

**CHƯƠNG TRÌNH ĐÀO TẠO KHÓA 2025 – NGÀNH THỐNG KÊ
TRÌNH ĐỘ ĐẠI HỌC**

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

1. Thông tin chung

- Tên ngành đào tạo:
- + Tiếng Việt: Thống kê (chuyên ngành: Thống kê ứng dụng)
- + Tiếng Anh: Statistics (specialization: Applied Statistics)
- Mã ngành đào tạo: 7460201
- Trình độ đào tạo: Đại học
- Loại hình đào tạo: Chính quy
- Thời gian đào tạo: 3.5-4 năm
- Tên văn bằng sau khi tốt nghiệp:
- + Tiếng Việt: Cử nhân Thống kê
- + Tiếng Anh: Bachelor of Science in Statistics
- 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: IU03 (Toán - Tin học)

d. Tổ hợp môn xét tuyển

Toán, Vật lý, Hóa học

Toán, Vật lý, Tiếng Anh

Toán, Tin học, Tiếng Anh

Toán, Tin học, Vật lý

Toán, Tin học, Hóa học

e. Dự kiến chỉ tiêu tuyển sinh năm 2025: 30 sinh viên

3. Mục tiêu đào tạo

a. Mục tiêu chung

Trường Đại học Quốc tế đào tạo cử nhân Thống kê ứng dụng có phẩm chất chính trị, đạo đức và sức khỏe tốt; được trang bị nền tảng vững chắc về Toán học, kiến thức chuyên sâu về Thống kê và Học máy; có khả năng vận dụng hiệu quả các công cụ và mô hình Thống kê hiện đại để phân tích, dự báo và giải quyết các bài toán thực tiễn, đặc biệt trong các lĩnh vực kinh tế, tài chính, bảo hiểm và quản trị. Cụ thể các sinh viên ngành Thống kê sau khi tốt nghiệp có các năng lực và phẩm chất sau đây:

Phẩm chất chính trị và phẩm chất đạo đức: Có phẩm chất chính trị, đạo đức nghề nghiệp tốt, hiểu biết đúng đắn về đường lối, chính sách của Đảng và Nhà nước.

Khả năng chuyên môn: Cử nhân ngành Thống kê (Chuyên ngành Thống kê ứng dụng) có khả năng sử dụng thành thạo các công cụ, các mô hình Thống kê hiện đại và các mô hình học máy để phân tích và dự báo cho các ngành nghề khác nhau. Có khả năng tham gia xây dựng và phân tích các mô hình Thống kê cụ thể, tính toán và xử lý dựa trên công cụ toán học và công nghệ thông tin (phần mềm thống kê) nhằm phân tích, đề xuất dự báo thống kê cho nhiều lĩnh vực trong kinh tế, tài chính và xã hội.

Kỹ năng: Am hiểu và có khả năng tổ chức các hoạt động trong lĩnh vực thống kê ứng dụng trong các ngành như kinh tế, tài chính, bảo hiểm, quản trị, y học... Thành thạo kỹ năng thu thập dữ liệu từ các nguồn khác nhau, đồng thời hiểu rõ các số liệu thống kê. Có khả năng ứng dụng các mô hình thống kê và các kỹ thuật phân tích dữ liệu kinh tế xã hội và dự báo, từ đó lựa chọn giải pháp thích hợp và đưa ra phương án tốt nhất trong các tình huống đa dạng, hỗ trợ việc ra quyết định cho các nhà quản lý.

Khả năng tự nâng cao trình độ và thích nghi được với sự phát triển của khoa học và xã hội:

- Có khả năng tự đọc, trang bị kiến thức mới, công cụ hiện đại thuộc chuyên ngành.
- Có khả năng đọc và phân tích các thành tựu khoa học thuộc chuyên môn trong và ngoài nước và áp dụng vào công việc chuyên môn của mình.
- Có khả năng tự học hỏi, nghiên cứu sâu về lý thuyết thống kê và thống kê ứng dụng.

Năng động và thích nghi tốt với môi trường:

- Có thể tham gia vào việc nghiên cứu, cải tiến phương pháp, tham gia các đề án Thống kê liên ngành và các vấn đề ứng dụng liên quan.
- Có năng lực độc lập suy nghĩ, sáng tạo trong các hoạt động nghề nghiệp, thích nghi được với sự thay đổi loại hình và tính chất công việc khi làm việc với các dự án thuộc đa ngành.

- Có khả năng nhận biết vấn đề, xử lý, đề xuất các phương án và có những kỹ năng làm việc tốt trong môi trường quốc tế (tiếng Anh tốt, kỹ năng làm việc nhóm, kỹ năng làm việc trong môi trường đa văn hóa).

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

P.O.1. Có khả năng ứng dụng một cách hiệu quả các công cụ Toán học và mô hình Thống kê, Học máy để giải quyết các vấn đề trong các lĩnh vực thuộc khoa học tính toán, khoa học dữ liệu, kinh tế, tài chính, quản trị và công nghiệp.

P.O.2. Có khả năng phổ biến và phát triển các mô hình lý thuyết Thống kê, tham gia nghiên cứu khoa học và sẵn sàng học tiếp lên bậc học cao hơn. Có các kỹ năng mềm cần thiết. Có khả năng truyền đạt ý tưởng của mình và làm việc nhóm, khả năng giải quyết vấn đề, khả năng thuyết trình, khả năng lãnh đạo và kỹ năng quản lý.

P.O.3. Có phẩm chất đạo đức và phẩm chất chính trị tốt, sống và làm việc tuân theo các quy định của pháp luật nhà nước Việt Nam

P.O.4. Có khả năng tự học tập suốt đời, tự cập nhật và giáo dục thường xuyên trong lĩnh vực Thống kê và trong nghề nghiệp. Có trách nhiệm nghề nghiệp cao.

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

Mục tiêu đào tạo của CTĐT	Tâm nhìn	Sứ mạng	Luật giáo dục
<p>P.O.1. Có khả năng ứng dụng một cách hiệu quả các công cụ Toán học và mô hình Thống kê, Học máy để giải quyết các vấn đề trong các lĩnh vực thuộc khoa học tính toán, khoa học dữ liệu, kinh tế, tài chính, quản trị và công nghiệp</p> <p>P.O.2. Có khả năng phổ biến và phát triển các mô hình lý thuyết Thống kê, tham gia nghiên cứu khoa học và sẵn sàng học tiếp lên bậc học cao hơn.</p> <p>P.O.3. Có các kỹ năng mềm cần thiết. Có khả năng truyền đạt ý tưởng của</p>	<p>1. Đào tạo nguồn nhân lực có trình độ cao trong lĩnh vực của Toán ứng dụng và Thống kê trong kinh tế tài chính và Thống kê.</p> <p>2. Gắn kết chặt chẽ nội dung đào tạo với nhu cầu thực tiễn của các doanh nghiệp và tổ chức tài chính tại Việt Nam.</p> <p>3. Đào tạo và nghiên cứu về Toán ứng dụng và Thống kê, kỹ thuật tài chính và quản trị rủi ro theo xu hướng của các nước tiên tiến trên thế giới như Mỹ, Anh,</p>	<p>1. Đào tạo đại học chất lượng cao trong các lĩnh vực Toán ứng dụng, Thống kê và các lĩnh vực liên ngành trong Toán ứng dụng.</p> <p>2. Đào tạo các kỹ năng nghiên cứu bao gồm nghiên cứu cơ bản và ứng dụng, đào tạo và phát triển nghiên cứu độc lập và khả năng học tập suốt đời của người học để đáp ứng nhu cầu của ngành và xã hội.</p> <p>3. Tiên phong phát triển lĩnh vực Toán ứng dụng và Thống kê, Kỹ thuật tài chính & Quản lý rủi ro và các lĩnh vực Toán ứng dụng khác tại Việt Nam bằng cách thúc</p>	<p>Mục tiêu chung:</p> <p>- Đào tạo nhân lực, nâng cao dân trí, bồi dưỡng nhân tài; nghiên cứu khoa học, công nghệ tạo ra tri thức, sản phẩm mới, phục vụ yêu cầu phát triển kinh tế - xã hội, bảo đảm quốc phòng, an ninh và hội nhập quốc tế;</p> <p>- Đào tạo người học có phẩm chất chính trị, đạo đức; có kiến thức, kỹ năng thực hành nghề nghiệp, năng lực nghiên cứu và phát triển ứng dụng khoa học và công nghệ tương xứng với trình độ</p>

<p>mình và làm việc nhóm, khả năng giải quyết vấn đề, khả năng thuyết trình, khả năng lãnh đạo và kỹ năng quản lý.</p> <p>P.O.4. Có phẩm chất đạo đức và phẩm chất chính trị tốt, sống và làm việc tuân theo các quy định của pháp luật nhà nước Việt Nam</p> <p>P.O.5. Có khả năng tự học tập suốt đời, tự cập nhật và giáo dục thường xuyên trong lĩnh vực Thống kê và trong nghề nghiệp. Có trách nhiệm nghề nghiệp cao.</p>	<p>Pháp.</p> <p>4. Ứng dụng và kết hợp kiến thức của các ngành toán học, học máy và công nghệ thông tin vào hoạt động phân tích dữ liệu tài chính và quản trị rủi ro tại Việt Nam.</p>	<p>đầy ứng dụng Kỹ thuật tài chính & Quản lý rủi ro trong nhiều lĩnh vực sản xuất và dịch vụ tại Việt Nam.</p> <p>4. Giữ vai trò tiên phong trong giáo dục và nghiên cứu Toán học lý thuyết và ứng dụng tại Việt Nam.</p>	<p>đào tạo; có sức khỏe; có khả năng sáng tạo và trách nhiệm nghề nghiệp, thích nghi với môi trường làm việc; có ý thức phục vụ Nhân dân.</p>
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4. Chuẩn đầu ra của chương trình đào tạo (Program Learning Outcomes – PLOs)

Chương trình đào tạo có 8 chuẩn đầu ra. Cụ thể, cử nhân ngành Thống kê của trường Đại học Quốc tế ngay sau khi tốt nghiệp sẽ có các khả năng như sau:

Stt	Chuẩn đầu ra	Trình độ năng lực (theo thang Bloom)
1.	Kiến thức và lập luận ngành (Cognitive/ knowledge/ thinking)	
PLO1	Có nền tảng kiến thức vững chắc về khoa học xã hội, Toán học, Xác suất – Thống kê; thành thạo lập trình, mô hình hóa, phân tích dữ liệu, học máy và trí tuệ nhân tạo.	Bậc 2 (Understand)
PLO2	Có khả năng vận dụng tư duy Toán học, Thống kê và tư duy phản biện để phân tích và giải quyết các vấn đề thực tiễn.	Bậc 3 (Apply)
PLO3	Có khả năng phân tích, đánh giá và vận dụng các phương pháp Toán học và Thống kê trong các mô hình ứng dụng thực tiễn, đặc biệt trong lĩnh vực tài	Bậc 4 (Analyze)

	chính, kinh doanh và kinh tế – xã hội.	
2.	Kỹ năng, năng lực thực hành nghề nghiệp (Psychomotor/skill/doing)	
PLO4	Có kỹ năng giao tiếp (viết, nói, ...) tốt, trong các môi trường chuyên môn, nghiên cứu, cũng như không chuyên môn. Có khả năng sử dụng tiếng Anh lưu loát trong giao tiếp. Có những kỹ năng làm việc tốt trong môi trường quốc tế, môi trường đa văn hóa. Có tinh thần và kỹ năng làm việc nhóm hiệu quả, tính chuyên nghiệp cao.	Bậc 3 (response)
PLO5	Có kỹ năng lựa chọn, phân tích và cải tiến phương pháp thống kê và các mô hình dự báo. Xây dựng và tổ chức mô hình thống kê cho doanh nghiệp và xã hội.	Bậc 4 (articulation)
PLO6	Có khả năng thiết kế và triển khai tính toán cho các mô hình Thống kê dữ liệu, bao gồm mô phỏng, phân tích và dự báo, với ứng dụng trong tài chính, quản trị kinh doanh và kinh tế – xã hội.	Bậc 5 (Mechanism-basic proficiency)
3.	Thái độ, ý thức (Affective/attitude/feeling)	
PLO7	Có đạo đức cá nhân và đạo đức nghề nghiệp tốt và có trách nhiệm với cộng đồng. Có hiểu biết đúng đắn về pháp luật đại cương và pháp luật nghề nghiệp, về đường lối, chính sách của Đảng và Nhà nước. Có thể giới quan, nhân sinh quan đúng đắn và có khả năng nhận thức, đánh giá các hiện tượng một cách logic và tích cực.	Bậc 4 (Organization)
PLO8	Có tính chủ động, tích cực, có nhu cầu tự hoàn thiện nghề nghiệp và thích nghi với những biến động của xã hội. Có ý thức và khả năng học tập suốt đời.	Bậc 5 (Characterization)

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

Bảng 2. Mối quan hệ giữa 8 CDR (8 PLOs) và 05 mục tiêu đào tạo (POs)

	PLOs	POs				
		PO1	PO2	PO3	PO4	PO5
Kiến thức	PLO1	x		x	x	
	PLO2	x	x	x		
	PLO3		x			x
Kỹ năng	PLO4		x	x		
	PLO5	x	x			

	PLO6		x			
Tự chủ và trách nhiệm	PLO7				x	x
	PLO8			x		x

6. Quy trình đào tạo, điều kiện tốt nghiệp

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

Căn cứ Quyết định số 719/QĐ-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 khóa

Tổng số tín chỉ: **125 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	40	39	1	32

	đại cương				
	- Bắt buộc: 40 tín chỉ	40	39	1	32
	- Tự chọn: 0 tín chỉ				
II	Khối kiến thức cơ sở ngành	29	27	2	23.2
	- Bắt buộc: 26 tín chỉ	26	24	2	20.8
	- Tự chọn: 3 tín chỉ	3	3	0	2.4
III	Kiến thức chuyên ngành	32	31	1	25.6
	- Bắt buộc: 23 tín chỉ	23	22	1	18.4
	- Tự chọn: 9 tín chỉ	9	9	0	7.2
IV	Kiến thức bổ trợ	11	9	2	8.8
	- Bắt buộc: 11 tín chỉ	11	9	2	8.8
	- Tự chọn: 0 tín chỉ				
V	Thực tập, khóa luận/luận văn tốt nghiệp	13	13	0	10.4
	Tổng cộng	125	119	6	100

9. Nội dung chương trình đào tạo

Bảng 5. Khung CTĐT chung của nhóm ngành Toán-Tin học

IU03	NHÓM 3	TOÁN - TIN HỌC	Tín chỉ
Khối kiến thức Kinh tế - Chính trị - Xã hội - Luật			14
1	PE015IU	Philosophy of Marxism and Leninism	3
2	PE016IU	Political economics of Marxism and Leninism	2
3	PE017IU	Scientific socialism	2
4	PE018IU	History of Vietnamese Communist Party	2
5	PE019IU	Ho Chi Minh's Thoughts	2
6	PE021IU	General Law	3
Khối kiến thức Khoa học Tự nhiên			14
7	MA001IU	Calculus 1	4
8	MA003IU	Calculus 2	4
9	MA033IU	Linear Algebra	3
10	MA036IU	Probability and Statistics	3
Khối kiến thức Tin học			8
11	IT069IU	Object-Oriented Programming	4
12	IT079IU	Principles of Database Management	4
Khối kiến ngoại ngữ			8
13	EN007IU	Writing AE1	2
14	EN008IU	Listening AE1	2
15	EN011IU	Writing AE2	2

16	EN012IU	Speaking AE2	2
Giáo dục chung khác			6
17	PT001IU	Physical Training 1	3
18	PT002IU	Physical Training 2	3
19		Military Training	
Tổng			50

Bảng 6. Các môn học thuộc CTĐT

Stt	Mã MH	Tên môn học (MH)		Loại MH (bắt buộc/ tự chọn)	Tín chỉ			Phòng TN (**)
		Tiếng Việt	Tiếng Anh		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
I	Khởi kiến thức giáo dục đại cương				40	39	1	
	Lý luận chính trị (11 tín chỉ)				11	11	0	
1	PE015IU	Những nguyên lý cơ bản của Chủ nghĩa Mác – Lê nin	Philosophy of Marxism and Leninism	Bắt buộc	3	3		
2	PE016IU	Kinh tế chính trị Mác-Lênin	Political economics of Marxism and Leninism	Bắt buộc	2	2		
3	PE017IU	Chủ nghĩa xã hội khoa học	Scientific socialism	Bắt buộc	2	2		
4	PE018IU	Lịch sử Đảng Cộng sản Việt Nam	History of Vietnamese Communist Party	Bắt buộc	2	2		
5	PE019IU	Tư tưởng Hồ Chí Minh	Ho Chi Minh's Thoughts	Bắt buộc	2	2		
	Pháp luật, Khoa học xã hội và nhân văn (3 tín chỉ)				3	3	0	
6	PE021IU	Pháp luật đại cương	General law	Bắt buộc	3	3		
	Ngoại ngữ (8 tín chỉ)				8	8	0	
7	EN007IU	Tiếng Anh chuyên ngành 1 (kỹ năng viết)	Writing AE1	Bắt buộc	2	2		
8	EN008IU	Tiếng Anh chuyên ngành 1 (kỹ năng nghe)	Listening AE1	Bắt buộc	2	2		
9	EN011IU	Tiếng Anh chuyên ngành 2 (kỹ năng viết)	Writing AE2	Bắt buộc	2	2		

10	EN012IU	Tiếng Anh chuyên ngành 2 (kỹ năng nói)	Speaking AE2	Bắt buộc	2	2		
Toán - Tin học - Khoa học tự nhiên - Công nghệ - Môi trường (15 tín chỉ)					15	14	1	
11	MA001IU	Giải tích 1	Calculus 1	Bắt buộc	4	4		
12	IT149IU	Lập trình căn bản	Fundamentals of Programming	Bắt buộc	4	3	1	
13	MA003IU	Giải tích 2	Calculus 2	Bắt buộc	4	4		
14	MA033IU	Đại số tuyến tính	Linear Algebra	Bắt buộc	3	3		
Kinh tế - Quản lý (3 tín chỉ)					3	3	0	
15	BA005IU	Tài chính kế toán	Financial Accounting	Bắt buộc	3	3		
II	Kiến thức cơ sở ngành				29	27	2	
16	MA036IU	Xác suất-Thống kê	Probability and Statistics	Bắt buộc	3	3		
17	MAFE201IU	Giải tích thực	Real Analysis	Bắt buộc	4	4		
18	IT079IU	Nguyên lý quản trị dữ liệu	Principles of Database management	Bắt buộc	4	3	1	
19	MAAS220IU	Giới thiệu về thống kê	Introduction to Statistics	Bắt buộc	2	2		
20	MAFE220IU	Giải tích số	Numerical Analysis	Bắt buộc	3	3		
21	MA038IU	Phương trình vi phân	Differential Equations	Bắt buộc	3	3		
22	IT172IU	Học máy	Machine Learning	Bắt buộc	4	3	1	
23	MAFE207IU	Lý thuyết ra quyết định	Decision making	Bắt buộc	3	3		
24	Môn học tự chọn #1		MAAS Elective #1	Tự chọn	3	3		
	IS055IU	Các nguyên lý logistics và chuỗi cung ứng	Principles of Logistics and Supply Chain Management		3	3		
	MAFE306IU	Toán tài chính 1	Financial Mathematics 1					
	MAFE209IU	Thị trường	Financial Markets					

		Tài chính						
	PE008IU	Tư duy phản biện	Critical Thinking					
III	Kiến thức chuyên ngành				32	31	1	
25	MAAS318IU	Mô hình ngẫu nhiên	Stochastic Modeling	Bắt buộc	3	3		
26	MAFE320IU	Thống kê và khoa học dữ liệu với Python	Statistics and Data Science with Python	Bắt buộc	3	3		
27	IT136IU	Phân tích hồi quy	Regression Analysis	Bắt buộc	4	3	1	
28	MAAS324IU	Phân tích chuỗi thời gian ứng dụng	Applied Time Series Analysis	Bắt buộc	3	3		
29	Môn tự chọn #2		MAAS Elective #2	Tự chọn	3	3		
	MAAS325IU	Phân tích dự báo	Predictive Analytics		3	3		
	IS065IU	Quản trị rủi ro và an toàn chuỗi cung ứng	Supply Security and Risk Management		3	3		
	MAFE318IU	Quản trị rủi ro tài chính 1	Financial Risk management 1		4	4		
	MAAS326IU	Toán bảo hiểm cho cuộc sống	Actuarial Mathematics for Life Contingent		3	3		
30	IT157IU	Học sâu	Deep Learning		Bắt buộc	4	3	1
31	Môn học tự chọn #3		MAAS Elective #3	Tự chọn	3	3		
	MAAS411IU	Mô hình thống kê cho khoa học Bảo hiểm	Statistical Models for Actuarial Science		3	3		
	MAAS412IU	Phương pháp thống kê trong tài chính	Statistical Methods for Finance		3	3		
	IS066IU	Khai phá dữ liệu trong chuỗi cung	Data Mining in Supply Chain		3	3		

		ứng						
	MAAS410IU	Thống kê Bayes	Bayesian Statistics		3	3		
32	Môn học tự chọn #4		MAAS Elective #4	Tự chọn	3	3		
	MAFE307IU	Tối ưu hoá 2	Optimization 2		3	3		
	MAAS414IU	Phương pháp lấy mẫu điều tra	Survey Sampling		3	3		
	MAAS415IU	Mô hình xác suất ứng dụng trong khoa học Bảo hiểm	Applied Probability Models in Actuarial Science		3	3		
33	MAFE221IU	Tối ưu hoá 1	Optimization 1	Bắt buộc	3	3		
34	MAAS413IU	Phân tích thống kê nhiều chiều	Multivariate Statistical Analysis	Bắt buộc	3	3		
IV	Kiến thức bổ trợ				11	9	2	
35	IT069IU	Lập trình hướng đối tượng	Object-Oriented programming	Bắt buộc	4	3	1	
36	IT013IU	Cấu trúc dữ liệu và giải thuật	Algorithms and Data structures	Bắt buộc	4	3	1	
37	BA115IU	Giới thiệu về quản trị kinh doanh	Introduction to Business Administration	Bắt buộc	3	3		
V	Thực tập, khóa luận/ luận văn tốt nghiệp				13	13		
38	MAAS328IU	Thực tập hè	Summer Internship	Bắt buộc	3	3		
39	MAAS421IU	Khóa luận tốt nghiệp	Graduation thesis	Bắt buộc	10	10		
	Tổng số (tín chỉ)				125	119	6	

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

Kế hoạch giảng dạy các môn học được cụ thể tương ứng được trình bày trong Bảng 7

Bảng 7. Kế hoạch giảng dạy (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 (20 tín chỉ)	EN007IU	Writing AE1	Tiếng Anh chuyên ngành 1 (kỹ năng viết)	Bắt buộc	2	2		
	EN008IU	Listening AE1	Tiếng Anh chuyên ngành 1 (kỹ năng viết)	Bắt buộc	2	2		
	MA001IU	Calculus 1	Giải tích 1	Bắt buộc	4	4		
	IT149IU	Fundamentals of Programming	Lập trình căn bản	Bắt buộc	4	3	1	
	PE015IU	Philosophy of Marxism and Leninism	Những nguyên lý cơ bản của	Bắt buộc	3	3		

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	
			Chủ nghĩa Mác – Lê nin					
	PE016IU	Political economics of Marxism and Leninism	Kinh tế chính trị Mác-Lênin	Bắt buộc	2	2		
	PT001IU	Physical Training 1		Bắt buộc	3			
	Tổng				20	16	1	
II (21 tín chỉ)	EN011IU	Writing AE2	Tiếng Anh chuyên ngành 2 (kỹ năng viết)	Bắt buộc	2	2		HR: Writing AE1
	EN012IU	Speaking AE2	Tiếng Anh chuyên ngành 2 (kỹ năng nói)	Bắt buộc	2	2		HT: Writing AE1 Listening AE1
	MA003IU	Calculus 2	Giải tích 2	Bắt buộc	4	4		HT: Giải tích 1
	MA033IU	Linear Algebra	Đại số tuyến tính	Bắt buộc	3	3		
	IT069IU	Object-Oriented Programming	Lập trình hướng đối tượng	Bắt buộc	4	3	1	HT: Lập trình căn bản
	PE021IU	General Law	Pháp luật đại cương	Bắt buộc	3	3		
	PT002IU	Physical Training 2		Bắt buộc	3			
	Tổng				21	17	1	

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	
III (18 tín chỉ)	MA036IU	Probability and Statistics	Xác suất-Thống kê	Bắt buộc	3	3		HT: Giải tích 2
	IT079IU	Principles of Database Management	Nguyên lý Hệ quản trị dữ liệu	Bắt buộc	4	3	1	
	MAAS220IU	Introduction to Statistics	Giới thiệu về thống kê	Bắt buộc	2	2		
	PE017IU	Scientific Socialism	Chủ nghĩa xã hội khoa học	Bắt buộc	2	2		
	BA005IU	Financial Accounting	Tài chính kế toán	Bắt buộc	3	3		
	MAFE201IU	Real Analysis	Giải tích thực	Bắt buộc	4	4		HT: Giải tích 2
	Tổng				18	17	1	
IV (19 tín chỉ)	MA038IU	Differential Equations	Phương trình vi phân	Bắt buộc	3	3		HT: Giải tích 2
	IT172IU	Machine Learning	Học máy	Bắt buộc	4	3	1	
	MAFE320IU	Statistics and Data Science with Python	Thống kê và khoa học dữ liệu với Python		3	3		HT: Xác suất và Thống kê
	MAFE221IU	Optimization 1	Tối ưu hoá 1		3	3		
		MAAS Elective #1			3	3		
	BA115IU	Introduction to Business Administration	Giới thiệu về quản trị kinh doanh		3	3		

