU

1. General Information

- Course Title:
- + Vietnamese: Thực hành Hóa học cho Kỹ thuật y sinh
- + English: Chemistry laboratory for BME
- Course ID: BM098IU
- Course type:

☐ General	☐ Fundamental
☐ Specialization	☐ Others
☒ Skills	☐ Project/Internship/Thesis

- Number of credits: 1
- + Lecture: 0
- + Laboratory : 1
- Prerequisites: None
- Parallel Courses:

2. Course Description

The course covers the basic principles of analytical chemistry, introduces modern analytical chemistry and instrumental techniques with emphasis on techniques relevant to analysis in biomedical engineering. Applications of each technique will be discussed.

3. Textbooks and Other Required

Materials Textbooks:

[1] Lab handout Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Understand basic principles of analytical chemistry and modern instrumental analysis	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Understand the importance of sampling, pretreatment, calibration and data handling for the significance and reliability of derived results	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

G3	Solve quantitative and qualitative analytical problems	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	an ability to apply knowledge of chemistry, science, and calculations	I, T, U
G1.2	an ability to identify, formulate, and solve chemistry problems	I, T, U
G1.3	an ability to use the techniques, skills, and modern analytic tools necessary for analytical chemistry	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline *Lecture:None Laboratory*

Week/Class	Content	Learning outcomes	Assessment
1	Laboratory introduction	---	Attendance, Lab report
2	Solution preparation	---	Attendance, Lab report
3	Acid – base titration	---	Attendance, Lab report
4	Gravimetric method	---	Attendance, Lab report
5	Electrochemical method	---	Attendance, Lab report
6	UV-Vis spectroscopy	---	Attendance, Lab report
7	Thin layer chromatography	---	Attendance, Lab report
8	Exam	---	Attendance, Lab report

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problem and

group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Truong Phuoc Long
 - Email: tplong@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

(Signature)

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Biology for BME

Course Code: BM090IU

1. General Information

- Course Title:
- + Vietnamese: Sinh học cho kỹ thuật y sinh
- + English: Biology for BME
- Course ID: BM090IU
- Course type:

☒ General ☐ Specialization ☐ Skills	☐ Fundamental ☐ Others ☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: None
- Parallel Courses:

2. Course Description

This course covers basic concepts and universal principles of biological molecules, cells, genetics, and biotechnology. The laboratory activities are designed to further investigate and illuminate each topic area in BME research settings.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Students will be able to explain the relationship between structure – function of biomolecules and apply their knowledge to explain the mechanism and treatment strategy for human diseases that are caused by loss/dysfunction of biomolecules	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Student will develop knowledge on biomolecular structure and function, cellular activities, control of gene expression in cells so that they will be able to bring information together to for a solution for biological/medical problem.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	(A) An ability to apply knowledge of mathematics, science, and engineering to solve biomedical engineering problems	I, T, U
G1.2	(B) An ability to design and conduct experiments, as well as to analyze and interpret biomedical and health data	I, T, U
G1.3	(E) An ability to identify, formulate, and solve biomedical engineering problems	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Chapter 1: Introduction to Biology for BME	G1, G2, G3	in class	A1.1
2	Chapter 2: Chemical context of Life	G1, G2, G3	in class	A1.1 A1.2
3	Chapter 3: Biological macromolecules	G1, G2, G3	in class	A1.1
4	Chapter 3: Cont.	G1, G2, G3	in class	A1.1
5	Chapter 4: Tour of cell	G1, G2, G3	in class	A1.1 A1.2
6	Chapter 4: Cont.	G1, G2, G3	in class	A1.1
7	Chapter 5: Cell metabolism	G1, G2, G3	in class	A1.1
8	Chapter 6: Cell cycle, growth and division	G1, G2, G3	in class	A1.1 A1.2
9	Chapter 6: Cont.	G1, G2, G3	in class	A1.1
	Midterm exam			A2.1

10	Chapter 7: Structure and function of cellular membrane	G1, G2, G3	in class	A1.1
11	Chapter 7: Cont.	G1, G2, G3	in class	A1.1
12	Chapter 8: Gene expression and control of gene expression	G1, G2, G3	in class	A1.1 A1.2
13	Chapter 8: Cont.	G1, G2, G3	in class	A1.1
14	Chapter 9: Introduction to Bacteria and Virus	G1, G2, G3	in class	A1.1 A1.2
15	Chapter 9: Cont.	G1, G2, G3	in class	A1.1
	Final exam			A3.2

Laboratory

Week/ Class	Content	Learning outcomes	Assessment
1	Overview of medical laboratory	G1, G2	B1.1
2	Visit of medical laboratory in hospital	G1, G2	B1.1
3	Visit of physician office laboratory	G1, G2	B1.1
4	Blood collection, fractionation	G1, G2	B1.1
5	Microscopic observation of blood cells	G1, G2	B1.1
6	Case Study	G1, G2	B1.1
7	Lab Report	G1, G2	B1.2
8	Final Examination		B1.3

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- Email: yblong@hcmiu.edu.vn,

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
 School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Principles of Electricity in Biomedical Engineering/ Principles of Electricity in Biomedical Engineering Lab

Course Code: BM053IU/ BM054IU

1. General Information

- Course Title:
- + Vietnamese: Nguyên lý điện trong kỹ thuật y sinh , Thực hành nguyên lý điện trong kỹ thuật y sinh
- + English: Principles of Electricity in Biomedical Engineering, Principles of Electricity in Biomedical Engineering Lab
- Course ID: BM053IU-BM054IU
- Course type:

☐ General	☒ Fundamental
☐ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: Calculus 2
- Parallel Courses:

2. Course Description

In the lecture, students will learn the DC electricity where the sources are constant with respect to time. In this domain, students learn all basic elements such as resistor, Op-Amp, capacitor and inductor as well as common analysis techniques to analyze circuits that contain those elements. With capacitor and inductor, students get familiar with the time variable notion. The lecture also covers the AC circuit where the sources vary periodically with respect to time. These notions are particularly useful for students in BME to understand the origins, generations, conductions and functioning of electrical signals in human physiology. Each lecture includes examples highlighting the specific impacts of electricity and electrical engineering in biomedical engineering.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Students will be able to explain the functions and implementations of simple electrical elements in electrical networks, and electrical devices.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Applying DC and AC electrical voltage, current, energy, power, circuit connection, switch and ground (a, e, k).	I, T, U
G1.2	Evaluating voltages, currents and powers of a DC circuit consisting of resistors, current sources and voltage sources using different methods such as: voltage and current division, mesh, node, source conversion, superposition, Thevenin and Norton, and maximum power transfer and power efficiency (a, e, k).	I, T, U
G1.3	Creating series and parallel circuits consisting of resistors, current sources and voltage sources (a, e, k).	I, T, U
G1.4	Analyzing the transient and steady state responses of voltages and currents of a DC circuit consisting of resistors and either capacitors or inductors, current sources and voltage sources (a, e, k)	I, T, U
G1.5	Analyzing the DC gain and outputs of an operation amplifier circuit. (a, e, k)	I, T, U
G1.6	Analyzing the sinusoidal steady state response of a circuit consisting of RLC. (a, e, k)	I, T, U
G1.7	Analyzing the basic functions of electrical elements such as resistors, capacitors and inductors, current sources and voltage sources and their implications in the real world and biomedical devices (h)	I, T, U
G1.8	Analyzing the voltages and currents of different elements such as power supplies, function generators, resistors, capacitors, inductors and op-amp in a circuit using multi-meter and oscilloscope (a, k)	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%

A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/ Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Generalities	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
2	Foundation of Electricity	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
3	Resistor and Resistance	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
4	Basic Resistive Circuits	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
5	Standard Methods to Analyze Resistive Circuits	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
6	Standard Methods to Analyze Resistive Circuits	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
7	Operational Amplifier	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
8	Operational Amplifier	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
	Midterm exam			A2.1

9	Capacitor and Capacitance	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
10	Inductor and Inductance	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
11	Inductor and Inductance	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
12	AC Circuits	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
13	AC Circuits	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
14	AC Circuits	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
15	Electrical Safety	G1, G2, G3, G4, G5, G6, G7, G8	in class	A1.1 A1.2
	Final exam			A3.2

Laboratory

Week/ Class	Content	Learning outcomes	Assessment
1	Introduction to Electrical circuit Electricity safety	G1, G2, G3, G4, G5	B1.1 B1.2
2	Kirchoff's Current and Voltage Laws	G1, G2, G3, G4, G5	B1.1 B1.2
3	AC circuit	G4, G5, G6, G7, G8	B1.1 B1.2
4	Mesh and Nodal Analysis of AC Circuit	G4, G5, G6, G7, G8	B1.1 B1.2
5	Thevenin Theorem	G4, G5, G6, G7, G8	B1.1 B1.2
6	Frequency and Phase Shift Measurement	G4, G5, G6, G7, G8	B1.1 B1.2

7	Operational Amplifier	G4, G5, G6, G7, G8	B1.1 B1.2
8	Final lab exam	G4, G5, G6, G7, G8	B1.1 B1.2

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Pham Thi Thu Hien
- Email: ptthien@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Machine Design

Course Code: BM030IU

1. General Information

- Course Title:

+ Vietnamese: Thiết kế máy cơ khí

+ English: Machine Design

- Course ID: BM030IU

- Course type:

☐ General

☒ Fundamental

☐ Specialization

☐ Others

☐ Skills

☐ Project/Internship/Thesis

- Number of credits: 3

+ Lecture: 3

+ Laboratory : 0

- Prerequisites: PH013IU - Physics 1

- Parallel Courses:

2. Course Description

Introduction to the principles of design and analysis of machines and machine components. Design for functionality, motion, force, strength and reliability. The laboratory experience provides open-ended projects to reinforce the design process.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Understand the fundamental kinematics of machines.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Understand the fundamental kinetics of machines.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G3	Understand the fundamentals of stress analysis of beam-like machine Parts.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G4	Understand the fundamentals of deflection analysis of beam-like machine parts.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

G5	Enhance problem-solving and communication skills through short and long design projects.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	(a) an ability to apply knowledge of mathematics, science, and engineering	I, T, U
G1.2	(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	I, T, U
G1.3	(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	I, T, U
G1.4	(e) an ability to identify, formulate, and solve engineering problems	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Synthesis	G1, G2	In class	Homework
2	Vector Loops	G1, G2	In class	Quiz
3	Position Solutions	G1, G2	In class	Homework
4	Velocity Solutions	G1, G2	In class	Quiz
5	Accel Solutions	G1, G2	In class	Homework

6	Point Path, Curvature	G1, G2	In class	Quiz
7	Rolling Contact	G1, G2	In class	Homework
8	Instant Centers	G1, G2	In class	Quiz
9	Cams	G1, G2	In class	Homework
10	Typical Kinematics Projects (Graphical synthesis of a sofa bed mechanism & Analysis of a film advance mechanism)	G1, G2	In class	Quiz
11	Dynamic Force Analysis	G1, G2	In class	Homework
12	Static Force Analysis	G1, G2	In class	Quiz
13	Graphical Methods	G1, G2	In class	Homework
14	Friction effects	G1, G2	In class	Quiz
15	Buckling	G1, G2	In class	Homework
16	Typical Kinetics Projects: (Baseball pitching mechanism & Bus windshield wiper mechanism)	G1, G2	In class	Quiz
17	Stress Analysis Procedure	G1, G2	In class	Homework
18	State of Stress	G1, G2	In class	Quiz
19	Stress Patterns	G1, G2	In class	Homework
20	Superposition of Stress Patterns	G1, G2	In class	Quiz
21	Typical Stress Projects: (Design of a sign post & Design of a food mixer shaft)	G1, G2	In class	Homework
22	Materials	G1, G2	In class	Quiz
23	Ductile Failure Theories	G1, G2	In class	Homework
24	Brittle Failure Theories	G1, G2	In class	Quiz

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Nguyen Thanh Qua
- Email: ntqua@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Applied Informatics

Course Code: BM064IU

1. General Information

- Course Title:
- + Vietnamese: Tin học ứng dụng
- + English: Applied Informatics
- Course ID: BM064IU
- Course type:

☐ General ☒ Specialization ☐ Skills	☐ Fundamental ☐ Others ☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: None
- Parallel Courses:

2. Course Description

This course focuses on how to apply programming languages to solve engineering problems targeting towards biomedical fields. C-programming language provides students basic programming skills to develop and implement medical devices. MATLAB-programming language supports effective tools for mathematic calculations and graphical visualization of dataset.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Able to construct algorithms to solve engineering problems.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Be able to write C-codes for particular engineering problems.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G3	Be introduced to the concept of graphical user interface in MATLAB to develop new MATLAB toolbox.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

G4	Be able to apply MATLAB tools to solve complicated mathematic problems such as algebra computations on big matrix, polynomial fitting, differential equations.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G5	Be able to apply MATLAB tools for modeling, data visualization, data analysis .	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G6	Perception of the contribution of	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
	Applied Informatics to public health.		

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	(a) an ability to apply knowledge of mathematics, science, and engineering	I, T, U
G1.2	(e) an ability to identify, formulate, and solve engineering problems	I, T, U
G1.3	(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	I, T, U
G1.4	(f) an understanding of professional and ethical responsibility	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Introduction of programming for engineering	G1-G6	Lecture, discussion	Homework

2	Introduction to C programming, variables, standard inputs and outputs	G1-G6	Lecture, discussion	Quiz
3	Structure programming and functions	G1-G6	Lecture, discussion	Homework
4	Arrays and pointers	G1-G6	Lecture, discussion	Quiz
5	String libraries	G1-G6	Lecture, discussion	Homework
6	Structure and bit operators, file input/output	G1-G6	Lecture, discussion	Quiz
7	Advanced programming structure with linked-list and binary tree	G1-G6	Lecture, discussion	Homework
8	Introduction to MATLAB	G1-G6	Lecture, discussion	Quiz
9	Arrays and linear algebra	G1-G6	Lecture, discussion	Homework
10	Scripts, function files, and programming structures	G1-G6	Lecture, discussion	Quiz
11	Plotting and graphical user interfaces	G1-G6	Lecture, discussion	Homework
12	Summary	G1-G6	Lecture, discussion	Quiz

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- Email: ntlua@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: AI for Healthcare

Course Code: BM096IU

1. General Information

- Course Title:
- + Vietnamese: Trí tuệ nhân tạo trong y tế
- + English: AI for Healthcare
- Course ID: BM096IU
- Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 3
- + Lecture: 3
- + Laboratory : 0
- Prerequisites: Biosignal Processing, Linear Algebra
- Parallel Courses:

2. Course Description

This course provides an introduction to how we apply artificial intelligence in healthcare. Several typical problems of applied artificial intelligence in healthcare are introduced, such as diagnosis/segmentation/abnormality detection in CT, OCT, fundus, endoscope images, detecting diseases by signals, e.g., EEG, blood pressure, heart rate. The course offers artificial intelligence methods that are frequently utilized in healthcare systems, including k-nearest neighbor, support vector machine (SVM), neural network, convolutional neural network, recurrent neural network, generative adversarial network. There are lab activities in which students work on programming to build practical schemes.

3. Textbooks and Other Required

Materials Textbooks:

- [2] Deep Learning, Ian Goodfellow, Yoshua Bengio, and Aaron Courville, The MIT Press, 2016 (free online: <http://www.deeplearningbook.org/>)
- [3] Hands-on Machine Learning with Scikit-Learn & Tensorflow, Aurelien Geron, O'Reilly, 2017.
- [4] Information Technologies in Biomedicine, Ewa Pietka, Jacek Kawa, Springer 2008

Reference Materials:

- Deep Learning, Ian Goodfellow, Yoshua Bengio, and Aaron Courville, The MIT Press, 2016 (free online: <http://www.deeplearningbook.org/>)
- Hands-on Machine Learning with Scikit-Learn & Tensorflow, Aurelien Geron, O'Reilly, 2017.
- Information Technologies in Biomedicine, Ewa Pietka, Jacek Kawa, Springer

2008

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Recognizing problems in healthcare that can apply AI	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Have ability to formulate the problems	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G3	Analyzing and solve the problems using AI tools	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G4	Recognizing a normal ECG and sectional medical images	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G5	Evaluating the impacts and limitations of different schemes	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	an ability to apply mathematics and AI tools to solve biomedical engineering problems	I, T, U
G1.2	an ability to design and conduct experiments, to analyze and interpret biomedical and health data, as well as to clean data to apply AI	I, T, U
G1.3	an ability to identify, formulate, and solve biomedical engineering problems	I, T, U
G1.4	a knowledge of contemporary issues related to health and biomedical engineering	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lectures:

Week/ Class	Subject/Chapter	Content

1	Introduction	Introduction: Historical Review, Current Status and Future Potential of Artificial Intelligence in Healthcare
2	AI models in Healthcare problems	AI models in Healthcare problems: Classification
3	AI models in Healthcare problems (cont.)	AI models in Healthcare problems: Segmentation
4	AI models in Healthcare problems (cont.)	AI models in Healthcare problems: Abnormality detection and others
5	Classification problem	Classification problem: Data-driven approach K-nearest neighbor
6	Classification problem	Classification problem: Linear classification Support vector machine
7	Optimization	Optimization: Loss functions Optimization, stochastic gradient descent
Midterm exam		
8	Neural networks	Neural networks: Backpropagation Multi-layer Perceptrons
9	Convolutional neural networks	Convolutional neural networks: Convolutional, pooling, dropout layers
10	Training Neural Networks	Training Neural Networks: Update rules, ensembles, data augmentation, transfer learning
11	CNN Architectures	CNN Architectures: AlexNet, VGG, GoogLeNet, ResNet, etc
12	Recurrent Neural Networks	Recurrent Neural Networks: RNN, LSTM, GRU
13	Generative Adversarial Networks	Generative Adversarial Networks: Generative Adversarial Networks Conditional Generative Adversarial Networks
14	Visualizing and Understanding Feature	Visualizing and Understanding Feature
15	Deep Reinforcement Learning	Deep Reinforcement Learning
Final exam		

Laboratory

Week/ Class	Subject/Chapter	Content
1	Lab 1	Lab 1: Intro to Python (Numpy, Tensorflow)
2	Lab 2	Lab 2: kNN, SVM
3	Lab 3	Lab 3: Build a NN from scratch

4	Lab 4	Lab 4: CNNs for classification
5	Lab 5	Lab 5: CNNs for segmentation
6	Lab 6	Lab 6: CNNs for abnormality detection
7	Lab 7	Lab 7: RNNs, GANs
8	Lab 8	Presentation

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Ngo Thi Lua
- Email: ntlua@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Mechanical design and Manufacturing processes in Biomedical Engineering/ Mechanical design and Manufacturing processes in Biomedical Engineering Lab

Course Code: BM101IU/ BM102IU

1. General Information
 - Course Title:
 - + Vietnamese: Phương pháp thiết kế và chế tạo cơ khí trong kỹ thuật y sinh
 - + English: Mechanical design and Manufacturing processes in Biomedical Engineering/ Mechanical design and Manufacturing processes in Biomedical Engineering Lab
 - Course ID: BM101IU/ BM102IU
 - Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
 - Number of credits: 2
 - Prerequisites: Mechanical design and Manufacturing processes in Biomedical Engineering Lab / Edusoft: none
 - Parallel Courses: None
2. Course Description

Introduction to fundamental knowledge of mechanical design and manufacturing processes in biomedical engineering.
3. Textbooks and Other Required

Materials Textbooks: Class and recitation notes
Reference Materials:
4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Understand legal rules and requirements in medical devices and the roles of related governmental agencies such as FDA	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Understand projection methods. Be capable of reading specifications of a technical drawing and using a drawing software to plot a technical drawing.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G3	Understand the characteristics of different fabrication processes	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

G4	Design a medical related device.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Understand the specifications of a technical drawing and to plot a technical drawing for the manufacturing of a device using a commercial computer drawing software.	I, T, U
G1.2	Use the techniques, skills, and modern tools necessary for mechanical design and manufacturing.	I, T, U
G1.3	Design a device, use hand tools and machine tools to fabricate its mechanical components and assemble them into a device.	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%

7. Course Outline

Lecture:

Chapter	Content
1	Basic regulation of biomedical devices (Ref: https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/overview-device-regulation)
2	Projection: 3D object to 2D drawing. Reading a blue-print
3	Fabrication methods: Additive Manufacturing, 3D Printing, Cold Welding
4	Fabrication methods: Plastic injection, molding
5	Fabrication methods: Electroerosion
6	Computer aided design (CAD) and computer aided manufacturing (CAM)
7	Using Solid work

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Vo Van Toi
 - Email: vvtoi@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Statistics for health sciences

Course Code: BM005IU

1. General Information

- Course Title:
- + Vietnamese: Thống kê trong khoa học sức khỏe
- + English: Statistics for health sciences
- Course ID: BM005IU
- Course type:

☐ General	☒ Fundamental
☐ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 3
- + Lecture: 2
- + Laboratory : 1
- Prerequisites: BM007IU - Introduction to Biomedical Engineering
- Parallel Courses:

2. Course Description

This course focuses on intermediate statistical methods which are often used in bioengineering and biomedicine. The course emphasizes the appropriateness, practical application and interpretation of a variety of analytic methods. Working with SPSS (Statistical package for the social sciences) supports student to deal with practical problems in statistical analysis.

3. Textbooks and Other Required

Materials Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	After completing the course, students are able to apply the fundamentals of statistics, the roles of statistics in analyzing and interpreting experimental data, and know how to apply software to solve practical problems and how to report the analyses.	a,e,b,k,	3.5-4.5

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes

G1.1	Apply the principles of statistics in bioengineering and biomedicine (A3)	I, T, U
G1.2	Be introduced to the concept of modeling and its application in prediction (E1)	I, T, U
G1.3	Apply statistical analyses to find suitable methods in a particular situation to analyze and interpret data (B3)	I, T, U
G1.4	Perform the statistical methods using SPSS (K3), (B3)	I, T, U
G1.5	Apply statistical analyses in scientific papers and present the results from analyses in written form in a professional manner (G2)	I, T, U
G1.6	Be introduced to sources of health databases (J1)	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Basic concepts: Study designs, sampling methods, randomization, types of data	G1, G2	Lecture, Class discussion	Homework
2	Describing data: Measures of central tendency, dispersion, frequency, graphs, Normal distribution, Sampling distributions of the sample means, Standard error, Confidence interval	G1, G2	Lecture, Class discussion	Quiz
3	Analyzing data.	G1, G2	Lecture, Class discussion	Homework
4	Confounding	G1, G2	Lecture, Class discussion	Quiz

5	Effect modification/statistical interaction	G1, G2	Lecture, Class discussion	Homework
6	Review scientific paper	G1, G2	Lecture, Class discussion	Homework
7	Survival analysis (optional)	G1, G2	Lecture, Class discussion	Quiz

Laboratory

Week/Class	Content	Learning outcomes	Assessment
1	Introduction to SPSS: Input/Import/Merge data, Clean data, Recode data	---	Attendance, Lab report
2	Using SPSS to describe data: Descriptive statistics, Graphs	---	Attendance, Lab report
3	Using SPSS for means comparison	---	Attendance, Lab report
4	Using SPSS to compare proportions, measure association, perform diagnostic tests	---	Attendance, Lab report
5	Running simple linear regression by SPSS	---	Attendance, Lab report
6	Running multiple linear regression & logistic regression by SPSS	---	Attendance, Lab report
7	Running regression with effect modification using SPSS	---	Attendance, Lab report

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Truong Phuoc Long
 - Email: tplong@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
 School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Human Anatomy and Physiology

Course Code: BM091IU

1. General Information

- Course Title:
- + Vietnamese: Giải phẫu và sinh lý người
- + English: Human Anatomy and Physiology
- Course ID: BM091IU
- Course type:

☐ General ☐ Specialization ☐ Skills	☒ Fundamental ☐ Others ☐ Project/Internship/Thesis
- Number of credits: 3
- + Lecture: 3
- + Laboratory : 0
- Prerequisites: BM090IU - Biology for BME
- Parallel Courses:

2. Course Description

This subject explains the physical and chemical factors that are responsible for the origin, development, and progression of life. This subject explains the specific characteristics and mechanisms of the human body that make it a living being. This subject explains the functions of tissues, organs and systems with the regulation and control mechanisms of body.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Objective 1: understand the functions of tissues, organs and systems of body.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Objective 2: explain the functions and and control mechanisms of the organs and body systems.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes

G1.1	Understanding the structure of body systems (Program outcome: c, f)	I, T, U
G1.2	Understanding the functions and working mechanisms of body systems (Program outcome: c, f)	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/ Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Introduction to Human Anatomy and Physiology	G1, G2	in class	A1.1 A1.2
2	Overview of the Body Systems	G1, G2	in class	A1.1 A1.2
3	Types of Tissues	G1, G2	in class	A1.1 A1.2
4	Integumentary system and the Senses	G1, G2	in class	A1.1 A1.2
5	Musculoskeletal system	G1, G2	in class	A1.1 A1.2
6	The Heart	G1, G2	in class	A1.1 A1.2
7	Circulatory system and Blood	G1, G2	in class	A1.1 A1.2
8	Respiratory system	G1, G2	in class	A1.1 A1.2
9	Renal system	G1, G2	in class	A1.1 A1.2
	Midterm exam			A2.1
10	Digestive System	G1, G2	in class	A1.1 A1.2
11	Nervous System	G1, G2	in class	A1.1 A1.2

12	Autonomic Nervous System	G1, G2	in class	A1.1 A1.2
13	Endocrine system	G1, G2	in class	A1.1 A1.2
14	Reproductive System	G1, G2	in class	A1.1 A1.2
15	Immune System	G1, G2	in class	A1.1 A1.2
	Final exam			A3.2

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Trinh Nhu Thuy
- Email: tnthuy@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Bioethics

Course Code: BM008IU

1. General Information

- Course Title:
- + Vietnamese: Y đức
- + English: Bioethics
- Course ID: BM008IU
- Course type:

☐ General	☒ Fundamental
☐ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 3
- + Lecture: 3
- + Laboratory : 0
- Prerequisites: BM007IU - Introduction to Biomedical Engineering
- Parallel Courses:

2. Course Description

Many difficult ethical questions have arisen from the explosive growth of biomedical research and the health-care industry since World War II. For example, when does life begin to matter morally? When and how should doctors be allowed to help patients end their lives? Should embryos be cloned for research and/or reproduction? What sorts of living things is appropriate to use as research subjects? How should we distribute scarce and expensive medical resources? This course will show students how problems in bioethics can be approached from a variety of perspectives, with the aim of understanding how we have got, where we are, and how we should decide where to go next.