Học kỳ	Mã MH	Tên MH		Loại MH (bắt buộc/tự chọn)	Tín chỉ			Môn học tiên quyết (TQ)/ Môn học học trước (HT)/ Môn học song hành (SH)	
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm		
	Tổng				19	18	1		
V (19 tín chỉ)	MAAS318IU	Stochastic Modeling	Mô hình ngẫu nhiên	Bắt buộc	3	3			
	MAFE220IU	Numerical Analysis	Giải tích số	Bắt buộc	3	3		HT: Giải tích 2	
	IT136IU	Regression Analysis	Phân tích hồi quy	Bắt buộc	4	3	1		
	IT013IU	Algorithms and Data Structure	Cấu trúc dữ liệu và giải thuật	Bắt buộc	4	3	1		
	PE018IU	History of Vietnamese Communist Party	Lịch sử Đảng Cộng sản Việt Nam	Bắt buộc	2	2			
		MAAS Elective #2				3	3		
	Tổng				19	17	2		
VI (18 tín chỉ)	MAAS413IU	Multivariate Statistical Analysis	Phân tích thống kê nhiều chiều	Bắt buộc	3	3			
	MAFE207IU	Decision making	Lý thuyết ra quyết định	Bắt buộc	3	3		HT: Xác suất và Thống kê	
	MAAS324IU	Applied Time Series Analysis	Phân tích chuỗi thời gian ứng dụng	Bắt buộc	3	3			
	IT157IU	Deep Learning	Học sâu	Bắt buộc	4	3	1		
		MAAS Elective #3				3	2		
	PE019IU	Ho Chi Minh's Thoughts	Tư tưởng Hồ Chí Minh	Bắt buộc	2	2			
	Tổng				18	17	1		

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	
Summer Semester	MAAS328IU	Summer Internship	Thực tập hè		3	3		
	Tổng				3			
VII (12 tín chỉ)	MAAS421IU	GRADUATION THESIS	Khóa luận tốt nghiệp	Bắt buộc	10	10		
		MAAS Elective #4			3	3		
	Tổng				13	13		

Total credits: 125

Môn tự chọn (Elective courses)

	Codes	Subjects	Credits			
			Total	Theory	Practice	% practice /total
MAAS Elective #1						
1	IS055IU	Principles of Logistics and Supply Chain Management	3	3		
2	MAFE306IU	Financial Mathematics 1	3	3		
3	MAFE209IU	Financial Markets	3	3		
4	PE008IU	Critical Thinking	3	3		
MAAS Elective #2						
1	MAAS325IU	Predictive Analytics	3	3		
2	IS065IU	Supply Security and Risk Management	3	3		
3	MAFE318IU	Financial Risk Management 1	4	4		
4	MAAS326IU	Actuarial Mathematics for Life Contingent	3	3		
MAAS Elective #3						
1	MAAS411IU	Statistical Models for Actuarial Science	3	3		
2	MAAS412IU	Statistical Methods for Finance	3	3		
3	IS066IU	Data Mining in Supply Chain	3	3		
4	MAAS410IU	Bayesian Statistics	3	3		

		(kỹ năng viết)		3			3				3
10	EN012IU	Tiếng Anh chuyên ngành 2 (kỹ năng nói)	Speaking AE2	3			4				3
11	MA001IU	Giải tích 1	Calculus 1	2	2	3					
12	IT149IU	Lập trình cơ bản	Fundamentals of programming	2	3				4		
13	MA003IU	Giải tích 2	Calculus 2	2	3	3					
14	MA033IU	Đại số tuyến tính	Linear Algebra	2	3	3					
15	BA005IU	Tài chính kế toán	Financial Accounting			3	3		3		
16	MAFE201IU	Giải tích thực	Real Analysis	3	3	3					3
18	MA036IU	Xác suất- Thống kê	Probability and Statistics	3	3	4					
19	IT079IU	Các nguyên lý của quản trị dữ liệu	Principles of Database Management	3	3				4		3
20	MAAS220IU	Giới thiệu về thống kê	Introduction to Statistics	2	3	3					
21	MAFE220IU	Giải tích số	Numerical Analysis	3	3	4					
22	MA038IU	Phương trình vi phân	Differential Equations	3	3	4					
23	IT172IU	Học máy	Machine Learning	3	3				4		4
24	MAFE207IU	Lý thuyết ra quyết định	Decision making	3	3	4			4		
25		Môn học tự chọn 1	MAAS Elective #1								
	IS055IU	Các nguyên lý logistics và chuỗi cung ứng	Principles of Logistics and Supply Chain Management			3			3	3	3
	MAFE306IU	Toán tài chính 1	Financial Mathematics 1	3		3			4		3

	MAFE209IU	Thị trường Tài chính	Financial Markets	3		4	4				
	PE008IU	Tư duy phản biện	Critical Thinking	3				4		3	3
26	MAAS318IU	Mô hình ngẫu nhiên	Stochastic Modeling	3	5					4	
27	MAFE320IU	Thống kê và khoa học dữ liệu với Python	Statistics and Data science with Python	3	3	4			4		
28	IT136IU	Phân tích hồi quy	Regression Analysis	3	3	4			4		
30	MAAS324IU	Phân tích chuỗi thời gian ứng dụng	Applied Time Series Analysis		3	4				4	4
31		Môn tự chọn 2	MAAS Elective #2								
	MAAS325IU	Phân tích dự báo	Predictive Analytics		3	4			3		5
	IS065IU	Quản trị rủi ro và an toàn chuỗi cung ứng	Supply Security and Risk Management		3	4			4		
	MAFE318IU	Quản trị rủi ro tài chính 1	Financial Risk management 1	3	4	4			4		
	MAAS326IU	Toán bảo hiểm cho cuộc sống	Actuarial Mathematics for Life Contingent		4	4		4			5
32	IT157IU	Học sâu	Deep Learning	3	4			4	4		
33	MAAS410IU	Thống kê Bayes	Bayesian Statistics	3	3				4		4
34		Môn học tự chọn 3	MAAS Elective #3								
	MAAS411IU	Mô hình thống kê cho khoa học Bảo	Statistical Models for Actuarial		4	4		4	5		

		hiêm	Science								
	MAAS412IU	Phương pháp thống kê trong tài chính	Statistical Methods for Finance		4	4			4		4
	IS066IU	Khai phá dữ liệu trong chuỗi cung ứng	Data Mining in Supply Chain	3	3	4				4	
35		Môn học tự chọn 4	MAAS Elective #4								
	MAFE307IU	Tối ưu hoá 2	Optimization 2	3	3	3			4		
	MAAS414IU	Phương pháp lấy mẫu điều tra	Survey Sampling	3	3	4					3
	MAAS415IU	Mô hình xác suất ứng dụng trong khoa học Bảo hiểm	Applied Probability Models in Actuarial Science	3	4	4		4			
36	MAFE221IU	Tối ưu hoá 1	Optimization 1	3	3	4					3
37	MAAS413IU	Phân tích thống kê nhiều chiều	Multivariate Statistical Analysis	3	4			4	4		
38	IT069IU	Lập trình hướng đối tượng	Object-Oriented programming	3	4				4		3
39	IT013IU	Cấu trúc dữ liệu và giải thuật	Algorithms and Data structures	3	4				3		3
40	BA115IU	Giới thiệu về quản trị kinh doanh	Introduction to Business Administration	2	3	3	3				
41	MAAS328IU	Thực tập hè	Summer Internship	4	4	4	5	5	5	6	4
42	MAAS421IU	Luận văn tốt nghiệp	Graduation thesis	4	4	4	5	5	5	5	5

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

10.1. Philosophy of Marxism and Leninism (Những nguyên lý cơ bản của chủ nghĩa Mác-Lênin)

Mã môn học: PE015IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: không

Mô tả nội dung môn học:

- Môn học trang bị cho sinh viên những nội dung cơ bản về thể giới quan, phương pháp luận triết học Mác - Lênin.

- Giúp cho sinh viên vận dụng những tri thức về thể giới quan, phương pháp luận triết học triết học Mác - Lênin một cách sáng tạo trong hoạt động nhận thức và thực tiễn, nhằm giải quyết những vấn đề mà đời sống xã hội của đất nước, của thời đại đang đặt ra.

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

Mã môn học: PE016IU

Số tín chỉ: 2 (2LT+0TH)

Môn học trước: không

Mô tả nội dung môn học:

Nội dung chương trình gồm 6 chương: Trong đó chương 1 bàn về đối tượng, phương pháp nghiên cứu và chức năng của Kinh tế chính trị Mác - Lênin. Từ chương 2 đến chương 6 trình bày nội dung cốt lõi của Kinh tế chính trị Mác - Lênin theo mục tiêu của môn học. Cụ thể các vấn đề như: Hàng hóa, thị trường và vai trò của các chủ thể trong nền kinh tế thị trường; Sản xuất giá trị thặng dư trong nền kinh tế thị trường; Cạnh tranh và độc quyền trong nền kinh tế thị trường; Kinh tế thị trường định hướng xã hội chủ nghĩa và các quan hệ lợi ích kinh tế ở Việt Nam; Công nghiệp hóa, hiện đại hóa và hội nhập kinh tế quốc tế ở Việt Nam.

10.3. History of Vietnamese communist party (Lịch sử Đảng Cộng sản Việt Nam)

Mã môn học: PE018IU

Số tín chỉ: 2 (2LT+0TH)

Môn học trước: không

Mô tả nội dung môn học:

Môn học trang bị cho sinh viên những kiến thức cơ bản về lịch sử Đảng Cộng sản Việt Nam.

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

Mã môn học: PE019IU

Số tín chỉ: 2 (2LT+0TH)

Môn học trước: Triết học Mác - Lênin, . Kinh tế chính trị Mác - Lênin, Chủ nghĩa xã hội khoa học

Mô tả nội dung môn học:

Môn học 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.

10.5. Scientific Socialism (Chủ nghĩa xã hội khoa học)

Mã môn học: PE017IU

Số tín chỉ: 2 (2LT+0TH)

Môn học trước: không

Mô tả nội dung môn học:

Môn học trang bị cho sinh viên kiến thức cơ bản về chủ nghĩa xã hội khoa học.

10.6. General Law (Pháp luật Đại cương)

Mã môn học: PE021IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: không

Mô tả nội dung môn học:

Môn học này cung cấp cho sinh viên kiến thức cơ bản về hệ thống pháp luật Việt Nam. Đặc biệt, sinh viên sẽ hiểu về quyền và nghĩa vụ của mình trong Hiến pháp, Luật hình sự, Luật hành chính, Luật dân sự, Luật lao động và Luật doanh nghiệp của Việt Nam. Từ đó, sinh viên sẽ nâng cao nhận thức về trách nhiệm của mình để đảm bảo công bằng trong xã hội.

10.7. Writing AE1 (Tiếng Anh chuyên ngành 1 (Kỹ năng viết 1))

Mã môn học: EN007IU

Số tín chỉ: 2 (2LT+0TH)

Môn học trước:

Mô tả nội dung môn học:

Môn học nhằm cải thiện kỹ năng viết chuẩn bị cho khóa viết luận nâng cao. Chương trình chú trọng xây dựng bài văn dựa trên các kỹ năng viết như: viết bài, viết luận, kết nối và sắp xếp trật tự đoạn văn, từ ngữ, cụm từ để tạo nên bài viết mạch lạc. Các dạng viết luận bao gồm: mô tả người, đồ vật, quy trình, trình bày quan điểm, so sánh và đối chiếu, nguyên nhân - kết quả, vấn đề - giải pháp, thảo luận.

10.8. Listening AE1 (Tiếng Anh chuyên ngành 1 (Kỹ năng nghe))

Mã môn học: EN008IU

Số tín chỉ: 2 (2LT+0TH)

Môn học trước:**Mô tả nội dung môn học:**

Kỹ năng nghe, ghi chú và thảo luận bằng tiếng Anh học thuật sẽ giúp học sinh làm quen với những khó khăn khi học tiếng Anh ở trường đại học. Sinh viên sẽ được học các kỹ năng cần thiết cho sinh viên đại học quốc tế, bao gồm: chủ động nghe giảng, ghi chép hiệu quả, tự tin tham gia thảo luận. Cùng với kỹ năng nghe, môn học còn giúp sinh viên cải thiện vốn từ vựng học thuật của mình.

10.9. Writing AE2 (Tiếng Anh chuyên ngành 2 (Kỹ năng viết))

Mã môn học: EN011IU

Số tín chỉ: 2 (2LT+0TH)

Môn học trước: Môn học trước: EN007IU: Tiếng Anh chuyên ngành 1 (Kỹ năng viết 1)

Mô tả nội dung môn học:

Sinh viên được học bố cục của một báo cáo, các kỹ năng chọn và giới hạn đề tài, viết bài văn, lập dàn ý, tìm và dẫn chứng tài liệu, ghi chú, viết mở bài, nội dung chính và kết luận, viết và sửa bản nháp. Sinh viên cũng sẽ thực hành về các chủ đề liên quan đến các môn học của mình.

10.10. Speaking AE2 (Tiếng Anh chuyên ngành 2 (Kỹ năng nói))

Mã môn học: EN012IU

Số tín chỉ: 2 (2LT+0TH)

Môn học trước:

Mô tả nội dung môn học:

Môn học cung cấp cho sinh viên những chiến lược thực tế để sử dụng trong việc thuyết trình. Ngoài ra, sinh viên còn được giúp phát triển kỹ năng lắng nghe, nhận xét và phản hồi cho các bài thuyết trình khác trên lớp.

10.11. Calculus 1 (Giải tích 1)

Mã môn học: MA001IU

Số tín chỉ: 4 (4LT+0TH)

Môn học trước: không

Mô tả nội dung môn học:

Nội dung chính: Phép tính vi tích phân hàm 1 biến. Lý thuyết về tập hợp. Giới hạn hàm số, Tính liên tục, Đạo hàm và vi phân, Đạo hàm của các hàm số sơ cấp cơ bản, Quy tắc tính đạo hàm, Định lý giá trị trung bình và ứng dụng, Quy tắc L'Hospital, Ứng dụng của đạo hàm. Phép tính tích phân. Tổng Riemann, các kỹ thuật tích phân. Ứng dụng của tích phân.

Course Description:

Differential and integral calculus of single-variable functions. Set theory. Limits of functions, continuity, derivatives and differentials, derivatives of basic elementary functions, rules of differentiation, the Mean Value Theorem and its applications, L'Hospital's Rule, applications of derivatives. Integral calculus, Riemann sums, integration techniques, and applications of integrals.

10.12. Fundamentals of Programming (Lập trình căn bản)

Mã môn học: IT149IU

Số tín chỉ: 4 (3 LT+1 TH)

Môn học trước: không

Mô tả nội dung môn học:

Môn học này cung cấp cho sinh viên các kiến thức cơ bản của ngôn ngữ lập trình, đây là nền tảng giúp sinh viên tiếp cận với các môn chuyên ngành có liên quan đến lập trình. Môn học giúp sinh viên làm quen với ngôn ngữ lập trình Python. Môn học bao gồm tất cả các cấu trúc dữ liệu Python cơ bản, luồng điều khiển, mô-đun và giới thiệu về OOP trong Python.

Course Description: This course provides students with fundamental knowledge of programming languages, serving as a foundation for approaching specialized courses related to programming. It introduces students to the Python programming language and covers all basic Python data structures, control flow, modules, and an introduction to object-oriented programming (OOP) in Python.

10.13. Calculus 2 (Giải tích 2)

Mã môn học: MA003IU

Số tín chỉ: 4 (4LT+0TH)

Môn học trước: Giải tích 1

Mô tả nội dung môn học:

Môn học này là phần tiếp theo của Giải tích 1. Mục đích của môn học là trang bị cho sinh viên các khái niệm cơ bản về dãy, chuỗi và tích phân nhiều chiều cùng với các ứng dụng của chúng.

Course Description: This course is a continuation of Calculus I. Its aim is to equip students with fundamental concepts of sequences, series, and multivariable integrals, along with their applications.

10.14. Linear Algebra (Đại số tuyến tính)

Mã môn học: MA033IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: không

Mô tả nội dung môn học:

Môn học cung cấp các khái niệm và kỹ thuật để giải các hệ phương trình tuyến tính, ma trận, định thức, không gian vectơ, phép biến đổi tuyến tính, giá trị riêng và vectơ riêng.

Course Description:

This course provides fundamental concepts and techniques for solving systems of linear equations, matrices, determinants, vector spaces, linear transformations, eigenvalues, and eigenvectors.

10.15. Financial Accounting (Tài chính kế toán)

Mã môn học: BA005IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: không

Mô tả nội dung môn học:

Môn học trang bị cho sinh viên những lý thuyết, các nguyên tắc và ứng dụng cơ bản của kế toán và báo cáo tài chính, các yếu tố cần thiết theo tiêu chuẩn Hoa Kỳ. Các chủ đề chính bao gồm lý thuyết ghi nợ và tín dụng, tài khoản, nhật ký đặc biệt, kế toán chu kỳ, ghi chú và tiền lãi, dồn tích và trả chậm, tiền mặt, khoản phải thu, hàng tồn kho, tài sản cố định và việc lập báo cáo tài chính. Sinh viên được cung cấp kiến thức cơ bản trong việc chuẩn bị và xử lý các giao dịch kế toán để trình bày các chi tiết tài chính một cách phù hợp và hiệu quả, cũng như giải thích thông tin kế toán cho các loại nhà đầu tư nội bộ và bên ngoài, ban quản lý và các đối tượng khác.

Course Description: This course introduces students to the fundamental theories, principles, and applications of accounting and financial reporting in accordance with U.S. standards. Key topics include the theory of debits and credits, accounts, special journals, the accounting cycle, notes and interest, accruals and deferrals, cash, receivables, inventory, fixed assets, and the preparation of financial statements. Students will gain foundational knowledge in recording and processing accounting transactions to present financial information clearly and effectively, as well as interpreting accounting data for internal and external users, management, and other stakeholders.

10.16. Real Analysis (Giải tích thực)

Mã môn học: MAFE201IU

Số tín chỉ: 4 (4LT+0TH)

Môn học trước: Giải tích 2

Mô tả nội dung môn học:

Môn học là phần tiếp theo của Giải tích 2. Môn học giới thiệu về lý thuyết không gian metric và tập trung vào các nguyên tắc cơ bản về độ đo và tích phân.

Course Description:

This course is a continuation of Calculus 2. It introduces the theory of metric spaces and focuses on the fundamental principles of measure and integration.

10.17. Probability and Statistics (Xác suất-Thống kê)

Mã môn học: MA036IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Giải tích 2

Mô tả nội dung môn học:

Môn học này giới thiệu cho sinh viên các khái niệm cơ bản về tính ngẫu nhiên và sự không chắc chắn, cung cấp hiểu biết nền tảng về lý luận xác suất và suy luận thống kê. Khóa học bắt đầu với các nguyên tắc cốt lõi bao gồm lý thuyết tập hợp, các quy tắc xác suất cơ bản, xác suất có điều kiện và hành vi của các biến ngẫu nhiên (cả rời rạc và liên tục). Dựa trên nền tảng này, khóa học khám phá cách các khái niệm này áp dụng vào các vấn đề thực tế trong ước tính, kiểm định giả thuyết và lý thuyết quyết định. Vào cuối khóa học, sinh viên sẽ được trang bị các công cụ để phân tích và diễn giải dữ liệu trong điều kiện không chắc chắn và áp dụng lý luận thống kê trong bối cảnh ra quyết định trong thế giới thực.

Course Description:

This course introduces students to fundamental concepts of randomness and uncertainty, providing a foundational understanding of probability theory and statistical inference. The course begins with core principles, including set theory, basic probability rules, conditional probability, and the behavior of random variables (both discrete and continuous). Building on this foundation, it explores how these concepts apply to real-world problems involving estimation, hypothesis testing, and decision theory. By the end of the course, students will be equipped with the tools to analyze and interpret data under uncertainty and to apply statistical reasoning in real-world decision-making contexts.

10.18. Principles of Database Management (Các nguyên lý của quản trị dữ liệu)

Mã môn học: IT079IU

Số tín chỉ: 4 (3 LT+ 1TH)

Môn học trước: không

Mô tả nội dung môn học:

Môn học này giới thiệu cho sinh viên các khái niệm cơ bản về thiết kế và triển khai cơ sở dữ liệu. Các kỹ thuật thiết kế cơ sở dữ liệu, bao gồm thiết kế quan hệ và phân tích E-R. Các truy vấn cơ sở dữ liệu sử dụng SQL được trình bày trong các bài giảng và được hỗ trợ thông qua các bài tập thực hành.

Course Description:

This course introduces students to fundamental concepts in database design and implementation. It covers database design techniques, including relational design and

Entity-Relationship (E-R) analysis. Database querying using SQL is presented through lectures and reinforced with practical exercises.

10.19. Introduction to Statistics (Giới thiệu về Thống kê)

Mã môn học: MAAS220IU

Số tín chỉ: 2 (2LT+0TH)

Môn học trước: không

Mô tả nội dung môn học:

Môn học giới thiệu về các khái niệm, công cụ cơ bản, ngôn ngữ và diễn giải số liệu thống kê cho các ứng dụng trong khoa học xã hội và ứng dụng như kinh tế, kinh doanh và định phí bảo hiểm. Môn học được thiết kế để giúp sinh viên làm quen với các thuật ngữ và kỹ thuật cơ bản trong thống kê và phân tích dữ liệu. Các chủ đề bao gồm thống kê mô tả; biểu diễn số và đồ họa của thông tin; trực quan hóa dữ liệu; phương pháp đo lường vị trí, sự phân tán, vị trí, ngoại lệ và sự phụ thuộc; phân tích khám phá dữ liệu; phương pháp lấy mẫu.

Course Description:

This course introduces fundamental concepts, tools, terminology, and interpretation of statistical data for applications in the social sciences and applied fields such as economics, business, and actuarial science. It is designed to familiarize students with basic statistical terms and data analysis techniques. Topics include descriptive statistics; numerical and graphical data representation; data visualization; measures of central tendency, dispersion, position, outliers, and dependence; exploratory data analysis; and sampling methods.

10.20. Numerical Analysis (Giải tích số)

Mã môn học: MAFE220IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Giải tích 2

Mô tả nội dung môn học: Môn học cung cấp các khái niệm cơ bản và kỹ năng giải quyết vấn đề trong giải tích số. Môn học bao gồm các chủ đề sau: Độ đúng và độ chính xác (Accuracy and precision), sai số, nghiệm của phương trình phi tuyến tính, giải hệ phương trình tuyến tính, điều chỉnh và nội suy đường cong, nội suy spline (curve fitting and interpolation, spline interpolation); vi phân và tích phân số, phương pháp số cho phương trình vi phân, phương pháp số cho phương trình đạo hàm riêng.

Course Description:

This course provides fundamental concepts and problem-solving skills in numerical analysis. Topics include accuracy and precision, errors, solutions of nonlinear equations, solving systems of linear equations, curve fitting and interpolation, spline interpolation, numerical differentiation and integration, numerical methods for ordinary differential equations, and numerical methods for partial differential equations.

10.21. Differential equation (Phương trình vi phân)

Mã môn học: MA038IU

Số tín chỉ: 3 (3 LT+ 0TH)

Môn học trước: Giải tích 2

Mô tả nội dung môn học:

Môn học giới thiệu các phương pháp toán học cơ bản và phân tích trong phương trình vi phân; ứng dụng của chúng; và giới thiệu ngắn về phương trình đạo hàm riêng.

Course Description:

This course introduces fundamental mathematical and analytical methods for differential equations, their applications, and provides a brief introduction to partial differential equations.

10.22. Machine Learning (Học máy)

Mã môn học: IT172IU

Số tín chỉ: 4 (3 LT+ 1 TH)

Môn học trước: lập trình căn bản, Giải tích 2, Đại số tuyến tính

Mô tả nội dung môn học:

Mục tiêu của môn học này là trang bị cho sinh viên kiến thức nền tảng và một số loại kỹ năng thực tế để phát triển nhiều mô hình Học máy với mục tiêu tập trung vào ứng dụng. Trong môn học này, sinh viên được học một lớp các phương pháp Học máy phổ biến trong Phân loại, Hồi quy, Phân cụm và Phân tích chuỗi thời gian. Ngoài ra, môn học sẽ giới thiệu một danh sách các công cụ tiềm năng có thể giúp sinh viên thử nghiệm với các kỹ thuật Học máy nâng cao khác nhau. Vì vậy, mục tiêu chung của môn học này là cung cấp cho sinh viên các kỹ thuật Học máy một cách rộng rãi, không phải chuyên sâu, và nội dung có nhiều khả năng là phương pháp tiếp cận dựa trên ứng dụng.