3. Textbooks and Other Required Materials

Textbooks:

- i. John Harris. The value of life. An introduction to medical ethics. Taylor & Francis e-Library, 2001.
- ii. Monique Frize. Ethics for Bioengineers. Morgan & Claypond. 2012
- iii. Biomedical Ethics Opposing Viewpoints. Greenhaven Press. 1998
- iv. Daniel A. Vallero. Biomedical Ethics for Engineers: Ethics and Decision Making in Biomedical and Biosystem Engineering. Elsevier. 2007

Reference Materials: Lecturer will provide references based on each specific topic.

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence

G1	The students will be provided the capability of identifying ethical issues in medicine, health care and life science, as well as rational justification for ethical decisions	(1)-(7)	3.0-4.5

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Performance Indicators (PI)	Teaching Modes
G1.1	Analysing key issues, ethical principles, traditional topics of bioethics such as the relationship between health professionals and patients, clinical research ethics, the ethics of ending lives (i.e. abortion and euthanasia), etc. as well as current controversies surrounding rapidly advancing biological and medical science and technology such as cloning, stem cell research, vaccine, medical instrumentation, implant and prosthesis, etc. (Program outcomes: (a), (f), (i), (j))	7B	I, T, U
G1.2	Evaluating medical, philosophical, theological, moral and legal aspects of bioethical questions (Program outcomes: (a), (f))	1C	I, T, U
G1.3	Applying communication skills to express your own views clearly in class discussion and engage the views of your classmates (Program outcome: (g))	3C	I, T, U
G1.4	Applying concrete implications of ethical dilemmas and the importance of establishing careful and morally serious approaches to their resolution (Program outcome: (f))	4A	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Weekly Journal	15	10%
	Quiz	3	5%
	Presentation	1	12.5%
	Debate	1	12.5%
A2. Midterm assessment	Midterm exam	1	30%
A3. Final assessment	Final Exam	1	30%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment

1	Course introduction • Review Syllabus • Class Discussion: goals and rules Introduction to Bioethics <i>Book #2: Chap 1: Page 3 - 14</i> <i>Book #4: Chap 1 + 2: Page 10 - 102</i>	G1, G2	In class	weekly journal
2	Beings, human beings and persons Introduction to logic • Basic Logic: Argument, Structure • Validity and Soundness • Informal fallacies <i>Book #1: Chap 1: Page 7 - 27</i>	G1, G2	In class	weekly journal, quiz
3	Engineering Ethics: How to prepare and deliver a debate <i>Book #1: Chap 2: Page 28 - 47</i>	G1, G2	In class	weekly journal, presentation
4	Bioethics at the beginning of life – Abortion, IVF, other reproductive technologies and the selection of “best embryo” • Guest speaker: (potentially) Thao Nguyen M.D. (Tan Tao University) <i>Book #1: Chap 6, 7, 8: Page 111 – 173</i> <i>Book #3: Chap 3: Page 109 - 172</i>	G1, G2	In class	weekly journal, debate
5	Bioethics at the beginning of life – Human cloning How to write a philosophy paper Selection of midterm paper topics <i>Book #3: Chap 1: Page 16 – 50</i> <i>Book #4: Chap 2: Page 52 - 56</i>	G1, G2	In class	weekly journal, presentation
6	Bioethics at the end of life – Killing: A caring thing to do? Assisted suicide & Euthanasia. <i>Book #1: Chap 4: Page 64 - 86</i>	G1, G2	In class	weekly journal, presentation
7	Organ donations and the engineering solutions Discussion of midterm paper outlines <i>Book #3: Chap 2: Page 51 - 108</i>	G1, G2	In class	weekly journal, presentation
8	Animal research <i>Book #2: Chap 2: Page 23 – 24 Book #4: Chap 4: Page 158 - 159</i>	G1, G2	In class	weekly journal, quiz, presentation
	Midterm paper (2 weeks)			

9	Human research – principles to consider when performing studies with human subjects <i>Book #2: Chap 2: Page 15 – 22</i> <i>Book #4: Chap 5: Page 167 - 174</i>	G1	In class	weekly journal
10	Human research– Clinical trials for drugs, vaccines and medical devices	G1	In class	weekly journal, presentation
11	IRB and informed consent. • Guest lecturer: Huan Vuong, M.D.	G1	In class	Weekly Journal
12	Modern technology & Bioethics: Genome, genetic testing and GMO Discussion of Final Exam preparation <i>Book #3: Chap 4: Page 173 - 235</i>	G1	In class	weekly journal, debate
13	Modern technology & Bioethics: Human enhancement and immortality <i>Book #4: Chap 2: Page 57 - 58</i>	G1	In class	weekly journal, debate
14	Bioethics related to Artificial Intelligence • Lecture: Career Orientation (Msc. Bui Thi Nhu Ngoc) <i>Book #2: Chap 4: Page 35 – 46 Book #4: Chap 5: Page 178 - 189</i>	G1	In class	weekly journal, quiz
15	Topic: Technology and society: (Technology Friend and Foe or the Impact of science and tech on society, Societal responses to global issues created by science and technology, Poverty and issues of concern in developing countries, Low tech technologies) • Review of Bioethics course <i>Book #2: Chap 4: Page 35 – 46 Book #4: Chap 5: Page 178 - 189</i>	G1	In class	weekly journal, presentation

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Ha Thi Thanh Huong
 - Email: htthuong@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in purple ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Biomaterials

Course Code: BM082IU

1. General Information

- Course Title:
- + Vietnamese: Vật liệu sinh học
- + English: Biomaterials
- Course ID: BM082IU
- Course type:

☐ General ☒ Specialization ☐ Skills	☐ Fundamental ☐ Others ☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: None
- Parallel Courses:

2. Course Description

An engineer of tissue engineering major should understand biomaterials, and its surface modification for specific applications. Also, an engineer must understand how to choose materials and how to design a scaffold for specific implantation zone.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	To explain basic principles of biocompatibility and implants performance, review different strategies to modify and/or design materials that are biocompatible. Also, this course will explain what biodegradability is and how it affects biomaterial design. These allow students to understand material selection and structure-function relationships and read, understand and assimilate papers, publications and lectures in the biomaterials. Student will obtain enough knowledge to develop analysis and critical-thinking skills for the evaluation of relevant literature.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Give the definition of a biomaterial (Program outcome: e, j)	I, T, U
G1.2	Describe the structure and composition of naturally occurring biomaterials, such as tooth enamel, bone, collagen, skin etc. (Program outcome: e, k)	I, T, U
G1.3	Derive mathematical expressions relating to material stress, strain and viscoelastic properties and describe and quantify failure mechanisms (Program outcome: b)	I, T, U
G1.4	Describe methods of manufacture of the different types of materials used in medicine and biosciences, their properties and their suitability for a particular function (Program outcome: l)	I, T, U
G1.5	Describe methods of modifying surfaces and their impact on the material/biological interface. (Program outcome: a,l,m)	I, T, U
G1.6	Describe physical techniques used in biomaterials research, such as x-ray photoelectron spectroscopy, electron microscopy, scanning probe microscopy, force microscopy and quartz crystal resonance and apply these to qualitatively and quantitatively derive information about how materials interact with biological systems. (Program outcome: b)).	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment

1	Chapter 1: Course introduction	G1, G2	Lecture, discussion	Homework
2	Chapter 2: Polymers: Polymer synthesis, Polymer characterization	G1, G2	Lecture, discussion	Quiz
3	Chapter 3: Biodegradable polymers: chemistry of hydrolysis, degradation mechanisms	G1, G2	Lecture, discussion	Homework
4	Chapter 4: Hydrogels: hydrogel structure and crosslinking, hydrogel swelling and characterization	G1, G2	Lecture, discussion	Quiz
5	Chapter 5: Hydrogels: Polyelectrolyte swelling and applications	G1, G2	Lecture, discussion	Homework
6	Chapter 6: Adhesives and coatings: Natural polymers and adhesion; Surface treatments and analysis	G1, G2	Lecture, discussion	Quiz
7	Chapter 7: Biomaterial analysis: Thermal & Advanced mechanical analysis	G1, G2	Lecture, discussion	Homework
8	Chapter 8: Biologic Recognition: Protein adsorption; Engineered recognition	G1, G2	Lecture, discussion	Quiz
9	Chapter 9: Biologic Response: Thrombosis/ Blood compatibility; Tissue compatibility and testing	G1, G2	Lecture, discussion	Homework
10	Chapter 10: Controlled Release: Membrane systems; Swellable systems	G1, G2	Lecture, discussion	Homework
11	Chapter 11: Micro and nanoparticle systems: Overview; Stealth systems	G1, G2	Lecture, discussion	Quiz

Lecture:

Laboratory

Week/Class	Content	Learning outcomes	Assessment
1	Fabrication of a hydrogel for skin regeneration	---	Attendance, Lab report
2	Swelling and degradation of a sponge	---	Attendance, Lab report

3	Fabrication of a scaffold for tissue regeneration – Preparation of raw materials	---	Attendance, Lab report
4	Fabrication of a scaffold for tissue regeneration – Fabrication Process	---	Attendance, Lab report
5	Fabrication of a scaffold for tissue regeneration – Swelling and degradation	---	Attendance, Lab report
6	Synthesis of Hydroxyapatite using microwave method for bone regeneration	---	Attendance, Lab report
7	Synthesis of Hydroxyapatite using sonic method for bone regeneration	---	Attendance, Lab report

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Nguyen Thi Hiep
- Email: nthiep@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: BME Capstone Design Course

Course Code: BM009IU

1. General Information

- Course Title:
- + Vietnamese: Đồ án thiết kế Kỹ thuật y sinh
- + English: BME Capstone Design Course
- Course ID: BM009IU
- Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: BM007IU - Introduction to Biomedical Engineering
- Parallel Courses:

2. Course Description

The course has three components: class lectures, laboratories, and project. The lectures are built upon all previous BME coursework. They emphasize on the design principles of medical instrumentation and biomedical signal analysis. Topics include the origin of bioelectric potentials; the characteristics of various biological signals, transducers, instrumentation amplifiers, analogue and digital devices; and computer interfaces. Labs include the design, construction and testing of electrical circuits and computer interfaces to measure diverse biological signals. The semester long group project consists of designing an instrument requested from hospitals or the BME Department labs. Students work in a team of different orientations.

3. Textbooks and Other Required

Materials Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	The goal of the course is to encourage students to use knowledge acquired in other courses to focus on the design of a useful device and to develop self-learning skills.	(1)-(7)	4.0-4.5

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Evaluating the relationship between traditional and biomedical engineering impacts (a, h)	I, T, U
G1.2	Evaluating the origin of biopotentials (a, h)	I, T, U
G1.3	Evaluating the resistive, capacitive and inductive sensors and electro-mechanical actuators used in biomedical engineering (a, h)	I, T, U
G1.4	Evaluating the diversity of medical devices (a, h)	I, T, U
G1.5	Evaluating the notion of multiple and open-ended solution in the design (a, h).	I, T, U
G1.6	Creating circuits to amplify the bio-signals and eliminate the noise (a, h)	I, T, U
G1.7	Applying soft skills such as teamwork, problem solving, self-learning and public presentation (g, k)	I, T, U
G1.8	Applying scientific knowledge to identify issues of a problem to be solved and technical skills to create a device capable of performing functions, experiments and measurements to solve the above issues (a, b, c, d, e, f, g, h, k).	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Basic concepts of Medical Instrumentation	G1, G2	In class	Homework
2	Basic Sensors and Actuators in biology and medicine	G1, G2	In class	Quiz
3	Human Factors Engineering	G1, G2	In class	Homework
4	Biopotential Amplifiers	G1, G2	In class	Quiz

5	Biopotential Electrodes	G1, G2	In class	Homework
6	Feedback Control	G1, G2	In class	Quiz
7	Origin of Biopotentials	G1, G2	In class	Homework
8	Design of a blood pressure and heart rate measurement device	G1, G2	In class	Homework
9	Design of a spirometer	G1, G2	In class	Quiz

Laboratory

Week/Class	Content	Learning outcomes	Assessment
1	Using Arduino: Introduction, interface and control. Practices: Blinking LED, Simple LED controller, LCD Interface, LCD displaying, LCD using Arduino	---	Attendance, Lab report
2	Using Sensors: Selecting, Signal acquiring. Practices: Thermal measurement, ECG acquiring	---	Attendance, Lab report
3	Using Actuators: Selecting, Motors controlling, Signal acquiring. Practices: DC motor, PWM, Stepping motor	---	Attendance, Lab report
4	Using Design Software and Hardware: Solidworks, 3D printers. Practice: Design simple components with Solidworks, implement it on 3D printers	---	Attendance, Lab report
5	Define the characteristics of the device to be designed, and describe its related scientific, medical and economic backgrounds	---	Attendance, Lab report
6	Identify and analyze existing devices on the market and possible design solutions	---	Attendance, Lab report
7	Determine working plan and schedule	---	Attendance, Lab report
8	Develop hardware	---	Attendance, Lab report
9	Develop software	---	Attendance, Lab report
10	Integrate and test the functioning of the system	---	Attendance, Lab report
11	Test the device on real subjects (using only non-invasive and in vivo methods) or real situations, analyze the results and propose works to be done.	---	Attendance, Lab report

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final

examination. Missed tests: 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.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Vo Van Toi
 - Email: vvtoi@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Engineering Challenges in Medicine I

Course Code: BM011IU

1. General Information

- Course Title:
- + Vietnamese: Thách thức kỹ thuật trong Y khoa 1
- + English: Engineering Challenges in Medicine I
- Course ID: BM011IU
- Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 3
- + Lecture: 3
- + Laboratory : 0
- Prerequisites: BM091IU - Human Anatomy and Physiology
- Parallel Courses:

2. Course Description

Engineering Challenges in Medicine (ECM) exposes students to technical issues encountered by physicians in hospitals that prevent them to advance in medical diagnosis and treatment. In this course, physician instructors will demonstrate pathophysiology, advantages and disadvantages of current medical management of common diseases, and ask students to propose their own solutions to overcome these challenges. ECM I covers basic principles of diagnostic imaging, electrocardiography and common diseases of the musculoskeletal, neurological, and cardiovascular systems.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	ECM I aims to familiarize students with medical management for common diseases of musculoskeletal, neurological and cardiovascular system so that students can develop skills to identify medical challenges and propose their own solutions for innovation or creation.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Explain and illustrate pathophysiology of some common diseases - (a) an ability to apply knowledge of mathematics, science, and engineering	I, T, U
G1.2	Interpret common arrhythmia on ECG and identify normal brain waves on EEG - (a) an ability to apply knowledge of mathematics, science, and engineering	I, T, U
G1.3	Compare and contrast the working principles, pros and cons of Ultrasound, CT and MRI - (a) an ability to apply knowledge of mathematics, science, and engineering	I, T, U
G1.4	Identify and analyze pros and cons in current medical diagnosis, treatment and prevention of common diseases - (a) an ability to apply knowledge of mathematics, science, and engineering; (e) the ability to identify, formulate, and solve engineering problems; (j) a knowledge of contemporary issues	I, T, U
G1.5	Summarize and address common challenges in medical management and suggest solutions - (a) an ability to apply knowledge of mathematics, science, and engineering; (e) the ability to identify, formulate, and solve engineering problems; (j) a knowledge of contemporary issues	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Introduction	G1, G2	Lecture, discussion	Homework

2	Common Diagnostic Procedures	G1, G2	Lecture, discussion	Quiz
3	Musculoskeletal Diseases	G1, G2	Lecture, discussion	Homework
4	Neurological Diseases	G1, G2	Lecture, discussion	Homework
5	Cardiovascular Diseases	G1, G2	Lecture, discussion	Quiz

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Dao Thi Thanh Binh
- Email: binh.daothanh@gmail.com

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Entrepreneurship in Biomedical Engineering

Course Code: BM013IU

1. General Information
 - Course Title:
 - + Vietnamese: Kinh thần trong Kỹ thuật y sinh
 - + English: Entrepreneurship in Biomedical Engineering
 - Course ID: BM013IU
 - Course type:

☐ General ☐ Specialization ☐ Skills	☒ Fundamental ☐ Others ☐ Project/Internship/Thesis
 - Number of credits: 3
 - + Lecture: 3
 - + Laboratory : 0
 - Prerequisites: EN011IU - Writing AE2
 - Parallel Courses:

2. Course Description

This course introduces various stages of the entrepreneurial process and provides knowledge of start-up development. Students will expose to this process by working on some key steps in establishing a start-up for a biomedical product or service. The main goal of the course is to prepare students with an entrepreneurial mindset so that they realize the importance of developing a biomedical product or service that meets the customer demand and can be commercialized.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	In this course, students are to learn entrepreneurship in BME through a “hands-on” approach, in which students have to deal with real issues and challenges. So the unifying framework for the course is the assignment for developing the business plan for a “real” venture in BME. Students are to use and integrate the concepts, tools and frameworks from the course to evaluate their business ideas, to develop the business plan for the selected idea and to pitch this business plan to active entrepreneurs and practicing venture capital professionals.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Describe start-up development process	I, T, U
G1.2	Identify opportunities to establish a start-up on a biomedical product or service	I, T, U
G1.3	Conduct market research to understand the real needs of customers and market competition in order to validate target market segment and value proposition and evaluate the identified opportunity (H1, I2)	I, T, U
G1.4	Estimate the cost for start-up development and make financial projection (H2)	I, T, U
G1.5	Identify different ways and sources of financing for biomedical start-ups (J1)	I, T, U
G1.6	Collaborate within a start-up team (D3)	I, T, U
G1.7	Sharpen analytical thinking through evaluation of other teams' projects	I, T, U
G1.8	Persuade the stakeholders through defense of own team's project (G1, G3)	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Introduction to Entrepreneurship, Entrepreneurial mindset	G1, G2	Lecture, discussion	Homework
2	Opportunity identification and evaluation	G1, G2	Lecture, discussion	Quiz
3	Developing Marketing Strategy	G1, G2	Lecture, discussion	Homework

4	Distinctive competence & sustainable competitive advantage	G1, G2	Lecture, discussion	Quiz
5	Segmentation & Positioning	G1, G2	Lecture, discussion	Homework
6	Market research	G1, G2	Lecture, discussion	Quiz
7	Understanding Your Customers and Competitors	G1, G2	Lecture, discussion	Homework
8	Identifying Your Value Proposition	G1, G2	Lecture, discussion	Quiz
9	Market Entry and Market Penetration	G1, G2	Lecture, discussion	Homework
10	The Marketing Mix	G1, G2	Lecture, discussion	Quiz
11	Guerilla Marketing	G1, G2	Lecture, discussion	Homework
12	Financial projections	G1, G2	Lecture, discussion	Quiz
13	Sources of financing	G1, G2	Lecture, discussion	Homework
14	Pricing	G1, G2	Lecture, discussion	Quiz
15	Crowdfunding	G1, G2	Lecture, discussion	Homework
16	Business plan	G1, G2	Lecture, discussion	Homework
17	Optional: Intellectual Property, legal basics, Cash management	G1, G2	Lecture, discussion	Quiz

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final

examination. Missed tests: 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.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Phan Gia Hoang
 - Email: giahoang108@gmail.com

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Project 1

Course Code: BM068IU

1. General Information

- Course Title:
- + Vietnamese: Đồ án 1
- + English: Project 1
- Course ID: BM068IU
- Course type:

☐ General ☐ Specialization ☐ Skills	☐ Fundamental ☐ Others ☒ Project/Internship/Thesis
- Number of credits: 1
- + Lecture: 0
- + Laboratory : 1
- Prerequisites: EN011IU - Writing AE2
- Parallel Courses:

2. Course Description

Students will explore a specific topic in the medical fields. Students will learn how to do a research through various skills of doing experiments, searching and identifying scientific journals as references related to the experiments from e-library, analyzing data, weekly report meeting with advisor, writing scientific report, and etc. At the end of the course, student will submit a final report.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	An ability to independently conduct logical search for relevant literature	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Analyze literature, drawing comparisons and connections to formulate biomedical engineering problems	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G3	An ability to make a research plan with appropriate experimental methods and design	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G4	An ability to prepare a well-structured scientific report	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	(B) An ability to design and conduct experiments, as well as to analyze and interpret biomedical and health data	I, T, U
G1.2	(E) An ability to identify, formulate, and solve biomedical engineering problems	I, T, U
G1.3	(I) A recognition of the need for, and an ability to engage in life-long learning	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	How to conduct literature review	G1-G4	Lecture, discussion	Homework
2	Formulate research topic	G1-G4	Lecture, discussion	Quiz
3	Experimental plan, data analysis	G1-G4	Lecture, discussion	Homework
4	Citation management software	G1-G4	Lecture, discussion	Quiz
5	Progress meeting	G1-G4	Lecture, discussion	Homework
6	How to write a scientific report	G1-G4	Lecture, discussion	Quiz

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Ha Thi Thanh Huong
 - Email: htthuong@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Pre-thesis

Course Code: BM003IU

1. General Information

- Course Title:
- + Vietnamese: Đồ án chuẩn bị LVTN
- + English: Pre-thesis
- Course ID: BM003IU
- Course type:

☐ General ☐ Specialization ☐ Skills	☐ Fundamental ☐ Others ☒ Project/Internship/Thesis
- Number of credits: 1
- + Lecture: 0
- + Laboratory : 1
- Prerequisites: BM068IU - Project 1
- Parallel Courses:

2. Course Description

Pre-thesis is a semester-long course taken at the senior year. Students engage in a research project to explore in literature published research achievements in a research field that students have already agreed upon with potential thesis advisors. This is an independent work. Students and advisors meet to discuss together as much as needed. In the end, students must narrow down their works to a specific research topic and develop a detailed plan for works to be done for the thesis. For an unsatisfactory work, students must prolong the time until completion or change the topic or the advisor. The course culminates in a written pre-thesis report. Students also defend their results in an oral presentation in front of the Department faculty committee during the exam week.

3. Textbooks and Other Required

Materials Textbooks: As needed

Reference Materials: Published scientific articles and technical documents

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Students use their knowledge and experiences acquired in previous courses, learn how to use literature search skills to identify works that have been done, and use analysis and synthesis skills to identify a specific work that needs to be done. After finishing this course students acquire knowledge and comprehension of the scientific research process. They know how to identify a scientific issue and propose how to solve it.	(i), (e), (k), (g)	3.5-4.5

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Searching the literature relevant to the topic; Differentiating between primary, secondary and tertiary sources of information; Producing a critical review of the literature relevant to the topic to be studied.	I,T,U
G1.2	Formulating a hypothesis/design requirements; Carrying out the investigations; Collecting, collating and analyzing data from their investigations; Designing and constructing a prototype.	I,T,U
G1.3	Drawing valid conclusions from the analysis of the data/results; Discussing the relevance of the conclusions in the context of the literature relating to that topic.	I,T,U
G1.4	Reporting the findings of the investigation by manuscript; oral presentation; poster. Orally describe, discuss and defend their work.	I,T,U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

This is an independent, original and personal course.