Course Description:

The objective of this course is to equip students with foundational knowledge and practical skills to develop a range of machine learning models with a focus on applications. Students will learn a set of commonly used machine learning methods in classification, regression, clustering, and time series analysis. The course also introduces a variety of tools to support experimentation with advanced machine learning techniques. The overall goal is to provide students with broad, application-oriented exposure to machine learning techniques, rather than in-depth theoretical coverage.

10.23. Decision Making (Lý thuyết ra quyết định)

Mã môn học: MAFE207IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Xác suất-Thống kê, Tối ưu hóa 1

Mô tả nội dung môn học:

Ra quyết định là một trong những bộ phận quan trọng trong nghiên cứu hoạt động hay khoa học quản lý. Kỹ thuật ra quyết định giúp các nhà quản lý lựa chọn phương án tốt nhất dựa trên các tiêu chí định lượng. Môn học này cung cấp cho học viên những kiến thức cơ bản về xây dựng mô hình quyết định để có thể ra quyết định dựa trên mô hình. Môn học này cũng cung cấp cho sinh viên những kiến thức cơ bản về việc ra quyết định trong môi trường quan hệ với lý thuyết trò chơi. Cụ thể, sinh viên được cung cấp cấu trúc của các vấn đề ra quyết định, có hoặc không có sự không chắc chắn, lý thuyết trò chơi và ra quyết định, và Quản lý dự án PERT/CPM.

Course Description:

Decision-making is a critical component of operations research and management science. Decision-making techniques assist managers in selecting the optimal alternative based on quantitative criteria. This course provides students with foundational knowledge for constructing decision models to support model-based decision-making. It also introduces basic concepts of decision-making in relation to game theory. Specific topics include the structure of decision problems under certainty and uncertainty, game theory and strategic decision-making, and project management using PERT/CPM techniques.

10.24. Tên môn học tự chọn #1**10.24.1. Principles of Logistics and Supply Chain Management (Các nguyên lý logistics và quản lý chuỗi cung ứng)**

Mã môn học: IS055IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: không

Mô tả nội dung môn học:

Đây là môn học giới thiệu về Logistics và quản lý chuỗi cung ứng (SCM). Môn học cung cấp cho sinh viên các khái niệm cơ bản, quy trình kinh doanh và các mô hình/công cụ. Môn học này kết hợp kiến thức kinh doanh SCM với tư duy phân tích và xác định chính xác vai trò của SCM so với các ngành kinh doanh khác.

Course Description:

This course provides an introduction to logistics and supply chain management (SCM). It equips students with fundamental concepts, business processes, and key models and tools. The course integrates SCM business knowledge with analytical thinking and emphasizes a clear understanding of the role of SCM in relation to other business functions.

10.24.2. Financial Mathematics 1 (Toán tài chính 1)

Mã môn học: MAFE306IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Xác suất-Thống kê

Mô tả nội dung môn học:

Môn học cung cấp cho sinh viên các công cụ cơ bản trong Toán học tương ứng với các công cụ tài chính: lợi nhuận, lãi suất, tiền/dòng tiền, trái phiếu, danh mục đầu tư, định giá tài sản và các nguyên tắc cơ bản của tài chính.

Course Description:

This course equips students with fundamental mathematical tools used in finance, covering topics such as returns, interest rates, cash flows, bonds, portfolios, asset valuation, and basic principles of finance.

10.24.3. Financial Markets (Thị trường tài chính)

Mã môn học: MAFE209IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: không

Mô tả nội dung môn học:

Môn học cung cấp cho sinh viên những kiến thức và hiểu biết về vai trò của các tổ chức tài chính trung gian trên thị trường tài chính. Từ đó giúp sinh viên có thể phân biệt giữa các tổ chức tài chính có tiền gửi và không có tiền gửi, hiểu và phân tích cấu trúc hoạt động của thị trường tài chính, phân biệt các loại chứng khoán như cổ phiếu, tiền tệ, trái phiếu và các công cụ tài chính khác.

Course Description:

This course provides students with knowledge and understanding of the roles of financial intermediaries in the financial market. It enables students to distinguish between depository and non-depository financial institutions, analyze the structure and functioning of financial markets, and differentiate among various types of securities such as stocks, money market instruments, bonds, and other financial tools.

10.24.4. Critical Thinking (Tur duy phản biện)

Mã môn học: PE008IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: không

Mô tả nội dung môn học: Môn học này cung cấp sinh viên những kiến thức nền về tư duy phân tích, kỹ năng hữu ích đối với mọi đối tượng ngành nghề. Sinh viên thực hành với các dạng lý luận, phân tích, đánh giá các lý luận của mình và của người khác. Sinh viên được hỗ trợ các phương pháp tìm kiếm thông tin để lý luận và kiểm định lý luận.

Course Description: This course provides students with foundational knowledge in analytical thinking, a skill applicable across all disciplines and professions. Students will practice various forms of reasoning, as well as analyze and evaluate their own arguments and those of others. The course also introduces methods for researching information to support and assess arguments.

10.25. Stochastic Modeling (Mô hình ngẫu nhiên)

Mã môn học: MAAS318IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Xác suất- Thống kê

Mô tả nội dung môn học:

Môn học cung cấp nền tảng vững chắc về quá trình ngẫu nhiên bao gồm các khái niệm cơ bản trong quá trình ngẫu nhiên, chẳng hạn như thuộc tính Markov và tập trung vào việc lập công thức/ phân tích hệ thống xác suất để hiểu được các kết quả tiềm năng và đưa ra quyết định.

Course Description:

This course provides a solid foundation in stochastic processes, covering fundamental concepts such as the Markov property, and focuses on formulating and analyzing probabilistic systems to understand potential outcomes and support decision-making.

10.26. Statistics and Data Science with Python (Thống kê và khoa học dữ liệu với Python)

Mã môn học: MAFE320IU

Số tín chỉ: 3 (LT+0TH)

Môn học trước: Xác suất-Thống kê

Mô tả nội dung môn học:

Củng cố kiến thức xác suất-thống kê cơ bản và chuyển tiếp mạch lạc sang các phương pháp phân tích dữ liệu hiện đại: Định lý giới hạn trung tâm, Ước lượng tham số, Kiểm định giả thuyết, Hồi quy, Phân tích phương sai (ANOVA). Trang bị kỹ năng thực hành với Python (pandas, numpy, matplotlib, seaborn, scikit-learn, statsmodels) để khai thác, trực quan hóa và mô hình hóa dữ liệu. Kết nối thống kê cổ điển với machine learning: sinh viên hiểu sự khác biệt và tính liên tục giữa kiểm định giả thuyết, hồi quy tuyến tính/logistic và các mô hình học máy như cây quyết định, random forest, boosting, SVM. Phát triển tư duy dữ liệu: đặt câu hỏi, thiết kế thí nghiệm, đánh giá độ tin cậy kết quả, và trình bày phát hiện một cách rõ ràng.

Course Description:

This course reinforces foundational knowledge in probability and statistics while providing a coherent transition to modern data analysis methods. Topics include the Central Limit Theorem, parameter estimation, hypothesis testing, regression, and ANOVA. Students develop practical skills using Python (pandas, numpy, matplotlib, seaborn, scikit-learn, statsmodels) for data exploration, visualization, and modeling. The course bridges classical statistics and machine learning, helping students understand the distinctions and continuity between hypothesis testing, linear/logistic regression, and machine learning models such as decision trees, random forests, boosting, and SVM. Emphasis is placed on cultivating data thinking: formulating questions, designing experiments, evaluating result

reliability, and effectively communicating findings.

10.27. Regression Analysis (Phân tích hồi quy)

Mã môn học: IT136IU

Số tín chỉ: 4 (3 LT+1 TH)

Môn học trước: Thống kê và khoa học dữ liệu với Python

Mô tả nội dung môn học:

Phân tích hồi quy là một trong những phương pháp hữu hiệu nhất trong thống kê để xác định mối quan hệ giữa các biến và sử dụng các mối quan hệ này để dự báo các quan sát trong tương lai. Nền tảng của phân tích hồi quy rất hữu ích cho bất kỳ bài tập mô hình nào. Các mô hình hồi quy được sử dụng để dự đoán và dự báo các kết quả trong tương lai. Mức độ phổ biến của nó trong tài chính rất cao; nó cũng rất phổ biến trong các ngành khác như khoa học sự sống và sinh học, quản lý, kỹ thuật.

Course Description:

Regression analysis is one of the most powerful statistical methods for identifying relationships between variables and using those relationships to forecast future observations. A solid understanding of regression provides a valuable foundation for any modeling task. Regression models are widely used for prediction and forecasting in various fields, with particular relevance in finance, as well as in the life sciences, biology, management, and engineering.

10.28. Applied Time Series Analysis (Phân tích chuỗi thời gian ứng dụng)

Mã môn học: MAAS324IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Xác suất-Thống kê

Mô tả nội dung môn học:

Môn học giới thiệu lý thuyết và ứng dụng của các phương pháp chuỗi thời gian cho dữ liệu được thu thập theo thời gian. Các chủ đề bao gồm các công cụ phân tích dữ liệu, các phương pháp giảm xu hướng và điều chỉnh dữ liệu theo mùa, các kỹ thuật làm mịn bao gồm phương pháp liên tiến lũy thừa (exponential smoothing), lập mô hình và dự báo dựa trên lớp mô hình ARIMA và các mô hình ARCH/GARCH. Sinh viên có được kinh nghiệm thực hành về các phương pháp chuỗi thời gian được áp dụng cho các tập dữ liệu thực tế thông qua việc sử dụng phần mềm thống kê.

Course Description:

This course introduces the theory and application of time series methods for data collected over time. Topics include data analysis tools, trend removal and seasonal adjustment techniques, smoothing methods such as exponential smoothing, and modeling and forecasting using ARIMA and ARCH/GARCH models. Students gain hands-on experience with time series techniques applied to real-world datasets using statistical

software.

10.29. Tên môn học tự chọn #2

10.29.1. Predictive Analysis (Phân tích dự báo)

Mã môn học: MAAS325IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: phân tích hồi quy, Học máy

Mô tả nội dung môn học:

Môn học được thiết kế để cung cấp các kỹ thuật thống kê nâng cao trong việc lập mô hình dự đoán với các ứng dụng trong phân tích kinh doanh. Môn học bao gồm các khái niệm cơ bản về thống kê và sử dụng ngôn ngữ lập trình R. Môn học còn cung cấp cho sinh viên thấy được sự chuyển đổi từ lý thuyết thống kê toán học sang phân tích dự đoán và ứng dụng trong kinh doanh và định phí bảo hiểm.

Course Description:

This course is designed to provide advanced statistical techniques for predictive modeling with applications in business analytics. It covers fundamental statistical concepts and the use of the R programming language. The course also highlights the transition from mathematical statistical theory to predictive analysis and its applications in business and actuarial science.

10.29.2. Supply Security and Risk Management (Quản lý rủi ro và an toàn chuỗi cung ứng)

Mã môn học: IS065IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Không

Mô tả nội dung môn học:

Môn học cung cấp cho sinh viên kiến thức cơ bản về quản lý rủi ro chuỗi cung ứng, từ chiến lược đến mô hình hóa xác suất hoạt động và phân tích. Môn học cũng trang bị cho sinh viên các công cụ và kỹ thuật định tính và định lượng rủi ro chiến lược, rủi ro tài chính và rủi ro hoạt động.

Course Description:

This course provides students with foundational knowledge of supply chain risk management, from strategic frameworks to probabilistic modeling and analysis. It equips students with qualitative and quantitative tools and techniques for assessing strategic, financial, and operational risks.

10.29.3. Financial Risk Management 1 (Quản trị rủi ro Tài chính 1)

Mã môn học: MAFE318IU

Số tín chỉ: 4 (4LT+0TH)

Môn học trước: Xác suất-Thống kê

Mô tả nội dung môn học: Môn học cung cấp cho sinh viên các khái niệm cơ bản và các công cụ toán học để quản lý rủi ro định lượng tại ngân hàng, tổ chức tài chính và bảo hiểm. Môn học tập trung chủ yếu vào rủi ro thị trường tài chính, rủi ro phát sinh từ những thay đổi bất ngờ về giá cả và lãi suất. Môn học cũng cung cấp các bộ công cụ để đo lường định lượng rủi ro. Ngoài ra, Môn học còn cung cấp các thước đo rủi ro định lượng, ví dụ: Giá trị rủi ro, thâm hụt dự kiến, rủi ro lãi suất.

Course Description:

This course provides students with fundamental concepts and mathematical tools for managing quantitative risk in banking, financial institutions, and insurance. The focus is primarily on financial market risk arising from unexpected changes in prices and interest rates. The course introduces a set of tools for quantifying risk, including key risk measures such as Value at Risk (VaR), Expected Shortfall, and interest rate risk.

10.29.4. Actuarial Mathematics for Life Contingent (Toán bảo hiểm cho cuộc sống)

Mã môn học: MAAS326IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Xác suất-Thống kê

Mô tả nội dung môn học:

Môn học cung cấp cho sinh viên kiến thức về các mô hình xác suất cho các tình huống bất ngờ trong cuộc sống làm cơ sở để phân tích bảo hiểm nhân thọ, tiền trợ cấp cũng như xác định phí bảo hiểm.

Course Description:

This course provides students with a solid foundation in probabilistic models for life-contingent events. It equips learners with the theoretical and practical tools necessary to analyze life insurance products, annuities, and pension benefits. Emphasis is placed on modeling survival and mortality, calculating premiums, and evaluating reserves, forming the basis for sound actuarial analysis and decision-making in life insurance and retirement planning.

10.30. Deep Learning (Học sâu)

Mã môn học: IT157IU

Số tín chỉ: 4 (3 LT+ 1 TH)

Môn học trước: không

Mô tả nội dung môn học:

Môn học này giúp sinh viên hiểu được khả năng, thách thức và hậu quả của việc học

sâu và chuẩn bị cho sinh viên tham gia vào quá trình phát triển công nghệ AI tiên tiến. Trong môn học này, sinh viên sẽ xây dựng và đào tạo các kiến trúc mạng nơ-ron như Convolutional Neural Networks, Recurrent Neural Networks, Transformers và tìm hiểu cách cải thiện chúng bằng các chiến lược như Dropout, BatchNorm, v.v. giúp sinh viên sẵn sàng để nắm vững các khái niệm lý thuyết và ứng dụng trong ngành của chúng bằng Python và PyTorch và giải quyết các trường hợp thực tế.

Course Description: This course enables students to understand the capabilities, challenges, and implications of deep learning, preparing them to engage in the development of advanced AI technologies. Students will build and train neural network architectures such as Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), and Transformers. The course also explores techniques to enhance model performance, including Dropout, Batch Normalization, and others. Through hands-on experience with Python and PyTorch, students will gain both theoretical and practical knowledge, empowering them to apply deep learning methods to real-world problems in their field.

10.31. Tên môn tự chọn #3

10.31.1. Bayesian statistics (Thống kê Bayes)

Mã môn học: MAAS410IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Xác suất-Thống kê, thống kê và khoa học dữ liệu với Python

Mô tả nội dung môn học:

Môn học này cung cấp cho sinh viên phần giới thiệu về suy luận thống kê Bayes, đề cập đến cả khía cạnh cơ bản và thực tế của các phương pháp Bayes. Các vấn đề cụ thể về kinh tế và kinh doanh sẽ được xem xét. Học sinh sẽ bắt đầu bằng cách hiểu sự khác biệt giữa phương pháp cổ điển và phương pháp Bayes, cách xử lý các mô hình đơn giản. Các chủ đề bao gồm: Quy tắc Bayes, suy luận Bayes cho các mô hình đơn và đa tham số, mô hình phân cấp, kiểm tra giả thuyết, hồi quy tuyến tính và phương pháp tính toán Bayes (Markov Chain Monte Carlo, Metropolis-Hastings và Gibbs Sampling).

Course Description:

This course offers an introduction to Bayesian statistical inference, covering both foundational principles and practical methodologies. Students will explore the core differences between classical and Bayesian approaches and learn how to apply Bayesian methods to simple and complex models. The course emphasizes applications in economics and business, using real-world problems to illustrate key concepts.

Topics include: Bayes' Rule, Bayesian inference for single- and multi-parameter models, hierarchical modeling, hypothesis testing, linear regression, and computational techniques such as Markov Chain Monte Carlo (MCMC), Metropolis-Hastings, and Gibbs Sampling. Students will develop the skills to implement Bayesian models and interpret results in applied contexts.

10.31.2. Statistical Models for Actuarial Science (Mô hình thống kê cho khoa học Bảo hiểm)

Mã môn học: MAAS411IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Phân tích hồi quy

Mô tả nội dung môn học

Môn học cung cấp cho sinh viên lý thuyết và khái niệm về mô hình hóa thống kê như mô hình tuyến tính tổng quát, mô hình phi tuyến tính, hồi quy Poisson...với các ứng dụng trong khoa học tính toán.

Course Description:

This course provides students with theoretical foundations and conceptual understanding of statistical modeling, including generalized linear models, nonlinear models, and Poisson regression. Emphasis is placed on practical applications in computational science.

10.31.3. Statistical Methods for Finance (Phương pháp thống kê trong tài chính)

Mã môn học: MAAS412IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Xác suất, Thống kê, Mô hình ngẫu nhiên

Mô tả nội dung môn học:

Môn học cung cấp cho sinh viên những kiến thức chính về các phương pháp định lượng quan trọng và kỹ thuật thống kê cho tài chính và kinh tế. Hơn nữa, môn học cũng hướng dẫn cách sử dụng ngôn ngữ lập trình R hoặc Python trong phân tích dữ liệu tài chính.

Course Description:

This course provides students with core knowledge of essential quantitative methods and statistical techniques used in finance and economics. In addition to theoretical concepts, the course emphasizes practical skills through the application of statistical tools in financial data analysis using programming languages such as R or Python.

10.31.4. Data Mining in Supply Chain (Khai phá dữ liệu trong chuỗi cung ứng)

Mã môn học: IS066IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: không

Mô tả nội dung môn học:

Môn học cung cấp cho sinh viên kiến thức tổng quan về trí tuệ doanh nghiệp trong lĩnh vực quản lý chuỗi cung ứng và tiếp thị. Ngoài ra sinh viên được học về cách tận dụng các hệ thống kinh doanh thông minh để xác định KPI, nâng cao độ chính xác của dự báo và lập

kế hoạch, theo dõi các hoạt động kinh doanh và cung cấp bảng điều khiển, phiếu ghi điểm, báo cáo chiến lược và báo cáo hoạt động/thời gian thực để nâng cao quá trình ra quyết định cho chuỗi cung ứng và tiếp thị thông qua ví dụ minh họa trí tuệ doanh nghiệp SAP.

Course Description:

This course provides students with an overview of business intelligence (BI) in the context of supply chain management and marketing. Students will learn how to leverage smart business systems to define key performance indicators (KPIs), improve forecasting accuracy, enhance planning, monitor business operations, and generate dashboards, scorecards, strategic reports, and real-time operational reports. The course emphasizes data-driven decision-making through hands-on examples, including the application of SAP Business Intelligence tools in real-world scenarios.

10.32. Tên môn học tự chọn #4

10.32.1. Optimization 2 (Tối ưu hóa 2)

Mã môn học: MAFE307IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Xác suất-Thống kê, Tối ưu hóa 1

Mô tả nội dung môn học:

- Cung cấp cho sinh viên những ý tưởng và kỹ thuật chính của quy hoạch tuyến tính ứng dụng và kiến thức cơ bản về quy hoạch tuyến tính đa mục tiêu.
- Phát triển các kỹ năng trong mô hình toán học và giải quyết vấn đề và cung cấp ý nghĩa thực tế/ ứng dụng của những ý tưởng và kỹ thuật này, thông qua các ví dụ thực tế được rút ra từ nhiều lĩnh vực kỹ thuật, khoa học đời sống, quản lý và tài chính.
- Phát triển khả năng tư duy, nhận thức về các vấn đề/câu hỏi mới và trả lời/giải quyết/chứng minh chúng trong một số điều kiện mới nảy sinh trong thực tiễn.

Course Description:

- Provide students with key ideas and techniques of applied linear programming and basic knowledge of multi-objective linear programming.
- Develop skills in mathematical modeling and problem-solving, emphasizing the practical meaning and applications of these concepts and techniques through real-world examples from various fields such as engineering, life sciences, management, and finance.
- Enhance students' ability to think critically, recognize new issues/questions, and address/solve/prove them under newly arising conditions in practical settings.

10.32.2. Survey Sampling (Phương pháp lấy mẫu điều tra)

Mã môn học: MAAS414IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Thống kê và khoa học dữ liệu với Python

Mô tả nội dung môn học:

Môn học cung cấp cho sinh viên các phương pháp và kỹ thuật lấy mẫu theo các khía cạnh thực tế của các vấn đề khảo sát. Môn học bắt đầu giới thiệu ngắn gọn về vai trò của các cuộc khảo sát mẫu trong thế giới hiện đại. Sau đó, Môn học giới thiệu những thiết kế khảo sát mẫu hoặc quy trình ước tính thích hợp cho những vấn đề thực tế. Ngoài ra sinh viên còn được cung cấp những phương pháp để giải quyết vấn đề được mô tả, chi tiết về quy trình ước tính, bao gồm phần trình bày ngắn gọn các công thức cần thiết để hoàn thành phân tích cùng các ví dụ thực tế được giải quyết chi tiết.

Course Description:

This course provides students with essential sampling methods and techniques, emphasizing the practical aspects of survey-related problems. It begins with a brief introduction to the role of sample surveys in the modern world, highlighting their importance in research and decision-making. The course then explores appropriate survey designs and estimation procedures tailored to real-world scenarios. Students will learn effective approaches to problem-solving, including detailed estimation processes, the necessary formulas for analysis, and thoroughly worked-out examples drawn from practical applications.

10.32.3. Applied Probability Model in Actuarial Science (Mô hình xác suất ứng dụng trong khoa học Bảo hiểm)

Mã môn học: MAAS415IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Xác suất-Thống kê

Mô tả nội dung môn học:

Môn học tập trung vào các ứng dụng của mô hình xác suất cho bảo hiểm tài sản và tai nạn. Môn học giới thiệu một số mô hình quan trọng và hữu ích. Môn học còn giúp sinh viên hiểu các bước liên quan đến quy trình mô hình hóa và cách thực hiện các bước này trong việc giải quyết các vấn đề kinh doanh.

Course Description:

This course focuses on the application of probabilistic models in the context of property and casualty insurance. It introduces students to several important and practical models commonly used in actuarial practice. In addition, the course equips students with a clear understanding of the steps involved in the modeling process and how to implement these steps to solve real-world business problems. Through applied examples, students will develop both conceptual understanding and practical modeling skills relevant to the insurance industry.

10.33. Optimization 1 (Tối ưu hóa 1)

Mã môn học: MAFE221IU

Số tín chỉ: 3 (3 LT+0TH)

Môn học trước: Đại số tuyến tính, Giải tích 3

Mô tả nội dung môn học:

Đây là môn học đầu tiên về tối ưu hóa dành cho sinh viên ngành Kỹ thuật tài chính và Quản lý rủi ro và Thống kê ứng dụng. Nội dung chính của môn học bao gồm:

- Các yếu tố của giải tích lồi (convex analysis)
- Các bài toán quy hoạch tuyến tính (QHTT): Mô hình QHTT từ các bài toán thực tế (đặc biệt là các bài toán tài chính), các tính chất của QHTT, phương pháp đơn hình (simplex method), tính đối ngẫu (duality)
- Các bài toán quy hoạch phi tuyến tính, bài toán không ràng buộc: điều kiện Karush-Kuhn-Tucker, bài toán lồi, một số phương pháp giải (phương pháp dốc nhất, phương pháp Newton, phương pháp hướng liên hợp, phương pháp Quasi-Newton).
- Quy hoạch phi tuyến tính, bài toán ràng buộc: điều kiện Karush-Kuhn-Tucker, một số phương pháp giải (phương pháp chiếu gradient, phương pháp penalty, phương pháp barrier, phương pháp đối ngẫu).
- Các mô hình trong tài chính và quản lý rủi ro.

Course Description:

This is the first optimization course designed for students in Financial Engineering, Risk Management, and Applied Statistics. The course covers:

- Elements of convex analysis
- Linear programming (LP): LP models from real-world problems (especially in finance), properties of LP, the simplex method, and duality theory
- Nonlinear programming – unconstrained problems: Karush-Kuhn-Tucker (KKT) conditions, convex problems, solution methods (steepest descent, Newton’s method, conjugate gradient method, quasi-Newton methods)
- Nonlinear programming – constrained problems: KKT conditions and solution methods (gradient projection, penalty method, barrier method, dual approaches)
- Applications of optimization models in finance and risk management

Emphasis is placed on understanding the modeling process and applying appropriate methods to solve practical problems in financial and risk-related contexts.

10.34. Multivariate Statistical Analysis (Phân tích thống kê nhiều chiều)

Mã môn học: MAAS413IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: phân tích hồi quy, Học máy

Mô tả nội dung môn học

Môn học cung cấp cho sinh viên các phương pháp được sử dụng trong phân tích thống kê đa biến. Các chủ đề được giới thiệu và ứng dụng trong Môn học bao gồm ôn tập đại số

ma trận, kỹ thuật mô tả, phân phối đa biến, lý thuyết ước lượng và kiểm định giả thuyết, nguyên lý phân tích thành phần, đặc biệt là lý thuyết Copula và một số ứng dụng trong tài chính.