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering

- CourseCoordinator/Lecturer: Tran Le Giang
Email: tlgiang@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in purple ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Practice 1: Reverse Engineering

Course Code: BM050IU

1. General Information

- Course Title:
- + Vietnamese: Thực hành 1: Kỹ thuật đảo ngược
- + English: Practice 1: Reverse Engineering
- Course ID: BM050IU
- Course type:

☐ General	☐ Fundamental
☐ Specialization	☐ Others
☐ Skills	☒ Project/Internship/Thesis
- Number of credits: 1
- + Lecture: 0
- + Laboratory : 1
- Prerequisites: None
- Parallel Courses:

2. Course Description

This is a course of general knowledge in medicine, medical instrumentation, and basic of Arduino. Students will learn how to take vital signs, do CPR and some common first aids, and explore common medical devices in our department's labs such as ECG, Ultrasound, Ventilator, CT machines... which are provided by the industrial partners. Students learn how to use mechanical tools to disassemble and reassemble medical devices and explore their working principles and block diagrams. Moreover, students will study some basics about the Arduino circuit and apply them to the project which built up the simple medical device/ equipment. As one of the first courses for BME students, it also covers the soft skills required for presentation, literature searching, and report writing.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Take vital signs, do CPR and some common first aids, basic of Arduino	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Describe basic working principles and block diagram of some common medical devices	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

G3	Work effectively together as a team to do group assignments	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Disassemble and reassemble popular medical devices - (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	I, T, U
G1.2	Illustrate the working principles of studied medical devices - (e) an ability to identify, formulate, and solve engineering problems	I, T, U
G1.3	Demonstrate soft skills of building teamwork, searching for documents, writing report, making PowerPoint presentation/poster - (i) a recognition of the need for, and an ability to engage in life-long learning	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	0	0%
	Homeworks	0	0%
A2. Midterm assessment	Midterm exam	0	0%
A3. Final assessment	Final Exam	0	0%
	Project report	0	0%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Quiz, Lab report	7	40%
B2. Final assessment	Final Exam	1	40%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Assessment
1	Introduction of a logbook, Laboratory Safety, Arduino 1	G1.1, G1.2	Attendance, Homework
2	Arduino 2	G1.1, G1.2	Attendance, Homework
3	Arduino 3	G1.1, G1.2	Attendance, Homework
4	Sphygmomanometer and Ventilator machine	G1.1, G1.2, G1.3	Attendance, Quiz, Report

5	ECG machine and patient monitor	G1.1, G1.2, G1.3	Attendance, Report, Quiz,
6	Ultrasound and CT scan machine	G1.1, G1.2, G1.3	Attendance, Report, Quiz,
7	CPR and common First Aids	G1.1, G1.2,	Attendance
8	Final project presentation	G1.1, G1.2, G1.3	Attendance, Report

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week self-studying. This time should be made up of reading, working on exercises and problems and group assignments. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed test: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Nguyen Thanh Qua
- Email: ntqua@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Practice 2: Animal Cells and Microbiologies

Course Code: BM067IU

1. General Information

- Course Title:

+ Vietnamese: Thực hành 2: Tế bào động vật và vi sinh vật

+ English: Practice 2: Animal Cells and Microbiologies

- Course ID: BM067IU

Number of credits: 1

+ Lecture: 0

+ Laboratory: 1

2. Course Description

This course introduces students to the essential theory and techniques for working with microorganisms and animal cells. As these are among the most important model systems in biomedical engineering, this knowledge will enable students to conduct engineering and scientific projects using these systems. If students would like to further study these topics, they can consider taking courses such as Clinical Test, Tissue Engineering, Cell/tissue - Biomaterial Interaction and Biomaterials. This course includes a field trip to microbiology labs (hospital, research institute...) in which students will learn the practical protocols related to microorganisms and animal cells.

3. Textbooks and Other Required Materials

[1]. Lab hand-outs

[2]. Lecturer will provide further references based on each specific topic

4. Course Goals

At the end of the course, students will:

- Be able to understand the essential theory and conduct the fundamental techniques for working with microorganism and animal cells.

- Be familiar with and able to perform several fundamental scientific skills, including: Taking note in lab notebook., Designing experiments and evaluating result, Making figures/figure legend, Making and presenting poster, Writing lab report.

5 Learning Outcome

5.1 Student outcomes

This course support for the attainment of the following student outcomes:

b. An ability to design and conduct experiments, as well as to analyze and interpret data

5.2 Course Learning outcomes

Learning outcome code	Course learning outcomes	Program Learning outcomes after ABET
G1	Understand the essential theory and conduct the fundamental techniques for working with microorganism and animal cells.	b
G2	Be familiar with and able to perform several fundamental scientific skills, including: Taking note in lab notebook, Designing experiments and evaluating result, Making figures/figure legend, Making and presenting poster, Writing lab report	b

6. Course Assessment

Assessment component	Assessment form	Week	CLOs	SOs	Percentage %
Laboratory					
B1. Process assessment	B1.1 Participations	Every week	G1, G2	B	10 %
	B1.2 Quiz (at the beginning and end of class)	Every week	G1, G2	B	40 %
B2. Final assessment	B2.1 Lab report	Week 6 and week 11	G1, G2	B	20 %
	B2.2 Poster	Week 11	G1, G2	B	15 %
	B2.3 Poster presentation	Week 11	G1, G2	B	15 %

7. Course Outline

Week/Class	Subject/Chapter	Title	Content
1	Lab 1	Introduction to tissue culture – Part I	<i>Why learning tissue culture? Cell types and their needs Design of a cell culture facility</i>
2	Lab 2	Introduction to tissue culture – Part II	<i>Sterile techniques Common contaminations and how to avoid/handle Culture media preparation</i>
3	Lab 3	Culture initiation	<i>Cell thawing Live/death identification Cell counting Cell plating onto different culture vessels and media conditions</i>
4	Lab 4	Subculture Cell and Substrate Interaction	<i>Assessment of cell growth with microscope Subculture of cells onto different substrates Morphology evaluation with SEM and bright field microscope after cell plating</i>
5	Lab 5	Viability Assessment	<i>Cell and other material interaction Other structural and biochemical indicators: ATP, NADPH, membrane integrity</i>

6	Lab 6	Basic equipment, Aseptic technique, preparation and sterilization of culture media	<i>Basic rules and requirements in microbiology lab Aseptic technique Culture medium Preparation and sterilization of media to culture bacteria.</i>
7	Lab 7	Microbial culture techniques	<i>Culture techniques of microorganism Cultural characteristics of microorganisms</i>
8	Lab 8	Staining techniques, observation of microbial under microscope	<i>Observation of live bacteria under microscope Simple staining technique Gram staining technique</i>
9	Lab 9	Final course assessment	<i>Lab exam</i>

8. Course Policy

- Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problem and group assignment.
- Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 90 % of the course to be eligible for the final presentation.
- Missed tests: Students are not allowed to miss the final presentation. There are very few exceptions. (Only with extremely reasonable excuses, e.g. certified paper from doctors, may students re-take the tests.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
 - Course Coordinator/Lecturer: Truong Phuoc Long
- Email : tplong@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Practice 3: Electronic Design

Course Code: BM052IU

1. Name of course:
 - Vietnamese: Thực hành 3: Thiết kế mạch điện
 - English: Practice 3: Electronic Design
 - Course code: BM052IU
 - Course type:

☒ Specialization
 ☐ Core

☒ Requirement
 - Elective ☐
 - Number of credits: 1 credits
 - Theory: 0 credits
 - Practice: 1 credit
 - Prerequisite: Principles of EE 1
 - Parallel teaching in the course: None
2. Course Description: Students will study essential skills for medical device design. In the first half of semester, students will study how to design an electrical schematic and PCB using CAD software. They also have chance to make their own PCB using tools in our department's labs by conducting 2 practical projects. These projects are demanded from industry. Upon finishing the third semester, students can design electrical part of a medical device. Students also have chance to visit PCB production companies.
3. Course objectives: On completion of the course, students will have skill to:
 - Design the schematic of electronic circuits.
 - PCB design using CAD software.
 - Make an electronic circuits in Lab using tools in department's labs.
4. Textbooks and references: Textbooks:
 - *R. Khandpur, Printed Circuit Boards: Design, Fabrication, and Assembly, McGraw-Hill Electronic Engineering, 2005*
 - *Nihal Kularatna, Electronic Circuit Design: From Concept to Implementation, CRC Press, 2008*

References: Lecturer will provide references based on each specific topic.

5. Learning outcomes

	Course Learning outcomes	Performance indicators for outcomes
Skill	1. Able to formulate, develop and test a PCA prototype of medical devices.	2C. Implementing engineering design to specific biomedical engineering problems
	2. Able to create a system to meet desired needs within requirements of practical products.	2A. Identify constraints and requirements of the design to meet the needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

		2B. Design a system, component, or process with required specifications and functions
Attitude	3. Perception of the contribution of research to public health.	4A. Evaluate the professional and ethical dimensions of engineering cases

6. Course implementation

a. Time: 8~10 week, 05 periods per week

b. Teaching and learning activities

- Classroom activities: Lectures, discussions, lab & presentations
- Self-learning: Design their own circuits, Show final working products.
- Field-trip: Observing, discussing

7. Course outline

Week	Subjects	Descriptions
1	Electronic circuits (schematic) design with Capture CAD software	- Learn how to use Capture CAD software to design an electronic circuit schematic
2	PCB design with CAD software Layout	- Learn how to use CAD software Layout to design a PCB from the schematic
3	Recognize, measuring, testing electronic components.	- With given electronic components, student need to recognize the name and pins configuration, measure the components' parameters, test the function of the components.
4	Practical project #1: Develop a medical device PCA which demanded from industry (Ex: ECG signal generator circuits)	- Study the provided circuit functions. - Sketch design - Schematic design - Layout design
5	Practical project #1: (cont.)	- PCB development - PCA making - Testing
6	Practical project #2: Develop a medical device PCA which demanded from industry (Ex: Wireless micro phone)	- Study the provided circuit functions. - Sketch design - Schematic design - Layout design
7	Practical project #2: (cont.)	- PCB development - PCA making - Testing
8	Final Exam / Project presentation	- Present two projects' results. Each student has to build a basic project individually. - Guest reviewers from industry will be invited for evaluating (if possible).

8. Course Assessment:

8.1. Grading:

- Attendance: 10%

- Lab works (attitude, skills, lab results): 30%
 - Lab report: 30%
 - Final exam/ Project presentation: 30%
- 8.2. Assessment Plan

No	Assessment tasks	Assessment crit	Level of cognitive Domain												Weight (%)
			Applying			Analyzing			Evaluating			Creating			
			MCQ	WQ	P	MCQ	WQ	P	MCQ	WQ	P	MCQ	WQ	P	
1	- Lab: Assignment 2	Know how to design the schematic of electronic circuits.					x			x			x		20
2	- Lab: Assignment 3	Know how to make the PCB design using Orcard.					x			x			x		20
3	- Lab: Assignment 1	Know how to choose electronic components corresponding to their applications, power/voltage supply, and their specifications.		x				x						x	10
4	- Lab: Project 1,2	Know how to make an electronic circuits in Lab using tools in BME department's labs.						x			x			x	40
5	- Lab: Project Final / Final Exam	Know how to make a fully workout electronic circuits for BME design.			x			x			x			x	10
	Total														100

Note: MCQ: Multiple choice questions ; WQ: Writing questions; P: Presentation

9. Student responsibility & Policies:

- *Student responsibility:* Students are expected to spend at least 8 hours per week for

self – studying. This time should be made up of reading, working on exercises and problem and group assignment.

- *Attendance:* Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination.

- *Missed tests:* 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.)

10. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Le Ngoc Bich
- Email: lnkich@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in purple ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Medical Design

Course Code: BM017IU

1. General Information

- Course Title:
- + Vietnamese: Thiết kế y tế
- + English: Medical Design
- Course ID: BM017IU
- Course type:

☐ General	☐ Fundamental
☐ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 1
- + Lecture: 0
- + Laboratory: 1
- Prerequisites: Practice 3: Electronic Design
- Parallel Courses:

2. Course Description

Students will practice designing medical devices/equipment. In the first half of this course, students will learn different types of motors (step motors, servo motors, and DC motors) and how to control these motors. In the second half of this course, students will learn and practice using microcontrollers (for example ESP32) to collect and process data from biomedical sensors. This course requires students to work on a group project to design and build a medical device or equipment. Ideas and requirements for these projects come from the industrial partner and they are also involved in the evaluation of the report.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Students will be able to use basic motors and sensors, and apply these components to the designing and fabrication of medical devices/equipment.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	(f) An understanding of professional and ethical responsibility in the practice of biomedical engineering	I, T, U
G1.2	(k) An ability to use the techniques, skills, and modern engineering tools necessary for biomedical engineering practice	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	0	0%
	Homework	0	0%
A2. Midterm assessment	Midterm exam	0	0%
A3. Final assessment	Final Exam	0	0%
	Project report	0	0%
Laboratory			
B1. Process assessment	Attendance	8	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Laboratory

Week/Class	Content	Learning outcomes	Assessment
1	Introduction to motors	G1.1, G1.2	Attendance, Lab report
2	Controlling DC motor	G1.1, G1.2	Attendance, Lab report
3	Controlling step motor	G1.1, G1.2	Attendance, Lab report
4	Controlling servo motor	G1.1, G1.2	Attendance, Lab report
5	Microcontroller ESP32	G1.1, G1.2	Attendance, Lab report
6	Microcontroller ESP32	G1.1, G1.2	Attendance, Lab report
7	Microcontroller ESP32	G1.1, G1.2	Attendance, Lab report
8	Final project presentation	G1.1, G1.2	Attendance, Lab report

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Tran Le Giang

- Email: tlgiang@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Project 2

Course Code: BM069IU

1. General Information

- Course Title:
- + Vietnamese: Đồ án 2
- + English: Project 2
- Course ID: BM069IU
- Course type:

☐ General	☐ Fundamental
☐ Specialization	☐ Others
☐ Skills	☒ Project/Internship/Thesis
- Number of credits: 1
- + Lecture: 0
- + Laboratory : 1
- Prerequisites: Research 2B, Academic English II
- Parallel Courses:

2. Course Description

Students will do biomedical engineering project. They will have chance to apply what they have learned in previous semesters in designing, performing experiment, collecting and analyzing experimental data. Moreover, student also improve their presenting, writing skills in scientific manner. In addition, students can work on projects that are suggested or ordered by the industrial partner. The enterprises also participate in the assessment of students' project results.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals (Gx)	Descriptions	Program Outcomes	Level of Competence
G1	An ability to independently design experiment	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Analyze and interpret experimental results and based on that to draw conclusion	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G3	An ability to present experimental results in a scientific manner	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G4	An ability to prepare a well-structured scientific report	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code	CLOs Descriptions	Teaching Modes
G1.1	(B) An ability to design and conduct experiments, as well as to analyze and interpret biomedical and health data	I, T, U
G1.2	(E) An ability to identify, formulate, and solve biomedical engineering problems	I, T, U
G1.3	(G) An ability to communicate effectively	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

*Lecture:**Laboratory*

Week/Class	Content	Learning outcomes	Assessment
1	Experimental design	G1.1, G2.1	Attendance, Lab report
2	Data collection and interpretation	G1.1, G2.1	Attendance, Lab report
3	Trouble-shooting for experiment	G1.1, G2.1	Attendance, Lab report
4	Graphic presentation of experimental result	G1.1, G2.1	Attendance, Lab report
5	Writing a scientific report	G1.1, G2.1	Attendance, Lab report

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Pham Thi Thu Hien
- Email: ptthien@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Internship

Course Code: BM020IU

1. General Information

- Course Title:
- + Vietnamese: Thực tập
- + English: Internship
- Course ID: BM020IU
- Course type:

☐ General ☐ Specialization ☐ Skills	☐ Fundamental ☐ Others ☒ Project/Internship/Thesis
- Number of credits: 3
- + Lecture: 0
- + Laboratory : 3
- Prerequisites: None
- Parallel Courses:

2. Course Description

In BME program, students are required to spend at least 2 months during their 4 year study to become Biomedical Engineers. Internships are opportunities for students of BME department International University to learn about and apply biomedical engineering principles outside the classroom in the laboratory, work place and/or field. During the internship, the faculty mentor will assign the student responsibilities that have been previously agreed upon and approved by the BME department chair. These duties will vary depending on the particular discipline. The student will work under the guidance and direction of an internship mentor at the site. This individual will be an employee of the internship site.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	- Gaining practical, on-the-job experience	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	- Development of professional and personal confidence, responsibility, and maturity	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G3	- Understanding of the realities of the work world	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

G4	- Acquisition of human relations skills	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G5	- Opportunity to examine a career choice closely and make professional contacts	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G6	- Opportunity to test the ideas learned in the classroom out in the work place	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G7	- Opportunity to make contacts with potential employers	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G8	- Enhancement of classroom experiences	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G9	- Learning what careers to pursue or not to pursue	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G10	- Development of skills that are difficult to learn and practice in the classroom	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G11	- Possible earnings to help offset college expenses	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline NA

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Vong Binh Long
- Email: vblong@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in purple ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Thesis research

Course Code: BM004IU

1. General Information

- Course Title:
- + Vietnamese: Luận văn tốt nghiệp
- + English: Thesis research
- Course ID: BM004IU
- Course type:

☐ General	☐ Fundamental
☐ Specialization	☐ Others
☐ Skills	☒ Project/Internship/Thesis
- Number of credits: 10
- + Lecture: 0
- + Laboratory : 10
- Prerequisites: Pre-thesis
- Parallel Courses:

2. Course Description

Thesis is a semester-long course taken at the senior year following the success of the pre-thesis work. This is an independent work, students are expected to spend about 30 h/per week. Students work on a specific research topic whose plan has been developed in detail during the pre-thesis. Students and advisors meet to discuss together as much as needed. The work can be the design of a medical device or the experiments to discover the effects of certain factors on a scientific issue. For an unsatisfactory work, students must prolong the time until completion. In an unavoidable situation, students may require to change the topic or the advisor. The course culminates in a written thesis report and a working device, if applied. Students also defend their results in an oral presentation and a demonstration of working device, if applied in front of a Department faculty committee, in due form, during the exam week.

3. Textbooks and Other Required

Materials Textbooks: As needed

Reference Materials: Published scientific articles and technical documents

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	After finishing this course students acquire knowledge and comprehension of the research process. They know how to identify a scientific issue, apply their knowledge to solve a scientific problem. They learn how to communicate their scientific findings to the greater scientific community using manuscript, poster and oral presentation. They feel confident enough about their scientific discoveries to discuss and defend their findings and how they related to the greater scientific community.	(1)-(7)	4.0-4.5

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Searching the literature relevant to the topic; Differentiating between primary, secondary and tertiary sources of information; Producing a critical review of the literature relevant to the topic to be studied.	I,T,U
G1.2	Formulating a hypothesis; Carrying out the investigations; Collecting, collating and analyzing data from their investigations.	I,T,U
G1.3	Drawing valid conclusions from the analysis of the data; Discussing the relevance of the conclusions in the context of the literature relating to that topic.	I,T,U
G1.4	Reporting the findings of the investigation by manuscript; oral presentation; poster. Orally describe, discuss and defend their work.	I,T,U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

This is an independent, original and personal course.

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Vong Binh Long
 - Email: vblong@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Digital Systems/ Digital Systems Lab

Course Code: BM060IU/ BM061IU

1. General Information

- Course Title:
- + Vietnamese: Hệ thống số
- + English: Digital Systems, Digital Systems Lab
- Course ID: BM060IU-BM061IU
- Course type:

☐ General ☒ Specialization ☐ Skills	☐ Fundamental ☐ Others ☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: None
- Parallel Courses:

2. Course Description

This course provides the student to understand about digital system in order to design digital circuits or systems. This course represents the following parts: Binary arithmetic, Boolean algebra, K-maps, Combinational Logic Circuit, Flip-Flops, Digital Arithmetic, Counters and Registers, Memory Devices, AD-DA Conversions and PLD.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	To calculate different number systems, binary addition and subtraction, 2's complement representation and operations with this representation.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	To understand the different switching algebra theorems and apply them for logic functions.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G3	To apply the Karnaugh map for a few variables and perform an algorithmic reduction of logic functions.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

G4	To describe the following combinational circuits: buses, encoders/ decoders, (de)multiplexers, exclusive-ORs, comparators, arithmetic-logic units; and then to be able to build simple applications.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G5	To construct the different latches and flip-flops.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G6	To derive the state-machine analysis or synthesis and to perform simple projects with a few flip-flops.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G7	To compute sequential circuits, like counters and shift registers, and to perform simple projects with them.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G8	To describe types of memory ICs.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	a. an ability to apply knowledge of mathematics, science, and engineering to solve biomedical engineering problems. (a1)	I, T, U
G1.2	c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. (c3)	I, T, U
G1.3	e. an ability to identify, formulate, and solve biomedical engineering problems. (e3)	I, T, U
G1.4	k. an ability to use the techniques, skills, and modern engineering tools necessary for biomedical engineering practice. (k2)	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
	Attendance	7	20%

B1. Process assessment	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Chapter 1: Introduction	G1, G2	Lecture, discussion	Homework
2	Chapter 2: Number Systems and Codes	G1, G2	Lecture, discussion	Quiz
3	Chapter 3: Logic Gates and Boolean Algebra	G1, G2	Lecture, discussion	Homework
4	Chapter 4: Combinational Logic Circuits	G1, G2	Lecture, discussion	Quiz
5	Chapter 5: Flip-Flops and Related Devices	G1, G2	Lecture, discussion	Homework
6	Chapter 6: Digital Arithmetic: Operations and Circuits	G1, G2	Lecture, discussion	Quiz
7	Chapter 7: Counters and Registers	G1, G2	Lecture, discussion	Homework
8	Chapter 8: MSI Logic Circuits	G1, G2	Lecture, discussion	Quiz
9	Chapter 9: Integrated-Circuit Logic Families	G1, G2	Lecture, discussion	Homework
10	Chapter 10: Memory, PLD, CPLDs and FPGAs	G1, G2	Lecture, discussion	Quiz

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Pham Thi Thu Hien
Email: ptthien@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Micro-electronic Devices

Course Code: BM062IU

1. General Information

- Course Title:

+ Vietnamese: Thiết bị vi điện tử

+ English: Micro-electronic Devices

- Course ID: BM062IU

- Course type:

☐ General

☒ Specialization

☐ Skills

☐ Fundamental

☐ Others

☐ Project/Internship/Thesis

- Number of credits: 3

+ Lecture: 3

+ Laboratory : 0

- Prerequisites: BM053IU – Principles of Electricity in Biomedical Engineering/
Edusoft: none

- Parallel Courses:

2. Course Description

The course is an introduction to microcontrollers including basic architecture, programming and applications of MCS-51 family and other MCS platforms.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Upon completion of the course, students will understand the basics of microcontroller-based system as well as their applications. Students will also be equipped with detailed knowledge about microcontrollers' hardware structures and be able to write codes for their applications. Prerequisite: Electronic Circuits II and Digital System	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Knowing the fundamentals and applications of microprocessors and microcomputers (outcome a,j).	I, T, U
G1.2	Understanding the architectures, instruction sets, and applications of 8051 microcontroller family and other platforms (outcome a,j).	I, T, U
G1.3	Implementing basic applications of microcontrollers, such as input/output, analog-digital conversion (ADC), digital-analog conversion (DAC), motor speed control and data acquisition using different microcontroller platforms (outcome c,k).	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Introduction	G1, G2	Lecture, discussion	Homework
2	Introduction to numeral systems, ASCII code and Boolean operations	G1, G2	Lecture, discussion	Quiz
3	Architecture of the 8051 micro-controller	G1, G2	Lecture, discussion	Homework
4	Assembly language programming	G1, G2	Lecture, discussion	Quiz
5	Timer	G1, G2	Lecture, discussion	Homework
6	Serial port	G1, G2	Lecture, discussion	Quiz
7	Interrupt	G1, G2	Lecture, discussion	Homework

8	Review	G1, G2	Lecture, discussion	Quiz

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Le Ngoc Bich
- Email: lnkich@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Electronic Devices for Biomedical Design

Course Code: BM089IU

1. General Information

- Course Title:
- + Vietnamese: Thiết bị điện tử cho Kỹ thuật Y Sinh
- + English: Electronic Devices for Biomedical Design
- Course ID: BM089IU
- Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: BM053IU – Principles of Electricity in Biomedical Engineering/Edusoft: none
- Parallel Courses:

2. Course Description

Fundamentals of semiconductor devices and microelectronic circuits, characteristics of p-n, Zener diodes, and analog diode circuits. Principles of MOSFET and BJT operation, biasing, transistor analysis at midband frequencies.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	An ability to define and analyze the four basic amplifiers models (voltage, current, transconductance and transresistance). Solve the amplifier's transfer functions and gain.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	An ability to understand in depth the op amp as a circuit building block and its terminal characteristics for applications.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

G3	An ability to understand the essence of the diode function, grasp the techniques for the analysis of diode circuits through modeling the diode characteristics, use diodes for various applications, including in design of rectifier circuits.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G4	An ability to analyze the BJT terminal characteristics, utilize the	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
	circuit models to perform the rapid first-order analysis of BJT circuits and to design single-state BJT amplifiers.		
G5	An ability to develop a high degree of familiarity with the MOSFET: its physical structure and operation, terminal characteristics, circuit models, single - stage amplifier configurations and basic circuit applications, analyze and design the basic discrete MOSFET circuits.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	(a) an ability to apply knowledge of mathematics, science, and engineering	I, T, U
G1.2	(b) an ability to design and conduct experiments, as well as to analyze and interpret data	I, T, U
G1.3	(c) an ability to identify, formulate, and solve engineering problems	I, T, U
G1.4	(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/ Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Chapter 1: Introduction. Analog and digital signals, amplifiers, circuit models for amplifiers, network theorems.	G1, G2	in class	A1.1
2	Chapter 2: Operational Amplifiers, Ideal Op Amp, inverting & non-inverting configurations, Op Amp circuits, non-ideal performance.	G2, G3	in class	A1.1 A1.2
3	Chapter 3: Diodes, Ideal diode, terminal characteristics, analysis of diode circuits, small signal analysis.	G1, G3	in class	A1.1
4	Chapter 4: PN junction under reverse-bias, PN junction under forward bias, zener diodes.	G1, G2	in class	A1.1 A1.2
5	Chapter 5: Diode applications, diode circuit design.	G2, G3	in class	A1.1
6	Chapter 6: Bipolar Junction Transistors; Physical structures and models of operation, PNP & NPN transistors.	G1, G3	in class	A1.1 A1.2
7	Chapter 7: DC analysis, BJT as an amplifier.	G1, G2	in class	A1.1
8	Chapter 8: Single stage amplifier configurations; BJT in cut-off and saturation; BJT circuit applications and circuit design.	G2, G3	in class	A1.1 A1.2
9	Chapter 9: Field-Effect Transistors.	G1, G3	in class	A1.1
	Midterm exam			A2.1
10	Chapter 10: Structure and physical operation of enhancement-type and depletion type MOSFET.	G1, G2	in class	A1.1 A1.2
11	Chapter 11: FET circuit in DC.	G2, G3	in class	A1.1
12	Chapter 11: Cont.	G1, G3	in class	A1.1
13	Chapter 12: FET as an amplifier, biasing circuits and biasing design; Basic configuration of single-stage FET amplifiers.	G1, G2	in class	A1.1 A1.2

14	Chapter 13: Basic configuration of single-stage FET amplifiers; FET circuit design.	G2, G3	in class	A1.1
15	Chapter 14: CMOS and CMOS Applications.	G1, G3	in class	A1.1
	Final exam			A3.2

Laboratory

Week/ Class	Content	Learning outcomes	Assessment
1	Introduction and Laboratory Equipment	G3, G4	B1.1
2	RC Circuits and Operational Amplifier	G3, G4	B1.1 B1.2
3	Semiconductor Junction Diode	G3, G4	B1.2
4	Bipolar Junction Transistors: I-V Characteristics and Biasing	G3, G4	B1.1 B1.2
5	Bipolar Junction Transistors: Amplifier Topologies	G3, G4	B1.1 B1.2
6	MOSFET Transistors	G3, G4	B1.2
7	Review		B1.2
8	Final exam		B2.1

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Pham Thi Thu Hien
- Email: ptthien@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

**Course Name: Information Technology in the Health Care System/ Information
Technology in the Health Care System Lab**

Course Code: BM033IU/ BM070IU

1. General Information
 - Course Title:
 - + Vietnamese: Công nghệ thông tin trong hệ thống chăm sóc sức khỏe
 - + English: Information Technology in the Health Care System & Laboratory
 - Course ID: BM033IU-BM070IU
 - Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
 - Number of credits: 4
 - + Lecture: 3
 - + Laboratory : 1
 - Prerequisites: Applied Informatics/ Edusoft: None
 - Parallel Courses:

2. Course Description

This course will teach students how to analyze and apply various management programs and technology systems currently available to health care professionals. Lectures and tutorials will offer experiential learning opportunities. The tutorials will introduce the knowledge and software toolsets that will be used by the students to design an original health care delivery system application. Knowledge will include those used by professionals to design information healthcare system, automated decision support system and healthcare standards.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	We will show how information technologies (IT) shape the health care trends in future. Students will learn how IT enhances medical care through: 1) improve the way to manage healthcare information in large scale, 2) network-integrated decision support tools for clinicians, 3) opportunities for e- health delivery over the network	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

	and 4) standardize information transfers among healthcare centers.		