Course Description:

This course provides students with fundamental methods used in multivariate statistical analysis. It introduces and applies key topics such as a review of matrix algebra, descriptive techniques, multivariate distributions, estimation theory, and hypothesis testing. The course also covers principal component analysis (PCA) and places special emphasis on Copula theory, along with its applications in finance. Students will gain both theoretical understanding and practical skills in applying multivariate techniques to real-world data analysis problems, particularly in financial contexts.

10.35. Object-Oriented Programming (Lập trình hướng đối tượng)

Mã môn học: IT069IU

Số tín chỉ: 4 (3 LT+1 TH)

Môn học trước: không

Mô tả nội dung môn học:

Môn học giới thiệu cho sinh viên về lập trình hướng đối tượng từ các khái niệm cơ bản đến các nguyên tắc nghiệp vụ để thiết kế một phần mềm hướng đối tượng.

Course Description: This course introduces students to object-oriented programming (OOP), starting from fundamental concepts and progressing to business-oriented principles for designing object-oriented software.

10.36. Algorithms and Data Structures (Cấu trúc dữ liệu và giải thuật)

Mã môn học: IT013IU

Số tín chỉ: 4 (3 LT+1 TH)

Môn học trước: Lập trình hướng đối tượng

Mô tả nội dung môn học:

Môn học này giới thiệu cho sinh viên các cấu trúc dữ liệu và thuật toán cơ bản, bao gồm thiết kế, phân tích và triển khai.

Course Description:

This course introduces students to fundamental data structures and algorithms, focusing on their design, analysis, and implementation.

10.37. Introduction to Business Administration (Giới thiệu về quản trị kinh doanh)

Mã môn học: BA115IU

Số tín chỉ: 3 (3LT+0TH)

Môn học trước: Không.

Mô tả nội dung môn học:

Môn học này nhằm giới thiệu cho sinh viên về sự phức tạp và các khía cạnh đa chiều của kinh doanh. Đồng thời môn học sẽ cố gắng cung cấp những kiến thức nền tảng và các ứng dụng trong các chủ đề cốt lõi: Tiếp thị, Quản lý, Nguồn nhân lực. Ngoài ra, môn học cũng làm tăng nhận thức và hiểu biết của sinh viên về các vấn đề toàn cầu.

Course Description:

This course is designed to introduce students to the complexity and multidimensional nature of business. It provides foundational knowledge and practical applications across core topics such as marketing, management, and human resources. In addition, the course aims to enhance students' awareness and understanding of global business issues, helping them develop a broader perspective on how businesses operate in an interconnected world.

10.38. Summer Internship (Thực tập hè)

Mã môn học: MAAS328IU

Số tín chỉ: 3

Điều kiện: Điểm trung bình tích lũy tối thiểu từ 50 trở lên và số tín chỉ tích lũy tối thiểu là 85 tín chỉ.

Mô tả nội dung môn học:

Thực tập mùa hè là khóa học bắt buộc đối với Cử nhân bằng Thống kê. Việc thực tập của sinh viên được giám sát về mặt học thuật bởi một giảng viên của trường và được hướng dẫn công việc bởi một người quản lý hay hướng dẫn thực tập phía công ty. Trong giai đoạn thực tập, sinh viên sẽ làm việc tại vị trí thực tập ở công ty khoảng 40 giờ một tuần trong ít nhất 32 ngày làm việc (khoảng 1 tháng và 2 tuần). Sinh viên sau thời gian thực tập phải viết báo cáo cuối cùng bao gồm các phần sau:

- Giới thiệu
- Thông tin chung về công ty.
- Mô tả nhiệm vụ/dự án/công việc trong công ty
- Báo cáo các kỹ năng, kiến thức thu được trong quá trình thực tập
- Thảo luận và kết luận.

Course Description:

The summer internship is a compulsory course for students pursuing a Bachelor's degree in Applied Statistics. Each student's internship is academically supervised by a university faculty member and professionally guided by a manager or internship mentor from the host company. During the internship period, students are expected to work approximately 40 hours per week for a minimum of 32 working days (about one month and two weeks). At the end of the internship, students are required to submit a final report that

includes the following components:

- Introduction
- General information about the company
- Description of tasks/projects/assignments carried out
- Summary of skills gained and experiences during the internship

The course is designed to help students apply academic knowledge in real-world environments and develop essential professional skills for future careers.

10.39. Graduation Thesis (Khóa luận tốt nghiệp)

Mã môn học: MAAS421IU

Số tín chỉ: 10

Điều kiện: Điểm trung bình tích lũy tối thiểu từ 50 trở lên và số tín chỉ tích lũy tối thiểu là 112 tín chỉ.

Mô tả nội dung môn học:

Làm khóa luận tốt nghiệp là yêu cầu bắt buộc của sinh viên ngành Thống kê ứng dụng. Sinh viên làm khóa luận tốt nghiệp sẽ thực hiện và hoàn thành một dự án nghiên cứu về mô hình Thống kê trong tài chính, kinh tế, hay khoa học dữ liệu, ML/AI. Sinh viên sẽ làm việc trực tiếp với GVHD để trao đổi và lập kế hoạch nghiên cứu trong suốt quá trình làm khóa luận. Sinh viên phải viết báo cáo đề xuất đề tài và bản thảo sơ khởi (proposal) và trình bày đề cương trước Hội đồng. Hội đồng sẽ góp ý và có những nhận xét hoặc điều chỉnh phù hợp để phát triển đề tài. Sau khi báo cáo đề cương, sinh viên tiếp tục thực hiện đề tài và viết báo cáo luận văn. Việc làm khóa luận và viết luận văn tốt nghiệp đòi hỏi sinh viên những kỹ năng tích hợp đã được tích lũy trong suốt quá trình học Đại học, bao gồm các kiến thức nền tảng về Toán và Thống kê, phát triển khả năng nghiên cứu, viết báo cáo khoa học, tư duy phản biện, tư duy độc lập và giao tiếp và hợp tác hiệu quả. Sinh viên phải bảo vệ khóa luận tốt nghiệp trước Hội đồng chấm luận văn tốt nghiệp.

Course Description:

The undergraduate thesis is a mandatory requirement for students majoring in Applied Statistics. In this course, students undertake and complete a research project focused on statistical modeling in fields such as finance, economics, data science, or machine learning/artificial intelligence (ML/AI). Under the close supervision of a faculty advisor, students are expected to plan, execute, and report their research throughout the entire thesis process.

Students must first submit a research proposal and present their thesis outline to a review committee. The committee will provide feedback, suggestions, and necessary adjustments to improve the quality and feasibility of the research. Following the outline presentation, students will carry out their research project and prepare a full thesis report.

Completing the thesis requires the integration of knowledge and skills acquired throughout the undergraduate program, including foundations in mathematics and statistics,

research and scientific writing skills, critical and independent thinking, and effective communication and collaboration. The course culminates in a formal thesis defense before an academic committee.

**KT. TRƯỞNG BỘ MÔN
PHÓ TRƯỞNG BỘ MÔN**

**KT. HIỆU TRƯỞNG
PHÓ HIỆU TRƯỞNG**

Nguyễn Minh Quân

Đinh Đức Anh Vũ

Phụ lục 1

**NỘI DUNG ĐIỀU CHỈNH CHƯƠNG TRÌNH ĐÀO TẠO
NGÀNH THỐNG KÊ KHÓA 2025 SO VỚI KHÓA 2024**

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

1. Danh sách các môn học loại bỏ khỏi chương trình đào tạo và bổ sung vào chương trình đào tạo

STT	Các môn học loại bỏ khỏi chương trình đào tạo	Các môn học bổ sung vào chương trình đào tạo	Ghi chú
1	MAFE101IU - Analysis 1 (4TC)	MA001IU - Calculus 1 (4TC)	Đổi tên học phần
2	MAFE101IU - Analysis 2 (4TC)	MA003IU - Calculus 2 (4TC)	Đổi tên học phần
3	MAFE203IU - Analysis 3 (3TC)	Không	Loại bỏ học phần
4	MAFE104IU - Linear Algebra (4TC)	MA033IU - Linear Algebra (3TC)	Giảm tín chỉ
5	MAFE308IU – Financial Risk Management 1 (3TC)	MAFE318IU - Financial Risk Management 1 (4TC)	Tăng tín chỉ
6	MAFE109IU - Introduction to Python (4TC)	IT149IU - Fundamentals of Programming (4TC)	Đổi tên học phần. Nội dung và ngôn ngữ lập trình giữ nguyên Python
7	MAFE208IU - Numerical Analysis (4TC)	MAFE220IU - Numerical Analysis (3TC)	Giảm tín chỉ
8	MAFE204IU - Database Management System (3TC)	IT079IU - Principles of Database Management (4TC)	Đổi tên học phần và mã môn học
9	MAFE316IU - Statistics (4TC)	MAFE320IU - Statistics and Data Science with Python (3TC)	Đổi tên và giảm tín chỉ, tăng DS, Python
10	MAAS221IU - Introduction to Machine Learning (3TC)	IT172IU - Machine Learning (4TC)	Tăng tín chỉ và đổi mã môn
11	MAFE202IU - Differential	MA038IU - Differential	Giảm tín chỉ

	Equations (4TC)	Equations (3TC)	
12	MAAS320IU - Regression Models (3TC)	IT136IU - Regression Analysis (4TC)	Tăng tín chỉ và đổi mã môn
13	MAAS322IU - Statistical Computing (3TC)	Không	Loại bỏ học phần
14	MAAS410IU - Bayesian Statistics (3TC) (Môn bắt buộc)	MAAS410IU - Bayesian Statistics (3TC) (Môn tự chọn)	Chuyển từ bắt buộc sang tự chọn
15	MAFE206IU - Probability (3TC)	MA036IU - Probability and Statistics (3TC)	Đổi tên học phần
16	MAFE303IU - Optimization 1 (4TC)	MAFE221IU - Optimization 1 (3TC)	Giảm tín chỉ
17	MAFE212IU - Financial Accounting (4TC)	BA005IU - Financial Accounting (3TC)	Đổi mã môn học và giảm tín chỉ
18	MAAS420IU - Graduation Thesis (12TC)	MAAS421IU - Graduation Thesis (10TC)	Giảm tín chỉ

2. Các điều chỉnh khác

Không có các điều chỉnh khác

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

Sinh viên các khóa cũ vẫn học theo chương trình đào tạo cũ. Chương trình đào tạo mới được bắt đầu cho khóa K2025.

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

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

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

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

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

STT	Mã MH	Tên MH (Tiếng Anh)	NLTP 1.1	NLTP 1.2	NLTP 1.3
1	MA036IU	Probability and Statistics	Bậc 4	Bậc 5	Bậc 4
2	IT079IU	Principles of Database Management	Bậc 4	Bậc 4	Bậc 5
3	MAAS220IU	Introduction to Statistics	Bậc 4	Bậc 4	Bậc 4
4	IT136IU	Regression Analysis	Bậc 5	Bậc 5	Bậc 5
5	MAAS324IU	Applied Time Series Analysis	Bậc 5	Bậc 5	Bậc 5

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)	NLTP 2.1	NLTP 2.2	NLTP 2.3	NLTP 2.4	NLTP 2.5	NLTP 2.6
1	PE008IU	Critical Thinking	Bậc 4	Bậc 4	Bậc 4	Bậc 4	Bậc 4	Bậc 4
2	MAAS328IU	Internship	Bậc 4	Bậc 5	Bậc 4	Bậc 5	Bậc 5	Bậc 5
3	MAAS420IU	Graduation Thesis	Bậc 5	Bậc 5	Bậc 5	Bậc 5	Bậc 5	Bậc 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)	NLTP 3.1	NLTP 3.2	NLTP 3.3	NLTP 3.4
1	IT149IU	Fundamentals of Programming	Bậc 4	Bậc 4	Bậc 4	Bậc 4
2	IT069IU	Object-Oriented Programming	Bậc 4	Bậc 5	Bậc 4	Bậc 4
3	IT013IU	Data Structures and Algorithms	Bậc 4	Bậc 5	Bậc 4	Bậc 4
4	MAFE320IU	Statistics and Data Science with Python	Bậc 5	Bậc 5	Bậc 5	Bậc 5
5	IT172IU	Machine Learning	Bậc 5	Bậc 5	Bậc 5	Bậc 5
6	IT157IU	Deep Learning	Bậc 5	Bậc 6	Bậc 5	Bậc 5

4. Miền năng lực 4: An toàn 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)	NLTP 4.1	NLTP 4.2	NLTP 4.3	NLTP 4.4
1	MAFE318IU	Financial Risk Management 1	Bậc 4	Bậc 4	Bậc 5	Bậc 4
2	IS065IU	Supply Security and Risk Management	Bậc 5	Bậc 5	Bậc 5	Bậc 5
3	IT079IU	Principles of Database Management	Bậc 4	Bậc 4	Bậc 4	Bậc 4
4	PE021IU	General Law	Bậc 4	Bậc 4	Bậc 4	Bậc 4

5. Miền năng lực 5: Giải quyết vấn đề

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

STT	Mã MH	Tên MH (Tiếng Anh)	NLTP 5.1	NLTP 5.2	NLTP 5.3	NLTP 5.4
1	MAFE220IU	Numerical Analysis	Bậc 4	Bậc 5	Bậc 5	Bậc 4
2	MA038IU	Differential Equations	Bậc 4	Bậc 4	Bậc 5	Bậc 4
3	MAFE229IU	Optimization 1	Bậc 4	Bậc 4	Bậc 5	Bậc 4
4	MAFE307IU	Optimization 2	Bậc 5	Bậc 5	Bậc 5	Bậc 5
5	MAAS318IU	Stochastic Modeling	Bậc 5	Bậc 5	Bậc 5	Bậc 5

6	MAAS413IU	Multivariate Statistical Analysis	Bậc 5	Bậc 5	Bậc 5	Bậc 5
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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)	NLTP 6.1	NLTP 6.2	NLTP 6.3
1	IT172IU	Machine Learning	Bậc 5	Bậc 5	Bậc 5
2	IT157IU	Deep Learning	Bậc 5	Bậc 5	Bậc 6
3	MAAS325IU	Predictive Analytics	Bậc 5	Bậc 5	Bậc 5
4	MAAS410IU	Bayesian Statistics	Bậc 5	Bậc 5	Bậc 5
5	IS066IU	Data Mining in Supply chain	Bậc 5	Bậc 6	Bậc 6

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

Miền năng lực	NLTP	Học phần	Phương pháp đánh giá
1. Khai thác dữ liệu và thông tin	NLTP 1.1	MA036IU, IT079IU, MAAS220IU, IT136IU, MAAS324IU	Thảo luận trên lớp, bài tập nhóm, thuyết trình nhóm, bài thi giữa kỳ, bài thi cuối kỳ
2. Giao tiếp và hợp tác trong môi trường số	NLTP 2.1	PE008IU, MAAS328IU, MAAS420IU	Case study, báo cáo, thuyết trình, đánh giá qua thực tập, khóa luận
3. Sáng tạo nội dung số	NLTP 3.1	IT149IU, IT069IU, IT013IU, MAFE320IU, IT172IU, IT157IU	Thảo luận, project, bài tập nhóm, bài thi giữa kỳ/cuối kỳ, thuyết trình nhóm, bài thi giữa kỳ, bài thi cuối kỳ
4. An toàn	NLTP 4.1	MAFE318IU, IS065IU, IT079IU, PE021IU	Quiz, case study, thảo luận tình huống, thuyết trình nhóm, bài thi giữa kỳ, bài thi cuối kỳ
5. Giải quyết vấn đề	NLTP 5.1	MAFE220IU, MA038IU, MAFE229IU, MAFE307IU, MAAS318IU, MAAS413IU	Thảo luận, bài tập nhóm, thuyết trình nhóm, bài thi giữa kỳ, bài thi cuối kỳ
6. Ứng dụng trí tuệ nhân tạo	NLTP 6.1	IT172IU, IT157IU, MAAS325IU, MAAS410IU, IS066IU	Quiz, case study, project thực tế, thuyết trình nhóm, bài thi giữa kỳ, bài thi cuối kỳ

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

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

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

Các đề cương môn học sau đây.



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

COURSE SYLLABUS

Course Name: Writing AE1 (Academic Writing)

Course Code: **EN007IU**

1. General information

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 Department of English
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, project
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 90 Contact hours (lecture, exercise): 30 Private study including examination preparation, specified in hours ¹ : 60
Credit points	2
Required and recommended prerequisites for joining the course	Students must fulfil ONE of the following requirements to attend this course: <ul style="list-style-type: none">• hold TOEFL iBT certificate with score ≥ 61• hold IELTS certificate with score ≥ 5.5• have completed IE2 course
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.

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

Course learning outcomes	<p>Upon the successful completion of this course, students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td> CLO1. Understand and follow different steps in the writing process to produce a complete essay CLO2. Employ different methods to improve their writing such as peer feedback and teacher comments </td> </tr> <tr> <td>Skill</td> <td> CLO3. Read critically, analyze and annotate an academic text CLO4. Use different functions of writing to successfully communicate their purposes to the audience (describe a process, discuss the causes and effects, compare and contrast, make arguments, paraphrase and summarize) </td> </tr> <tr> <td>Attitude</td> <td>CLO5. Reason around ethical issues in writing academic essays and avoid committing plagiarism</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Understand and follow different steps in the writing process to produce a complete essay CLO2. Employ different methods to improve their writing such as peer feedback and teacher comments	Skill	CLO3. Read critically, analyze and annotate an academic text CLO4. Use different functions of writing to successfully communicate their purposes to the audience (describe a process, discuss the causes and effects, compare and contrast, make arguments, paraphrase and summarize)	Attitude	CLO5. Reason around ethical issues in writing academic essays and avoid committing plagiarism																						
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Summarizing	2	U																													
Review & Correction	2	U																													
Examination forms	Essay writing																														
Study and examination requirements	<p><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.</p> <p><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.</p>																														

	<p><i>Class Behaviors</i></p> <p>Students are required to treat their studying in college as a full-time job and spend an adequate amount of time for this Writing AE1 course with approximately 8-10 hours per week (both in class and self-study). Accordingly, students are supposed to follow the obligations below:</p> <ul style="list-style-type: none"> - 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. <p><i>Plagiarism</i></p> <p>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.</p> <p><i>Writing Center (Room 509)</i></p> <p>Students are encouraged to visit the Writing Center to schedule an appointment for additional help with essay writing.</p>
Reading list	<p>[1] Oshima, A., & Hogue, A. (2017). <i>Longman Academic Writing Series, Level 4: Essays</i> (5th ed.).New Jersey, NJ: Pearson Longman.</p> <p>[2] Oshima, A., & Hogue, A. (2006). <i>Longman Academic Writing Series, Level 4: Essays</i> (4th ed.).New Jersey, NJ: Pearson Longman.</p>

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

Week	Coursebook		Homework
	Chapter	Pages	
1	<p>The process of Academic Writing Step 1: Creating (Prewriting) Step 2: Planning (Outlining) Step 3: Writing Step 4: Polishing</p> <p><i>Using Outside Sources</i> Paraphrasing Plagiarism and how to avoid plagiarism</p>	<p>[2] pp. 265-279</p> <p>[1] pp. 58-65</p>	<ul style="list-style-type: none"> Do revising & editing exercises Read pp. [1] pp. 66-72
2	<p><i>Using Outside Sources (Cont'd)</i> Strategies for writing a successful summary</p>	<p>[1] pp. 58 - 72</p>	<ul style="list-style-type: none"> Do paraphrasing exercises Read [1] pp.74-100. Read, take notes and write the summary of ONE of the following articles: <ul style="list-style-type: none"> The Challenge of Many Languages (p. 280) Nice by Nature? (p. 281) Marital Exchanges (pp. 283-4) Why We Should Send a Manned Mission to Mars (pp. 286-7) Let's Not Go to Mars (pp. 288-9)
3 & 4	<p>Review/ Correction: Lecturer gives feedback to one or two students' writings in class.</p> <p>From Paragraph to Essay The introductory paragraph:</p> <ul style="list-style-type: none"> General statements & Introductory techniques Thesis statements & Logical division of ideas <p>Body paragraphs:</p> <ul style="list-style-type: none"> Topic sentences <p>The concluding paragraph:</p> <ul style="list-style-type: none"> Restatement Final thoughts <p>Outlines of essays</p>	<p>[1] pp. 74 - 100</p>	<ul style="list-style-type: none"> Read pp. 101-15 Do exercises on: <ul style="list-style-type: none"> Writing thesis statements Writing topic sentences from the thesis statement provided Writing restatements

5	<p>Process Essays Introduction Analyzing the models Thesis statements for process essays Transitional signals Write together: Writing from a diagram (p.115)</p>	[1] pp. 101 - 115	<ul style="list-style-type: none"> • Write a short essay (150-200 words) describing how hydroelectric power is generated (or a topic of the lecturer's choice)
6	<p>Process Essays (Cont'd) Review/ Correction: Lecturer gives feedback to one or two students' writings in class. <u>In-class Assignment:</u> Write a process essay about one of these topics or a topic of the lecturer's choice:</p> <ul style="list-style-type: none"> • How to cook a favorite food • How to do a favorite hobby • How to succeed in your major area or professional field • How to accomplish an academic task (register for classes, apply for a scholarship, pass an exam, etc.) 	[1] pp. 101 - 115	<ul style="list-style-type: none"> • Read [1] pp. 116-132
7	<p>Cause/ Effect Essays Introduction Analyzing the models Organization Signal words and phrases Write together: Write the introduction, ONE body paragraph and the conclusion on one of the topics below or a topic of the lecturer's choice:</p> <ul style="list-style-type: none"> • The cause of obesity • The effects of involvement in sports on young children • The causes of stress in college students • The effects of regular reading on students' lives 	[1] pp. 116 - 132	<ul style="list-style-type: none"> • Practice 4, 5,6 /pp. 127-9 • Write the introduction, ONE body paragraph and the conclusion on one of the topics below or a topic of the lecturer's choice. The topic should be different from the one that has been used in class: <ul style="list-style-type: none"> ○ The cause of obesity ○ The effects of involvement in sports on young children ○ The causes of stress in college students ○ The effects of regular reading on students' lives

8	<p>Cause/ Effect Essays (Cont'd) Review/ Correction: Lecturer gives feedback to one or two students' writings in class.</p> <p><u>In-class Writing:</u> Write the introduction, ONE body paragraph and the conclusion on one of the two topics left (except for the ones that has been worked on in class and assigned as homework) or a topic of the lecturer's choice:</p> <ul style="list-style-type: none"> • The cause of obesity • The effects of involvement in sports on young children • The causes of stress in college students <p>The effects of regular reading on students' lives</p>	<ul style="list-style-type: none"> • Give peer-feedback using the rubric provided
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MID-TERM EXAMINATION

9	<p>Comparison/ Contrast Essays Introduction Analyzing the models Organization:</p> <ul style="list-style-type: none"> • Points of comparison • Point-by-point organization • Block organization <p>Comparison and Contrast signal words</p> <p>Write together: Write the introduction, ONE body paragraph and the conclusion on one of the topics below or a topic of the lecturer's choice:</p> <ul style="list-style-type: none"> • Compare and contrast the relationship between parents and children in two different cultures. • Compare and contrast the university culture in two different countries. • Compare and contrast the culture of a small town and a big city. 	<p>[1] pp. 133 - 151</p>	<ul style="list-style-type: none"> • Practice 3, 4, 6, 7/pp.142-6 • Write the introduction, ONE body paragraph and the conclusion on one of the topics below or a topic of the lecturer's choice. The topic should be different from the one that has been used in class: <ul style="list-style-type: none"> ○ Compare and contrast the relationship between parents and children in two different cultures. ○ Compare and contrast the university culture in two different countries. ○ Compare and contrast the culture of a small town and a big city.
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10	<p>Comparison/ Contrast Essays (Cont'd) Review/ Correction: Lecturer gives feedback to one or two students' writings in class. <u>In-class Assignment:</u> Write a compare and contrast essay on the topic left or a topic of the lecturer's choice:</p> <ul style="list-style-type: none"> • Compare and contrast the relationship between parents and children in two different cultures • Compare and contrast the university cultures in two different countries • Compare and contrast the cultures of a small town and a big city 	[1] pp. 133 - 151	<ul style="list-style-type: none"> • Read [1] pp. 152-168
11 & 12	<p>Argumentative Essays Introduction Analyzing the model</p>	[1] pp. 152-168	<ul style="list-style-type: none"> • Write an argumentative essay (300 – 350 words) on ONE of the following topics or a topic
	<p>Organization: Block vs. Point-by-point pattern The elements of an argumentative essay:</p> <ul style="list-style-type: none"> • An explanation of the issue • A clear thesis statement • A summary of the opposing arguments • Rebuttals to the opposing arguments • Your own arguments <p>The introductory paragraph: Thesis Statement Statistics as support Write together: Write the introduction, ONE body paragraph and the conclusion on one of the topics below or a topic of the lecturer's choice:</p> <ul style="list-style-type: none"> • Can same-sex parenting negatively influence a child's mentality? • Do famous artists have an innate talent, or do they put in great effort to improve their skills? • Is homework helpful? 		<p>of the lecturer's choice:</p> <ul style="list-style-type: none"> ○ Can same-sex parenting negatively influence a child's mentality? ○ Do famous artists have an innate talent, or do they put in great effort to improve their skills? ○ Is homework helpful?