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Know how to apply the roles of information technology in healthcare system. (Program outcome: (a,h))	I, T, U
G1.2	Know the fundamentals of network protocol. (Program outcome: (a,c,k))	I, T, U
G1.3	Be introduced recent trends in clinical decision support system (CDSS) and telemedicine. (Program outcome: (i,c,j,h))	I, T, U
G1.4	Experience a real healthcare information system. (Program outcome: (b,h))	I, T, U
G1.5	Apply the fundamentals of database to create, access and manage a database system. (Program outcome: (a,e,c,k))	I, T, U
G1.6	Apply electronic healthcare records and related international standards. (Program outcome: (c,j))	I, T, U
G1.7	Evaluate the importances and supports of smartphones and embedded sensors within healthcare context. (Program outcome: (c,k,h))	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Information technology and healthcare professionals	G1, G2	Lecture, discussion	Homework
2	Communication networks	G1, G2	Lecture, discussion	Quiz

3	Network protocol and open systems interconnection (OSI) model	G1, G2	Lecture, discussion	Homework
4	TCP/IP protocol and IP address	G1, G2	Lecture, discussion	Quiz
5	Database, MySQL and PHP	G1, G2	Lecture, discussion	Homework
6	Smartphone programming and embedded system in health care	G1, G2	Lecture, discussion	Quiz
7	Health information system (HIS) and introduction to Care2x	G1, G2	Lecture, discussion	Homework
8	Electric healthcare record and health level seven international (HL7) standard, version 2.x	G1, G2	Lecture, discussion	Quiz
9	Electric healthcare record and health level seven international (HL7) standard, version 3.x	G1, G2	Lecture, discussion	Homework
10	Clinical decision support system (CDSS)	G1, G2	Lecture, discussion	Quiz
11	Telemedicine	G1, G2	Lecture, discussion	Homework
12	Convergence informatics: The future of clinical innovation	G1, G2	Lecture, discussion	Quiz

Laboratory

Week/Class	Content	Learning outcomes	Assessment
1	Network and IP Address	---	Attendance, Lab report
2	Database, MySQL and PHP	---	Attendance, Lab report
3	Database, MySQL and PHP	---	Attendance, Lab report
4	Smartphone programming and Biosensors	---	Attendance, Lab report
5	Care2x	---	Attendance, Lab report
6	HL7	---	Attendance, Lab report
7	CDSS	---	Attendance, Lab report
8	Final examination	---	Attendance, Lab report

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Ngo Thanh Hoan
- Email: nthoan@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Biomedical Photonics/ Biomedical Photonics Lab

Course Code: BM075IU/ BM076IU

1. General Information
 - Course Title:
 - + Vietnamese: Quang học y sinh & Thí nghiệm quang học y sinh
 - + English: Biomedical Photonics & Biomedical Photonics Laboratory
 - Course ID: BM075IU-BM076IU
 - Course type:

☐ General ☒ Specialization ☐ Skills	☐ Fundamental ☐ Others ☐ Project/Internship/Thesis
 - Number of credits: 4
 - + Lecture: 3
 - + Laboratory : 1
 - Prerequisites: None
 - Parallel Courses:

2. Course Description

This course introduces some of the basic concepts of applying light in biomedical applications. This course is especially tailored for engineers who have no prior knowledge in biomedical sciences. The course first introduces some basic concepts in biomedical sciences so that students can be familiar with the techniques and the terminologies used in the field. Subsequently, the course would consider biological tissues as an optical material with some unique properties different from other conventional material, such as semiconductors, when light interacts with it. Several important research topics including microscopy, optical detection techniques, and optical disease detection techniques will be discussed. Engineering students who take this course would allow them to quickly get into the field of biomedical engineering that highly interdisciplinary knowledge and skills are required.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	To define the fundamentals of Light and Matter, their interactions.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	To define the fundamentals of Lasers, Laser Technology and Nonlinear Optics.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

G3	To apply the fundamentals and applications of Photobiology.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G4	To demonstrate the fundamentals of microscopy and fluorescence dyes and know their applications.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G5	To apply some nonlinear microscopy techniques such as CARS, FLIM, FCS, PALM, STED.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G6	To define the fundamentals of optical coherence tomography.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G7	To describe some basic concepts in biomedical sciences and know some applications of biological tissues.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G8	To apply several important research topics including microscopy, optical detection techniques, and optical disease detection techniques.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G9	To define the fundamental and know how to use of some optical biosensors.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	a. an ability to apply knowledge of mathematics, science, and engineering to solve biomedical engineering problems. (a3)	I, T, U
G1.2	g. an ability to communicate effectively. (g1)	I, T, U
G1.3	j. a knowledge of contemporary issues. (j2)	I, T, U
G1.4	k. an ability to use the techniques, skills, and modern engineering tools necessary for biomedical engineering practice. (k1)	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%

B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Chapter 1: Introduction	G1, G2	Lecture, discussion	Homework
2	Chapter 2: Fundamentals of Light and Matter	G1, G2	Lecture, discussion	Quiz
3	Chapter 3: Basics of Biology	G1, G2	Lecture, discussion	Homework
4	Chapter 4: Fundamental of Light-Matter Interactions	G1, G2	Lecture, discussion	Quiz
5	Chapter 5: Lasers, Laser Technology and Nonlinear Optics	G1, G2	Lecture, discussion	Homework
6	Chapter 6: Photobiology	G1, G2	Lecture, discussion	Quiz
7	Chapter 7: Biological Imaging Spectroscopy	G1, G2	Lecture, discussion	Homework
8	Chapter 8: Biochips and Microarrays: Tools for New Medicine	G1, G2	Lecture, discussion	Quiz
9	Chapter 9: Microscopy and fluorescence dyes	G1, G2	Lecture, discussion	Homework
10	Chapter 10: Optical coherence tomography	G1, G2	Lecture, discussion	Quiz
11	Chapter 11: Optical disease diagnostic techniques: autofluorescence, vibrational spectroscopy	G1, G2	Lecture, discussion	Homework
12	Chapter 12: Optical Biosensors	G1, G2	Lecture, discussion	Quiz

Laboratory

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering

- CourseCoordinator/Lecturer: Pham Thi Thu Hien
Email: ptthien@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Biomedical Image Processing

Course Code: BM058IU

1. General Information

- Course Title:
- + Vietnamese: Xử lý ảnh y sinh
- + English: Biomedical Image Processing
- Course ID: BM058IU
- Course type:

☐ General ☒ Specialization ☐ Skills	☐ Fundamental ☐ Others ☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: Biosignal Processing/Edusoft: None
- Parallel Courses:

2. Course Description

The goal of this course is to introduce techniques to enhance biomedical images to help physicians in diagnosis and treatment. This subject also introduces the principle of tomography techniques such as X-ray, CT, MRI and PET/CT. Moreover, it provides students essential knowledge of digital image processing including image acquisition, image formation, linear system, low-level image processing, image enhancement in frequency domain, pattern recognition, etc. A series of exercises and labs also provide students practical experience in working with biomedical image data.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	An ability to understand types of medical images and how they are different from other digital images.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	An ability to process images by methods such as filter, transforms, enhancement, edge detection and others.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

G3	An ability to write Matlab codes for processing biomedical images with the aforementioned methods.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Understand medical imaging and biomedical images (Program outcome: (a), (b), (e), (k)).	I, T, U
G1.2	Understand methods to enhance medical images (Program outcome: (a), (b), (k)).	I, T, U
G1.3	Understand supported methods to develop computer aided diagnosis programs (Program outcome: (b), (k)).	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Introduction to biomedical image processing	G1, G2	Lecture, discussion	Homework
2	Digital image acquisition	G1, G2	Lecture, discussion	Quiz
3	Image enhancement in spatial domain	G1, G2	Lecture, discussion	Homework
4	Image enhancement in frequency domain: Fourier transform	G1, G2	Lecture, discussion	Quiz

5	Image enhancement in frequency domain: Filters	G1, G2	Lecture, discussion	Homework
6	Morphological image processing	G1, G2	Lecture, discussion	Quiz
7	Image restoration	G1, G2	Lecture, discussion	Homework
8	Image segmentation	G1, G2	Lecture, discussion	Quiz
9	Object classification and recognition	G1, G2	Lecture, discussion	Homework
10	Medical image registration	G1, G2	Lecture, discussion	Quiz
11	Computed tomography	G1, G2	Lecture, discussion	Homework
12	Revision	G1, G2	Lecture, discussion	Quiz

Laboratory

Week/Class	Content	Learning outcomes	Assessment
1	Enhance image in spatial domain (1)	---	Attendance, Lab report
2	Enhance image in spatial domain (2)	---	Attendance, Lab report
3	Enhance image in frequency domain	---	Attendance, Lab report
4	Morphological image processing	---	Attendance, Lab report
5	Medical image restoration	---	Attendance, Lab report
6	Medical image segmentation	---	Attendance, Lab report
7	Medical image classification	---	Attendance, Lab report
8	Medical image registration	---	Attendance, Lab report

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering

- CourseCoordinator/Lecturer: Le Ngoc Bich
- Email: lnbich@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

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

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Brain - Computer Interface

Course Code: BM074IU

1. General Information

- Course Title:
- + Vietnamese: Giao diện não - máy
- + English: Brain - Computer Interface
- Course ID: BM074IU
- Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: Biosignal Processing/ Edusoft: none
- Parallel Courses:

2. Course Description

In this course, students will learn about the basic function and structure of brain, the function of each part of the brain. In addition, students will be practiced on devices to learn how to interface between Brain-Computer. Collecting signals and analyzing them are also mentioned.

3. Textbooks and Other Required Materials

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	An ability to understand structure of human brain.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	An ability to learn how to use medical devices to measure the brain signals.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G3	An ability to analyze the data and get the useful information from the signal.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G4	An ability to learn methods for calculating and analyzing signals.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G5	An ability to do statistical analysis of signals.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G6	An ability to do real experiments of Brain-Computer interface.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	(a) an ability to apply knowledge of mathematics, science, and engineering	I, T, U
G1.2	(b) an ability to design and conduct experiments, as well as to analyze and interpret data	I, T, U
G1.3	(e) an ability to identify, formulate, and solve engineering problems	I, T, U
G1.4	(i) a recognition of the need for, and an ability to engage in life-long learning	I, T, U
G1.5	(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Attendance	15	5%
	Quiz	3	5%
	Group Presentation		10%
A2. Midterm assessment	Midterm exam	1	30%
A3. Final assessment	Project presentation + Report	1	30%
Laboratory			
B1. Process assessment	Attendance	8	5%
	Lab report	7	5%
B2. Final assessment	Lab Exam	1	10%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Course introduction: Lecture: Introduction to Brain Computer Interface	G1	In class	Attendance
2	Basic Neuroscience: anatomy, physiology and disorders.	G1	In class	Attendance

3	Basic Neuroscience: anatomy, physiology and disorders (cont.)	G1	In class	Attendance, Quiz
4	Recording and stimulation techniques.	G2	In class	Attendance
5	Signal processing for BCI	G3, G4, G5	In class	Attendance
6	Signal processing for BCI (cont)	G3, G4, G5	In class	Attendance
7	Machine learning for BCI	G3, G4, G5	In class	Attendance
	Midterm Exam			
8	Machine learning for BCI (cont)	G3, G4, G5	In class	Attendance
9	Non-invasive BCIs: Evoked Potentials (SSVEP and P300), Oscillatory Potentials and Cognitive Imagery	G1, G2, G6	In class	Attendance
10	Non-invasive BCIs: Evoked Potentials (SSVEP and P300), Oscillatory Potentials and Cognitive Imagery (cont)	G1, G2, G6	In class	Attendance, Quiz
11	Semi invasive BCIs: Using EcoG and nerve-based approaches 1 st student-led presentation and discussion	G1, G2, G6	In class	Presentation
12	Invasive BCIs: Early Studies, Toward Neural Prosthetics; Decoding techniques, Cognitive control 2 nd student-led presentation and discussion	G1, G2, G6	In class	Presentation
13	Bidirectional and Recurrent BCIs: Lecture	G1, G2, G4	In class	Attendance, Quiz
14	BCI Applications: Medical applications BCI applications: Non - medical applications 3 rd student-led presentation and discussion	G1, G2, G6	In class	Presentation

15	BCI Applications: Technology challenges and system integration, BCI Ethics, Current and future status of BCI 4 th student-led presentation and discussion Project support session with TA	G1, G2	In class	Presentation
	Final Project presentation			

Laboratory

Week/Class	Content	Learning outcomes	Assessment
1	Introduction to EEG Signal Acquisition Psychopy (Communication with EEG) Final Project Description	G2, G3, G4, G5	Attendance, Lab report
2	Preprocessing Steps for Advanced Data Analysis Time-frequency Power	G3, G4, G5	Attendance, Lab report
3	Independent Component Analysis	G3, G4, G5	Attendance, Lab report
4	Steady State Visually Evoked Potentials Decoding the SSVEP response	G3, G4, G5	Attendance, Lab report
5	Data visualization and feature visualization	G3, G4, G5	Attendance, Lab report
6	Machine + Deep learning Techniques in BCI	G3, G4, G5	Attendance, Lab report
7	Motor Imagery Decoding Imagined Movement	G1, G3, G4	Attendance, Lab report
8	Lab Examination	G3, G4, G5	Attendance, Lab Examination

Guidelines:

- *Paper Presentation and Discussion:* Teams of two students will choose 2-3 papers to present on a particular class day (using slides and whiteboard) for in-class discussion. 1 week before the presentation day, you will need to (1) send the slides for instructor to get feedback and (2) create a discussion post on our class Facebook group to initiate discussion about your topic.
- *Guidelines for Paper Presentation:* Use the following format to structure your presentation:
 - Introduction and background: First few slides should discuss the problem being addressed by the paper and prior work on the topic;
 - Methods: Describe the methods used for experiments and analysis of data;

- Results: Present the results reported by the authors, e.g., by going over figures/tables (for longer papers, you do not need to go over every figure/table -- pick results you think are the most interesting);
- Summary/Conclusion and Discussion of Strengths/Weaknesses/Future Work: Summarize the contributions of the paper, assess its strengths/weaknesses, and speculate on how the results could be extended/improved.
- Feel free to copy and paste into your presentation figures from either the online version of the paper or from the PDF file (as a last resort, use PrntScr or screengrab). You can also use figures from the web or other papers with proper attribution.
- *Discussion Board:* Before each class involving Group presentation, students must should participate in the Facebook Group Post to get bonus pointss.
- *Lab report:* For the lab sessions, you will be introduced to several recording techniques of brain activity, instruments for recording, BCI softwares, etc. After each or a few of the sessions, you will be required to write up a lab report. Students will work in group of 2-4 for the lab sessions.
- *Final Group Project:* There will be a final group project that will involve additional exploration of BCI research and possibly hands-on experience with BCI data. Final project groups will consist of 3-4 students in each group. All groups will present their results to class and submit a short-written report.

8. Course Policy

- Attendance and participation: Be on time, focus and actively participate during class time. Regular on-time attendance in this course is expected. It is compulsory that students attend at least 12 out of 15 classes and 7 out of 8 lab sessions to be eligible for the final presentation. If you show up more than 5 minutes late, your attendance of that class is not counted.
- No late submission of any class assignment is allowed. If you submit your assignment late, it will not be graded and will be considered as “no submission”, which is equal to zero grade for that assignment. Why? Because you need to develop a good task managing skill and a respect for deadline. If you have emergency situation, you can inform the lecturers about it and negotiate for a new deadline, but you will need to be really convincing and sincere.
- Pay close attention to and strictly follow all announcements and instructions of the teaching team. They can come via blackboard, email and Facebook group, as well as directly from your lecturers and TAs.
- If you have questions or feedback, please do tell the teaching team. Maximize your learning efficiency by going to TA office hours and be very engaged during class and lab sessions.
- No plagiarism is allowed. If you copy information (more than a whole phrase in a sentence) from your classmates, from online source, from other papers without citing them, that is considered plagiarism. This is an unacceptable practice in our class and for your future career. Please use your own writing.
- Students are expected to spend at least 3-5 hours per week for self – studying. This time should be made up of reading, working on exercises and problem and group assignment.
- Missed tests: Students are not allowed to miss the final presentation. There are very few exceptions. (Only with extremely reasonable excuses, e.g. certified paper from doctors, may students re-take the tests.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Ha Thi Thanh Huong
 - Email: htthuong@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in purple ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Computer Aided Diagnosis

Course Code: BM071IU

1. General Information

- Course Title:
- + Vietnamese: Chẩn đoán hỗ trợ bằng máy tính
- + English: Computer Aided Diagnosis
- Course ID: BM071IU
- Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: Biosignal Processing/ Edusoft: none
- Parallel Courses:

2. Course Description

This course is an introduction to diagnostic imaging and an overview of how computerized analysis of medical images has been employed to assist physicians in detecting or classifying lesions and screening for differential diagnosis. Topics include typical pathological abnormal patterns of various diagnostic imaging modalities with an emphasis on ECG, Ultrasound, and CT scan. Lab activities focus on interpreting ECG, CT scan and performing an Ultrasound exam.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Recognizing a normal ECG and sectional medical images	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Analyzing common and typical lesions on ECG and selected diagnostic imaging modalities	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G3	Evaluating the impacts and limitations of different computer-aided diagnostic imaging modalities	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	I, T, U
G1.2	(d) an ability to function on multi-disciplinary teams	I, T, U
G1.3	(f) an understanding of professional and ethical responsibility	I, T, U
G1.4	(e) an ability to identify, formulate, and solve engineering problems	I, T, U
G1.5	(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Introduction: Historical Review, Current Status and Future Potential of Computer-Aided Diagnosis	G1, G2	Lecture, discussion	Homework
2	Normal ECG	G1, G2	Lecture, discussion	Quiz

3	Sectional Anatomy	G1, G2	Lecture, discussion	Homework
4	Medical Images of the Head	G1, G2	Lecture, discussion	Quiz
5	Medical Images of the Chest	G1, G2	Lecture, discussion	Homework
6	Medical Images of the Abdomen	G1, G2	Lecture, discussion	Quiz
7	Computer-Aided Diagnosis in ECG and Ultrasound	G1, G2	Lecture, discussion	Homework
8	Computer-Aided Diagnosis for Brain Lesions	G1, G2	Lecture, discussion	Quiz
9	Computer-Aided Diagnosis for Lung Nodules	G1, G2	Lecture, discussion	Homework
10	Computer-Aided Diagnosis for Breast Cancer	G1, G2	Lecture, discussion	Homework
11	Computer-Aided Diagnosis for Osteoporosis	G1, G2	Lecture, discussion	Quiz

Laboratory

Week/Class	Content	Learning outcomes	Assessment
1	Lab 1: Interpreting ECG	---	Attendance, Lab report
2	Lab 2: Interpreting Brain Images	---	Attendance, Lab report
3	Lab 3: Interpreting Lung Images	---	Attendance, Lab report
4	Lab 4: Interpreting Mammography	---	Attendance, Lab report
5	Lab 5: Interpreting Abdominal Images	---	Attendance, Lab report
6	Lab 6: Interpreting Breast Tumors	---	Attendance, Lab report
7	Lab 7: Interpreting Bone Scans	---	Attendance, Lab report

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering

- CourseCoordinator/Lecturer: Ngo Thi Lua
- Email: ntlua@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
 School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Nanotechnology for Drug Delivery Systems

Course Code: BM080IU

1. General Information

- Course Title:
- + Vietnamese: Công nghệ nano cho hệ vận chuyển thuốc
- + English: Nanotechnology for Drug Delivery Systems
- Course ID: BM080IU
- Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: Chemistry for BME/ edusoft: none
- Parallel Courses:

2. Course Description

Since nanoparticulate drug delivery systems present very small size, they are promising in targeted therapy of diseased tissue, organ and hence, leading to the increased drug concentration at those places through biological barriers to increase the effectiveness of the treatment. The course depicts nanoparticles and technologies applied to targeted drug delivery to diseased cells.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	To learn and understand basic and advanced concepts of nanotechnology for applications in drug delivery.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	An ability to evaluate of the nanoparticulate drug delivery systems (Program outcome: (b))	I, T, U

G1.2	Understanding of various methods of nanotechnological drug delivery systems (Program outcome: (k))	I, T, U
G1.3	An ability to design and manufacture of nanoparticulate drug delivery systems (Program outcome: (c))	I, T, U
G1.4	An ability to identify and apply nanotherapeutics in related disease (Program outcome: (e))	I, T, U
G1.5	A knowledge of recent trends and emerging technologies in the area of nanoparticulate drug delivery systems (Program outcome: (j))	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Chapter 1: nanoparticulate drug delivery systems - an overview	G1, G2	Lecture, discussion	Homework
2	Chapter 2: nanotechnology in preparation of controlled release drug delivery systems and enhanced stability of drug structure and activity	G1, G2	Lecture, discussion	Quiz
3	Chapter 3: targeted nanoparticles for drug delivery	G1, G2	Lecture, discussion	Homework
4	Chapter 4: dendrimer as nanoparticulate drug carriers	G1, G2	Lecture, discussion	Quiz
5	Chapter 5: liposomes for drug delivery and targeting	G1, G2	Lecture, discussion	Homework
6	Chapter 6: nanoparticle and targeted systems for cancer diagnosis and therapy	G1, G2	Lecture, discussion	Quiz

7	Chapter 7: nanotherapeutics for skin diseases	G1, G2	Lecture, discussion	Homework
8	Chapter 8: nanoparticles for oral vaccination	G1, G2	Lecture, discussion	Quiz
9	Chapter 9: nanoparticles: therapeutic approaches for bacterial diseases	G1, G2	Lecture, discussion	Homework
10	Chapter 10: nanoparticle therapy in parasites diseases	G1, G2	Lecture, discussion	Homework
11	Chapter 11: nanocarriers in the therapy of inflammatory disease	G1, G2	Lecture, discussion	Quiz

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Vong Binh Long
- Email: vblong@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
 School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Drug Delivery Systems

Course Code: BM081IU

1. General Information

- Course Title:
- + Vietnamese: Hệ vận chuyển thuốc
- + English: Drug Delivery Systems
- Course ID: BM081IU
- Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: Chemistry for BME/ edusoft: none
- Parallel Courses:

2. Course Description

In this class, the students will be introduced the concept of drug delivery systems providing pharmaceutical agents at target site, technology, regulatory considerations and applications of each system. The course is also intended to provide the students about design of controlled release drug delivery systems.