13	<p>Argumentative Essays (Cont'd) Review/ Correction: Lecturer gives feedback to one or two students' writings in class. In-class Writing: Write an argumentative essay on the topic left or a topic of the lecturer's choice:</p> <ul style="list-style-type: none"> • Can same-sex parenting negatively influence a child's mentality? • Do famous artists have an innate talent, or do they put in great effort to improve their skills? • Is homework helpful? 		<ul style="list-style-type: none"> • Give peer-feedback using the rubric provided
14	Review & Practice: Summarizing		Sample final test
15	<p>Review/Correction: Lecturer gives feedback to one or two students' argumentative essays +sample final test in class. Lecturer has students check their own assignment scores.</p>		
FINAL EXAMINATION			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Homework completion (10%)	80% Pass	80% Pass	80% Pass		
Week 6: In-class writing assignment: Process essay (10%)				80% Pass	
Week 10: In-class writing assignment: Compare & Contrast essay (10%)				80% Pass	
Midterm exam (30%)	80% Pass			80% Pass	80% Pass
Final exam (40%)				80% Pass	80% Pass

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

5. Rubrics (optional)

5.1. Midterm exam rubrics (100 points)

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

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

Notes:

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

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

Answers/ Criteria	Parts/ Points	CLO
Language use and Mechanics A wide variety of sentence patterns and vocabulary are presented correctly. Language used for <i>Cause-Effect Essay</i> is good and Meaning is clear. Spelling, capitalization, punctuation are correct.	10	CLO 1,4

<p>Content</p> <p>The essay fulfills the requirements of the assignment & the topic is fully addressed. (15)</p> <p>The essay is interesting to read and originally written by the student. (5)</p>	20	CLO 1,4,5
<p>Organization</p> <p><i>Introduction:</i></p> <p>The introduction ends with a thesis statement. (10)</p> <p><i>Body:</i></p> <p>Each paragraph discusses a particular point and begins with a clear topic sentence. (5)</p> <p>Each paragraph has specific supporting details (fact, examples, etc.) (5)</p> <p>Each paragraph has cohesion and coherence. (5)</p> <p><i>Conclusion:</i></p> <p>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)</p>	30	CLO 1,4
Total	60	

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

Criteria/ word count	300-350 words (100%)	200-299 words (80%)	Under 200 words (60%)	CLO
<p>Language use and mechanics (20)</p> <p>A wide variety of sentence patterns and vocabulary are presented correctly.</p> <p>Language control is good, and meaning is clear.</p> <p>Spelling, capitalization and punctuation are correct.</p>	20	16	12	CLO 1,4
<p>Content: (20)</p> <p>The essay fulfills the task requirements, and the topic is fully addressed. The content is originally created by the students.</p>	20	16	12	CLO 1,4,5
<p>Organization: (60)</p> <p><i>Introduction:</i></p> <p>The introduction has a thesis statement. (10)</p> <p><i>Body:</i></p> <p>At least one paragraph discusses the counter-arguments. (10)</p>	10	8	6	CLO 1,4
	10	8	6	

Each paragraph discusses a particular point and begins with a clear topic sentence. (10)	10	8	6	
Each paragraph has specific supporting details (fact, examples, etc.). There are no sentences that are off-topic. (10)	10	8	6	
Each paragraph has cohesion and coherence. There are transition signals to show the relationship among ideas and to link paragraphs. (10)	10	8	6	
Conclusion: The conclusion summarizes the main points and paraphrases the thesis statement, begins with a conclusion signal, and leaves the readers with the writer's final thought on the topic. (10)	10	8	6	
Total	100	80	60	

Date revised: 15 August, 2022

Ho Chi Minh City, 15 August 2022

Head of Department

(Signature)

Nguyễn Huy Cường



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

COURSE SYLLABUS

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

Course Code: **EN008IU**

1. General information

Course designation	<i>The course is designed to prepare students for effective listening and note-taking skills, so that they can pursue the courses in their majors without considerable difficulty. The course is therefore lecture-based in that the teaching and learning procedure is built up on lectures on a variety of topics such as business, science, and humanities.</i>
Semester(s) in which the course is taught	1, 2, 3
Person responsible for the course	Lecturers of Department of English
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 90 Contact hours (lecture, exercise): 30 Private study including examination preparation, specified in hours ¹ : 60
Credit points	2
Required and recommended prerequisites for joining the course	Students must fulfil ONE of the following requirements to attend this course: <ul style="list-style-type: none">• hold TOEFL iBT certificate with score ≥ 61• hold IELTS certificate with score ≥ 5.5• complete IE2 course

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.

<p>Course objectives</p>	<p>There are a number of objectives embedded in various teaching activities in Listening AE1 course:</p> <p>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.</p> <p>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.</p> <p>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.</p>								
<p>Course learning outcomes</p>	<p>Upon the successful completion of this course, students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td> CLO1. Remember different strategies and techniques in listening to academic lectures and taking notes. CLO2. Improve their specialized knowledge of academic lectures </td> </tr> <tr> <td>Skill</td> <td> CLO3. Respond to academic lectures with appropriate strategies CLO4. Communicate effectively with their classmates and professors. </td> </tr> <tr> <td>Attitude</td> <td>CLO5. Respond to academic lectures with confidence</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Remember different strategies and techniques in listening to academic lectures and taking notes. CLO2. Improve their specialized knowledge of academic lectures	Skill	CLO3. Respond to academic lectures with appropriate strategies CLO4. Communicate effectively with their classmates and professors.	Attitude	CLO5. Respond to academic lectures with confidence
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Attitude	CLO5. Respond to academic lectures with confidence								

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (2 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <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> </tbody> </table>	Topic	Weight	Level	Orientation & Introduction of strategies and techniques in note-taking	2	I, T, U	Chapter 1: New Trends in Marketing Research	3	T, U	Chapter 2: Business Ethics	3	T, U	Chapter 3: Trends in Children’s Media Use	2	T, U	Chapter 4: The Changing Music Industry	2	T, U	Chapter 5: The Placebo Effect	2	T, U	Midterm Sample Test & Review	2	T, U	Chapter 6: Intelligent Machines	3	T, U	Chapter 7: Sibling Relationships	3	T, U	Chapter 8: Multiple Intelligences	3	T, U	Chapter 9: The Art of Graffiti	3	T, U	Final Sample Test & Review	2	T, U
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Examination forms	Paper and pen tests: Correct the mistakes, Fill in the blanks, Write short answers, Write a summary paragraph.																																							
Study and examination requirements	<p><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.</p> <p><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.)</p> <p><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</p>																																							
Reading list	<p>[1] Frazie, L., & Leeming, S. (2013). <i>Lecture ready 3</i>. Oxford: Oxford University Press. References:</p> <p>[2] Frazie, L., & Leeming, S. (2013). <i>Lecture ready 1, 2</i>. Oxford: Oxford University Press.</p>																																							

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

WEEK	P.	Chapter	Listening oriented activities	Speaking oriented activities
WEEK 1	2	ORIENTATION		
WEEK 2	2	<u>Chapter 1</u> New Trends in Marketing Research	Recognizing topic introducing and lectureplan presenting expressions Organizing ideas by outlining	Expressing ideas during a discussion
WEEK 3	2	<u>Chapter 2</u> Business Ethics	Recognizing transition expressions Using symbols and abbreviations	Asking for clarification and elaboration during a discussion
WEEK 4	2	REVIEW		
WEEK 5	2	<u>Chapter 3</u> Trends in Children's Media Use	Recognizing generalization and support expressions	Giving opinions andasking for opinions during a discussion
WEEK 6	2	<u>Chapter 4</u> The Changing Music Industry	Recognizing expressions for clarification or emphasis Organizing notes byusing a split-page format	Expressing interest and asking for elaboration during a discussion
WEEK 7	2	<u>Chapter 5</u> The Placebo Effect	Recognizing cause andeffect expressions Noting causes and effects	Agreeing and disagreeing during a discussion
WEEK 8	2	Sample test correction WRAP-UP AND REVIEW		

MID-TERM EXAMINATION

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

FINAL EXAMINATION

4. Assessment plan

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

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

5. Rubrics (optional)

Date revised: 15 August, 2022

Ho Chi Minh City, 15 August 2022

Head of Department

(Signature)

Nguyễn Huy Cường



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

COURSE SYLLABUS
Course Name: Calculus 1

Course Code: MA001IU

1. General information

Course designation	This course equips students with basic concepts of calculus: limits, continuity, differentiation, and integration. Applications of these concepts are extensively discussed.
Semester(s) in which the course is taught	1, 2
Person responsible for the course	
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lectures, assignments
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 120 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 60 (lectures) Private study including examination preparation, specified in hours ¹ : 60
Credit points	4

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

Required and recommended prerequisites for joining the course	None									
Course objectives	<ol style="list-style-type: none"> 1. To provide students with the main ideas and techniques of calculus. These include limits, continuity, differentiation, and integration. 2. To introduce practical applications of these ideas and techniques, through practical examples taken from many areas of engineering, business, and life sciences. 3. To develop skills in mathematical modelling and problem solving, ability to think logically, and adapt these skills creatively to new situations 									
Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td> CLO1. Have basic knowledge of limits and derivatives (Program outcomes: a) CLO2. Have basic knowledge of definite/indefinite integrals (Program outcomes: a) </td> </tr> <tr> <td>Skill</td> <td> CLO3. Can compute often used limits, can define and compute derivatives (Program outcomes: a, j) CLO4. Can compute standard types of integrals. Use integrals in practical situations (Program outcomes: a, j) </td> </tr> <tr> <td>Attitude</td> <td>CLO5. Confident when dealing with derivatives and integrals. Comfortable with using derivatives and integrals in practical situations. (Program outcome: j, k)</td> </tr> </tbody> </table>		Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Have basic knowledge of limits and derivatives (Program outcomes: a) CLO2. Have basic knowledge of definite/indefinite integrals (Program outcomes: a)	Skill	CLO3. Can compute often used limits, can define and compute derivatives (Program outcomes: a, j) CLO4. Can compute standard types of integrals. Use integrals in practical situations (Program outcomes: a, j)	Attitude	CLO5. Confident when dealing with derivatives and integrals. Comfortable with using derivatives and integrals in practical situations. (Program outcome: j, k)
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Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (4 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Review: Set theory and mapping. Functions and Graphs, Inverse Functions, Exponential and Logarithmic Functions</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Parametric Curves, Limit. One-sided Limits, Laws of Limits</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Evaluating Limits. The Squeeze Theorem. Continuity. 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Examination forms	Written examination																																																
Study and examination requirements	<p>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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																																																

Reading list	J. Stewart, <i>Calculus</i> , Thomson Learning, 7 th edition, 2012.
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2. Learning Outcomes Matrix

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

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

3. Planned learning activities and teaching methods

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

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

4. Assessment plan

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

Final exam (50%)		Q1, Q2 80% Pass		Q3, Q4 70% Pass	Q5 50%
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Note: %Pass: Target that % of students having scores greater than 50 out of 100.

5. Date revised: May 2025

Ho Chi Minh City, 03/06/2025
Department of Mathematics



Nguyen Minh Quan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Computer Science and Engineering

COURSE SYLLABUS

Course Name: Fundamentals of Programming

Course Code: IT149

1. General information

Course name	- (in English): Fundamental of Programming - (in Vietnamese): Lập trình cơ bản
Course designation	Learning the basics of programming
Course type	<input type="checkbox"/> <i>General knowledge</i> <input checked="" type="checkbox"/> <i>Fundamental</i> <input type="checkbox"/> <i>Specialized knowledge</i> <input type="checkbox"/> <i>Internship/Project/Thesis</i> <input type="checkbox"/> <i>Others:</i>
Semester(s) in which the course is taught	2
Person responsible for the course	Assoc. Prof. Nguyen Thi Thuy Loan, Dr.
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 182.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Lecture: 37.5 hours + Laboratory: 25 hours Private study including examination preparation, specified in hours: 120 hours
Credit points	4 credits (Theory: 3 + Practice: 1)

	6.18 ECTS																														
Number of periods	Theory: 45 Practice: 30																														
Required and recommended prerequisites for joining the course																															
Course objectives	This course concentrates on learning the basics of programming languages which is the foundation for further studies. The course enables students to get familiar with the Python programming language. The course covers all basic Python data structures, control flows, module and introduction to OOP in Python																														
Course learning outcomes	<p>CLO 1. Understand programming languages and applications, how applications work</p> <p>CLO 2. Able to write applications using Python</p> <p>CLO 3. Understand basic data structure of Python programming</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>CLO1</td> </tr> <tr> <td>Skill</td> <td>CLO2, CLO3</td> </tr> <tr> <td>Attitude</td> <td>CLO3</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1	Skill	CLO2, CLO3	Attitude	CLO3																						
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Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction to Programming Language</td> <td>3</td> <td>I</td> </tr> <tr> <td>Introduction to Python Programming</td> <td>3</td> <td>I, T</td> </tr> <tr> <td>Data Types and Variables in Python</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Numbers and Operators in Python</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Control Flow: Branching Statements</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Control Flow: Loops</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Lists in Python</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Tuples in Python</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Sets in Python</td> <td>3</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction to Programming Language	3	I	Introduction to Python Programming	3	I, T	Data Types and Variables in Python	3	T, U	Numbers and Operators in Python	3	T, U	Control Flow: Branching Statements	3	T, U	Control Flow: Loops	3	T, U	Lists in Python	3	T, U	Tuples in Python	3	T, U	Sets in Python	3	T, U
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Inheritance and Polymorphism	3	T, U																	
Examination forms	Multiple-choice questions, short-answer questions																		
Study and examination requirements	<p>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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																		
Reading list	Eric Matthes, Python Crash Course: A Hands-On, Project-Based Introduction to Programming, 2nd Edition, No Starch Press, 2019																		

2. Learning Outcomes Matrix (optional)

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

CLO\SLOT	1	2	3	4	5	6
1	x					
2		xx				
3		xx				

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Programming Language	1	Quiz	Lecture	1
2	Introduction to Python Programming	1	Quiz	Lecture	1
3	Data Types and Variables in Python	1	Quiz	Lecture	1
4	Numbers and Operators in Python	2, 3	Quiz, Lab, Midterm	Lecture, Discussion,	1

				In-class Exercise	
5	Control Flow: Branching Statements	2, 3	Quiz, Lab, Midterm	Lecture, Discussion, In-class Exercise	1
6	Control Flow: Loops	2, 3	Quiz, Lab, Midterm	Lecture, Discussion, In-class Exercise	1
7	Lists in Python	2, 3	Quiz, Lab, Midterm	Lecture, Discussion, In-class Exercise	1
8	Tuples in Python	2, 3	Quiz, Lab, Midterm	Lecture, Discussion, In-class Exercise	1
Midterm					
9	Sets in Python	2, 3	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
10	Functions	2, 3	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
11	Modules	2, 3	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
12	File Handling	2, 3	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1

13	Exception Handling	2, 3	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
14	Object and Classes in Python	2, 3	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
15	Inheritance and Polymorphism	2, 3	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
Final					

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Quiz / Assignment (10%)	50%	10%	10%
Labs (20%)	10%	30%	30%
Midterm examination (30%)	30%	30%	30%
Final examination (40%)	10%	30%	30%

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

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

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
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	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.

<p>Influence of context and assumptions</p>	<p>Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.</p>	<p>Identifies own and others' assumptions and several relevant contexts when presenting a position.</p>	<p>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).</p>	<p>Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.</p>
<p>Student's position (perspective, thesis/hypothesis)</p>	<p>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).</p>	<p>Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).</p>	<p>Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.</p>	<p>Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.</p>
<p>Conclusions and related outcomes (implications and</p>	<p>Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed</p>	<p>Conclusion is logically tied to a range of information, including opposing</p>	<p>Conclusion is logically tied to information (because information is chosen to fit the</p>	<p>Conclusion is inconsistently tied to some of the information discussed;</p>

consequences)	evaluation and ability to place evidence and perspectives discussed in priority order.	viewpoints; related outcomes (consequences and implications) are identified clearly.	desired conclusion); some related outcomes (consequences and implications) are identified clearly.	related outcomes (consequences and implications) are oversimplified.
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Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

	enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	effectiveness of the presentation. Language in presentation is appropriate to audience.	support the effectiveness of the presentation. Language in presentation is appropriate to audience.	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	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or

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

Source: Association of American Colleges and Universities

Date revised: April 24, 2025

Ho Chi Minh City, 24/04/2025

Dean of the School of Computer Science and Engineering

(Signature)

Nguyen Van Sinh

ĐỀ CƯƠNG CHI TIẾT MÔN HỌC

Triết học Mác-Lênin (Philosophy Marx – Lenin)

1. Thông tin chung

Tên môn học (tiếng Việt):	Triết học Mác-Lênin
Tên môn học (tiếng Anh):	Philosophy Marx – Lenin
Mã số môn học:	PE015 IU
Thuộc khối kiến thức:	Cơ sở
Số tín chỉ:	3
Số tiết lý thuyết:	30 (trên lớp)
Số tiết thực hành:	15 (trên lớp)
Số tiết tự học:	90 (về nhà)
Giảng viên phụ trách	Khoa Chính trị - Hành chính, ĐHQG-HCM

2. Mục đích/mục tiêu môn học (Course Purposes/Aims)

2.1. Môn học trang bị cho sinh viên những nội dung cơ bản về thế giới quan, phương pháp luận triết học Mác – Lênin.

2.2. Giúp cho sinh viên vận dụng những tri thức về thế giới quan, phương pháp luận triết học triết học Mác – Lênin một cách sáng tạo trong hoạt động nhận thức và thực tiễn, nhằm giải quyết những vấn đề mà đời sống xã hội của đất nước, của thời đại đang đặt ra.

3. Mô tả môn học (Course Outlines)

Môn học trang bị cho sinh viên những kiến thức cơ bản về triết học Mác-Lênin

4. Tài liệu phục vụ học tập:

- Bộ Giáo dục và Đào tạo (2019), *Giáo trình Triết học Mác – Lênin*, 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 Triết học Mác-Lênin*, Nxb. Chính trị quốc gia, Hà Nội.

5. Chuẩn đầu ra môn học (Course Learning Outcomes)

Chuẩn đầu ra	Mô tả	Tiêu chí đánh giá	Mục tiêu môn học	Chuẩn đầu ra CDIO CTĐT	Mức độ giảng dạy (I/T/U)
5.1. Kiến thức					
LO.1	TRIẾT HỌC VÀ VAI TRÒ CỦA TRIẾT HỌC TRONG ĐỜI SỐNG XÃ HỘI	<p>LO.1.1 - Khái lược được triết học, một số khái niệm cơ bản trong triết học</p> <p>LO.1.2 – Nhận biết được sự đối lập giữa chủ nghĩa duy vật và chủ nghĩa duy tâm trong việc giải quyết vấn đề cơ bản của triết học</p> <p>LO.1.3 – Nắm được chủ nghĩa duy vật biện chứng – hình thức phát triển cao nhất của chủ nghĩa duy vật biện chứng</p> <p>LO.1.4 – Nắm rõ được sự ra đời, đối tượng, chức năng và vai trò của triết học Mác - Lênin</p>	2.1	1.1.3	I3
LO.2	CHỦ NGHĨA DUY VẬT BIỆN CHỨNG	<p>LO.2.1- Hiểu rõ vật chất theo quan điểm của chủ nghĩa duy vật biện chứng</p> <p>LO.2.2 – Hiểu rõ ý thức theo quan điểm của chủ nghĩa duy vật biện chứng</p> <p>LO.2.3 – Giải quyết được mối quan hệ giữa vật chất và ý thức theo quan điểm của chủ nghĩa duy vật biện chứng</p> <p>LO.2.4 – Hiểu được phép biện chứng và phép biện chứng duy vật</p>	2.1 2.1 2.1 2.1	1.1.3	T4



		<p>LO.2.5 – Hiểu rõ được hai nguyên lý cơ bản của phép biện chứng duy vật và rút ra ý nghĩa phương pháp luận của từng nguyên lý</p> <p>LO.2.6 – Hiểu rõ được các cặp phạm trù cơ bản của phép biện chứng duy vật và rút ra ý nghĩa phương pháp luận từng cặp phạm trù</p> <p>LO.2.7 - Hiểu rõ được các quy luật cơ bản của cơ bản của phép biện chứng duy vật và rút ra ý nghĩa phương pháp luận từng quy luật</p> <p>LO.2.8 - Hiểu rõ được thực tiễn, nhận thức, vai trò của thực tiễn đối với nhận thức và chân lý</p>	<p>2.1 2.2</p> <p>2.1 2.2</p> <p>2.1 2.2</p> <p>2.1</p>			
LO.3	CHỦ NGHĨA DUY VẬT LỊCH SỬ	<p>LO.3.1 - Hiểu rõ được vai trò của sản xuất vật chất và phương thức sản xuất đối với sự tồn tại và phát triển xã hội</p> <p>LO.3.2 - Hiểu rõ được mối quan hệ biện chứng giữa lực lượng sản xuất và quan hệ sản xuất</p> <p>LO.3.3 - Hiểu rõ được mối quan hệ biện chứng giữa CSHT và KTTT; sự phát triển tự nhiên của các hình thái KT-XH</p> <p>LO.3.4 - Hiểu rõ được giai cấp, đấu tranh giai cấp; dân tộc và mối quan hệ giữa giai cấp, dân tộc và nhân loại</p> <p>LO.3.5 - Hiểu rõ được nhà nước và mạng xã hội</p> <p>LO.3.6 - Hiểu rõ được mối quan hệ biện chứng giữa tồn tại xã hội và ý thức xã hội</p>	<p>2.1 2.2</p>	1.1.3	T4	



		LO.3.7 - Hiểu rõ được con người, bản chất con người; hiện tượng tha hóa và giải phóng con người; mối quan hệ giữa cá nhân và xã hội, vai trò của quần chúng nhân dân			
5.2. Kỹ năng					
LO.4	THỂ HIỆN KHẢ NĂNG KHÁI QUÁT HÓA, TƯ DUY, TRANH LUẬN, PHẢN BIỆN, LÀM VIỆC NHÓM	<p>LO.4.1. Có kỹ năng khái quát hóa để rút ra <i>Từ khóa tri thức</i> đối với mỗi nội dung và tư duy có hệ thống</p> <p>LO.4.2. Có kỹ năng trình bày, thuyết minh, phản biện, tranh luận, hùng biện những tri thức lý luận đang học tập, nghiên cứu dựa trên thực tiễn</p> <p>LO.4.3. Có kỹ năng giao tiếp xã hội, hợp tác và làm việc nhóm, chia sẻ tri thức và kinh nghiệm, khả năng điều hành nhóm làm việc</p>	2.1 2.2	2.1.1 2.3.1 2.4.4 2.5 3.1.5	U4
5.3. Thái độ					
LO.5	THỂ HIỆN Ý THỨC, NHẬN THỨC TRONG VÀ SAU KHI HỌC TẬP	<p>LO.5.1. Có ý thức trách nhiệm bảo vệ tính khoa học, cách mạng, nhân văn của CN Mác – Lênin</p> <p>LO.5.2. Có ý thức, trách nhiệm cá nhân đối với tập thể, cộng đồng</p> <p>LO.5.3. Có nhận thức về sự cần thiết học tập, nghiên cứu suốt đời và vận dụng nó trong cuộc sống.</p>	2.1 2.2	3.1	U3



6. Kế hoạch giảng dạy theo buổi học (Course Plan):

TT (tiết)	Nội dung giảng dạy	LO	Hoạt động dạy và học	Đánh giá
1 (1 tiết)	Giới thiệu về môn học	LO.1, LO.4;	<p>Dạy:</p> <ul style="list-style-type: none"> - Giới thiệu đề cương môn học - Giới thiệu nội dung đề tài thuyết trình nhóm GHW) <p>Học ở lớp:</p> <ul style="list-style-type: none"> - Chia nhóm (5 SV/nhóm) - Giới thiệu nhóm học tập <p>Học ngoài lớp:</p> <ul style="list-style-type: none"> - Chọn đề tài thuyết trình của nhóm (GHW) - Đọc trước tài liệu chương 1. 	
2 (15 tiết)	Chương 1 TRIẾT HỌC VÀ VAI TRÒ CỦA TRIẾT HỌC TRONG ĐỜI SỐNG XÃ HỘI	LO.1; LO.4 LO.5	<p>Dạy:</p> <p>I. TRIẾT HỌC VÀ VẤN ĐỀ CƠ BẢN CỦA TRIẾT HỌC</p> <ol style="list-style-type: none"> 1. Khái lược về triết học 2. Vấn đề cơ bản của triết học 3. Biện chứng và siêu hình <p>II. TRIẾT HỌC MÁC - LÊNIN VÀ VAI TRÒ CỦA TRIẾT HỌC MÁC - LÊNIN TRONG ĐỜI SỐNG XÃ HỘI</p> <ol style="list-style-type: none"> 1. Sự ra đời và phát triển của triết học Mác - Lênin 2. Đối tượng và chức năng của triết học Mác - Lênin 3. Vai trò của triết học Mác - Lênin trong đời sống xã hội và trong sự nghiệp đổi mới ở Việt Nam hiện nay <p>Học ở lớp: Thảo luận và phát biểu trên lớp</p> <p>Học ngoài lớp:</p> <ul style="list-style-type: none"> - Phác thảo nội dung thuyết trình nhóm GHW - Đọc trước tài liệu chương 2. 	Thi giữa kỳ (Quiz)
3 (15 tiết)	Chương 2 CHỦ NGHĨA DUY VẬT BIỆN CHỨNG	LO.2 LO.4 LO.5	<p>Dạy:</p> <p>I. VẬT CHẤT VÀ Ý THỨC</p> <ol style="list-style-type: none"> 1. Vật chất và các hình thức tồn tại của vật chất 2. Nguồn gốc, bản chất và kết cấu của ý thức 3. Mối quan hệ giữa vật chất và ý thức <p>II. PHÉP BIỆN CHỨNG DUY VẬT</p> <ol style="list-style-type: none"> 1. Hai loại hình biện chứng và phép biện chứng duy vật 2. Nội dung của phép biện chứng duy 	Thi giữa kỳ (Quiz) Thi cuối kỳ (FEX)