3. Textbooks and Other Required

Materials Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	The students will be able to comprehend various drug delivery systems for improving clinical efficacy as well as reducing drug side effects.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	A knowlegde of necessities and roles of drug delivery systems (Program outcome: (e))	I, T, U
G1.2	Understanding of roles of polymers in drug delivery (Program outcome: (b))	I, T, U

G1.3	An understanding of specialized structures in human body to develop drug delivery systems (Program outcome: (l))	I, T, U
G1.4	An ability of design and fabrication of drug delivery systems (Program outcome: (c))	I, T, U
G1.5	An ability to modify active pharmaceutical agents to increase their biological activity (Program outcome: (k))	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Chapter 1: An Overview of drug delivery systems	G1, G2	Lecture, discussion	Homework
2	Chapter 2: Controlled drug delivery systems	G1, G2	Lecture, discussion	Quiz
3	Chapter 3: Polymers in drug delivery	G1, G2	Lecture, discussion	Homework
4	Chapter 4: Implant drug delivery	G1, G2	Lecture, discussion	Quiz
5	Chapter 5: Drug modification	G1, G2	Lecture, discussion	Homework
6	Chapter 6: Transdermal drug delivery	G1, G2	Lecture, discussion	Quiz
7	Chapter 7: Intranasal and ocular drug delivery	G1, G2	Lecture, discussion	Homework
8	Chapter 8: Oral drug delivery	G1, G2	Lecture, discussion	Quiz
9	Chapter 9: Site-specific drug delivery	G1, G2	Lecture, discussion	Homework
10	Chapter 10: Protein delivery	G1, G2	Lecture, discussion	Homework
11	Chapter 11: Gene delivery/therapy	G1, G2	Lecture, discussion	Quiz

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Vong Binh Long
- Email: vblong@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Biosignal Processing

Course Code: BM010IU

1. General Information

- Course Title:
- + Vietnamese: Xử lý tín hiệu y sinh
- + English: Biosignal Processing
- Course ID: BM010IU
- Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: BM064IU - Applied Informatics
- Parallel Courses:

2. Course Description

The course provides students fundamentals knowledge to process and analyze biosignals. The knowledge of Fourier transform, signal sampling, analog to digital conversion, stochastic signal processing are covered in the class. The course also provides insight to different characteristics of typical biological signals including Electrocardiogram (ECG), Electroencephalogram (EEG), Electromyogram (EMG)

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Comprehend main characteristics of typical biological signals.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Utilize mathematical tools to analyze digital bio-signals.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G3	Represent, process and analyze biomedical digital signals using Matlab	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes

G1.1	(a) An ability to apply knowledge of mathematics, science, and engineering to solve biomedical engineering problems	I, T, U
G1.2	(c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	I, T, U
G1.3	(k) An ability to use the techniques, skills, and modern engineering tools necessary for biomedical engineering practice	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Electrical activities of cell, biomedical signals, digital signals, data acquisition	G1, G2	Lecture, discussion	Homework
2	Digital filtering	G1, G2	Lecture, discussion	Quiz
3	Z-transforms	G1, G2	Lecture, discussion	Homework
4	Discrete Fourier transform (DFT)	G1, G2	Lecture, discussion	Quiz
5	Filter design and Review	G1, G2	Lecture, discussion	Homework
6	Filter design	G1, G2	Lecture, discussion	Quiz
7	Wavelet transform	G1, G2	Lecture, discussion	Homework
8	Random process and nonlinear signal processing	G1, G2	Lecture, discussion	Quiz

9	Electrocardiogram (ECG),	G1, G2	Lecture, discussion	Homework
10	Electroencephalogram (EEG) and other signals	G1, G2	Lecture, discussion	Homework
11	Review	G1, G2	Lecture, discussion	Quiz

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Le Ngoc Bich

Email: lnbich@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Applications of Biomaterials in Regenerative Medicine

Course Code: BM083IU

1. General Information

- Course Title:
- + Vietnamese: Ứng dụng vật liệu sinh học trong y học tái tạo
- + English: Applications of Biomaterials in Regenerative Medicine
- Course ID: BM083IU
- Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: None
- Parallel Courses:

2. Course Description

This course is the basis for the student in biomedical engineering. It equips students with the basic knowledge about the types of tissues in the human body. This course will introduce some kind of tissue in the human body, including: heart, liver, lungs, stomach, eyes, bones, blood vessels, etc.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	This subject will introduce to students the general in structure of specific human organs. The common disease and the ability to regenerate in medicine	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Student will understand the structure, the composition and the cell types for specific-organ (Program outcome: f).	I, T, U

G1.2	Student will learn how to choose materials for designing, synthesizing, characterizing, and testing scaffold for specific-organ (Program outcome: e,m).	I, T, U
G1.3	Understanding immune/inflammatory response of implanted materials (Program outcome: f).	I, T, U
G1.4	Student will understand the functions of some organs (Program outcome: f).	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Chapter 1: Introduction in general	G1, G2	Lecture, discussion	Homework
2	Chapter 2: Skin	G1, G2	Lecture, discussion	Quiz
3	Chapter 4: blood vessel	G1, G2	Lecture, discussion	Homework
4	Chapter 5: Introduction to liver and kidney structure: pathology and treatment using biomaterials	G1, G2	Lecture, discussion	Quiz

5	Chapter 6: Introduction to stomach and intestines structure: pathology and treatment using biomaterials	G1, G2	Lecture, discussion	Homework
6	Chapter 7: Introduction to bones, skulls and teeth structure: pathology and treatment using biomaterials	G1, G2	Lecture, discussion	Quiz
7	Chapter 8: Introduction to and joint structure: pathology and treatment using biomaterials	G1, G2	Lecture, discussion	Homework
8	Chapter 9: Introduction to bladder: pathology and treatment using biomaterials	G1, G2	Lecture, discussion	Homework
9	Chapter 10: Translation of New Tissue Engineering Materials to Clinical Application	G1, G2	Lecture, discussion	Quiz

Laboratory

Week/Class	Content	Learning outcomes	Assessment
1	Week 1: Learning how to prepare and use tools for a operation process	---	Attendance, Lab report
2	Week 2: Suturing a laceration using a pig's skin model	---	Attendance, Lab report
3	Week 3: Grafting a artificial skin using a mice model	---	Attendance, Lab report
4	Week 4: Grafting a artificial skin using a mice model	---	Attendance, Lab report
5	Week 5: Grafting a artificial skin using a mice model	---	Attendance, Lab report
6	Week 6: Ex vivo a scaffold for muscle regeneration	---	Attendance, Lab report
7	Week 7: Ex vivo a scaffold for bone regeneration	---	Attendance, Lab report
8	Week 8: Exam	---	Attendance, Lab report

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Nguyen Thi Hiep
 - Email: nthiep@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Characterization and Properties of Biomaterials

Course Code: BM085IU

1. General Information

- Course Title:
- + Vietnamese: Đặc tính và tính chất của vật liệu sinh học
- + English: Characterization and Properties of Biomaterials
- Course ID: BM085IU
- Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: None
- Parallel Courses:

2. Course Description

This is a course for students majoring in biological materials. It equips students with the knowledge of how to determine the required properties and characteristics of biomaterials. Case studies and specific applications will be investigated. According to the specific damages to be repaired, the biomaterials must be fabricated to match the required properties and characteristics.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	This course introduces the characterization and properties of biomaterials in general and focuses on some specific applications.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Student can able to fabricate a scaffold which its properties satisfy to a specific organ using differential methods (Program outcome: k).	I, T, U

G1.2	Student can choose a mechanical measurement for specific application (Program outcome: k).	I, T, U
G1.3	Student learns the structural morphology for specific fabricated methods (Program outcome: b,l,i).	I, T, U
G1.4	Student learns cell culture for specific cell types (Program outcome: l,m).	I, T, U
G1.5	Determining cell types in order to culture cell on scaffolds for specific application (Program outcome: l,m).	I, T, U
G1.6	Understanding anti-microbial test for biomaterials, hemocompatible test,.. (Program outcome: l,m).	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Chapter 1: Course introduction	G1, G2	Lecture, discussion	Homework
2	Chapter 2: Characterization and Properties of Biomaterials for heart and artery applications	G1, G2	Lecture, discussion	Quiz
3	Chapter 3: Characterization and Properties of Biomaterials for lung applications	G1, G2	Lecture, discussion	Homework
4	Chapter 4: Characterization and Properties of Biomaterials for skin applications	G1, G2	Lecture, discussion	Quiz

5	Chapter 5: Characterization and Properties of Biomaterials for eyes applications	G1, G2	Lecture, discussion	Homework
6	Chapter 6: Characterization and Properties of Biomaterials for kidney applications	G1, G2	Lecture, discussion	Quiz
7	Chapter 7: Characterization and Properties of Biomaterials for bone applications	G1, G2	Lecture, discussion	Homework
8	Chapter 8: Characterization and Properties of Biomaterials for cartilage, ligaments applications	G1, G2	Lecture, discussion	Quiz
9	Chapter 9: Characterization and Properties of Biomaterials for intestines applications	G1, G2	Lecture, discussion	Homework
10	Chapter 10: Characterization and Properties of Biomaterials for stomach applications	G1, G2	Lecture, discussion	Quiz

Laboratory

Week/Class	Content	Learning outcomes	Assessment
1	Cell culture with different cell types	---	Attendance, Lab report
2	Measure scaffold strength using tensile strength, compressive strength	---	Attendance, Lab report
3	Measure and analyze swelling, water absorption	---	Attendance, Lab report
4	Do anti-microbial tests, hemocompatible test	---	Attendance, Lab report

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Nguyen Thi Hiep
- Email: nthiep@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in purple ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Methods and Process in Fabrication of Scaffold

Course Code: BM086IU

1. General Information

- Course Title:
- + Vietnamese: Phương pháp và qui trình xây dựng scaffold
- + English: Methods and Process in Fabrication of Scaffold
- Course ID: BM086IU
- Course type:

☐ General ☒ Specialization ☐ Skills	☐ Fundamental ☐ Others ☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: None
- Parallel Courses:

2. Course Description

This course will introduce students to some common methods to fabricate the biomaterials that are used worldwide. During the course, students will create their own new materials according to their purposes.

3. Textbooks and Other Required

Materials Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	This course will teach and allow students to practise methods and processes to create scaffolds. Students will understand methods for fabricating a scaffold	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Understanding morphology of each methods and its application in tissue regeneration (Program outcome: k).	I, T, U
G1.2	Ability to operate machines (electrospinning, freeze dryer,...) (Program outcome: a).	I, T, U

G1.3	Ability to combine methods for a complex scaffold. (Program outcome: b).	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Chapter 1: Introduction in general	G1, G2	Lecture, discussion	Homework
2	Chapter 2: Electrospinning method	G1, G2	Lecture, discussion	Quiz
3	Chapter 3: Hydrogel method	G1, G2	Lecture, discussion	Homework
4	Chapter 4: Water/oil/water, micelle method	G1, G2	Lecture, discussion	Quiz
5	Chapter 5: Sponge replica method	G1, G2	Lecture, discussion	Homework
6	Chapter 6: soil-gel method	G1, G2	Lecture, discussion	Quiz
7	Chapter 7: salt/gas leaching method	G1, G2	Lecture, discussion	Homework
8	Chapter 8: Extrusion method	G1, G2	Lecture, discussion	Quiz
9	Chapter 9: printing 3-D method	G1, G2	Lecture, discussion	Homework
10	Chapter 10: slurry/ evaporation method	G1, G2	Lecture, discussion	Quiz

Laboratory

Week/Class	Content	Learning outcomes	Assessment
1	Read articles	---	Attendance, Lab report
2	Submit proposal	---	Attendance, Lab report

3	Approval proposal	---	Attendance, Lab report
4	Making scaffold	---	Attendance, Lab report

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Nguyen Thi Hiep
- Email: nthiep@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Cell/Tissue – Biomaterial interaction

Course Code: BM092IU

1. General Information

- Course Title:
- + Vietnamese: Tương tác sinh học mô/tế bào
- + English: Cell/Tissue – Biomaterial interaction
- Course ID: BM092IU
- Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory : 1
- Prerequisites: Biology/ Biology for BME/ Edusoft: None
- Parallel Courses:

2. Course Description

A crucial concept to understand about the tissue-biomaterial interface is that a lot of things happen there. The environment inside the body is chemically, electrically, and mechanically active, and the interface between an implanted biomaterial and the body is the location of a variety of dynamic biochemical processes and reactions. This course will introduce students to the molecular level events that happen at the tissue-implant interface, explore selected biological and physiological consequences of these events, methods to characterize interaction between cell/tissue and materials and specifically, design novel biomaterial that truly integrate with the body's natural tissues.

3. Textbooks and Other Required

Materials Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	An ability to describe molecular events happen at cell/tissue- material interface as well as biological and physiological consequences after implantation	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Apply techniques to characterize cell/tissue-material interaction	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G3	Design novel biomaterials that truly integrate with body's natural tissues	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	(A) An ability to apply knowledge of mathematics, science, and engineering to solve biomedical engineering problems	I, T, U
G1.2	(B) An ability to design and conduct experiments, as well as to analyze and interpret biomedical and health data	I, T, U
G1.3	(C) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	I, T, U
G1.4	(E) An ability to identify, formulate, and solve biomedical engineering problems	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/ Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Chapter 1: Molecular events at the interface of cell/tissue-implants	G1, G2	in class	A1.1
2	Chapter 1: Cont.	G1, G2	in class	A1.2
3	Chapter 2: Biological and physiological consequences after implantation	G2, G3	in class	A1.1
4	Chapter 2: Cont.	G2, G3	in class	A1.2

5	Chapter 3: Techniques to characterize protein/cell/tissue-material interaction	G3, G4	in class	A1.1
6	Chapter 3: Cont.	G3, G4	in class	A1.2
7	Chapter 3: Cont.	G3, G4	in class	A1.2
8	Chapter 4: Engineering biomaterials' surface	G1, G3	in class	A1.1
9	Chapter 4: Cont.	G1, G3	in class	A1.2
	Midterm exam			A2.1
10	Chapter 5: Biocompatibility	G2, G4	in class	A1.1
11	Chapter 5: Cont.	G2, G4	in class	A1.2
12	Chapter 5: Cont.	G2, G4	in class	A1.2
13	Chapter 6: Control of cellular behaviors on biomaterial	G1, G4	in class	A1.1
14	Chapter 6: Cont.	G1, G4	in class	A1.2
15	Chapter 6: Cont.	G1, G4	in class	A1.2
	Final exam			A3.2

Laboratory

Week/ Class	Content	Learning outcomes	Assessment
1	Overview of medical laboratory	G1, G2	B1.1
2	Visit of medical laboratory in hospital	G1, G2	B1.1
3	Visit of physician office laboratory	G1, G2	B1.1
4	Blood collection, fractionation	G1, G2	B1.1
5	Microscopic observation of blood cells	G1, G2	B1.1
6	Case Study	G1, G2	B1.1
7	Lab Report	G1, G2	B1.2
8	Final Examination		B1.3

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Huynh Chan Khon
- Email: hckhon@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in purple ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Principle of clinical tests and instrumentation

Course Code: BM094IU

1. General Information
 - Course Title:
 - + Vietnamese: Nguyên lý và thiết bị xét nghiệm lâm sàng
 - + English: Principle of clinical tests and instrumentation
 - Course ID: BM094IU
 - Course type:

☐ General ☒ Specialization ☐ Skills	☐ Fundamental ☐ Others ☐ Project/Internship/Thesis
 - Number of credits: 4
 - + Lecture: 3
 - + Laboratory : 1
 - Prerequisites: Biology/ Biology for BME*Edusoft: none
 - Parallel Courses:

2. Course Description

The laboratory plays a crucial role in healthcare because it provides physicians and other health professionals with information to: (1) detect disease or predisposition to disease; (2) confirm or reject a diagnosis; (3) establish prognosis; (4) guide patient management; and (5) monitor efficacy of therapy. Therefore, a fundamental understanding of the principles of laboratory tests and instrumentation used in clinical laboratories is essential. This course will provide students an overview of medical laboratory, principle of a wide range of analytical tests and instrumentations ranging from haematology to molecular pathology.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Understanding of laboratory tests used in clinical diagnosis	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Get familiar with clinical laboratory instrumentation as related to Biomedical engineering and future career needs.	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lecture:

Week/ Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Clinical laboratory	G1, G2	in class	A1.1
2	Pre-analysis: sample collection, transport, and processing	G1, G2	in class	A1.1 A1.3
3	Pre-analysis (Cont.)	G1, G2	in class	A1.1 A1.2
4	Principle of instrumentation	G1, G2	in class	A1.1
5	Principle of instrumentation	G1, G2	in class	A1.1 A1.3
6	Clinical laboratory automation, point-of-care and physician office laboratories	G1, G2	in class	A1.1
7	Haematology	G1, G2	in class	A1.1 A1.3
8	Haematology (Cont.)	G1, G2	in class	A1.1 A1.2
9	Haemostasis and Thrombosis	G1, G2	in class	A1.1 A1.3
	Midterm exam			A2.1
10	Clinical chemistry	G1, G2	in class	A1.1
11	Clinical microbiology	G1, G2	in class	A1.1 A1.3
12	Clinical microbiology (Cont.)	G1, G2	in class	A1.1 A1.2

13	Immunology, Immunopathology	G1, G2	in class	A1.1
14	Molecular pathology	G1, G2	in class	A1.1 A1.3
15	Molecular pathology (cont.)	G1, G2	in class	A1.1 A1.2
	Final exam			A3.2

Laboratory

Week/ Class	Content	Learning outcomes	Assessment
1	Overview of medical laboratory	G1, G2	B1.1
2	Visit of medical laboratory in hospital	G1, G2	B1.1
3	Visit of physician office laboratory	G1, G2	B1.1
4	Blood collection, fractionation	G1, G2	B1.1
5	Microscopic observation of blood cells	G1, G2	B1.1
6	Case Study	G1, G2	B1.1
7	Lab Report	G1, G2	B1.2
8	Final Examination		B1.3

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Huynh Chan Khon
- Email: hckhon@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Medical Instrumentation

Course Code: BM095IU

1. General Information
 - Course Title:
 - + Vietnamese: Thiết bị Y tế
 - + English: Medical Instrumentation
 - Course ID: BM095IU
 - Course type:

☐ General ☒ Specialization ☐ Skills	☐ Fundamental ☐ Others ☐ Project/Internship/Thesis
 - Number of credits: 4
 - + Lecture: 3
 - + Laboratory : 1
 - Prerequisites: Principles of EE 1, Biosignal Processing
 - Parallel Courses: Nil

2. Course Description

This course covers the basic and advanced principles, concepts, and operations of medical sensors and devices. The origin and nature of measurable physiological signals are studied, including chemical, electrochemical, optical, and electromagnetic signals. The principles and devices to make the measurements, including design of electronic instrumentation, will be rigorously presented. This will be followed by realistic design and experimentation with amplifiers for biopotential measurements. There are laboratories session to give students hands on experience with electronic components, sensors, and biopotential measurements. The final part of this course will cover emerging frontiers of cellular and molecular instrumentation.

3. Textbooks and Other Required Materials

Textbooks:

1. Webster, Medical Instrumentation Application and Design, Wiley, 4th edition, 2009
2. Khandpur, Biomedical Instrumentation, McGraw Hill, 2005 Reference Materials:
 1. Schreiner, Bronzino, Peterson, Medical Instruments and Devices: Principles and Practices, CRC Press, 1st Edition, 2015
 2. Dubin, Rapid Interpretation of EKGs, Cover Publishing, 2000
4. Course Goals
 - Learn several signals that can be measured from the human body. Specific examples include temperature, electrical, and pressure signals.
 - Understand how noise from the environment, instruments and other physiologic systems can create artifacts in instrumentation and be able to design components to condition the signals.
 - Understand theory and design on signal conditioning (wheatstone bridges;

amplifiers, filters). Design filters necessary to condition and isolate a signal. Understand how signals are converted from analogue to digital and stored in a computer or presented on an output display.

- Review the cardiac, respiratory and muscular physiological systems... Study the designs of several instruments used to acquire signals from living systems. Integrate information learned about biomedical signals, sensors and instrumentation design.

- Digital Filters. Understand principles of digital filter design and applied to signals used in laboratory sessions.

5. Learning Outcome

Learning outcome codes	Course learning outcome descriptions	Program Learning outcomes after ABET
G1	Describe the origin of biopotentials and explain the role of biopotential electrodes	(a)
G2	Design and operate biopotential amplifiers	(a)
G3	Inspect common biomedical signals and distinguish characteristic features	(b,c)
G4	Identify common signal artifacts, their sources and formulate strategies for their suppression	(a,e)
G5	Outline the design of some medical devices, eg. cardiac pacemakers, neurostimulators and defibrillators	(a,e,d)
G6	Explain and contrast measurement principles for blood flow, pressure and volume as well as respiratory variables...	(e,k)
G7	Define and discuss biochemical sensors	
G8	Identify, explain and judge patient safety issues related to biomedical instrumentation	

ABET learning outcomes:

- a. an ability to apply knowledge of mathematics, science, and engineering*
- b. an ability to design and conduct experiments, as well as to analyze and interpret data*
- c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability*
- d. an ability to function on multidisciplinary teams*
- e. an ability to identify, formulate, and solve engineering problems*
- k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.*

6. Course Assessment

Assessment component	Assessment form	Percentage %
Lecture		
A1. Process assessment	A1.1 Quiz	10%
	A1.2 Homework	20%
A2. Midterm assessment	A2.1 Mid-term Exam	30%
A3. Final assessment	A3.1 Final exam	40%
Laboratory		
B1. Process assessment	B1.1 Participations	10%

	B1.2 Lab report	60%
B2. Final assessment	B2.1 Final exam	30%

7. Course Outline

Lecture:

Week/ Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Fundamentals of medical instrumentation	G1	in class	A1.1
2	Bioelectronic Signals and Electrodes	G1	in class	A1.1 A1.2
3	Physiological Transducers	G1	in class	A1.1 A1.2
4	Recording Systems	G1	in class	A1.1 A1.2
5	Patient Monitoring Systems	G2, G3	in class	A1.1 A1.2
6	Arrhythmia and Ambulatory Monitoring Instruments	G2, G3	in class	A1.1 A1.2
7	Fetal Monitoring Instruments	G2, G3	in class	A1.1 A1.2
8	Biomedical Telemetry and Telemedicine	G2, G3	in class	A1.1 A1.2
	Midterm exam			A2.1
9	Oximeters + Blood Flowmeters			
10	Pulmonary Function Analyzers	G2, G3	in class	A1.1 A1.2
11	Clinical Laboratory Instruments + Blood Gas Analyzers + Blood Cell Counters	G7	in class	A1.1 A1.2
12	Laser Applications in Biomedical Field	G5, G6	in class	A1.1 A1.2
13	Ophthalmic Imaging Systems	G5, G6	in class	A1.1 A1.2
14	Haemodialysis Machines	G5, G6	in class	A1.1 A1.2
15	Patient Safety	G8	in class	A1.1 A1.2
	Final exam			A3.1

Laboratory

Week/ Class	Content	Learning outcomes	Assessment
1	ECG Lab 1	G4, G5, G6	B1.1, B1.2
2	ECG Lab 2	G4, G5, G6	B1.1, B1.2
3	PPG/SpO2 Lab 1	G4, G5, G6	B1.1, B1.2
4	PPG/SpO2 Lab 2	G4, G5, G6	B1.1, B1.2

5	Project – day 1	G4, G5, G6	B1.1, B1.2
6	Project – day 2	G4, G5, G6	B1.1, B1.2
7	Project – day 3	G4, G5, G6	B1.1, B1.2
8	Project presentation	G4, G5, G6	B2.1

8. Course Policy

- Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problem and group assignment.
- Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination.
- Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- Course Coordinator/Lecturer: Le Ngoc Bich
- Email: lnkich@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Principles of Neuroengineering

Course Code: BM100IU

1. General Information
 - Course Title:
 - + Vietnamese: Nguyên Lý Kỹ Thuật Thần Kinh
 - + English: Principles of Neuroengineering
 - Course ID: BM100IU
 - Course type:

☐ General ☒ Specialization ☐ Skills	☐ Fundamental ☐ Others ☐ Project/Internship/Thesis
 - Number of credits: 4
 - + Lecture: 3
 - + Laboratory : 1
 - Prerequisites: AE1, Biology for BME, Human Anatomy and Physiology
 - Parallel Courses: Biosignal Processing

2. Course Description

Covers how to innovate technologies for brain analysis and engineering, for accelerating the basic understanding of the brain, and leading to new therapeutic insight and inventions. Focuses on using physical, chemical and biological principles to understand technology design criteria governing ability to observe and alter brain structure and function. Topics include optogenetics, noninvasive brain imaging and stimulation, nanotechnologies, stem cells and tissue engineering, and advanced molecular and structural imaging technologies. Design projects by students.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials: Lecturer will provide references based on each specific topic.