			<p>vật</p> <p>III. LÝ LUẬN NHẬN THỨC</p> <ol style="list-style-type: none"> 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 4. Các giai đoạn cơ bản của quá trình nhận thức 5. Chân lý <p>Học ở lớp: Thảo luận và phát biểu trên lớp</p> <p>Học ngoài lớp: Đọc trước tài liệu chương 3</p>	
4 (14 tiết)	Chương 3 CHỦ NGHĨA DUY VẬT LỊCH SỬ	LO.3 LO.4 LO.5	<p>Dạy:</p> <p>I. HỌC THUYẾT HÌNH THÁI KINH TẾ - XÃ HỘI</p> <ol style="list-style-type: none"> 1. Sản xuất vật chất là cơ sở của sự tồn tại và phát triển xã hội 2. Biện chứng giữa lực lượng sản xuất và quan hệ sản xuất 3. Biện chứng giữa cơ sở hạ tầng và kiến trúc thượng tầng của xã hội 4. Sự phát triển các hình thái kinh tế - xã hội là một quá trình lịch sử - tự nhiên <p>II. GIAI CẤP VÀ DÂN TỘC 160</p> <ol style="list-style-type: none"> 1. Vấn đề giai cấp và đấu tranh giai cấp 2. Dân tộc 3. Mối quan hệ giai cấp - dân tộc - nhân loại <p>III. NHÀ NƯỚC VÀ CÁCH MẠNG XÃ HỘI</p> <ol style="list-style-type: none"> 1. Nhà nước 2. Cách mạng xã hội <p>IV. Ý THỨC XÃ HỘI</p> <ol style="list-style-type: none"> 1. Khái niệm tồn tại xã hội và các yếu tố cơ bản của tồn tại xã hội 2. Ý thức xã hội và kết cấu của ý thức xã hội <p>V. TRIẾT HỌC VỀ CON NGƯỜI</p> <ol style="list-style-type: none"> 1. Khái niệm con người và bản chất con người 2. Hiện tượng tha hóa con người và vấn đề giải phóng con người 3. Quan hệ cá nhân và xã hội; vai trò của quần chúng nhân dân và lãnh tụ trong lịch sử 4. Vấn đề con người trong sự nghiệp 	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)



			<p>cách mạng ở Việt Nam</p> <p>Học ở lớp: Thảo luận và phát biểu trên lớp</p> <p>Học ngoài lớp: Hoàn thiện bài thuyết trình</p>	
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7. Đánh giá môn học

ST T	Mã	Tên	Mô tả	Tỷ trọng	Hình thức	LO
1	GH W	Thuyết trình nhóm	Thuyết trình nhóm về đề tài đã phân công	15%	Thuyết trình và bản báo cáo nhóm	LO.2 LO.3 LO.4 LO.5
2	Quiz	Bài thi giữa kỳ	Thi theo đề thi chung	20%	Tự luận đề mở	LO.1 LO.2;
3	DIC	Thảo luận, chuyên cần tại lớp (Discussion in Class)	Điểm thảo luận được tính theo phương pháp tương đối. SV có số lần thảo luận tại lớp nhiều nhất sẽ được điểm tối đa, điểm của các bạn khác được tính dựa theo bạn có số lần thảo luận cao nhất.	15%	Phát biểu/đặt câu hỏi trên lớp hoặc phiếu trả lời trong các nghiên cứu tình huống tại lớp	LO.4 LO.5
4	FEX	Thi cuối kỳ	Đề thi bao quát toàn bộ nội dung môn học	50%	Tự luận đề đóng	LO.2; LO.3; LO.4;
			Tổng cộng	100%		

8. Tiêu chí đánh giá chuẩn đầu ra môn học

TT	Chuẩn đầu ra	Nội dung	Phương pháp	Tiêu chí đánh giá
LO.1	Nhận biết được sự đối lập giữa chủ nghĩa duy vật và chủ nghĩa duy tâm trong việc giải quyết vấn đề cơ bản của triết học; vai trò của triết học Mác - Lênin	Chương 1	Thi giữa kỳ (Quiz)	Ngân hàng đề thi của GV



LO.2 LO.4	Nắm rõ nội dung: Vật chất, ý thức và mối quan hệ giữa chúng; các nguyên lý, các quy luật và các phạm trù cơ bản của phép biện chứng duy vật	Chương 2	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)	Tiêu chí đánh giá thuyết trình nhóm Ngân hàng đề thi của GV
LO.3 LO.4	Nhận biết và nắm được nội dung của chủ nghĩa duy vật lịch sử	Chương 3	Thảo luận tại lớp (Discussion in Class) Thi cuối kỳ (FEX)	Tiêu chí đánh giá thuyết trình nhóm, thảo luận tại lớp Ngân hàng đề thi của GV

9. Một số lưu ý khác:

- Khi có các thắc mắc liên quan môn học, sinh viên có thể liên lạc với quản lý Bộ môn Hồ Chí Minh học & Lịch sử Đảng và Khoa Chính trị - Hành chính qua email: daotao.spas@vnuhcm.edu.vn

- Quy định về Bài thuyết trình nhóm GHW

Thành lập nhóm: 5 sinh viên/nhóm. Hạn chót đăng ký đề tài nhóm Quản lý trên forum là Buổi 2 hoặc trực tiếp nộp cho GV buổi 1.

Tuần 4 (buổi thứ 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 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.

TP. Hồ Chí Minh, ngày 07 tháng 02 năm 2020

KT. TRƯỞNG KHOA
PHÓ TRƯỞNG KHOA



TS. Nguyễn Đình Quốc Cường



POLITICAL ECONOMICS OF MARXISM AND LENINISM

1. General Information

-	Course Title:	
+	Vietnamese: Kinh tế chính trị Mác-Lênin	
+	English: Political economics of Marxism and Leninism	
-	Course ID: PE016IU	
-	Course type	
	<input type="checkbox"/> General	<input type="checkbox"/> Fundamental
	<input type="checkbox"/> Specialization (required)	<input type="checkbox"/> Specialization (elective)
	<input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Others :
-	Number of credits: 2	
+	Lecture: 2	
+	Laboratory: 0	
-	Prerequisites:	
-	Parallel Course:	PE015IU: Philosophy of Marxism and Leninism

2. Course Description

Môn học trang bị cho sinh viên những nội dung cốt lõi của Kinh tế chính trị Mác – Lênin, bao gồm: Hàng hóa, thị trường và vai trò của các chủ thể trong nền kinh tế thị trường; sản xuất giá trị thặng dư trong nền kinh tế thị trường; cạnh tranh và độc quyền trong nền kinh tế thị trường; kinh tế thị trường định hướng xã hội chủ nghĩa và các quan hệ lợi ích kinh tế ở Việt Nam; công nghiệp hóa, hiện đại hóa và hội nhập kinh tế quốc tế ở Việt Nam.

3. Textbooks and References

Textbooks:

1. Bộ Giáo dục và Đào tạo (2019), Giáo trình Kinh tế chính trị Mác – Lênin dành cho bậc đại học không chuyên kinh tế chính trị. NXB. Chính trị quốc gia. Hà Nội.

References:

1. Robert, J.R. và Robert F. H. (2003), Lịch sử các học thuyết kinh tế, Bản tiếng Việt, NXB Thống kê.

4. Course Objectives

- Trang bị cho sinh viên những kiến thức cơ bản, cốt lõi của Kinh tế chính trị Mác – Lênin trong bối cảnh phát triển kinh tế của đất nước và thế giới ngày nay. Đảm bảo tính cơ bản, hệ thống, khoa học, cập nhật tri thức mới, gắn với thực tiễn, tính sáng tạo, kỹ năng, tư duy, phẩm chất người học.

- Hình thành tư duy, kỹ năng phân tích, đánh giá và nhận diện bản chất của các quan hệ lợi ích kinh tế trong phát triển kinh tế - xã hội của đất nước góp phần giúp sinh viên xây dựng trách nhiệm xã hội phù hợp, xây dựng lập trường, ý thức hệ tư tưởng Mác – Lênin đối với sinh viên.

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes (*)
L.O.1	Hiểu biết những kiến thức cơ bản, cốt lõi của Kinh tế chính trị Mác – Lênin trong bối cảnh phát triển kinh tế của đất nước và thế giới ngày nay. Đảm bảo tính cơ bản, hệ thống, khoa học, cập nhật tri thức mới, gắn với thực tiễn, tính sáng tạo, kỹ năng, tư duy, phẩm chất người học	d (level 2)

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes (*)
L.O.2	Hình thành tư duy, kỹ năng phân tích, đánh giá và nhận diện bản chất của các quan hệ lợi ích kinh tế trong phát triển kinh tế - xã hội của đất nước góp phần giúp sinh viên xây dựng trách nhiệm xã hội phù hợp, xây dựng lập trường, ý thức hệ tư tưởng Mác – Lênin	e, h (level 2)

6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	Quiz, attendance	30
A2. Midterm assessment	Midterm exam	20
A3. Final assessment	Final exam	50

7. Course Outlines

Theo quy định của Bộ Giáo dục và Đào tạo

Theory

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1	Đối tượng, phương pháp nghiên cứu và chức năng của Kinh tế chính trị Mác - Lênin	L.O.1, L.O.2	Lecture Class discussion	Quiz
2-4	Hàng hóa, thị trường và vai trò của các chủ thể tham gia thị trường	L.O.1	Lecture Class discussion	Quiz
5-7	Giá trị thặng dư của nền kinh tế thị trường	L.O.1, L.O.2	Lecture Class discussion	Quiz
8	Cạnh tranh và độc quyền trong nền kinh tế thị trường	L.O.1, L.O.2	Lecture Class discussion	Quiz
9	MIDTERM			Written exam
10-11	Cạnh tranh và độc quyền trong nền kinh tế thị trường	L.O.1, L.O.2	Lecture Class discussion	Quiz
12-14	Kinh tế thị trường định hướng xã hội chủ nghĩa và các quan hệ lợi ích kinh tế ở Việt Nam	L.O.1, L.O.2	Lecture Class discussion	Quiz
15-16	Công nghiệp hóa, hiện đại hóa và hội nhập kinh tế quốc tế của Việt Nam	L.O.1, L.O.2, L.O.3		

8. Course Policy

- Phải nghiên cứu giáo trình, chuẩn bị các ý kiến hỏi, đề xuất khi nghe giảng. Chuẩn bị thảo luận và đọc, sưu tầm các tư liệu có liên quan đến nội dung của chương.
- Dành thời gian cho việc nghiên cứu trước bài giảng dưới sự hướng dẫn của giảng viên.
- Tham dự các buổi thảo luận, các buổi lên lớp theo quy định.

9. Course Coordinator/ Lecturer

- Department of Civil Engineering:
- Course Coordinator/ Lecturer:
- Email:



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

COURSE SYLLABUS

Course Name: Writing AE2 (Research Paper Writing)

Course Code: **EN011IU**

1. General information

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 Department of English
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, project
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 90 Contact hours (lecture, exercise): 30 Private study including examination preparation, specified in hours ¹ : 60
Credit points	2
Required and recommended prerequisites for joining the course	Students must complete Writing AE1 course

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	<p>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.</p> <p>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.</p>																																				
Course learning outcomes	<p>Upon the successful completion of this course, students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>CLO1. Understand the structure of a research paper and employ appropriate academic language in writing a research paper</td> </tr> <tr> <td>Skill</td> <td>CLO2. Read critically, analyze, and annotate academic articles and journals CLO3. Employ the research writing skills obtained to work on their own paper in their major study.</td> </tr> <tr> <td>Attitude</td> <td>CLO4. Reason around ethical issues in writing research paper and avoid committing plagiarism</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Understand the structure of a research paper and employ appropriate academic language in writing a research paper	Skill	CLO2. Read critically, analyze, and annotate academic articles and journals CLO3. Employ the research writing skills obtained to work on their own paper in their major study.	Attitude	CLO4. Reason around ethical issues in writing research paper and avoid committing plagiarism																												
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Examination forms	Essay writing																																				

Study and examination requirements

Attendance

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.

Assignment (Literature review)

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.

Missed Tests

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.

Class Behaviors

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.

Plagiarism

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

	<p>The rater will review the paper to check if citations or references are provided properly. Penalties due to improper citations or references include:</p> <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> <p>Notes: Part of the test is marked as it is if no plagiarism is detected. Students who plagiarize over 40% <u>twice</u> will be prohibited from sitting the final examination.</p> <p><i>Writing Center (Room 509)</i></p> <p>Students are encouraged to visit the Writing Center or to schedule an appointment for additional help.</p>	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 .
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2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

WEEK	CONTENT—SUGGESTED TASKS	ASSIGNMENT/ HOMEWORK
1	Orientation of the Course Unit 1: The Academic Writing Process Introduction	
2	Unit 1: The Academic Writing Process (Cont.) Thinking about writing processes Distinguishing between academic and personal styles of writing Grammar of academic discourse	HW: Task 10
3	Unit 2: Researching and Writing Recognizing categories and classification The language of classification The structure of a research paper	HW: Task 17
4	Unit 3: Fundamentals & Feedback Exploring comparison and contrast structures The language of comparison and contrast Using comparisons and contrasts to evaluate and recommend	HW: Task 12
5	Unit 3: Fundamentals & Feedback (Cont.) The research paper Identifying a research gap The writing process	Assignment 1: Task 20
6	Unit 4: Definitions, Vocabulary & Clarity The clarity principle The language of definition The place of definition The writing process	HW: Task 15
7	Unit 5: Generalizations, Facts and Honesty Honesty principle The language of generalization	HW: Task 13
8	Unit 5: Generalizations, Facts and Honesty (Cont.) Writing a literature review The writing process Brainstorming and clustering APA 7th Style Guidelines – see https://www.apastyle.org/	Assignment 2: Writing Literature review
MID-TERM EXAMINATION		
9	Unit 6: Seeing Ideas and Sharing Texts Writing about events in time Connecting events Learning about peer reviews	HW: Tasks 12 & 13

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	HW: Tasks 9 & 11
11	Unit 8: Results, Discussion & Relevance What is an argument? The language of argument The Results and Discussion sections Finding an academic voice	HW: Task 9
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	HW: Task 9
13	Unit 10: Creating the Whole Text Structure of the research paper Creating your own research	
14	Unit 10: Creating the Whole Text Plagiarism Creating citations Paraphrase and summary Authorial identity	
15	Course Review	Submitting Literature review
FINAL EXAM		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Class participation and Assignments (30%)	80% Pass	80% Pass	80% Pass	
Midterm exam (30%)	80% Pass		80% Pass	80% Pass
Final exam (40%)	80% Pass		80% Pass	80% Pass

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

5. Rubrics

5.1. Midterm exam sample rubrics (100 points)

TASK 1: 30 points

CATEGORIES	CRITERIA	POINTS	CLO
Category	Farm animals seem to have more complex cognitive and social skills	7.5	CLO 1,2
Sub-category 1	1. Sheep experience stress a. increase stress (when isolated from the flock) b. reduce stress (when seeing familiar sheep faces)	7.5	
Sub-category 2	2. Cows' co-operative partnerships & physiological response on learning something new a. Those learning tasks experience an increase in heart rate (when facing same situation). b. Those not learning tasks do not experience a heart rate increase.	7.5	CLO 1,2
Sub-category 3	3. Pigs' different reactions react differently based on past experience a. avoid the place where they have been shut for long b. go for the place where they were released from quickly.	7.5	CLO 1,2
Total		30	

TASK 2: 70 points

CATEGORIES	CRITERIA	POINTS	CLO
Content	All main points relevant to topic Essay question fully answers	20	CLO 1,3,4
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 1,3,4
Coherence	Paragraphs ordered in a systematic manner based on, for example, importance, priority, etc. Comparison/contrast transitions are properly used.	15	CLO 1,3,4
Style and Tone	Formal writing with full forms Polite writing Academic vocabulary	15	CLO 1,3,4
Total		70	

5.2. Final exam rubrics: 100 points

CATEGORIES	CRITERIA	POINTS	CLO
Content	<ul style="list-style-type: none"> Presenting his/her view on the question clearly and persuasively 	20	CLO 1,3,4
Structure of ideas	<ul style="list-style-type: none"> Introduction with thesis statement, and conclusion with summary and comment Topic sentences well supported with explanations, examples, etc. 	40	CLO 1,3,4
Convincing argumentative techniques, e.g., counterargument		20	CLO 1,3,4
Language use: <i>use vocabulary and grammatical structures</i>		20	CLO 1,3,4
Total		100	

Date revised: 15 August, 2022

Ho Chi Minh City, 15 August 2022

Head of Department

(Signature)

Nguyễn Huy Cường



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

COURSE SYLLABUS

Course Name: Speaking AE2 (Effective Presentations)

Course Code: **EN012IU**

1. General information

Course designation	<i>Giving presentations today becomes a vital skill for students to succeed not only in university but also at work in the future. Speaking AE2, therefore, provides students with the knowledge and skills needed to deliver effective presentations (informative and persuasive presentations).</i>
Semester(s) in which the course is taught	1, 2, 3
Person responsible for the course	Lecturers of Department of English
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, mini presentations
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 90 Contact hours (lecture, exercise): 30 Private study including examination preparation, specified in hours ¹ : 60
Credit points	2
Required and recommended prerequisites for joining the course	Students must complete AE1 courses
Course objectives	Speaking AE2 aims at introducing an training students many aspects of giving a presentation: building up confidence, preparing and planning, using the appropriate language, applying effective visual aids, applying delivery techniques, dealing with questions and responding, performing body language, and so on.

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

Course learning outcomes	<p>Upon the successful completion of this course, students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>CLO1. Understand many aspects of giving a presentation: building up confidence, preparing and planning, using the appropriate language, applying effective visual aids, applying delivery techniques, dealing with questions and responding, performing body language</td> </tr> <tr> <td>Skill</td> <td>CLO2. Prepare and deliver effective, formal, structured presentations that are appropriate to the specific environment and audience.</td> </tr> <tr> <td>Attitude</td> <td>CLO3. Deliver both informative and persuasive speech with confidence</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Understand many aspects of giving a presentation: building up confidence, preparing and planning, using the appropriate language, applying effective visual aids, applying delivery techniques, dealing with questions and responding, performing body language	Skill	CLO2. Prepare and deliver effective, formal, structured presentations that are appropriate to the specific environment and audience.	Attitude	CLO3. Deliver both informative and persuasive speech with confidence																																					
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<p>Reading list</p>	<p>[1] Lowe, S, & Pile, L. (2010). <i>Presenting</i>. Singapore: Cengage Learning [2] Comfort, J. (1997). <i>Effective presentations</i>. Oxford: Oxford University Press [3] Lucas, S. (2014). <i>The art of public speaking</i> (12th edition). New York: McGraw-Hill Education. [4] Harrington, D., & Lebeau, C. (2009). <i>Speaking of speech</i>. Macmillan</p>

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

WEEK	Content	MATERIAL(S) COVERED	ACTIVITIES
WEEK 1	<ul style="list-style-type: none"> • Orientation & Introduction • Needs analysis 	[1] <i>Presenting</i> , p. 5	<p>Students will:</p> <ul style="list-style-type: none"> • receive an introduction to effective presentation • think about their strength and weaknesses in presenting in English • identify and prioritize their immediate and future needs for presenting • share tips on improving weaknesses
WEEK 2	Building up confidence		<p>Student will:</p> <ul style="list-style-type: none"> - give a short speech about themselves to help them overcome initial shyness of standing up and speaking in public
WEEK 3	Unit 1: The first few minutes	<ul style="list-style-type: none"> • <i>Presenting</i>, pp. 8-13 • <i>Effective Presentations</i>: p.7 + video clip; p.13+ video clip 	<p>Students will:</p> <ul style="list-style-type: none"> • learn the importance of making a good first impression • learn useful phrases for greeting the audience, introducing themselves and others, and giving the purpose of their presentation
WEEK 4	Unit 3: Organizing what you want to say	<ul style="list-style-type: none"> • <i>Presenting</i>, pp. 22-27) • <i>Effective Presentations</i>: p.19 + video clip 	<p>Students will:</p> <ul style="list-style-type: none"> • look at the importance of structuring their presentation • learn the useful phrases for outlining their presentation, organizing ideas and moving between different sections of their presentation
WEEK 5	Unit 6: Summarizing and concluding	<ul style="list-style-type: none"> • <i>Presenting</i>, pp. 40-45 • <i>Effective Presentations</i>: p.41 + video clip 	<p>Students will:</p> <ul style="list-style-type: none"> • look at ways of finishing a presentation effectively • learn useful phrases for ending their presentation, summarizing, handing over and thanking

WEEK 6	Unit 2: Using equipment	<ul style="list-style-type: none"> • <i>Presenting</i>, pp. 14-21) • <i>Effective Presentations</i>: p.31 + video clip 	<p>Students will:</p> <ul style="list-style-type: none"> • use equipment and visuals to support their presentation • learn useful phrases for referring to visuals, ensuring their audience can see and expanding on notes
WEEK 7	Delivery techniques: Putting it all together	[2] <i>Effective Presentations</i> : p.50 + video clip Assignment: Topic(s) for group presentation)	<p>Students will:</p> <ul style="list-style-type: none"> • watch a model presentation and discuss do's and don'ts for effective delivery • pick group members and plan their presentations for Week 8
WEEK 8	Group presentations for the instructor's evaluation and advice		<p>Students will:</p> <ul style="list-style-type: none"> • take turn to deliver a presentation on the topic(s) assigned by the instructor • consult the instructor for advice on the mid-term exam preparation
MIDTERM EXAMINATION			
Students will give a five-to-six minute informative presentation on a topic to be determined.			
WEEK 9	Introduction to persuasive speeches	[3] <i>The art of public speaking</i> , Chapter 15 (Handout given by the instructor)	<p>Students will:</p> <ul style="list-style-type: none"> • know types of persuasive speeches • know typical organizations of a persuasive speech
WEEK 10	Methods of persuasion	[3] <i>The art of public speaking</i> , Chapter 16 (Handout given by the instructor)	<p>Students will learn to persuade the audience by:</p> <ul style="list-style-type: none"> • building credibility • using evidence • reasoning • appealing to emotions
WEEK 11	Unit 4: Maintaining interest	<ul style="list-style-type: none"> • <i>Presenting</i>: pp. 28-33) • <i>Effective Presentations</i>: p.25 + video clip) 	<p>Students will:</p> <ul style="list-style-type: none"> • look at maintaining interest through effective delivery • learn useful phrases for clarifying what you mean, checking if the audience is following and involving the audience

WEEK 12	Unit 5: Dealing with problems and questions	<ul style="list-style-type: none"> ○ <i>Presenting</i>: pp. 34-39) ○ <i>Effective Presentations</i>: p.44 (Question time) 	Students will: <ul style="list-style-type: none"> ● learn strategies for coping in unexpected situations ● learn useful phrases for dealing with problems and questions
WEEK 13	Unit 6: Body language	[2] <i>Effective Presentations</i> : pp.36-39	Students will: <ul style="list-style-type: none"> ● practise using language and body language to communicate the message clearly and persuasively ● watch video clips about body language ● learn how to control posture, eye contact, gestures and voice inflection
WEEK 14	Practice	(to be determined by the instructor)	Students will: <ul style="list-style-type: none"> - deliver individual or group presentations (assigned by the instructor)
WEEK 15	Wrap-up and advice	(to be determined by the instructor)	Students will: <ul style="list-style-type: none"> ● consult the instructor for advice on the final exam preparation ● continue to deliver individual or group presentations (if any)
FINAL EXAMINATION			
Students will deliver a seven-to-eight-minute persuasive presentation on a topic to be determined			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
On-going Assessment (30%) (discussion, group presentation, individual presentation, and so on) <i>(It is requested that lecturers collect students' scripts or any type of evidence of their participation for possible fact check).</i>	80% Pass	80% Pass	80% Pass
Midterm exam (30%) (Students will give a five-to-six-minute informative presentation on a topic to be determined)	80% Pass	80% Pass	80% Pass
Final exam (40%) (Students will deliver a seven-to-eight-minute persuasive presentation on a topic to be determined.)	80% Pass	80% Pass	80% Pass

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

5. Rubrics & Marksheets

5.1. Midterm exam rubrics and marksheets

	Very Poor	Poor	Average	Good	Excellent
Pronunciation, Voice Techniques (Pauses, Volume, Speed Change, Stress, Tone, Etc)	<ul style="list-style-type: none"> - Mumbles, often mispronounces, very difficult to understand. - Dead person talking, voice to text software does better 	<ul style="list-style-type: none"> - Slurred speech, mispronounces some words. Difficult to understand. - Quiet, monotone, sing/song, little or no expression, boring. 	<ul style="list-style-type: none"> - Clear voice, few pronunciation errors. Some slurring Most can understand the presentation - Some use of voice to show interest 	<ul style="list-style-type: none"> - Crisp, clear voice, correct, precise pronunciation, all can understand. - proper volume; steady rate; enthusiasm; confidence 	<ul style="list-style-type: none"> - Native like
Grammar & Vocabulary (Usage And Appropriateness For Audience)	<ul style="list-style-type: none"> - Frequent grammar or spelling errors - Inappropriate level for the audience, Misuse vocabulary 	<ul style="list-style-type: none"> - Noticeable Errors - Often too simple or sophisticated, inconsistent. Some vocabulary incorrectly used 	<ul style="list-style-type: none"> - Minor errors - Generally appropriate, little variation or creativity 	<ul style="list-style-type: none"> - No errors, but simple language - Always appropriate for the audience. Excellent use of vocabulary 	<ul style="list-style-type: none"> - No errors. Excellent use of grammar to support ideas - Creative use of language
Body Language, Gestures, Eye Contact (Turns back to audience and reads screen – 0)	<ul style="list-style-type: none"> - Dead person on stage - Almost no eye contact, reads notes/screen 	<ul style="list-style-type: none"> - Excessive movement or many distracting gestures - Occasionally eye contact, mostly reads notes/screen 	<ul style="list-style-type: none"> - Some distracting gestures, and some movement and useful gestures - Generally maintains eye contact frequently reads notes/screen 	<ul style="list-style-type: none"> - No distracting gestures. Body language supports speech - Excellent eye contact, seldom uses notes 	<ul style="list-style-type: none"> - Excellent use of body language - Constant eye contact, no use of notes
Organization: Intro, Main, Ending, Coherence (see RATING CHECKLIST)	<ul style="list-style-type: none"> - Difficult to follow as disorganized 	<ul style="list-style-type: none"> - Generally follows outline, poor introduction or conclusion. 	<ul style="list-style-type: none"> - Follows outline, material generally well organized. Some use of transitions and linkage of ideas. Conclusion acceptable 	<ul style="list-style-type: none"> - Follows outline, material well organized. - Ideas clearly linked. Some use of transitions 	<ul style="list-style-type: none"> - Excellent, clear linkage of ideas. - Good transitions Arouses interest in Introduction, and summarizes clearly main points in conclusion
Content: Relevant/ Interesting/ Accurate	<ul style="list-style-type: none"> - Several errors or lacks critical information 	<ul style="list-style-type: none"> - Some errors and has irrelevant information 	<ul style="list-style-type: none"> - Information is generally accurate, minor errors, generally meets needs of the audience 	<ul style="list-style-type: none"> - Accurate information, related to needs of audience 	<ul style="list-style-type: none"> - No errors, answers all needs of the audience
Visual Aids: Appropriate, Clear (Movies, sound – 0)	<ul style="list-style-type: none"> - Slides consist of full paragraphs of text, no or superfluous graphics - Tiny font 	<ul style="list-style-type: none"> - Slides have full sentences and occasional superfluous graphics, Difficult to read 	<ul style="list-style-type: none"> - Slides have short phrases, Graphics relate to text and presentation. Easily read 	<ul style="list-style-type: none"> - Attractive, informative graphics, only key words, easily understood, Good use of masking 	<ul style="list-style-type: none"> - Professional quality, Excellent use of visual, no unrelated graphics, easily read, supports presentation
Overall effectiveness	<ul style="list-style-type: none"> - Ineffective, alienated audience 	<ul style="list-style-type: none"> - Little positive effect or exchange of info.. Audience bored 	<ul style="list-style-type: none"> - Audience learned something, no change in attitude 	<ul style="list-style-type: none"> - Audience generally positive and learned from presentation 	<ul style="list-style-type: none"> - Audience was kept interested and would remember key points



ACADEMIC YEAR 2021 - 2022

DATE: _____

Student name : _____ Student ID : _____

Topic : _____

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

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

Organization:

- | | Yes | No |
|--|--------------------------|--------------------------|
| A. Introduction | | |
| a. Greeting, name, position (<i>Good morning ladies and gentlemen. My name is __. I'm a __</i>) | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Purpose/ Objective (<i>The purpose of this talk is to __</i>) | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Connect with the audience (<i>I can see that all of you love to __</i>) | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Outline/ Main part (<i>I've divided my presentation into __ parts</i>) | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Questions (<i>Should you have any questions, please save them until the end of my presentation</i>) | <input type="checkbox"/> | <input type="checkbox"/> |
| B. Body (<i>Transitions: Let's start with __/ That brings me to __/ Firstly, Secondly, Next, Lastly</i>) | <input type="checkbox"/> | <input type="checkbox"/> |
| C. Ending | | |
| a. Signaling the end (<i>That brings me to the end of my presentation</i>) | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Summary (<i>Let me just run over the key points again</i>) | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Closing (<i>Thank you very much for your attention</i>) | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Inviting questions (<i>I'd be glad to answer any questions you might have</i>) | <input type="checkbox"/> | <input type="checkbox"/> |

Examiner :

5.2.Final exam rubrics and marksheets

	Very Poor	Poor	Average	Good	Excellent
Pronunciation, Voice Techniques (Pauses, Volume, Speed Change, Stress, Tone, etc.)	<ul style="list-style-type: none"> Mumbles, often mispronounces, very difficult to understand. Dead person talking, voice to text software does better 	<ul style="list-style-type: none"> Slurred speech mispronounces some words. Difficult to understand. Quiet, monotone, sing/song, little or no expression, boring. 	<ul style="list-style-type: none"> Clear voice, few pronunciation errors. Some slurring Most can understand the presentation Some use of voice to show interest 	<ul style="list-style-type: none"> Crisp, clear voice, correct, precise pronunciation, all can understand. Proper volume; steady rate; enthusiasm; confidence 	<ul style="list-style-type: none"> Native like
Grammar & Vocabulary (Usage and Appropriateness for Audience)	<ul style="list-style-type: none"> Frequent grammar or spelling errors Inappropriate level. for the audience, Misuse vocabulary 	<ul style="list-style-type: none"> Noticeable Errors Often too simple or sophisticated, inconsistent. Some vocabulary incorrectly used 	<ul style="list-style-type: none"> Minor errors Generally appropriate, little variation or creativity 	<ul style="list-style-type: none"> No errors, but simple language Always appropriate for the audience. Excellent use of vocabulary 	<ul style="list-style-type: none"> No errors. Excellent use of grammar to support ideas Creative use of language
Body Language: Posture, Gestures, Eye contact, Facial expression (Turns back to audience and reads screen – 0)	<ul style="list-style-type: none"> Dead person on stage Almost no eye contact, reads notes/screen 	<ul style="list-style-type: none"> Excessive movement or many distracting gestures Occasionally eye contact, mostly reads notes/screen 	<ul style="list-style-type: none"> Some distracting gestures, and some movement and useful gestures Generally maintains eye contact frequently reads notes/screen 	<ul style="list-style-type: none"> No distracting gestures. Body language supports speech Excellent eye contact, seldom uses notes 	<ul style="list-style-type: none"> Excellent use of body language Constant eye contact, no use of notes
Organization: Intro, Main, Ending, Coherence (see RATING CHECKLIST)	<ul style="list-style-type: none"> Difficult to follow as disorganized 	<ul style="list-style-type: none"> Generally follows outline, poor introduction or conclusion. 	<ul style="list-style-type: none"> Follows outline, material generally well organized. Some use of transitions and linkage of ideas. Conclusion acceptable 	<ul style="list-style-type: none"> Follows outline, material well organized. Ideas clearly linked. Some use of transitions 	<ul style="list-style-type: none"> Excellent, clear linkage of ideas. Good transitions Arouses interest in Introduction, and summarizes clearly main points in conclusion
Content: Relevant/Accurate, Informative and Persuasive	<ul style="list-style-type: none"> Several errors or lacks critical information 	<ul style="list-style-type: none"> Some errors and has irrelevant information Just focus on giving information 	<ul style="list-style-type: none"> Information is generally accurate, minor errors Give reasons with little or no emphasis on persuasion 	<ul style="list-style-type: none"> Accurate information, related to needs of audience Give frequent emphasis on persuasion 	<ul style="list-style-type: none"> No errors, answers all needs of the audience Persuade the audience well
Visual Aids: Appropriateness, Clarity (Use of video clip exceeding 20 seconds – 0)	<ul style="list-style-type: none"> Slides consist of full paragraphs of text, no or superfluous graphics Tiny font 	<ul style="list-style-type: none"> Slides have full sentences and occasional superfluous graphics, Difficult to read 	<ul style="list-style-type: none"> Slides have short phrases; Graphics relate to text and presentation. Easily read 	<ul style="list-style-type: none"> Attractive, informative graphics, only key words, easily understood, good use of masking 	<ul style="list-style-type: none"> Professional quality, Excellent use of visual, no unrelated graphics, easily read, supports presentation
Question response	<ul style="list-style-type: none"> Welcomes the question 	<ul style="list-style-type: none"> Listens carefully, doesn't interrupt 	<ul style="list-style-type: none"> Thinks before answering Clarifies, rephrases as needed 	<ul style="list-style-type: none"> Answers correctly and briefly 	<ul style="list-style-type: none"> Checks to see if questioner is satisfied



ACADEMIC YEAR 2021 - 2022

DATE: _____

Student name : Student ID :
Topic :

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

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

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

Organization:

Yes No

A. Introduction

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

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

C. Ending

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

Examiner : _____

Date revised: 15 August, 2022

Ho Chi Minh City, 15 August 2022

Head of Department

(Signature)

Nguyễn Huy Cường



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

COURSE SYLLABUS
Course Name: Calculus 2

Course Code: MA003IU

1. General information

Course designation	This course is a continuation of Calculus 1. Its aim is to equip student with basic concepts of sequence, series, vector functions, functions of several variables, multiple integrals and their applications
Semester(s) in which the course is taught	1, 2
Person responsible for the course	<i>Assoc. Prof. Mai Duc Thanh, Assoc. Prof. Tran Vu Khanh, Dr. Nguyen Minh Quan, Dr. Nguyen Anh Tu, Dr. Ta Quoc Bao.</i>
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lectures, assignments
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 120 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 60 (lectures) Private study including examination preparation, specified in hours ¹ : 60
Credit points	4
Pre-courses	Calculus 1

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

Course objectives	<ol style="list-style-type: none"> 1. To provide students with the main ideas and techniques of calculus. These include sequences, series, functions of several variables, optimal problems, multiple integrals, vector calculus. 2. To introduce practical applications of these ideas and techniques, through practical examples taken from many areas of engineering, business, and life sciences. 3. To develop skills in mathematical modeling and problem solving, ability to think logically, and adapt these skills creatively to new situations 								
Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td> <p>CLO1. Have basic knowledge of series, functions of several variables, multiple integrals (Program outcomes: a)</p> <p>CLO2. Have basic knowledge of vector calculus (Program outcomes: a)</p> </td> </tr> <tr> <td>Skill</td> <td> <p>CLO3. Can compute partial derivatives, multiple integral (Program outcomes: a, j)</p> <p>CLO4. Can show the convergence of a sequence and a series and use power series to simplify computation. Can show the optimal problem using partial derivatives, can find the volume of an object in higher dimension by using the multiple integrals (Program outcomes: i, h)</p> </td> </tr> <tr> <td>Attitude</td> <td> <p>CLO5. Confident when dealing with partial derivatives, multiple integrals. Comfortable with using partial derivatives and multiple integrals in practical situations. (Program outcome: j, k)</p> </td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	<p>CLO1. Have basic knowledge of series, functions of several variables, multiple integrals (Program outcomes: a)</p> <p>CLO2. Have basic knowledge of vector calculus (Program outcomes: a)</p>	Skill	<p>CLO3. Can compute partial derivatives, multiple integral (Program outcomes: a, j)</p> <p>CLO4. Can show the convergence of a sequence and a series and use power series to simplify computation. Can show the optimal problem using partial derivatives, can find the volume of an object in higher dimension by using the multiple integrals (Program outcomes: i, h)</p>	Attitude	<p>CLO5. Confident when dealing with partial derivatives, multiple integrals. Comfortable with using partial derivatives and multiple integrals in practical situations. (Program outcome: j, k)</p>
Competency level	Course learning outcome (CLO)								
Knowledge	<p>CLO1. Have basic knowledge of series, functions of several variables, multiple integrals (Program outcomes: a)</p> <p>CLO2. Have basic knowledge of vector calculus (Program outcomes: a)</p>								
Skill	<p>CLO3. Can compute partial derivatives, multiple integral (Program outcomes: a, j)</p> <p>CLO4. Can show the convergence of a sequence and a series and use power series to simplify computation. Can show the optimal problem using partial derivatives, can find the volume of an object in higher dimension by using the multiple integrals (Program outcomes: i, h)</p>								
Attitude	<p>CLO5. Confident when dealing with partial derivatives, multiple integrals. Comfortable with using partial derivatives and multiple integrals in practical situations. (Program outcome: j, k)</p>								

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (4 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Sequences and Convergence</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Series</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Tests for Convergence</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Power series</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Representations of Functions as Power series</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Taylor and Maclaurin series</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Vector Functions and Space Curves, Limit and continuity of vector functions</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Derivatives and Integrals of vector functions, Length of space curves</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Functions of Several Variables, Limits and Continuity</td> <td>1</td> <td>I,T</td> </tr> <tr> <td>Partial Derivatives, Tangent Plane and Linear Approximations</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Chain Rules, Directional Derivatives and Gradient</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Maximum and Minimum Values of Functions of two variables</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Lagrange Multipliers and Applications</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Double Integrals in Rectangles, Iterated Integrals</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Double, Triple Integrals in General regions and Applications</td> <td>2</td> <td>T,U</td> </tr> </tbody> </table>	Topic	Weight	Level	Sequences and Convergence	1	I, T	Series	1	I, T	Tests for Convergence	1	T, U	Power series	1	T, U	Representations of Functions as Power series	1	T, U	Taylor and Maclaurin series	1	T, U	Vector Functions and Space Curves, Limit and continuity of vector functions	1	I, T	Derivatives and Integrals of vector functions, Length of space curves	1	T, U	Functions of Several Variables, Limits and Continuity	1	I,T	Partial Derivatives, Tangent Plane and Linear Approximations	1	T, U	Chain Rules, Directional Derivatives and Gradient	1	T, U	Maximum and Minimum Values of Functions of two variables	1	T, U	Lagrange Multipliers and Applications	1	T, U	Double Integrals in Rectangles, Iterated Integrals	1	I, T	Double, Triple Integrals in General regions and Applications	2	T,U
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Double, Triple Integrals in General regions and Applications	2	T,U																																															
Examination forms	Written examination																																																
Study and examination requirements	<p>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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																																																
Reading list	J. Stewart, <i>Calculus</i> , Thomson Learning, 7 th edition, 2012.																																																

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

Week	Topics	CLO	Assessment	Teaching and Learning activities
1	Sequences, Series, The Integral Test and Estimates Sums, The comparison Tests	2, 4	HW	Lectures and Quiz
2	Alternating Series, Absolute Convergence and the Ratio and Roots Tests, Strategy for Testing Series	2, 4	HW	Lectures and Quiz
3	Power Series, Representations of Functions as Power Series, Taylor & Maclaurin Series, Applications of Taylor Polynomials	4, 5	Quiz	Lectures and Quiz
4	3D Coordinate Systems, Vectors, The Dot Product, The Cross Product, Equations of Lines and Planes, Functions of Surface.	2, 4	HW	Lectures and Quiz
5	Vector Functions and Space Curves, Derivatives and Integrals of	4, 5	HW	Lectures and Quiz

	Vector Functions, Arc Length, Parametric Surfaces			
6	Functions of Several Variables, Limit and Continuity,	2, 4, 5	Quiz	Lectures and Quiz
7	Partial Derivatives, Tangent Planes and Linear Approximations,	3, 5	HW	Lectures and Quiz
8	Chain Rule, Directional Derivatives and Gradient Vectors,	3, 5	HW	Lectures and Quiz
Midterm Exam				
9	Maximum and Minimum Values, Lagrange Multipliers	2, 4	HW	Lectures and Quiz
10	Double Integrals over Rectangles, Iterated Integrals, Double Integrals over General Regions	2, 4	HW	Lectures and Quiz
11	Double Integrals in Polar Coordinates, Application of Double Integrals.	4, 5	HW	Lectures and Quiz
12	Triple Integrals, Triple Integrals in Cylindrical and Spherical Coordinates. Change of Variables in Multiple Integrals	2, 4	Quiz	Lectures and Quiz
13	Vector Fields, Line Integrals, the Fundamental Theorem for Line Integrals	4, 5	HW	Lectures and Quiz
14	Green's Theorem, Curl and Divergence, Surface Integrals	2, 4, 5	HW	Lectures and Quiz
15	Stokes' Theorem, Divergence Theorem.	1, 2, 3, 4,	Exercises	
Final Exam				

4. Assessment plan

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

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

5. Date revised: May 2025

Ho Chi Minh City, 03/06/2025
Department of Mathematics

Nguyen Minh Quan



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

COURSE SYLLABUS
Course Name: Linear Algebra

Course Code: MA033IU

1. General information

Course designation	The aim of this course is to provide students with the concepts and techniques to solve linear systems of equations, matrices, determinants, vector spaces, linear transformation, eigenvalues and eigenvectors.
Semester(s) in which the course is taught	1, 2, 3
Person responsible for the course	<i>Associate Prof. Trần Vũ Khanh</i>
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, assignment, quiz
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 90 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 Private study including examination preparation, specified in hours ¹ : 45
Credit points	3

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

Required and recommended prerequisites for joining the course	None																					
Course objectives	The purpose of this course is to provide students with basic knowledge of linear algebra, ability to analyze the axiomatic structure of a modern mathematical subject and learn to construct simple proofs, as well as to solve problems that apply Linear Algebra to IT and Engineering and other areas.																					
Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <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 basic knowledge of Linear Algebra. CLO2. Analyze the axiomatic structure of a modern mathematical subject and learn to construct simple proofs.</td> </tr> <tr> <td>Skill</td> <td>CLO3. Construct models that apply Linear Algebra to IT, Financial Engineering and other areas</td> </tr> <tr> <td>Attitude</td> <td>CLO4. Form life-long learning attitude</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Apply basic knowledge of Linear Algebra. CLO2. Analyze the axiomatic structure of a modern mathematical subject and learn to construct simple proofs.	Skill	CLO3. Construct models that apply Linear Algebra to IT, Financial Engineering and other areas	Attitude	CLO4. Form life-long learning attitude													
Competency level	Course learning outcome (CLO)																					
Knowledge	CLO1. Apply basic knowledge of Linear Algebra. CLO2. Analyze the axiomatic structure of a modern mathematical subject and learn to construct simple proofs.																					
Skill	CLO3. Construct models that apply Linear Algebra to IT, Financial Engineering and other areas																					
Attitude	CLO4. Form life-long learning attitude																					
Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction of linear systems and matrices</td> <td>3</td> <td>I, T</td> </tr> <tr> <td>Determinants</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Vector spaces</td> <td>3</td> <td>I, T</td> </tr> <tr> <td>Inner product spaces</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Linear Transformation</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Eigenvalues and eigenvectors</td> <td>2</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction of linear systems and matrices	3	I, T	Determinants	2	T, U	Vector spaces	3	I, T	Inner product spaces	3	T, U	Linear Transformation	2	T, U	Eigenvalues and eigenvectors	2	T, U
Topic	Weight	Level																				
Introduction of linear systems and matrices	3	I, T																				
Determinants	2	T, U																				
Vector spaces	3	I, T																				
Inner product spaces	3	T, U																				
Linear Transformation	2	T, U																				
Eigenvalues and eigenvectors	2	T, U																				
Examination forms	Written examination																					

Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	1. B. Kolman and David R. Hill, Elementary Linear Algebra with Applications, 9th edition, Prentice Hall, 2008 2. E. Kreyszig, Advanced Engineering Mathematics, 10th edition, John Wiley & Sons, 2011. 3. B. Kolman and David R. Hill, Introductory Linear Algebra: An Applied First Course 8th edition, Prentice Hall, 2004 4. T.S. Shores, Applied Linear Algebra and Matrix Analysis, Springer, 2007

2. Learning Outcomes Matrix

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

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

The levels of the CLO are based on the Bloom taxonomy (levels from 1-6).

3. Planned learning activities and teaching methods

Week	Topics	CLO	Assessment	Teaching and Learning activities
1	Introduction to linear systems and matrices (1)	1,2		Lectures
2	Introduction to linear systems and matrices (2)	1,2		Lectures and discussion
3	Introduction to linear systems and matrices (3)	1,2	HW1/ Quiz 1	Lectures, exercises /homework
4	Determinants (1)	1,2,3		Lectures

5	Determinants (2)	1,2,3	HW2	Lectures, exercises and discussion
6	Vector spaces (1)	1,2,3		Lectures
7	Vector spaces (2)	1,2,3		Lectures and exercises
Midterm Exam				
8	Inner Product Spaces (1)	1,2,3	HW3/ Quiz 2	Lectures and exercises /homework
9	Inner Product Spaces (2)	1,2,3		Lectures
10	Linear Transformation (1)	1,2,3		Lectures and exercises
11	Linear Transformation (2)	1,2,3	HW4	Lectures and discussion /homework
12	Eigenvalues and eigenvectors (1)	1,2,3		Lectures
13	Eigenvalues and eigenvectors (2)	1,2,3	HW5/ Quiz 3	Lectures and exercises /homework
14	Eigenvalues and eigenvectors (3)	1,2,3,4		Lectures
15	Review for final exam	1,2,3,4	HW6	Exercises and discussion
Final Exam		1,2,3,4		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class exercises/ quizzes (10%)	Exercises/Qz1 80% Pass	Exercises/Qz 2 80% Pass	Exercises/Qz 3 80% Pass	Exercises 80% Pass
Homework exercises (20%)	HW1->HW6 70% Pass	HW1->HW6 70%	H2->HW6, 65% Pass	HW6 65% Pass
Midterm exam (30%)	Q1 80% Pass	Q2, Q3 80% Pass	Q4 70% Pass	Q5 60% Pass
Final exam (40%)	Q1 80% Pass	Q2 80% Pass	Q3, Q4 70% Pass	Q5 60% Pass

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

5. Date revised: May 2025

Ho Chi Minh City, 03/06/2025
Department of Mathematics

A handwritten signature in blue ink, appearing to read 'N. Minh Quan', written in a cursive style.