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Understand the essential theory and principles of neuroengineering, design for neural technology	(1),(2)	3.0-4.0
G2	Compile, present and defense a research proposal in the field of Neural engineering.	(3),(6)	3.0-4.0
G3	Synthesize information related to a Neural engineering topic, present them and lead a discussions related to that topic.	(4), (5)	3.0-4.0

Note: The Program Outcomes

- (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*

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Understand the essential theory and principles of neuroengineering, design for neural technology	I, T, U
G2.1	Recognize ethical and professional responsibilities in neural engineering.	I, T, U
G3.1	Compile, present and defense a research proposal in the field of Neural engineering.	I, T, U
G4.1	Synthesize information related to a Neural engineering topic, present them and lead a discussions related to that topic.	I, T, U

Note: I (Introduce), T (Teach), U (Utilize)

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Participation	15	10%
	Paper discussion	1	15%
A2. Midterm assessment	Midterm exam	1	15%
A3. Final assessment	Final Exam	1	40%
	Written proposal and presentation	1	20%
Laboratory			
B1. Process assessment	Participation	8	60%
	Lab report	8	40%

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Overview of the class. Introductions. Circuit elements of the nervous system. Neurons, glia, blood vessels. Channels, receptors. Genes and cell types.	G1	Lecture, discussion	Homework
2	Modalities of signaling, ionic, gap junctional, ephaptic, synaptic/chemical, second messenger, diffusible, gaseous. Analog electrical signaling. New mechanisms. In-vitro systems for molecular/cellular neuroscience. State-of-the art of neuronal cell culture technology; Slices on a chip; patch clamp chips; multi-electrode array.	G1	Lecture, discussion	Quiz
3	Macroscopic circuits and microscopy circuits. How these past conclusions were influenced by past technologies, and what is unknown or uncertain.	G1, G2	Lecture, discussion	Homework
4	Paper discussion: minibrain-on-a-chip a novel tool to expedite understanding of human neuronal activity	G3	Lecture, discussion	Quiz
5	Noninvasive mapping and measurement. PET, photoacoustic, MEG, EEG, fMRI, infrared imaging, x-rays. Physical principles of noninvasive brain interfacing.	G1, G2	Lecture, discussion	Homework
6	Invasive mapping and measurement. Electrodes, nanoprobe, nanoparticles, optical imaging and optical microscopy, endoscopy, multiphoton microscopy, light scattering, bioluminescence, electron microscopy.	G1, G2	Lecture, discussion	Quiz

7	Application of genetic tools in diagnosing, mapping and measuring the nervous system	G1, G2	Lecture, discussion	Homework
8	Paper discussions – cutting-edge and low-cost tools for mapping and measurement.	G3	Lecture, discussion	Quiz
Midterm exam				
9	Macrocircuit control. Magnetic, electrical, ultrasonic, chemical, pharmacological/pharmacogenetic, thermal.	G1, G2	Lecture, discussion	Homework
10	Microcircuit control. DBS, infrared optical stimulation, optogenetics, nanoparticle-mediated control, uncaging, signaling control.	G1, G2	Lecture, discussion	Quiz
11	Circuit assembly. Development, 3-D brain building, tissue engineering, stem cells, gene therapy and viral/transgenic technologies, extracellular matrix.	G1, G2	Lecture, discussion	Homework
12	Paper discussion: cutting-edge and low-cost tools for controlling and constructing a nervous system	G3	Lecture, discussion	Quiz
13	Building blocks of future tools I. Barcoding, quantum-measurement nanoparticles, DNA origami, robotics, nanorobots, automation of neuroscience, splicing, mechanosensation, immune cells, prions, newborn neurons, post-transcriptional/translational modification.	G1, G2	Lecture, discussion	Homework
14	Principles of designing future tools. Top-down vs. bottom-up design approaches, architecting tools, interdisciplinary collaboration principles, tools for science vs. tools for the clinic, "blind spots" in technology development.	G1, G2	Lecture, discussion	Quiz
15	Proposal presentation and demo	G2, G3	Discussion	Presentation

Laboratory

Week/Class	Content	Learning outcomes	Assessment

1	Sensory systems: standard assessment	G1,G2	Attendance, Lab report
2	Reverse engineering a cochlear implant Modeling cochlear implant design and signal processing	G1,G2	Attendance, Lab report
3	Recording neuronal activity at the cellular level Interpreting and analyzing cellular neuronal activity: pClamp based analysis	G1,G2	Attendance, Lab report
4	Whole brain structural imaging: MRI, CT and X-ray system (Field Trip to Medics lab)	G1,G2	Attendance, Lab report
5	Analyzing MRI and fMRI data for brain diseases diagnosis	G1,G2	Attendance, Lab report
6	EEG recording – wired systems: Alice5 and Biosemi	G1,G2	Attendance, Lab report
7	EEG recording wireless system: EPOC+, WEEG EEG analysis	G1,G2	Attendance, Lab report
8	fNIRS: device design, signal collection and analysis	G2,G2	Attendance, Lab report

Guidelines:

- *Paper Presentation and Discussion:* Teams of 1-2 students will be assigned a set of 2- 3 papers to present on a particular class day (using slides and whiteboard) for in-class discussion. 2-3 days before the presentation day, you will need to create a discussion post on our class MIRO page to initiate discussion about your topic.
- *Guidelines for Paper Presentation:* Use the following format to structure your presentation:
 - Introduction and background: First few slides should discuss the problem being addressed by the paper and prior work on the topic;
 - Methods: Describe the methods used for experiments and analysis of data;
 - Results: Present the results reported by the authors, e.g., by going over figures/tables (for longer papers, you do not need to go over every figure/table -- pick results you think are the most interesting);
 - Summary/Conclusion and Discussion of Strengths/Weaknesses/Future Work: Summarize the contributions of the paper, assess its strengths/weaknesses, and speculate on how the results could be extended/improved.
 - Feel free to copy and paste into your presentation figures from either the online version of the paper or from the PDF file (as a last resort, use PrntScr or screengrab). You can also use figures from the web or other papers with proper attribution.
- *Discussion Board:* Before each class involving paper discussion, students must read the assigned papers and should post to the MIRO page of our class their opinions, questions, and brief critical analyses of the assigned papers. Students are also encouraged to respond to critical analyses or questions of other students that are already posted on the board.
- *Lab report:* After each or a few of the sessions, you will be required to write up a lab report. Students will work in group of 2-3 for the lab sessions.
- *Final Proposal:* There will be a final proposal which will involve applying the

principles and technologies in class to address a neuronal disorder or condition. Students will need to submit both the written proposal and defense it in front of class.

8. Course Policy

- Attendance and participation: Be on time, focus and actively participate during class time. Regular on-time attendance in this course is expected. It is compulsory that students attend at least 90 % of the course to be eligible for the final presentation. If you show up more than 5 minutes late, your attendance of that class is not counted. You will get full score for your participation only if you contribute to discussions during class.
- No late submission of any class assignment is allowed. If you submit your assignment late, it will not be graded and will be considered as “no submission”, which is equal to zero grade for that assignment. Why? Because you need to develop a good task managing skill and a respect for deadline. If you have emergency situation, you can inform the lecturers about it and negotiate for a new deadline, but you will need to be really convincing and sincere.
- Pay close attention to and strictly follow all announcements and instructions of the teaching team. They can come via blackboard, email and facebook group, as well as directly from your lecturers and TAs.
- If you have questions or feedback, please do tell the teaching team. Maximize your learning efficiency by going to TA office hours and be very engaged during class and lab sessions.
- No plagiarism is allowed. If you copy information (more than a whole phrase in a sentence) from your classmates, from online source, from other papers without citing them, that is considered plagiarism. This is an unacceptable practice in our class and for your future career. Please use your own writing.
- Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problem and group assignment.
- Missed tests: Students are not allowed to miss the final presentation. There are very few exceptions. (Only with extremely reasonable excuses, e.g. certified paper from doctors, may students re-take the tests.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- Email: htthuong@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

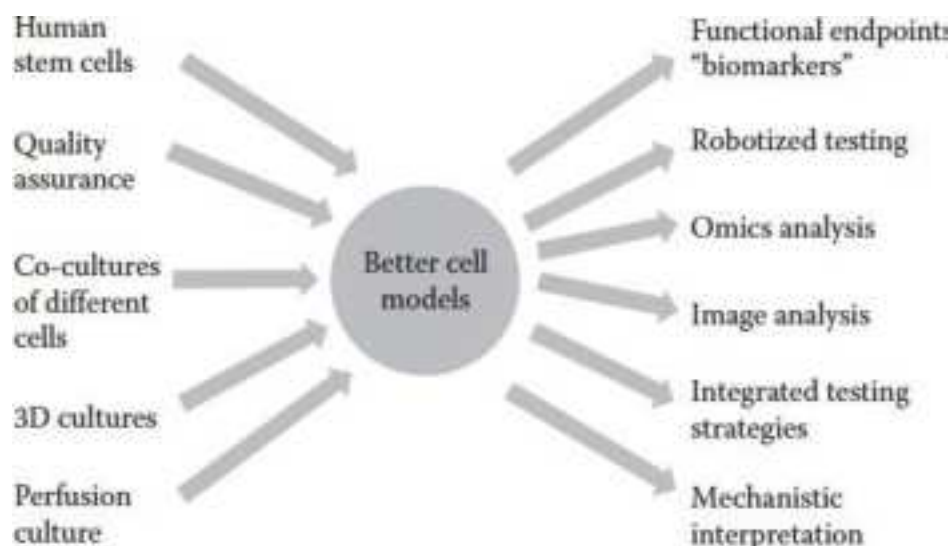
Course Name: Stem Cell Technology

Course Code: BM099IU

1. General Information
 - Course title:
 - + Vietnamese: Công Nghệ Tế Bào Gốc
 - + English: Stem Cell Technology
 - Course ID: BM099IU
 - Course type:

☐ General	☐ Fundamental
☒ Specialization (required)	☒ Specialization (elective)
☐ Project/Internship/Thesis	☐ Others:
 - Number of credits: 4
 - + Lecture: 3
 - + Laboratory: 1
 - Prerequisite: Biology for BME/ Edusoft : none
2. Course description

Stem cells, tissue engineering and regenerative medicine are fast moving fields with vastly transformative implications for the future of health care and capital markets. Stem cells, which located in many tissues and organs in human body, are presented as miracle cells that can do anything. When administered to a patient with some serious diseases they will rebuild the damaged tissues and make the patient recover and live longevity. Understanding of stem cell characteristics, intrinsic regulations, and functions helps generating novel therapies for many acute and chronic diseases as well as developing the new strategies for tissue engineering. This course will focus on the science of stem cells to explore the characteristics, functions, pathologies, and applications of stem cells in tissue engineering and regenerative medicine.



3. Textbooks and References

1. Jonathan M. W. Slack. 2018. The Science of Stem Cells. John Wiley & Sons, Inc. ISBN 9781119235231
2. Sean V. Murphy and Anthony Atala. 2017. Regenerative Medicine Technology - On-a-Chip Applications for Disease Modeling, Drug Discovery and Personalized Medicine. CRC Press (Taylor & Francis Group). ISBN 9781498711913
3. Federico Calegari and Claudia Waskow. 2014. STEM CELLS - From Basic Research to Therapy. CRC Press (Taylor & Francis Group). ISBN 978-1-4822-1984-5
4. Gustav_Steinho. 2016. Regenerative Medicine – from Protocol to Patient. Third edition, Springer. ISBN 978-3-319-27610-6

4. Course goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Understand stem cell biology and the important regulation factors on stem cells	(1), (6), (7)	3.0 - 3.5
G2	Understanding stem cells for applying in Tissue engineering and Regenerative medicine	(1), (6), (7)	3.0 - 3.5
G3	Be able to discuss about the challenges in Stem cell applications and propose potential solutions to overcome those challenges	(1), (6), (7)	3.0 - 3.5
G4	Apply modern techniques and analyze the results in stem cell isolation, culture, and differentiation.	(1), (6), (7)	3.0 - 3.5

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	I,T,U

G1.2	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	I,T,U
G1.3	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies	I,T,U

6. Course assessment

Assessment component	Assessment form	Percentage %
Lecture		
A1. Process assessment	A1.1 Participations	10%
	A1.2 Assignments or Presentations	20%
A2. Midterm assessment	A2.1 Mid-term Exam	30%
A3. Final assessment	A3.1 Final exam	40%
Laboratory		
B1. Process assessment	B1.1. Participations	30%
	B1.2. Lab report	35%
B2. Final assessment	B2.1 Final examination	35%

7. Course outline

a. LECTURE:

Week/ Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Introduction to Stem cell Technology	G1, G2, G3, G4	in class	A1.1 A1.2
2	Isolation and Classification of Stem Cells	G1, G2, G3, G4	in class	A1.1 A1.2
3	Isolation and Classification of Stem Cells (Cont.)	G1, G2, G3, G4	in class	A1.1 A1.2
4	Characterization of Stem Cells	G1, G2, G3, G4	in class	A1.1 A1.2
5	Imaging and Tracking Stem Cells	G1, G2, G3, G4	in class	A1.1 A1.2
6	Immunomodulation of Stem Cells	G1, G2, G3, G4	in class	A1.1 A1.2
7	Two-Dimensional vs. Three-Dimensional Stem Cell Culture	G1, G2, G3, G4	in class	A1.1 A1.2
8	Stem Cell Division and Differentiation	G1, G2, G3, G4	in class	A1.1 A1.2
9	Biomaterial as Stem Cell Niche	G1, G2, G3, G4	in class	A1.1 A1.2
	Midterm exam			A2.1
10	Stem Cells in wound healing	G1, G2, G3, G4	in class	A1.1 A1.2

11	Stem Cells for transplantation	G1, G2, G3, G4	in class	A1.1 A1.2
12	Stem Cells: On-a-chip for Disease Models	G1, G2, G3, G4	in class	A1.1 A1.2
13	Stem Cells for Drug Development	G1, G2, G3, G4	in class	A1.1 A1.2
14	Personalized Medicine	G1, G2, G3, G4	in class	A1.1 A1.2
15	Stem Cell Banking	G1, G2, G3, G4	in class	A1.1 A1.2
	Final exam			A3.1

b. LABORATORY

Week/C lass	Content	Learning outcomes	Assessment
1	Overview of stem cells	G1, G2, G3, G4	B1.1
2	Material preparation	G1, G2, G3, G4	B1.1
3	Demo for stem cell isolation	G1, G2, G3, G4	B1.1
4	Oil red O Staining for Adipogenic differentiation	G1, G2, G3, G4	B1.2
5	Absorbance measurements for quatifying the adipogenic differentiation	G1, G2, G3, G4	B1.1
6	Stem cell wound healing model in vitro	G1, G2, G3, G4	B1.1
7	Analyze the results of the wound healing model in vitro	G1, G2, G3, G4	B1.2
8	Final Examination	G1, G2, G3, G4	B2.1

8. Course policy

- Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problem and group assignment.
- Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination.
- Missed tests: 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.)

9. Course coordinator/lecturer:

- School of Biomedical Engineering
- Course Coordinator/Lecturer: Trịnh Như Thủy, Ph.D
- Email: tnthuy@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thủy', with a long horizontal flourish extending to the right.

Nguyễn Thị Hiệp



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Advanced Artificial Intelligence for Healthcare

Course Code: BM103IU

1. General Information

- Course Title:
- + Vietnamese: Trí tuệ nhân tạo nâng cao trong y tế
- + English: Advanced Artificial Intelligence for Healthcare
- Course ID: BM103IU
- Course type:

☐ General	☐ Fundamental
☒ Specialization	☐ Others
☐ Skills	☐ Project/Internship/Thesis
- Number of credits: 4
- + Lecture: 3
- + Laboratory: 1
- Prerequisites: AI in healthcare
- Parallel Courses: Biosignal Processing

2. Course Description

This course provides AI fundamental algorithms such as random forest, decision tree, support vector machine (SVM), boosting, Adaboost, XGBoost, artificial neural network (ANN), convolutional neural network, recurrent neural network. The real signal processing problems applied in healthcare are introduced such as applying SVM or randomforest, ANN to predict the EEG, blood pressure, or heart rate. This course also introduces the computer vision problems that can apply in healthcare such as segmentation, and object detection. There are lab activities in which students work on programing to build practical schemes.

3. Textbooks and Other Required Materials

Textbooks:

- [5] Deep Learning, Ian Goodfellow, Yoshua Bengio, and Aaron Courville, The MIT Press, 2016 (free online: <http://www.deeplearningbook.org/>)
- [6] Hands-on Machine Learning with Scikit-Learn & Tensorflow, Aurelien Geron, O'Reilly, 2017.
- [7] Information Technologies in Biomedicine, Ewa Pietka, Jacek Kawa, Springer 2008

Reference Materials:

- Deep Learning, Ian Goodfellow, Yoshua Bengio, and Aaron Courville, The MIT Press, 2016 (free online: <http://www.deeplearningbook.org/>)
- Hands-on Machine Learning with Scikit-Learn & Tensorflow, Aurelien Geron, O'Reilly, 2017.
- Information Technologies in Biomedicine, Ewa Pietka, Jacek Kawa, Springer 2008

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	Recognizing problems that can apply AI	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G2	Have ability to formulate the problems	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G3	Analyzing and solve the problems using AI tools	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G4	Recognizing a normal biomedical signal and sectional medical images	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0
G5	Evaluating the impacts and limitations of different schemes	(1),(2),(3),(4),(5),(6),(7)	3.0-4.0

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	an ability to apply mathematics and AI tools to solve biomedical engineering problems	I, T, U
G1.2	an ability to design and conduct experiments, to analyze and interpret biomedical and health data, as well as to clean data to apply AI	I, T, U
G1.3	an ability to identify, formulate, and solve biomedical engineering problems	I, T, U
G1.4	a knowledge of contemporary issues related to health and biomedical engineering	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %
Lecture			
A1. Process assessment	Quiz	2	10%
	Homework	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	7	20%
	Lab report	7	30%
B2. Final assessment	Final Exam	1	50%

7. Course Outline

Lectures:

Week/ Class	Subject/Chapter	Content

1	Introduction	Course introduction
2	Linear algebra	Matrix multiplication Statistic models
3	Machine Learning (ML): Decision Tree ML: Random forest	Decision Tree algorithm Build a decision tree with sklearn.tree.DecisionTreeClassifier, sklearn.tree.DecisionTreeRegressor Applying decision tree classifying the ECG signal. Random forest algorithm Build a random forest with sklearn.ensemble.RandomForestClassifier. Applying random forest in classifying the activities measured from a sensor to predict blood pressure level.
4	ML: Support vector machine (SVM)	Linear SVM, Hard-margin, Soft-margin, Nonlinear SVM, SVM kernel SVM regression Building SVM with sklearn.svm.SVM Applying SVM in classifying the activities measured from a sensor to predict depressed patients.
5	ML: Support vector machine (SVM) (cont.)	Linear SVM, Hard-margin, Soft-margin, Nonlinear SVM, SVM kernel SVM regression Building SVM with sklearn.svm.SVM Applying SVM in classifying the activities measured from a sensor to predict depressed patients.
6	ML: Boosting, Adaboost	Boosting: Introduction, Algorithms, Classification Adaboost (Adaptive boosting) Building Adaboost with sklearn.ensemble.AdaboostClassifier Applying Adaboost in classifying the Alzheimer patients and controls.
7	ML: XGBoost	XGBoost: Algorithm Bayesian reasoning Applying Adaboost in classifying the EEG signal of schizophrenia patients.
Midterm exam		
8	Fieldtrip	Go to A2DS Inc., VinAI, or Robert Bosch Vietnam

9	Artificial Neural Network (ANN)	ANN Activation functions Backpropagation, update rules Loss function, optimizers Gradient descent, Stochastic gradient descent GridsearchCV Building an ANN for applying in classifying heart rate of subjects.
10	Convolutional Neural Network (CNN)	Convolution operation Pooling Flattening Fully connected layer Softmax Cross-entropy CNN Architectures: AlexNet, VGG, GoogLeNet, ResNet, etc Building a CNN for classifying skin diseases.
11	Recurrent Neural Network (RNN)	Recurrent Neural Networks: standard RNN, LSTM, GRU RNN applications Building a RNN for applying in predicting the activity of depressed patients.
12	CNN in Segmentation	CNN Architectures: FCN, SegNet, Unet, RelayNet, etc Applying the segmentation networks to segment the retinal blood vessel in fundus images.
13	Object Detection	Single Shot MultiBox Detector (SSD) Multi-box concept Predict object position Scale problem Building object detection with SSD YOLO Applying YOLO to detect lung diseases in chest x-ray images.
14	Object Detection (cont.)	Single Shot MultiBox Detector (SSD) Multi-box concept Predict object position Scale problem Building object detection with SSD Fast-RCNN Applying Fast-RCNN to detect lung diseases in chest x-ray images.
15	Visualizing and Understanding Feature	Visualizing and Understanding Feature
Final exam		

Laboratory

Week/ Class	Subject/Chapter	Content
1	Lab 1	Lab 1: Intro to Python (Numpy, Tensorflow, Keras, Sklearn, Pandas)
2	Lab 2	Lab 2: Intro to Python (Numpy, Tensorflow, Keras, Sklearn, Pandas)
3	Lab 3	Lab 3: Random Forest, Decision Tree, SVM, XGB for ECG, EEG signal classification
4	Lab 4	Lab 4: ANN, CNNs for ECG, EEG signal classification
5	Lab 5	Lab 5: CNNs for biomedical image segmentation
6	Lab 6	Lab 6: Object detection in biomedical images
7	Lab 7	Group project
8	Lab 8	Group project

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Ngo Thi Lua
- Email: ntlua@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Microfluidics

Course Code: BM104IU

1. General Information

- Course Title:
- Vietnamese: Vi lru
- English: Microfluidics
- Course ID: BM104IU
- Course type:

☐ General

☐ Fundamental

☒ Specialization ☐ Others

☐ Skills

☐ Project/Internship/Thesis

- Number of credits: 4 (3,1)

+ Lecture: 3

+ Laboratory: 1

- Prerequisites: Mechanical design and manufacturing processes in BME (BM101IU)

- Parallel Courses:

2. Course Description

Microfluidics is both the science which studies the behavior of fluids through microchannels, and the technology of manufacturing microminiaturized devices containing chambers and tunnels through which fluids flow or are confined. Microfluidics deal with very small volumes of fluids (10⁻⁹ to 10⁻¹⁸ L), using channels with dimensions from several to hundreds of micrometers, which can be expanded even to millimeters. The key concept related to microfluidics is to integrate in a simple micro-sized system operations that commonly solicits a whole laboratory. This multidisciplinary field embraces research in physics, chemistry, medicine, engineering, materials science, and biology supporting the design of various microfluidic devices (known as Lab-on-a-chip/Organ-on-a-chip devices for (portable)diagnostics, drug related studies such as disease modeling, drug discovery, and drug delivery, as well as regenerative medicine and tissue engineering. In this course, student will be introduced to: (1) Microfluidics (its definition and scientific aspects), (2) Fluid dynamic Theory to understand fluid behaviors at microscopic scale (3) Various microfabrication techniques with focus on low-cost, simple techniques for microfluidics (4) Design of microfluidic devices for common biological/biomedical applications..

3. Textbooks and Other Required Materials

- Textbook: Fundamentals And Applications of Microfluidics, 3rd Edition (Integrated Microsystems) by Nam-Trung Nguyen (ISBN-13: 978-1-63081-364-2)
- Class notes
- Recommended reading materials given by instructor(s)

4. Course Goals:

- Understanding microfluidics, fluid behaviors at microscopic scale.
- Get familiar with the fabrication process to make the microfluidic device and

applications of microfluidic devices in biomedical field

5. Course Learning Outcome (CLOs)

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- 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

6. Course Assessment

- One midterm exam: 25%
- One final exam: 25%
- Lab reports + Interview: 25%
- Attendance + learning attitude: 5%
- Presentation: 20%

7. Course Outline

Week	Title	Descriptions	Instructor
1	Introduction to microfluidics	Overview of microfluidics Advantages of microfluidics Relationships among MEMS, Nanotechnology, and Microfluidics Scientific aspects	Dr. HCKhon
2,3	Fluid Mechanics at small Scales	Scaling law Surface tension Laminar flow / Low Reynolds number flow Peclet number	Dr. NTQua
4,5	Computer aid designs (CAD) and Computational Fluid dynamic (CFD)	Design the microfluidic device using autocad Simulation the fluid flow in the microfluidic channel using Comsol software	Dr. NTQua
6,7	Fabrication method	Overview of methods Photolithography Micromachining for hard materials Soft-lithography, micromolding 3D printing Materials for microfluidics	Dr. NTQua
8	Soft-lithography	Soft-lithography procedure Low-cost alternatives	Dr. HCKhon
9,10	Control Fluid Flow in Microfluidic Devices	External Flow Internal Flow: Micro pumps, Microvalves, Micromixing	Dr. NTQua, Dr. HCKhon

11,12	Point of care diagnostics	Lab-on-a-chip system Detecting and sensing device	Dr. NTQua, Dr. HCKhon
13,14	Organ-on-a-chip	Cells and molecular biology Biomedical and clinical	Dr. HCKhon
15	Student presentation		Dr. NTQua, Dr. HCKhon

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problem and group assignment. Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. Missed tests: 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.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- CourseCoordinator/Lecturer: Nguyen Thanh Qua, Huynh Chan Khon
- Email: ntqua@hcmiu.edu.vn, hckhon@hcmiu.edu.vn,

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Rehabilitation Engineering
Course Code: BM106IU

1. General Information

- Course Title:	
+ Vietnamese:	Kỹ thuật phục hồi chức năng
+ English:	Rehabilitation Engineering
BM0XXIU	
- Course level:	☒ Undergrad ☐ Master ☐ Both
- Course type:	☐ General Fundamental ☐ Specialization (required) ☒ Specialization (elective) ☐ Project/Internship/Thesis ☐ Others:
- Number of credits:	4
+ Lecture:	3
+ Laboratory:	1
- Prerequisites:	Human Anatomy, Medical Design
- Parallel Courses:	Nil
- Course it replaces:	Nil
- Course standing in curriculum	3 rd to 4 th year

2. Course Description

This course provides an overview of rehabilitation engineering, focusing on the application of engineering principles to develop technologies that restore or enhance functional abilities for people with disabilities. Topics include assistive devices, rehabilitation robotics, wearable systems, virtual reality, and functional electrical stimulation. Students will explore design considerations, user-centered engineering, and evaluation methods through lectures and hands-on projects.

3. Textbooks and Other Required Materials

Textbooks:

Reference Materials:

- [1] Alex Mihailidis, Foger Smith (2023). *Rehabilitation Engineering: Principles and Practice*. CRC Press.
- [2] Tan Yen Kheng (2009). *Rehabilitation Engineering*. In-Tech
- [2] Lab handout

4. Course Goals

The course in *Rehabilitation Engineering* aims to provide students with foundational knowledge and hands-on experience in designing and applying engineering solutions to assist individuals with physical, sensory, or cognitive impairments. Students will learn to integrate principles from human physiology, biomechanics, electronics, and systems design to develop assistive technologies, including wearable devices, rehabilitation robots, and functional electrical stimulation systems. The course emphasizes user-centered design, clinical relevance, and ethical considerations in creating effective, safe, and accessible rehabilitation solutions. By engaging in team projects, students will enhance their problem-solving, innovation, and communication skills. Moreover, students will explore the impact of rehabilitation engineering on healthcare systems and quality of life, especially in the context of aging populations and resource-limited settings.

5. Learning Outcome

5.1 Student outcomes and performance indicators

This course support for the attainment of the following student outcomes:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics (SO 1)
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 (SO 2)
3. an ability to communicate effectively with a range of audiences (SO3)
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 (SO 4)

This course support for the attainment of the following performance indicators:

- 1A. Demonstrate how mathematics, biomedical science and engineering principles are used in biomedical engineering
- 2B. Design a system, component, or process with required specifications and functions 2C. Implementing engineering design to specific biomedical engineering problems
- 3A. Make **effective oral presentation** in front of a **range of audiences** - most job roles include some element of presentation skills and speaking to or as part of a group
- 4A. Evaluate the **professional and ethical dimensions** of engineering cases

5.2 Course Learning Outcomes

Course Learning outcome codes	Course Learning Outcomes (CLOs)	Student Outcomes (SOs)	Performance Indicators (PIs)
CLO1	Understand the physiological, biomechanical, and clinical foundations relevant to rehabilitation engineering.	SO 1	1A – Apply biomedical knowledge
CLO2	Apply engineering principles to design and evaluate assistive and rehabilitation devices and systems.	SO 2	2B – Design a biomedical system
CLO3	Use sensors, electronics, or simulation tools to implement a rehabilitation solution or prototype.	SO 2	2C – Implement biomedical design

CLO4	Recognize safety, accessibility, ethical, and regulatory considerations in rehabilitation technology development.	SO 4	4A – Evaluate societal implications
CLO5	Communicate effectively in project reports and presentations related to rehabilitation engineering topics.	SO 3	3A – Present engineering content

6. Course Assessment

Assessment component	Assessment form	Week	CLOs	SOs	Percentage %
Lecture & Semester Project					
A1. Process assessment	A1.1 Quiz	2, 5, 10, 13	1, 2, 3	1, 2	10%
	A1.2 Homework	3, 7, 9, 12	1, 2, 3	1, 2	10%
	A1.3 Participation	1-15			10%
A2. Midterm assessment	A2.1 Midterm Exam	9	1, 3	1, 2	30%
A3. Final assessment	A3.1 Full Semester Project				
	A3.2 Final exam	16	1, 2, 3, 4	1, 2, 4	40%
B1. Process assessment	B1.1 Pre-lab				
	B1.2 Lab report	1-7	1, 2, 3, 4, 5	1, 2, 3, 4	30%
	B1.3 Participation	7-8			10%
B2. Final assessment	B2.1 Poster presentation				
	B2.2 Final Report	8	1, 2, 3, 4, 5	1, 2, 3, 4	60%

7. Course Outline

Theory

Week/Class	Subject/Chapter	Content
1-2	Chapter 1: Introduction to Rehabilitation Engineering	- Definitions and scope of rehabilitation engineering - Types of disabilities and assistive technologies - Multidisciplinary collaboration in rehabilitation - Regulatory and ethical considerations
3-5	Chapter 2: Fundamental of Rehabilitation Engineering	- Human Physiology and Impairments Relevant to Rehabilitation - Rehabilitation Program Design and Evaluation - Standards, Policy, and Accessibility
6-8	Chapter 3: Biomechanics and Mechatronics for Rehabilitation	- Human motion analysis (gait, posture, joint mechanics) - Kinetics and kinematics in rehabilitation assessment

		- Force and pressure measurement (e.g., plantar pressure, grip strength) - Principles of rehabilitation robotics - Types of robots: upper limb, lower limb, exoskeletons - Control systems and human-robot interaction
- Midterm exam		
9-12	Chapter 4: Technologies in Rehabilitation	- Assistive and Adaptive Devices - Wearable Devices and Sensors for Rehabilitation - Functional Electrical Stimulation (FES) and Neuromuscular Rehabilitation - Virtual and Augmented Reality in Rehabilitation - AI and Data Analytics in Rehabilitation - Tele-rehabilitation and Remote Monitoring
13-15	Chapter 5: Case studies	- Pediatric Rehabilitation Engineering - Rehabilitation in Geriatric Populations - Rehabilitation for Speech and Hearing Impairments
	Final exam	
	Field trip	

Laboratory

Week/ Class	Subject/Chapter	Content
1-2	Mechanical Design for Assistive Devices	- Introduction to mechanical principles for rehabilitation device design. - Sketching and CAD modeling of orthotic/prosthetic components. - Introduction to prototyping tools (e.g., 3D printing, laser cutting).
3-5	Sensor Signal Acquisition and Processing	- Overview of EMG, IMU, and flex sensor technologies. - Hands-on acquisition of biosignals using basic acquisition kits. - Signal filtering, noise removal, and basic feature extraction in Python or MATLAB.
6-7	Rehabilitation Program Design and Evaluation	- Introduction to clinical assessment tools (FIM, Barthel Index, 6MWT, etc.). - Design of a rehabilitation intervention plan for a selected case. - Evaluation of rehab progress using measurable metrics.

8	Final presentation	Final Presentation

8. Course Policy

- Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problems and group assignments.
- Attendance: Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination.
- Missed tests: 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 retake the tests.)

9. Course Coordinator/Lecturer

- School/Department: Biomedical Engineering
- Course Coordinator/Lecturer: Assoc. Prof. Le Ngoc Bich, PhD.
- Email: lnkich@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Information system analysis and design

Course Code: BM107IU

1. General Information

Course name	- (in English) <i>INFORMATION SYSTEM ANALYSIS AND DESIGN</i> - (in Vietnamese) <i>Phân tích và thiết kế hệ thống thông tin</i>
Course designation	<i>This course provides a comprehensive exploration of systems analysis and design, equipping students with the skills to transform business requirements into effective information systems that align with the strategic goals of organizations. Through a combination of projects, assignments, and supporting materials, students will enhance their analytical reasoning, critical thinking, and problem-solving abilities.</i>
Course type	☐ General knowledge Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	3rd to 4th year
Person responsible for the course	<i>Pham Thi Thu Hien, Assoc.Prof.</i>
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 45 (lecture) + 30 (lab) Contact hours Private study including examination preparation, specified in hours ⁴ : 8 hours/ week
Credit points	4 credits (Theory: 3 + Practice: 1) ECTS (optional)

⁴When 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: 45 Practice: 32		
Required and recommended prerequisites for joining the course	None		
Course objectives	This course provides a comprehensive exploration of systems analysis and design, equipping students with the skills to transform business requirements into effective information systems that align with with the strategic goals of organizations. Through a combination of projects, assignments, and supporting materials, students will enhance their analytical reasoning, critical thinking, and problem-solving abilities.		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1 Students have an ability to apply knowledge of mathematics, science, and engineering to solve complex biomedical engineering problems.	
	Skill	CLO2: Students have an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. CLO3: Students have an ability to identify, formulate, and solve biomedical engineering problems..	
	Attitude	CLO4: Students have an ability to use the techniques, skills, and modern engineering tools necessary for biomedical engineering practice.	
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
	Chapter 1: Foundations for developing information systems 1.1. Types of information systems 1.2. Approaches for developing information systems 1.3. Basic concepts of object-oriented software systems 1.4. Reuse 1.5. Methodology for object-oriented software development	2	I, T, U

	Chapter 2: Modeling object-oriented information systems 2.1. Introduction to UML - Features of unified modeling language (UML) - Views in UML - Basic concepts in UML 2.2. Diagrams in UML - Hierarchy of UML diagrams - Use case - Class and relationship - Sequence diagram - Communication diagram - Activity diagram - Package and deployment diagram 2.3. Tools and technologies for information development 2.4. Case study	2	I, T, U
	Chapter 3: Requirement Determination 3.1. Steps in requirement determination 3.2. Business perspective - Identifying business actors and use cases - Writing glossary - Illustrating use cases on activity and sequence diagrams 3.3. Developer perspective - Specializing actors - Use case relationships - Scenarios - Prioritizing use cases - User interface sketches 3.4. Case study	2	I, T, U
	Chapter 4: Requirement analysis 4.1. Analysis process 4.2. Static analysis - Finding classes	2	
	- Identifying class relationships - Drawing class diagrams - Attributes 4.3. Dynamic analysis - Identifying boundary, controller and entity classes - Drawing sequence diagrams - Adding operations/methods to classes - Identifying methods based on responsibility - State diagram 4.4. Case study		

	Chapter 5: Designing System Architecture 5.1. Steps in system design 5.2. Network technology/topology selection - Distributed architecture types - Technologies of tiers for system development 5.3. Partitioning software system 5.4. Package and deployment diagrams for system architecture 5.5. Case study	2	
	Chapter 6: Designing Subsystems 6.1. Steps in subsystem design 6.2. Mapping the analysis class model into the design class model - Mapping operations - Types and visibility of attributes - Mapping classes, attributes and relationships 6.3. Mapping class diagram into database schema - Database management systems - Relational model - Mapping entity classes - Mapping relationships 6.4. Case study	2	I, T, U
	Chapter 7: Data and Process Modeling	1	I, T, U
	Chapter 8: Object Modeling	1	I, T, U
	Chapter 9: Development Strategies	1	I, T, U
	Chapter 10: User Interface Design	1	
	Chapter 11: Managing Systems Implementation	1	I, T, U
Examination forms	<i>Midterm, Final, Project</i>		
Study and examination requirements	<i>Midterm, Final, Project</i>		
Reading list			

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

1	x	X					
2		x				x	x
3	X	X					
4		x					

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Chapter 1: Foundations for developing information systems 1.1. Types of information systems 1.2. Approaches for developing information systems 1.3. Basic concepts of object-oriented software systems 1.4. Reuse 1.5. Methodology for object-oriented software development		Teaching, Discussion	HW, Quiz	[[1] Scott Tilley, Harry J. Rosenblatt, “AE Systems Analysis and Design”, 12th Ed., Course Technology Cengage Learning, Boston, Massachusetts, 2019. [2] Joseph S. Valacich and Joey F. Georg, “Modern Systems Analysis and Design”, 8th Ed., Pearson, 2016. [3] Dennis, Wixon, Tegarden, “System analysis & design - An Object-oriented approach with UML”, 6th Ed., Wiley, 2020. [4] Mike O’Docherty,
2	Chapter 2: Modeling object-oriented information systems 2.1. Introduction to UML - Features of unified modeling language (UML) - Views in UML - Basic concepts in UML 2.2. Diagrams in UML - Hierarchy of UML diagrams - Use case - Class and relationship - Sequence diagram - Communication diagram - Activity diagram - Package and deployment diagram 2.3. Tools and technologies for information development - 2.4. Case study		Teaching, Discussion	HW, Quiz	

3	Chapter 3: Requirement Determination 3.1. Steps in requirement determination 3.2. Business perspective - Identifying business actors and use cases - Writing glossary - Illustrating use cases on activity and sequence diagrams 3.3. Developer perspective - Specializing actors - Use case relationships - Scenarios - Prioritizing use cases - User interface sketches 3.4. Case study		Teaching, Discussion	HW, Quiz
4	Chapter 4: Requirement analysis 4.1. Analysis process 4.2. Static analysis - Finding classes - Identifying class relationships - Drawing class diagrams - Attributes 4.3. Dynamic analysis - Identifying boundary, controller and entity classes - Drawing sequence diagrams - Adding operations/methods to classes - Identifying methods based on responsibility - State diagram 4.4. Case study		Teaching, Discussion	HW, Quiz

5	Chapter 5: Designing System Architecture 5.1. Steps in system design 5.2. Network technology/topology selection - Distributed architecture types - Technologies of tiers for system development 5.3. Partitioning software system 5.4. Package and deployment diagrams for system architecture 5.5. Case study		Teaching, Discussion	HW, Quiz
6	Chapter 6: Designing Subsystems 6.1. Steps in subsystem design 6.2. Mapping the analysis class model into the design class model - Mapping operations - Types and visibility of attributes - Mapping classes, attributes and relationships 6.3. Mapping class diagram into database schema - Database management systems - Relational model - Mapping entity classes - Mapping relationships 6.4. Case study		Teaching, Discussion	HW, Quiz
7	Chapter 7: Data and Process Modeling		Teaching, Discussion	HW, Quiz
8	Chapter 8: Object Modeling		Teaching, Discussion	HW, Quiz
9	Chapter 9: Development Strategies		Teaching, Discussion	HW, Quiz
10	Chapter 10: User Interface Design		Teaching, Discussion	HW, Quiz
11	Chapter 11: Managing Systems Implementation		Teaching, Discussion	HW, Quiz

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
A1.1 Quiz	X			
A1.2 Homework	x	X		
A1.3 Participation				
A2.1 Midterm Exam	x	x	x	x
A3.1 Full Semester Project				
A3.2 Final exam		x	X	
B1.1 Pre-lab		x	X	
B1.2 Lab report				
B1.3 Participation				
B2.1 Poster presentation				X
B2.2 Final Report				X

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

5. Rubrics
6. Date revised:
7. Course coordinator/Lecturer
 - School of Biomedical Engineering:
 - Email: bme@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Medical Bioinformatics

Course Code: BM108IU

1. General information

Course name	- (in English) <i>BIOINFORMATICS FOR HEALTHCARE</i> - (in Vietnamese) <i>Tin sinh học trong Y tế</i>
Course designation	<i>This course explores the role of bioinformatics in solving healthcare-related challenges, focusing on the integration of biological data and computational tools to advance medical research, diagnosis, and treatment. Students will learn how to analyze genomic, transcriptomic, and proteomic data, discover biomarkers, and identify therapeutic targets using bioinformatics approaches. The course emphasizes the application of bioinformatics in tackling complex healthcare problems such as cancer, infectious diseases, and genetic disorders. Topics include genome and protein analysis, next-generation sequencing (NGS), systems biology, and the use of artificial intelligence (AI) in clinical decision-making and drug discovery.</i>
Course type	☐ General knowledge Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	3rd to 4th year
Person responsible for the course	<i>To Thi Ngoc Han, PhD.</i> <i>Ha Thi Thanh Huong, PhD.</i>
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 45 hours (lecture) + 30 (lab) Contact hours: Private study including examination preparation, specified in hours ⁵ : 8hours/weeks

Credit points	4 credits (Theory: 3 + Practice: 1) ECTS (optional)		
Number of periods	Theory: 45 Practice: 32		
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name) BM090 – Biology for BME; BM096IU - AI for healthcare		
Course objectives	This course focuses on how bioinformatics can be used to solve healthcare challenges. Students will learn to apply bioinformatics tools to analyze biological data, identify disease markers, and discover potential treatment targets. They will also explore how bioinformatics is applied in biomedical engineering, personalized medicine, and disease research..		
Course learning outcomes	Upon the successful completion of this course students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1 Students have an ability to apply knowledge of mathematics, science, and engineering to solve complex biomedical engineering problems..	
	Skill	CLO2: Students have an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. CLO3: Students have an ability to identify, formulate, and solve biomedical engineering problems..	
	Attitude	CLO4: Students have an ability to use the techniques, skills, and modern engineering tools necessary for biomedical engineering practice.	
Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Chapter 1: Introduction to Bioinformatics in Healthcare 1.1. What is Bioinformatics? 1.2. Role of Bioinformatics in Healthcare and Medicine 1.3. Central dogma, DNA, RNA, Genes, and Protein	2	I, T, U

	Chapter 2: Types of Biological Data: Genomic, Transcriptomic, Proteomic, and Clinical 2.1. Introduction to Databases in Bioinformatics (NCBI, EMBL, UniProt, TCGA, ClinVar, etc.) 2.2. Data, Variables, and Big Dataset	2	I, T, U
	Chapter 3: Genomics analysis 3.1 Genome Sequencing and Annotation 3.2 Tools for Genome Analysis (BLAST, FASTA, etc.) 3.3 Role of Genomics in Precision and Personalized Medicine 3.4 Genetic Variations and Disease Associations (SNPs, GWAS)	2	I, T, U
	Chapter 4: Next-Generation Sequencing (NGS) Applications in Healthcare 4.1 Introduction to Next-Generation Sequencing (NGS) 4.2 NGS Platforms and Techniques	2	I, T, U
	Midterm		I, T, U
	Chapter 4: Next-Generation Sequencing (NGS) Applications in Healthcare(Cont.) 4.3 Applications of NGS in Healthcare	2	I, T, U
	Chapter 5: Proteomics and Transcriptomic 5.1. Introduction to Proteomics: Proteins and their Functions 5.2 Transcriptome Analysis (RNA-Seq, Microarrays)	2	I, T, U
	Chapter 6: Tools for Protein Structure Prediction 6.1 Introduction to tool for Protein structure (Swiss-Model, PyMOL) 6.2 Biomarker Discovery for Disease Diagnosis and Prognosis	2	
	Chapter 6: Tools for Protein Structure Prediction (cont.) 6.3 Integration of Omics Data for Therapeutic Targeting	1	I, T, U
	Chapter 7 : Ethical Considerations in Bioinformatics	1	I, T, U
Examination forms	<i>Midterm, Final, Project</i>		
Study and examination requirements	<i>Midterm, Final, Project</i>		
Reading list			

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
1	x	X					
2		x				x	x
3	X	X					
4		x					

3. Planned learning activities and teaching methods

Week	Topic	CLO	Learning activities	Assessments	Resources
1	Chapter 1: Introduction to Bioinformatics in Healthcare 1.1. What is Bioinformatics? 1.2. Role of Bioinformatics in Healthcare and Medicine 1.3. Central dogma, DNA, RNA, Genes, and Protein		Teaching, Discussion	HW, Quiz	[1.] Applied Bioinformatics - An Introduction by Paul M. Selzer, Richard J. Marhöfer, Oliver Koch, 2018. [2.] Introduction to Bioinformatics Arthur M. Lesk University of Cambridge, United States by Oxford University Press Inc., New York, 2002.
2	Chapter 2: Types of Biological Data: Genomic, Transcriptomic, Proteomic, and Clinical 2.1. Introduction to Databases in Bioinformatics (NCBI, EMBL, UniProt, TCGA, ClinVar, etc.) 2.2. Data, Variables, and Big Dataset		Teaching, Discussion	HW, Quiz	
3	Chapter 3: Genomics analysis 3.1 Genome Sequencing and Annotation 3.2 Tools for Genome Analysis (BLAST, FASTA, etc.) 3.3 Role of Genomics in Precision and Personalized Medicine 3.4 Genetic Variations and Disease Associations (SNPs, GWAS)		Teaching, Discussion	HW, Quiz	

4	Chapter 4: Next-Generation Sequencing (NGS) Applications in Healthcare 4.1 Introduction to Next-Generation Sequencing (NGS) 4.2 NGS Platforms and Techniques		Teaching, Discussion	HW, Quiz
5	Midterm		Teaching, Discussion	HW, Quiz
6	Chapter 4: Next-Generation Sequencing (NGS) Applications in Healthcare(Cont.) 4.3 Applications of NGS in Healthcare		Teaching, Discussion	HW, Quiz
7	Chapter 5: Proteomics and Transcriptomic 5.1. Introduction to Proteomics: Proteins and their Functions 5.2 Transcriptome Analysis (RNA-Seq, Microarrays)		Teaching, Discussion	HW, Quiz
8	Chapter 6: Tools for Protein Structure Prediction 6.1 Introduction to tool for Protein structure (Swiss-Model, PyMOL) 6.2 Biomarker Discovery for Disease Diagnosis and Prognosis			
9	Chapter 6: Tools for Protein Structure Prediction (cont.) 6.3 Integration of Omics Data for Therapeutic Targeting		Teaching, Discussion	HW, Quiz

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
A1.1 Quiz	X			
A1.2 Homework	x	X		
A1.3 Participation				
A2.1 Midterm Exam	x	x	x	x

A3.1 Full Semester Project				
A3.2 Final exam		x	X	
B1.1 Pre-lab		x	X	
B1.2 Lab report				
B1.3 Participation				
B2.1 Poster presentation				X
B2.2 Final Report				X

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

5. Rubrics

6. Date revised:

7. Course coordinator/Lecturer

- School of Biomedical Engineering:

- Email: bme@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Medical software engineering

Course Code: BM109IU

2. General information

Course name	- (in English) <i>MEDICAL SOFTWARE ENGINEERING</i> - (in Vietnamese) <i>Kỹ thuật phần mềm trong Y tế</i>
Course designation	<i>Medical Software Engineering" introduces the principles and practices of software development for medical applications, emphasizing Python programming. The course covers essential concepts such as medical data processing, visualization, algorithm development, and software validation tailored to healthcare needs. Students will engage in both theoretical lectures and practical laboratory sessions to build and test medical software systems, preparing them for real-world challenges in biomedical engineering.</i>
Course type	☐ General knowledge Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	3rd to 4th year
Person responsible for the course	<i>Nguyen Tan Nhu, PhD.</i>
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 45 (lecture) + 30 (lab) Contact hours (please specify whether lecture, exercise, laboratory session, etc.) Private study including examination preparation, specified in hours ³ : 8 hours/ week
Credit points	4 credits (Theory: 3 + Practice: 1) ECTS (<i>optional</i>)

3.

Number of periods	Theory: 45 Practice: 30	
Required and recommended prerequisites for joining the course	- Previous course (Course code – Course name) Object-oriented Programming in Biomedical Engineering	
Course objectives	The "Medical Software Engineering" course aims to equip students with the knowledge and skills to design, develop, and test software applications tailored for medical and healthcare needs. By mastering Python programming and leveraging relevant libraries, students will learn to process medical data, develop visualization tools, and implement algorithms for diagnostic and therapeutic applications. The course also emphasizes best practices in software engineering, validation, and documentation, preparing students to tackle real-world challenges in biomedical software development.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1 Students will demonstrate the ability to design software systems for medical applications, incorporating engineering principles and utilizing Python and modern computational tools.
	Skill	CLO2: Students will be able to implement and evaluate software solutions that address complex biomedical engineering problems, ensuring functionality and performance. CLO3: Students will demonstrate proficiency in using Python libraries and frameworks for medical data processing and visualization in healthcare applications. CLO4: Students will develop and validate software using appropriate frameworks, ensuring the accuracy and reliability of medical data processing tools..
	Attitude	CLO5: Students will evaluate the ethical implications and professional standards involved in the development of medical software solutions. CLO6: Students will apply ethical principles to design decisions in biomedical software development, considering patient safety, privacy, and healthcare regulations

Learning Outcomes Matrix (optional)

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

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

4. Planned learning activities and teaching methods

Week	Topic	CL O	Learning activities	Assessm ents	Resources
1	Introduction to Medical Software Engineering - Overview of medical software engineering and its applications in healthcare - Basics of Python programming for engineering - Ethical considerations and professional standards in medical software development		Teaching, Discussion	HW, Quiz	[1] "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython" by Wes McKinney; [2] "Programming for Computations - Python: A
2	Python Programming Essentials - Data types, control structures, and functions in Python - File handling and working with medical data files (e.g., CSV, JSON) Introduction to Python libraries commonly used in medical applications (NumPy, Pandas)		Teaching, Discussion	HW, Quiz	
3	Data Analysis for Medical Applications - Statistical methods in Python for analyzing medical data - Visualizing medical data using Matplotlib and Seaborn Case study: Exploring a dataset related to healthcare		Teaching, Discussion	HW, Quiz	
4	Medical Imaging Basics - Introduction to medical imaging formats (DICOM, NIfTI) - Basics of image processing with Python (e.g., OpenCV, scikit-image) Visualizing medical images		Teaching, Discussion	HW, Quiz	

5	Advanced Data Visualization Techniques - Creating interactive medical data visualizations using Plotly - Dashboards for healthcare applications (Dash framework) Project: Building a simple visualization dashboard for medical data		Teaching, Discussion	HW, Quiz	
6	Introduction to Software Design and Development - Fundamentals of software engineering: SDLC, Agile methodology - Requirements analysis and design considerations for medical applications Designing system architecture for healthcare solutions		Teaching, Discussion	HW, Quiz	
7	Designing Medical Applications - User-centered design for medical software - Mockup tools and prototyping techniques (e.g., Figma, Balsamiq) Case study: Designing a user interface for a medical application		Teaching, Discussion	HW, Quiz	
8	Machine Learning for Medical Applications (Part 1) - Basics of machine learning and its role in healthcare - Introduction to scikit-learn for classification and regression Hands-on: Building a simple medical prediction model				
9	Machine Learning for Medical Applications (Part 2) - Evaluating machine learning models: Metrics and validation - Feature selection and preprocessing medical datasets Hands-on: Improving and testing the model		Teaching, Discussion	HW, Quiz	

10	Medical Software Validation and Testing - Software validation techniques specific to healthcare - Unit testing and integration testing for medical applications Hands-on: Writing test cases for a Python-based medical application		Teaching, Discussion	HW, Quiz	
11	Data Privacy and Security in Healthcare Software - Understanding healthcare data regulations (e.g., HIPAA, GDPR) - Implementing data encryption and secure access in Python Ethical issues in handling patient data		Teaching, Discussion	HW, Quiz	
12	IoT and Wearable Device Integration - Basics of IoT in healthcare and wearable device data collection - Connecting Python applications to IoT devices (e.g., Raspberry Pi, Arduino) Hands-on: Processing data from a simulated wearable device		Teaching, Discussion	HW, Quiz	
13	Cloud Computing in Medical Applications - Introduction to cloud services for healthcare software (e.g., AWS, Azure) - Deploying a Python-based application to the cloud Project: Hosting a medical data visualization app on a cloud platform		Teaching, Discussion	HW, Quiz	
	Ethical and Professional Responsibilities - Evaluating case studies on ethical dilemmas in medical software engineering - Best practices for professional software development in healthcare Group discussion: Ethical challenges in AI-based healthcare systems		Teaching,	HW,	

14			Discussion	Quiz	
	Final Project Presentation and Review - Students present their final projects: A Python-based medical software application - Review of key topics and learning outcomes Feedback and course wrap-up				

5. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
A1.1 Quiz	X					
A1.2 Homework	x	X				
A1.3 Participation						
A2.1 Midterm Exam	x	x	x	x		
A3.1 Full Semester Project					X	
A3.2 Final exam		x	X			
B1.1 Pre-lab		x	X			
B1.2 Lab report						
B1.3 Participation						
B2.1 Poster presentation					X	
B2.2 Final Report					X	

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

5. Rubrics

6. Date revised:

7. Course coordinator/Lecturer

- School of Biomedical Engineering:
- Email: bme@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL



Nguyen Thi Hiep



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Object-oriented programming

Course Code: BM110IU

4 General Information

Course name	- (in English) <i>Object-Oriented Programming in Biomedical Engineering</i> - (in Vietnamese) <i>Lập trình hướng đối tượng trong kỹ thuật y sinh</i>
Course designation	<i>This course introduces object-oriented programming (OOP) principles and their applications in biomedical engineering, focusing on designing robust and reusable software solutions. Core concepts like encapsulation, inheritance, and polymorphism are taught alongside advanced topics such as design patterns and software architecture. The lecture component (3 credits) spans 15 weeks, covering Python programming, algorithmic thinking, and problem-solving strategies applied to biomedical challenges like patient monitoring and medical imaging. The laboratory (1 credit) spans 8 weeks, offering hands-on experience in projects involving data analysis, physiological simulations, and medical data visualization. By course end, students will proficiently design modular, efficient software and gain skills essential for healthcare technology and biomedical research careers</i>
Course type	☐ General knowledge Fundamental ☒ Specialized knowledge ☐ Internship/Project/Thesis ☐ Others:
Semester(s) in which the course is taught	3rd to 4th year
Person responsible for the course	Dr. Tan-Nhu NGUYEN, Dr. Ngoc-Bich LE
Language	English
Relation to curriculum	☐ Compulsory ☒ Elective
Teaching methods	

Workload (incl. Contact hours, self- study hours)	(Estimated) Total workload: 45 (lecture) + 30 (lab) Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Private study including examination preparation, specified in hours ² : 8 hours / week	
Credit points	credits (Theory: 3 + Practice: 1) ECTS (<i>optional</i>)	
Number of periods	Theory: 45 Practice: 30	
Required and recommended prerequisites for joining the course		
Course objectives	The objective of this course is to equip students with a comprehensive understanding of object-oriented programming (OOP) and its practical applications in biomedical engineering. Students will learn to design, develop, and implement efficient, modular, and reusable software solutions to address complex biomedical challenges. The course aims to teach key OOP concepts such as encapsulation, inheritance, polymorphism, and abstraction, and how these principles can be applied to develop software for medical applications like patient monitoring, diagnostic tools, and medical imaging. Additionally, students will gain hands-on experience in using programming languages such as Python to analyze medical data, simulate physiological systems, and create visualizations. By the end of the course, students will be equipped with computational thinking skills and programming expertise essential for careers in healthcare technology, biomedical research, and related fields	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1: Demonstrate the ability to apply mathematical and biomedical engineering principles in solving complex biomedical engineering problems by utilizing object-oriented programming techniques to design and implement software solutions.
	Skill	CLO2: Integrate knowledge of biomedical science and engineering principles with object-oriented programming to analyze and solve real-world biomedical challenges, ensuring that software solutions meet the specific needs of the biomedical field. CLO3: Identify complex biomedical engineering problems and design appropriate software solutions, applying critical thinking and problem-solving skills

		to address issues in areas like data analysis, medical simulation, and health technology. CLO4: Use object-oriented programming principles to create efficient, reusable, and modular software systems that apply biomedical engineering concepts to solve practical and theoretical biomedical problems.																																																
	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)																																																	
	<table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Advanced Object-Oriented Programming Concepts in Biomedical Engineering</td><td>1</td><td>I, T</td></tr><tr><td>Object-Oriented Design and UML Diagrams</td><td>2</td><td>I, T</td></tr><tr><td>Abstraction and Interfaces</td><td>3</td><td>I, T, U</td></tr><tr><td>Inheritance in Object-Oriented Programming</td><td>4</td><td>I, T, U</td></tr><tr><td>Polymorphism and Encapsulation</td><td>5</td><td>I, T, U</td></tr><tr><td>Software Design Patterns</td><td>6</td><td>I, T, U</td></tr><tr><td>Integration of Computational Tools in BME</td><td>7</td><td>I, T, U</td></tr><tr><td>File Handling and Data Storage</td><td>8</td><td>I, T, U</td></tr><tr><td>Working with Biomedical Data</td><td>9</td><td>I, T, U</td></tr><tr><td>Designing Graphical User Interfaces (GUIs)</td><td>10</td><td>I, T, U</td></tr><tr><td>Software Design Patterns</td><td>11</td><td>I, T, U</td></tr><tr><td>Integration of Computational Tools in BME</td><td>12</td><td>I, T, U</td></tr><tr><td>Software Testing and Debugging</td><td>13</td><td>I, T, U</td></tr><tr><td>Software Architecture and Scalability</td><td>14</td><td>I, T, U</td></tr><tr><td>Final Project Presentations and Review</td><td>15</td><td>I, T, U</td></tr></table>	Topic	Weight	Level	Advanced Object-Oriented Programming Concepts in Biomedical Engineering	1	I, T	Object-Oriented Design and UML Diagrams	2	I, T	Abstraction and Interfaces	3	I, T, U	Inheritance in Object-Oriented Programming	4	I, T, U	Polymorphism and Encapsulation	5	I, T, U	Software Design Patterns	6	I, T, U	Integration of Computational Tools in BME	7	I, T, U	File Handling and Data Storage	8	I, T, U	Working with Biomedical Data	9	I, T, U	Designing Graphical User Interfaces (GUIs)	10	I, T, U	Software Design Patterns	11	I, T, U	Integration of Computational Tools in BME	12	I, T, U	Software Testing and Debugging	13	I, T, U	Software Architecture and Scalability	14	I, T, U	Final Project Presentations and Review	15	I, T, U	
Topic	Weight	Level																																																
Advanced Object-Oriented Programming Concepts in Biomedical Engineering	1	I, T																																																
Object-Oriented Design and UML Diagrams	2	I, T																																																
Abstraction and Interfaces	3	I, T, U																																																
Inheritance in Object-Oriented Programming	4	I, T, U																																																
Polymorphism and Encapsulation	5	I, T, U																																																
Software Design Patterns	6	I, T, U																																																
Integration of Computational Tools in BME	7	I, T, U																																																
File Handling and Data Storage	8	I, T, U																																																
Working with Biomedical Data	9	I, T, U																																																
Designing Graphical User Interfaces (GUIs)	10	I, T, U																																																
Software Design Patterns	11	I, T, U																																																
Integration of Computational Tools in BME	12	I, T, U																																																
Software Testing and Debugging	13	I, T, U																																																
Software Architecture and Scalability	14	I, T, U																																																
Final Project Presentations and Review	15	I, T, U																																																
Examination forms																																																		
Study and examination requirements	<i>Midterm, Final, Project</i>																																																	
Reading list																																																		

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
1	x					

2		x				
3		x				
4	x					

**Use Bloom's Taxonomy*

3. Planned learning activities and teaching methods

Week	Topic	CL O	Learning activities	Assessments	Resources
1	Advanced Object-Oriented Programming Concepts in Biomedical Engineering		Teaching, Discussion	HW, Quiz	[1] "Python Object-Oriented Programming" by Steven F. Lott For biomedical applications: [2]
2	Object-Oriented Design and UML Diagrams		Teaching, Discussion	HW, Quiz	"Programming for Computations - Python: A Gentle Introduction to Numerical Simulations with Python" by Svein Linge and Hans Petter Langtangen
3	Abstraction and Interfaces		Teaching, Discussion	HW, Quiz	
4	Inheritance in Object-Oriented Programming		Teaching, Discussion	HW, Quiz	
5	Polymorphism and Encapsulation		Teaching, Discussion	HW, Quiz	
6	Software Design Patterns		Teaching, Discussion	HW, Quiz	[3] "Computational Medicine: Tools and Challenges" edited by Zlatko Trajanoski
7	Integration of Computational Tools in Biomedical Engineering		Teaching, Discussion	HW, Quiz	[4] "Introduction to Computing for Engineers and Scientists: Using Python" by Timothy Bower
8	File Handling and Data Storage		Teaching, Discussion	HW, Quiz	[7] "Practical Object-Oriented Design: An Agile Primer Using Ruby" by Sandi Metz [8] "Python Programming and Numerical Methods: A

					Guide for Engineers and Scientists" by Qingkai Kong, Timmy Siau, and Alexandre Bayen
9	Working with Biomedical Data		Teaching, Discussion	HW, Quiz	
10	Designing Graphical User Interfaces (GUIs)		Teaching, Discussion	HW, Quiz	
11	Software Design Patterns		Teaching, Discussion	HW, Quiz	
12	Integration of Computational Tools in Biomedical Engineering		Teaching, Discussion	HW, Quiz	
13	Software Testing and Debugging		Teaching, Discussion	HW, Quiz	
14	Software Architecture and Scalability		Teaching, Discussion	HW, Quiz	
15	Final Project Presentations and Review		Teaching, Discussion	HW, Quiz	

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
A1.1 Quiz	X			
A1.2 Homework	x	X		
A1.3 Participation				
A2.1 Midterm Exam	x	x		
A3.1 Full Semester Project	x	x	x	X
A3.2 Final exam	x	x		
B1.1 Pre-lab		x		
B1.2 Lab report				
B1.3 Participation				
B2.1 Final presentation				x
B2.2 Final Report				x

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

5. Rubrics

6. Date revised:

7. Course coordinator/Lecturer
- School of Biomedical Engineering:
- Email: bme@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Biomedical Engineering

COURSE SYLLABUS

Course Name: Introduction to BME/ Introduction to BME Lab

Course Code: BM111IU/ BM112IU

1. General Information

- Course Title:
- + Vietnamese: Giới thiệu về kỹ thuật Y sinh và Thực hành về kỹ thuật Y sinh
- + English: Introduction to BME/ Introduction to BME Lab
- Course ID: BM111IU/ BM112IU
- Course type:

? General	☒ Fundamental
? Specialization	? Others
? Skills	? Project/Internship/Thesis

- Number of credits: 4
- + Lecture: 3
- + Laboratory: 1
- Prerequisites: None
- Parallel Courses:

2. Course Description

This course consists of three main parts: (1) fundamental engineering technologies and methodologies, (2) their clinical applications and (3) topics related to the department orientations. In the first part students learn different engineering techniques and methods including mathematical modeling and simulation of a dynamic system, design methodology, geometric optics, kinematics, and statistics. In the second part students learn how these techniques or methods are applied in medical field. Case studies focus on specific organs such as eye, ear, and lung. In each study three aspects are covered: physiological, clinical, and instrumentation aspects. These 2 parts emphasize on the activities of the Medical Instrumentation orientation. In the third part other activities of the Department will be briefly introduced including Signal and Image Processing, Pharmaceutical Engineering and Regenerative Medicine. Besides, a semester long project is assigned. The project requires students to conceive, design and build a working device related to Biomedical Engineering field. This course is accompanied by lab works which introduce students by hands-on ways to topics related to different research orientations of the Department.

3. Textbooks and Other Required Materials Textbooks:
Reference Materials:

4. Course Goals

Goals(Gx)	Descriptions	Program Outcomes	Level of Competence
G1	The goal of the course is to offer a broad view of BME with emphasis on the current activities in the Department. The student will have a decent	(1)-(7)	3.0-4.0
	comprehension of diverse orientations to be selected during the later years.		

5. Course Learning Outcome (CLOs)

CLOs code (Gx.x)	CLOs Descriptions	Teaching Modes
G1.1	Analyzing the implication of BME in real world and its relationship with other traditional engineering fields (d, h, i)	I, T, U
G1.2	Applying the philosophy and approaches of the BME Department in the national and international settings (d, h, i)	I, T, U
G1.3	Applying engineering methods in the investigations of biomedical issues such as optics in the vision, mathematical modeling in the respiratory and auditory systems, kinematics in the design of prostheses (a, b, e, f)	I, T, U
G1.4	Applying the statistical methods in the experimental designs and interpreting the information obtained by experimental results such as confidence interval, level of significance (a, b, e, f)	I, T, U
G1.5	Managing a project with critical path method and Gantt chart (d, e, f, g, h, i, j, k)	I, T, U
G1.6	Creating a prototype to test a scientific hypothesis according to an assignment (a, b, c, d, e, f, g, h, k)	I, T, U
G1.7	Applying online literature search and bioethics while performing a project and conducting experiments (f)	I, T, U
G1.8	Applying some techniques used in drug delivery system (k)	I, T, U
G1.9	Experimenting on living human to measure biosignals such as EEG, EMG, ECG and the oxyhemoglobine and deoxyhemoglobine fluctuation in the blood vessels of the brain (k)	I, T, U
G1.10	Applying soft skills such as teamwork, self-learning, problem solving and public presentation (g, k).	I, T, U

6. Course Assessment

Assessment component	Assessment form	Frequency	Percentage %

Lecture			
A1. Process assessment	Quiz	2	10%
	Homeworks	2	10%
A2. Midterm assessment	Midterm exam	1	20-40%
A3. Final assessment	Final Exam	1	20-40%
	Project report	1	40-60%
Laboratory			
B1. Process assessment	Attendance	-	-
	Lab report	-	-
B2. Final assessment	Final Exam	-	-

7. Course Outline

Lecture:

Week/Class	Content	Learning outcomes	Teaching and learning activities	Assessment
1	Introduction to BME	G1, G2	Lecture, discussion	Homework
2	Medical Device Design	G1, G2	Lecture, discussion	Quiz
3	Project Management	G1, G2	Lecture, discussion	Homework
4	Standardization	G1, G2	Lecture, discussion	Quiz
5	Geometric Optics and their applications in human eyes and vision	G1, G2	Lecture, discussion	Homework
6	System Modeling and its applications in human lungs and ears	G1, G2	Lecture, discussion	Quiz
7	Kinematics and Knee Prosthesis	G1, G2	Lecture, discussion	Homework
8	Biostatistics	G1, G2	Lecture, discussion	Quiz
9	Bioethics	G1, G2	Lecture, discussion	Homework
10	Functional Near Infrared Spectroscopy (fNIRS)	G1, G2	Lecture, discussion	Quiz
11	Nanotechnology and Drug Delivery System	G1, G2	Lecture, discussion	Homework
12	Regenerative Medicine	G1, G2	Lecture, discussion	Quiz

8. Course Policy

Student responsibility: Students are expected to spend at least 8 hours per week for self studying. This time should be made up of reading, working on exercises and problem and group assignment. **Attendance:** Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. **Missed tests:** 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.)

9. Course Coordinator/Lecturer
- School/Department: Biomedical Engineering
 - CourseCoordinator/Lecturer: Vo Van Toi
 - Email: vvtoi@hcmiu.edu.vn

Ho Chi Minh City, 10/7/2025

DEAN OF SCHOOL

A handwritten signature in blue ink, appearing to read 'Thiep', with a long horizontal flourish extending to the right.

Nguyen Thi Hiep

Phụ lục 3

**BẢNG MÔ TẢ SỐ TÍN CHỈ THỰC TẬP CỦA CHƯƠNG TRÌNH ĐÀO TẠO
ĐƯỢC THỂ HIỆN CỤ THỂ THEO MÔN HỌC ĐỂ ĐẢM BẢO
8 TÍN CHỈ THỰC TẬP THEO QUY ĐỊNH TẠI THÔNG TƯ 17/2021/TT-BGDĐT**
*(Kèm theo Quyết định số 1048/QĐ-ĐHQG ngày 04 tháng 9 năm 2025
của Hiệu trưởng Trường Đại học Quốc tế)*

STT	Mã môn học	Tên môn học		Tín chỉ	Nhóm môn học
		Tiếng Việt	Tiếng Anh		
1	BM050IU	Thực hành 1: Kỹ thuật đảo ngược	Practice 1: Reverse Engineering	1	Thực tập, khóa luận/luận văn tốt nghiệp
2	BM067IU	Thực hành 2: Tế bào động vật và vi sinh vật	Practice 2: Animal Cells and Microbiologies	1	Thực tập, khóa luận/luận văn tốt nghiệp
3	BM052IU	Thực hành 3: Thiết kế mạch điện	Practice 3: Electronic Design	1	Thực tập, khóa luận/luận văn tốt nghiệp
4	BM017IU	Thiết kế y tế	Medical Design	1	Thực tập, khóa luận/luận văn tốt nghiệp
5	BM069IU	Đồ án 2	Project 2	1	Thực tập, khóa luận/luận văn tốt nghiệp
6	BM020IU	Thực tập	Internship	3	Thực tập, khóa luận/luận văn tốt nghiệp
		Tổng		8	

Phụ lục 4

MỨC ĐỘ ĐÁP ỨNG KHUNG NĂNG LỰC SỐ CỦA CHƯƠNG TRÌNH ĐÀO TẠO

(Kèm theo Quyết định số1048/QĐ-ĐHQT ngày 04tháng 9 năm 2025
của Hiệu trưởng Trường Đại học Quốc tế)

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

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

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

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

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần (NLTP)		
			NLTP 1.1	NLTP 1.2	NLTP 1.3
1	BM082IU	Biomaterials	6		
2	BM003IU	Capstone		8	
3	BM068IU	Project 1			8

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

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

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần (NLTP)					
			NLTP 2.1	NLTP 2.2	NLTP 2.3	NLTP 2.4	NLTP 2.5	NLTP 2.6
1	BM111IU	Introduction to BME	7	6				
2	BM003IU	Pre-thesis			8			6
3	BM091IU	Human Anatomy and Physiology				8		
4	BM069IU	Project 2					6	

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

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

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần (NLTP)			
			NLTP 3.1	NLTP 3.2	NLTP 3.3	NLTP 3.4
1	BM003IU	Pre-thesis	8	8		

2	BM069IU	Project 2			6	
3	BM064IU	Applied informatics				8

4. Miền năng lực 4: An toàn

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

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần (NLTP)			
			NLTP 4.1	NLTP 4.2	NLTP 4.3	NLTP 4.4
1	BM068IU	Project 1	6			6
2	BM069IU	Project 2		6	6	

5. Miền năng lực 5: Giải quyết vấn đề

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

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần (NLTP)			
			NLTP 5.1	NLTP 5.2	NLTP 5.3	NLTP 5.4
1	BM069IU	Project 2	8			
2	BM003IU	Capstone		8		
3	BM004IU	Thesis			8	8

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

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

STT	Mã MH	Tên MH (Tiếng Anh)	Năng lực thành phần (NLTP)		
			NLTP 6.1	NLTP 6.2	NLTP 6.3
1	BM096IU	AI for Healthcare	8		8
2	BM068IU	Project 1		6	

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	BM082IU- Biomaterials	Bài tập tìm bài báo phù hợp cho báo cáo cuối kỳ (bao gồm đánh giá nội dung, tạp chí, so sánh tạp chí, so sánh nội dung các bài báo có cùng chủ đề)
	NLTP 1.2	BM003IU- Capstone	Phần đánh giá “Decision matrix” trong bản báo cáo cuối kỳ.
	NLTP 1.3	BM068IU- Project 1	Form chấm điểm báo cáo cuối kỳ
2. Giao tiếp và hợp tác trong môi trường số	NLTP 2.1	BM111IU- Introduction to BME	- Phần đánh giá “Decision Matrix” Video, poster mô phỏng - giới thiệu sản phẩm
	NLTP 2.2	BM111IU-	Bài tập sử dụng tiện ích của trang web thư viện

		Introduction to BME	- tìm kiếm, sànlọc và lưu trữ tài liệu
	NLTP 2.3	BM091IU-Human Anatomy and Physiology	Bài thuyết trình
	NLTP 2.4	BM003IU-Prethesis	Phân đánh giá về chi phí và tác động của giải pháp kỹ thuật / phương pháp khoa học trong báo cáo cuối kỳ
	NLTP 2.5	BM069IU Project 2	Phân đánh giá về mức độ rõ ràng và hiệu quả của bản tóm tắt phổ thông nhằm đảm bảo việc truyền đạt thông tin kỹ thuật hoặc khoa học một cách chính xác và dễ tiếp cận đến đối tượng không chuyên môn.
	NLTP 2.6	BM003IU-Prethesis	Báo cáo cuối kỳ
3. Sáng tạo nội dung số	NLTP 3.1	BM003IU Prethesis	Báo cáo cuối kỳ
	NLTP 3.2	BM003IU-Prethesis	Phân đánh giá về phân tích vấn đề hiện có và đưa giải pháp (“Propose solution”)
	NLTP 3.3	BM003IU Prethesis	Báo cáo cuối kỳ
	NLTP 3.4	BM064IU-Applied informatics	Bài tập yêu cầu phát triển một chuỗi các câu lệnh dễ hiểu cho một hệ thống máy tính để giải quyết một vấn đề nhất định hoặc thực hiện một nhiệm vụ cụ thể
4. An toàn	NLTP 4.1	BM068IU-Project 1	Phân đánh giá về “Constraint and requirement identification” trong báo cáo cuối kỳ.
	NLTP 4.2		Báo cáo cuối kỳ
	NLTP 4.3		Báo cáo cuối kỳ
	NLTP 4.4	BM068IU-Project 1	Phân đánh giá về “Constraint and requirement identification” trong báo cáo cuối kỳ.
5. Giải quyết vấn đề	NLTP 5.1	BM069IU-Project 2	Phân đánh giá về “Designing with required specifications and functions” trong báo cáo cuối kỳ
	NLTP 5.2	BM003IU-Capstone	Phân đánh giá được nhu cầu và xác định, đánh giá, lựa chọn, sử dụng các công cụ số cùng với các giải pháp công nghệ khả thi để giải quyết chúng trong báo cáo cuối kỳ.
	NLTP 5.3	BM004IU-Thesis	Phân đánh giá về việc sử dụng được các công cụ và công nghệ số để tạo ra kiến thức, đổi mới quy trình và sản phẩm trong luận văn.
	NLTP 5.4	BM004IU-	Phân đánh giá về phương hướng cải thiện sản

		Thesis	phẩm/nghiên cứu trong tương lai trong luận văn.
6. Ứng dụng trí tuệ nhân tạo	NLTP 6.1	BM096IU-AI for Healthcare	Bài tập về AI ảnh hưởng đến cuộc sống hàng ngày và vai trò của AI trong các lĩnh vực
	NLTP 6.2	BM068IU-Project 1	Báo cáo cuối kỳ
	NLTP 6.3	BM096IU-AI for Healthcare	Bài tập về đánh giá và lọc thông tin từ các nguồn được tạo ra hoặc xử lý bằng AI