Nguyen Minh Quan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Computer Science and Engineering

COURSE SYLLABUS

Course Name: Object-Oriented Programming

Course Code: IT069

1. General information

Course name	- (in English): Object-Oriented Programming - (in Vietnamese): Lập trình hướng đối tượng
Course designation	This subject introduces students to the object-oriented programming from basic notions to professional principles for designing an object-oriented software.
Course type	<input type="checkbox"/> <i>General knowledge</i> <input checked="" type="checkbox"/> <i>Fundamental</i> <input type="checkbox"/> <i>Specialized knowledge</i> <input type="checkbox"/> <i>Internship/Project/Thesis</i> <input type="checkbox"/> <i>Others:.....</i>
Semester(s) in which the course is taught	3
Person responsible for the course	Dr. Tran Thanh Tung
Language	English
Relation to curriculum	Compulsory (all programs)
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 182.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Lecture: 37.5 hours + Laboratory: 25 hours

	Private study including examination preparation, specified in hours: 120 hours									
Credit points	4 credits (Theory: 3 + Practice: 1) 6.18 ECTS									
Number of periods	Theory: 45 Practice: 30									
Required and recommended prerequisites for joining the course	Recommended : Fundamentals of programming									
Course objectives	Introduction to object-oriented programming and design. Topics include core terminologies and basic design principles of object-oriented programming such as classes, objects, abstraction, encapsulation, inheritance, polymorphism, the SOLID design principles, and design patterns									
Course learning outcomes	<p>CLO 1. Explain and use concepts in object-oriented programming including classes, objects, abstraction, encapsulation, inheritance, and polymorphism.</p> <p>CLO 2. Implement an object-oriented solution in JAVA programming language.</p> <p>CLO 3. Analyze design principles and design patterns in object-oriented programming</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>CLO1</td> </tr> <tr> <td>Skill</td> <td>CLO2, CLO3</td> </tr> <tr> <td>Attitude</td> <td>CLO2</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1	Skill	CLO2, CLO3	Attitude	CLO2	
Competency level	Course learning outcome (CLO)									
Knowledge	CLO1									
Skill	CLO2, CLO3									
Attitude	CLO2									
Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction to Java</td> <td>3</td> <td>I</td> </tr> <tr> <td>Introduction to Object-Oriented Programming</td> <td>3</td> <td>I, T</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction to Java	3	I	Introduction to Object-Oriented Programming	3	I, T
Topic	Weight	Level								
Introduction to Java	3	I								
Introduction to Object-Oriented Programming	3	I, T								

	Classes and Objects	3	T
	Inheritance and composition	3	T
	Polymorphism	3	T
	Design with interfaces and abstract classes	3	T
	Building Objects	3	T
	Exception handling	3	T
	Generic classes and methods	3	T
	Introduction to SOLID principles Single responsibility principle	3	T, U
	Open/closed principle	1.5	T, U
	Liskov substitution principle	1.5	T, U
	Interface segregation principle	1.5	T, U
	Dependency inversion principle	1.5	T, U
	Reusing Designs Through Design Patterns	6	T, U
Examination forms	Short-answer questions		
Study and examination requirements	<p>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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>		
Reading list	<ol style="list-style-type: none"> 1. Paul J. Deitel (Author), Harvey Deitel (Author), Java How To Program, 11th Edition, Prentice Hall, 2017 2. Matt Weisfeld, The Object-Oriented Thought Process, 3rd Edition, Addison-Wesley, 2009 3. Erich Gamma, Richard Helm, Ralph Johnson and John Vlissides, Design Patterns: Elements of Reusable Object-Oriented Software, Addison-Wesley Professional, 1994 4. Eric Freeman, Bert Bates, Kathy Sierra and Elisabeth Robson, Head First Design Patterns: A Brain-Friendly Guide, O'Reilly Media, 2004 		

2. Learning Outcomes Matrix

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

	SLO					
CLO	1	2	3	4	5	6
1	xx					
2		xx				x
3		xxx				x

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Java	1	Quiz	Lecture	[1]
2	Introduction to Object-Oriented Programming	1	Quiz	Lecture, Discussion	[1,2]
3	Classes and Objects	2	Quiz, Lab, Midterm	Lecture, Discussion, In-class exercises	[1,2]
4	Inheritance and composition	2	Quiz, Lab, Midterm	Lecture, Discussion, In-class exercises	[1,2]
5	Polymorphism	2	Quiz, Lab, Midterm	Lecture, Discussion, In-class exercises	[1,2]
6	Design with interfaces and abstract classes	2,3	Quiz, Lab, Midterm	Lecture, Discussion, In-class exercises	[1,2]
7	Building Objects	2,3	Quiz, Lab, Midterm	Lecture, Discussion, In-class exercises	[1,2]
8	Exception handling	1,2	Quiz	Lecture	[1]

9	Midterm				
10	Generic classes and methods	2,3	Quiz, Lab, Final	Lecture, Discussion, In-class exercises	[1,2]
11	Introduction to SOLID principles Single responsibility principle	2,3	Quiz, Project, Final	Lecture, Discussion, In-class exercises	[1,3,4]
12	Open/closed principle Lisko substitution principle	2,3	Quiz, Project, Final	Lecture, Discussion, In-class exercises	[1,3,4]
13	Interface segregation principle Dependency inversion principle	2,3	Quiz, Project, Final	Lecture, Discussion, In-class exercises	[1,3,4]
14	Reusing Designs Through Design Patterns, part 1	2,3	Quiz, Project, Final	Lecture, Discussion, In-class exercises	[1,3,4]
15	Reusing Designs Through Design Patterns, part 2	2,3	Quiz, Project, Final	Lecture, Discussion, In-class exercises	[1,3,4]
16	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Quiz (5%)	10%		20%
Labs (10%)	30%	30%	
Midterm examination (30%)	50%	40%	
Projects/Presentations/ Report (15%)	10%		30%
Final examination (40%)		30%	50%

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.

<p>Influence of context and assumptions</p>	<p>Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.</p>	<p>Identifies own and others' assumptions and several relevant contexts when presenting a position.</p>	<p>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).</p>	<p>Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.</p>
<p>Student's position (perspective, thesis/hypothesis)</p>	<p>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).</p>	<p>Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).</p>	<p>Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.</p>	<p>Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.</p>
<p>Conclusions and related outcomes (implications and</p>	<p>Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed</p>	<p>Conclusion is logically tied to a range of information, including opposing</p>	<p>Conclusion is logically tied to information (because information is chosen to fit the</p>	<p>Conclusion is inconsistently tied to some of the information discussed;</p>

consequences)	evaluation and ability to place evidence and perspectives discussed in priority order.	viewpoints; related outcomes (consequences and implications) are identified clearly.	desired conclusion); some related outcomes (consequences and implications) are identified clearly.	related outcomes (consequences and implications) are oversimplified.
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Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

	enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	effectiveness of the presentation. Language in presentation is appropriate to audience.	support the effectiveness of the presentation. Language in presentation is appropriate to audience.	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	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or

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

Source: Association of American Colleges and Universities

Date revised: April 24, 2025

Ho Chi Minh City, 24/04/2025

Dean of the School of Computer Science and Engineering

(Signature)

Nguyen Van Sinh



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.

<p>Course objectives</p>	<p>The overarching aims of this course are to:</p> <ul style="list-style-type: none"> • 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. 									
<p>Course learning outcomes</p>	<p>Upon the successful completion of this course, students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td> <p>CLO1. Apply appropriate legal knowledge in the Vietnamese legal system to solve legal issues in various social contexts for a fair sustainable lifelong being.</p> <p>CLO1.1. Apply general knowledge on state and law to solve legal issues in various social contexts for a fair sustainable lifelong being.</p> <p>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.</p> </td> </tr> <tr> <td>Skill</td> <td> <p>CLO2. Communicate knowledge in the Vietnamese legal system to encourage people to raise their legal rights aiming for fair social/cultural moves.</p> <p>CLO3. Integrate ICTs to solve legal issues in various social contexts.</p> </td> </tr> <tr> <td>Attitude</td> <td> <p>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.</p> <p>CLO5. Respond to the base for coexistence in various social contexts.</p> </td> </tr> </tbody> </table>		Competency level	Course learning outcome (CLO)	Knowledge	<p>CLO1. Apply appropriate legal knowledge in the Vietnamese legal system to solve legal issues in various social contexts for a fair sustainable lifelong being.</p> <p>CLO1.1. Apply general knowledge on state and law to solve legal issues in various social contexts for a fair sustainable lifelong being.</p> <p>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.</p>	Skill	<p>CLO2. Communicate knowledge in the Vietnamese legal system to encourage people to raise their legal rights aiming for fair social/cultural moves.</p> <p>CLO3. Integrate ICTs to solve legal issues in various social contexts.</p>	Attitude	<p>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.</p> <p>CLO5. Respond to the base for coexistence in various social contexts.</p>
Competency level	Course learning outcome (CLO)									
Knowledge	<p>CLO1. Apply appropriate legal knowledge in the Vietnamese legal system to solve legal issues in various social contexts for a fair sustainable lifelong being.</p> <p>CLO1.1. Apply general knowledge on state and law to solve legal issues in various social contexts for a fair sustainable lifelong being.</p> <p>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.</p>									
Skill	<p>CLO2. Communicate knowledge in the Vietnamese legal system to encourage people to raise their legal rights aiming for fair social/cultural moves.</p> <p>CLO3. Integrate ICTs to solve legal issues in various social contexts.</p>									
Attitude	<p>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.</p> <p>CLO5. Respond to the base for coexistence in various social contexts.</p>									
<p>Content</p>	<p>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.</p>									
<p>Examination forms</p>	<p>Multiple choice questions Case-based exams Essay exams Oral exams</p>									

Study and examination requirements

To pass this course, the students must:

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

GRADING POLICY

Grades can be based on the following:

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

COURSE POLICIES

Attendance

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

Workload

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

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

General Conduct and Behaviour

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

Keeping informed

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

Academic honesty and plagiarism

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

	<p>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.</p> <p>Special consideration</p> <p>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.</p> <p>Meeting up with the lecturers after classes</p> <p>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.</p>
<p>Reading list</p>	<p>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.</p> <p>Required Course Texts and Materials</p> <p><u>Legal Texts:</u></p> <ol style="list-style-type: none"> 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 <p>Available at https://luatvietnam.vn/ or Blackboard</p> <p><u>Books:</u></p> <ul style="list-style-type: none"> • 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. <p><u>Additional materials provided in Blackboard</u></p> <p>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.</p> <p>Optional Course Texts and Materials</p> <p><u>Recommended Internet sites</u></p> <p>UNCTAD (United Nations Conference on Trade and Development)</p> <p>WTO (World Trade Organization)</p> <p>MOIT - Vietnam (Official website of Ministry of Industry and Trade)</p> <p>MPI - Vietnam (Official website of Ministry of Planning and Investment)</p>

	<p><u>Other Resources, Support and Information</u></p> <p>Additional learning assistance is available for students in this course and will be made available on Blackboard. Academic journal articles are available through connections via the VNU - Central Library. Recommended articles will be duly informed to the students.</p> <p><u>Books:</u></p> <ul style="list-style-type: none"> • Nguyen Phu Trong, <i>Kiên quyết, kiên trì đấu tranh phòng, chống tham nhũng, tiêu cực, góp phần xây dựng đảng và nhà nước ta ngày càng trong sạch, vững mạnh</i>, NXB Chính Trị Quốc Gia Sự Thật 2023. • University of Law Ho Chi Minh City, <i>Giáo trình luật Hiến pháp Việt nam</i>, NXB Hồng Đức 2023. • University of Law Ho Chi Minh City, <i>Giáo trình Luật hành chính</i>, NXB Hồng Đức 2022. • University of Law Ho Chi Minh City, <i>Giáo trình Luật hình sự Việt Nam</i>, NXB Hồng Đức 2022. • University of Law Ho Chi Minh City, <i>Giáo trình Luật dân sự Việt Nam</i>, NXB Hồng Đức 2022. • University of Law Ho Chi Minh City, <i>Giáo trình Luật lao động Việt Nam</i>, NXB Hồng Đức 2022. • University of Law Ho Chi Minh City, <i>Giáo trình pháp luật về chủ thể kinh doanh</i>, NXB Hồng Đức 2022.
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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	<p>Introduction to State</p> <ul style="list-style-type: none"> • What is State? • Nature of state • Forms of state • Functions of state • Introduction to structure of Vietnamese state 	1-5 (level I - introduced)	<p>Tests</p> <p>Peer evaluations</p> <p>Class-performance evaluations</p>	<p>Discussions</p> <p>Case studies</p>	<p>PPT - Introduction to Vietnamese legal system available on Blackboard</p>

2	<p>Introduction to law?</p> <ul style="list-style-type: none"> • What is law? • Nature of law • Forms of law • Structure of law • Categorization of legal system. • Enforcement • Breach of law and liabilities for breach of law • Introduction to structure of Vietnamese legal system 	1-5 (level I - introduced)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPT - Introduction to Vietnamese legal system available on Blackboard
3	<p>Constitutional Law</p> <ul style="list-style-type: none"> • 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	<p>Constitutional Law (Cont)</p> <ul style="list-style-type: none"> • 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	<p>Administrative Law</p> <ul style="list-style-type: none"> • 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	<p>Criminal Law</p> <ul style="list-style-type: none"> • 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

	<ul style="list-style-type: none"> Crimes Punishments 		evaluations	to corruption	Criminal code 2015 available on Blackboard
7	Criminal Law (Cont) <ul style="list-style-type: none"> 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) <ul style="list-style-type: none"> 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) <ul style="list-style-type: none"> Contracts <ul style="list-style-type: none"> 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) <ul style="list-style-type: none"> Inheritance <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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

	<ul style="list-style-type: none"> • 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	Organization and clarification	No evidence of organization and coherence	Does not organise ideas logically and with clarification Limited evidence of coherence Ideas lack consistence	Generally organised logically, with evidence of progression Occasionally, there may be a lack of focus or ideas may be tangential	Clear organization and progression. Responds appropriately and relevantly, although some ideas are underdeveloped	Response is focused, detailed and non-tangential. Shows a high degree of attention to logic and reasoning of points. Clearly leads the reader to the conclusion and stirs thought regarding the topic
2		Originality and usefulness of the analysis	Shows no ability to identify legal issues or a clear inability to gather the facts	Demonstrates an incomplete grasp of the task. There is no overall sense of creative coherence. Arguments are addressed incompletely.	Shows ability to identify legal issues, gather the facts and develop claims. Argument are addressed well but no links with evidence	Shows strong ability to identify legal issues, gather the fact and develop claims as well as link claims with evidence. Overall, an acceptable solution is offered and explained	Shows strong ability to identify legal issues, gather the facts and develop claims as well as link claims with evidence. Satisfactory solutions are offered and supported
3		Use of data/information	Shows no effort to incorporate information from primary and secondary sources	Shows little information from sources. Poor handling of sources	Shows moderate amount of source information incorporated. Some key points supported by sources. Quotations may be poorly integrated into paragraphs. Some possible problems with source citations	Draws upon sources to support most points. Some evidence may not support arguments or may appear where inappropriate. Quotations integrated well into paragraphs. Sources cited correctly	Draws upon primary and secondary source information in useful and illuminating ways to support key points. Excellent integration of quoted material into paragraphs. Source cited correctly
4	CLO2	Use of frameworks	Shows no effort to structure	Shows limited ability to structure	Shows effort to link problems with the theoretical	Shows ability to structure problems in	Shows ability to structure problems in correspondence to

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

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

Huỳnh Khả Tú



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department of Mathematics

COURSE SYLLABUS

Course Name: Probability and Statistics

Course Code: MA036IU

1. General Information

- Course Title	
+ Vietnamese:	Xác suất-Thống kê
+ English:	Probability and Statistics
- Course ID:	MA036IU
- Course type	
<input checked="" type="checkbox"/> General	<input checked="" type="checkbox"/> Fundamental
<input type="checkbox"/> Specialization (required)	<input type="checkbox"/> Specialization (elective)
<input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory:	0
- Pre-courses:	Calculus 1 and Calculus 2
- Parallel Course:	None
- Course standing in the curriculum:	Year 2

2. Course Description

This course introduces students to fundamental concepts of randomness and uncertainty, providing a foundational understanding of probabilistic reasoning and statistical inference. The course begins with core principles including set theory, basic probability rules, conditional probability, and the behaviour of random variables (both discrete and continuous). Building on this foundation, the course explores how these concepts apply to practical problems in estimation, hypothesis testing, and decision theory. By the end of the course, students will be equipped with the tools to analyze and interpret data under uncertainty and to apply statistical reasoning in real-world decision-making contexts.

3. Textbooks and References

Textbooks:

1. R E. Walpole, R H. Myers, S L Myers. Probability and Statistics for Engineers and Scientists 9th ed. Prentice Hall, 2011.
2. S. Ross. Probability and Statistics for Engineers and Scientists, 6th ed. Academic Press, 2021.
3. D C. Montgomery, R C Runger. Applied Statistics and Probability for Engineers, 7th ed. Wiley and Sons, 2018.

4. Course Objectives

The objective of this course is to acquaint students with basic concepts and methods in probability

and Statistics and demonstrate real-world applications using examples drawn from various fields. Topics to be covered include:

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Equip students with foundational concepts in probability and statistics.	L.O 1, L.O 2	Knowledge
G2	Students will understand the foundational theories and formulas in probability and statistics, and will be able to apply them fluently to solve basic and advanced problems	L.O 1 L.O 3	Skill
G3	Enable students to apply probabilistic and statistical methods to real-world scenarios and to interpret the results effectively for practical decision-making	L.O 1, L.O 4	Attitude

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Understand and distinguish among key probability formulas and explore the characteristics and applications of random variable distributions.	PLO1, PLO2	I,T
L.O.2	Understand basic concepts in statistical inference. Identify different parameter estimation problems and hypothesis testing problems.	PLO1, PLO2	I, T,U
L.O.3	Able to utilize theoretical foundations to solve practical problems in probability	PLO4	T, U
L.O.4	Develop the ability to distinguish between different types of estimation and hypothesis testing problems, and understand their appropriate applications	PLO7	I, T, U

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

The levels of the CLO are based on the Bloom taxonomy (levels from 1-6).

6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude	5
	A1.2 Homework	10
	A1.3 Quizzes, projects	5
A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	50

7. Course Outlines

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1-2	Chapter 1. Elements of Probability 1.1. Introduction to set theory 1.2. Sample space and events 1.3. Unions of events and addition rules 1.4. Conditional probability, Independence, and the product rule 1.5. Bayes rule	L.O.1 L.O.3	Lecture Class discussion	Homework Quiz
3-5	Chapter 2. Random variable and Probability distribution 2.1. Concept of a random variable 2.2. Discrete probability distributions 2.3. Continuous probability distributions 2.4. Joint probability distributions 2.5. Expectation and properties 2.6. Variance and properties 2.7. Covariance and variance of sums of random variables	L.O.1 L.O.3	Lecture Class discussion	Homework
6-8	Chapter 3. Special random distributions 3.1. The Bernoulli and binomial distributions 3.2. The Poisson distribution 3.3. The uniform distribution 3.4. Normal distributions 3.5. Exponential distributions 3.6. The chi-square distribution 3.7. The t-distribution	L.O.1 L.O.3	Lecture Class discussion	Quiz Homework
Midterm Examination				Written exam
9-11	Chapter 4. Parameter estimation 4.1. Random sampling and sampling distributions 4.2. The central limit theorem 4.3. Point estimation 4.4. Concept of interval estimation 4.4. Confidence interval for mean of normal distribution, variance known 4.5. Choice of sample size	L.O.2 L.O.4	Lecture Class discussion	Homework

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
	4.6 Confidence interval for mean of normal distribution, variance unknown 4.7 Confidence interval for a population proportion			
12-15	Chapter 5. Hypothesis testing 5.1. Statistical hypothesis: General concepts 5.2. Test on the mean of a normal distribution, variance known 5.3. Test on the mean of a normal distribution, variance unknown 5.4. Test on a population proportion 5.5. Test on the variance of a normal distribution 5.6. Test on two means of two normal populations	L.O.2 L.O.4	Class discussion	Homework
Final examination				Written exam

8. Course Policy

Class Participation: Student is expected that you will spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particularly in view of the interactive teaching and learning approach adopted.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for preparation, research, drafting, and the proper reference of sources in preparing all assessment items.

9. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Assoc Prof. Nguyen Minh Quan, Dr. Ta Quoc Bao, Dr. Pham Hai Ha
- Email: quannm@hcmiu.edu.vn, baotq@hcmiu.edu.vn, phha@hcmiu.edu.vn

10. Date revised: May 2025

Ho Chi Minh City, 03/06/2025
Department of Mathematics

Nguyen Minh Quan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Computer Science and Engineering

COURSE SYLLABUS

Course Name: Principles of Database Management

Course Code: IT079

1. General information

Course name	- (in English): Principles of Database Management - (in Vietnamese): Nguyên tắc của quản trị cơ sở dữ liệu
Course designation	This subject introduces students to learn how to design database and normalization
Course type	<input type="checkbox"/> <i>General knowledge</i> <input checked="" type="checkbox"/> <i>Fundamental</i> <input type="checkbox"/> <i>Specialized knowledge</i> <input type="checkbox"/> <i>Internship/Project/Thesis</i> <input type="checkbox"/> <i>Others:.....</i>
Semester(s) in which the course is taught	4,6
Person responsible for the course	Assoc. Prof. Dr. Nguyen Thi Thuy Loan
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 182.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Lecture: 37.5 hours + Laboratory: 25 hours Private study including examination preparation, specified in hours: 120 hours
Credit points	4 credits (Theory: 3 + Practice: 1) 6.18 ECTS

Number of periods	Theory: 45 Practice: 30																											
Required and recommended prerequisites for joining the course	IT149IU (Fundamentals of Programming)																											
Course objectives	This subject introduces the students to basic database design and implementation concepts. Database design techniques, including relational design and E-R analysis, are presented. Database queries using SQL are covered in lectures and supported by practical exercises.																											
Course learning outcomes	<p>CLO 1. Produce an (Extended) Entity-Relationship (E-R) model from specifications.</p> <p>CLO 2. Apply data normalization principles to transforming an ER model into a database schema.</p> <p>CLO 3. Construct efficient SQL queries, RA, and tree to retrieve and manipulate data as required.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>CLO1, CLO3</td> </tr> <tr> <td>Skill</td> <td>CLO2, CLO3</td> </tr> <tr> <td>Attitude</td> <td>CLO3</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1, CLO3	Skill	CLO2, CLO3	Attitude	CLO3																			
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Skill	CLO2, CLO3																											
Attitude	CLO3																											
Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction to Database Systems</td> <td>3</td> <td>I</td> </tr> <tr> <td>(Extended) Entity Relationship Model</td> <td>6</td> <td>T, U</td> </tr> <tr> <td>Relational Database Design</td> <td>9</td> <td>T, U</td> </tr> <tr> <td>Relational Model and Relational Algebra</td> <td>6</td> <td>T, U</td> </tr> <tr> <td>Structured Query Language</td> <td>6</td> <td>T, U</td> </tr> <tr> <td>Normalization</td> <td>6</td> <td>T, U</td> </tr> <tr> <td>Advanced SQL</td> <td>6</td> <td>T, U</td> </tr> <tr> <td>Review</td> <td>3</td> <td>I, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction to Database Systems	3	I	(Extended) Entity Relationship Model	6	T, U	Relational Database Design	9	T, U	Relational Model and Relational Algebra	6	T, U	Structured Query Language	6	T, U	Normalization	6	T, U	Advanced SQL	6	T, U	Review	3	I, U
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Normalization	6	T, U																										
Advanced SQL	6	T, U																										
Review	3	I, U																										
Examination forms	Multiple-choice questions, short-answer questions																											

Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	<ol style="list-style-type: none"> 1. Abraham Silberschatz, Henry F. Korth, S. Sudarshan, Database System Concept 7th, 2020 2. Jeffrey A. Hoffer, Ramesh Venkataraman, Heikki Topi, Modern Database Management 13th, 2019 3. Ramez Elmasri, Shamkant Navathe, Fundamentals of Database Systems 7th, 2016

2. Learning Outcomes Matrix (optional)

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

	SLO					
CLO	1	2	3	4	5	6
1	XXX					
2		XXX			X	
3		XX			XX	

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Database Systems	1	Quiz	Lecture	[1,3]
2	Relational Model and relational Algebra	2	Quiz, Midterm, Project	Lecture, Discussion, In-class, exercise	[1,3]
3	Structured Query Language	3	Quiz, Lab, Project, Midterm	Lecture, Discussion, In-class, exercise	[1,2,3]
4	(Extended) Entity Relationship Model	2	Quiz, Project, Midterm	Lecture, Discussion, In-class, exercise	[1,2,3]
5	Midterm				

6	Relational Database Design	2,3	Project, Final, Quiz, Lab	Lecture, Discussion, In-class, exercise	[1,2]
7	Normalization	2,3	Quiz, Project, Final	Lecture, Discussion, In-class, exercise	[2,3]
8	Advanced SQL	3	Quiz, Project, Final	Lecture, Discussion, In-class, exercise	[1,3]
9	Review	2,3	Quiz	Discussion, In-class, exercise	[1,2,3]
10	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Labs (10%)	40%		60%
Midterm examination (25%)	40%		60%
Quiz (5%)		40%	60%
Projects/Presentations/ Report (20%)	30%	20%	50%
Final examination (40%)	20%	50%	30%

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

- 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.↵

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

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

<p>Influence of context and assumptions</p>	<p>Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.</p>	<p>Identifies own and others' assumptions and several relevant contexts when presenting a position.</p>	<p>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).</p>	<p>Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.</p>
<p>Student's position (perspective, thesis/hypothesis)</p>	<p>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).</p>	<p>Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).</p>	<p>Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.</p>	<p>Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.</p>

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.
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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	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable	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.

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

	polished and confident.			
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	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is	Central message can be deduced but is not explicitly stated in the presentation.

	repeated, memorable, and strongly supported.)		not memorable.	
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Source: Association of American Colleges and Universities

Date revised: April 24, 2025

Ho Chi Minh City, 24/04/2025

Dean of the School of Computer Science and Engineering

(Signature)



Nguyen Van Sinh

COURSE SYLLABUS

Course Name: Introduction to Statistics

General Information

Course Title	
Vietnamese:	Giới thiệu về Thống kê
English:	Introduction to Statistics
Course ID:	MAAS220IU
Course type <input type="checkbox"/> General <input type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
Number of credits:	2
Lecture:	2
Laboratory:	0
Prerequisites:	None
Parallel Course:	None
Course standing in the curriculum:	Year 2

Course Description

The aim of this course is to introduce students to conceptual understanding, basic tools, language, and interpretation of statistics for applications in social and applied sciences such as economics, business, and actuaries. The course is designed to acquaint students with the terms and basic techniques in statistics and data analysis. Topics include descriptive statistics; graphical and numerical representation of information; data visualization; measures of location, dispersion, position, outliers, and dependence; exploratory data analysis; sampling methods, and index.

Textbooks and References

Textbooks:

- G. Keller (2018), *Statistics for Management and Economics*. 11th e, Cengage.
 M. Triola (2018), *Elementary Statistics*. Pearson
 K.Black (2020), *Business Statistics for Contemporary Decision-Making*. 10th e, Wiley.
 K. Healy (2019). *Data Visualization*. Princeton University Press.

Course Objectives

On completion of the course, students should be able to: identify and utilize different terms used in statistics, and different methods used to sample data; organize and visualize data in different ways including charts and graphs; identify shapes of distribution and define measures of Central Tendency, Dispersion, Position, and Outliers.

Goals	Goal description	Course Learning Outcomes	Competency level

G1	Provide students with a conceptual understanding of statistics and identify and utilize different terms used in statistics, and different methods used to sample data.	L.O.1	Knowledge
G2	Introduce students how to use basic techniques in statistics to explore real datasets.	L.O.2 L.O.3	Skill
G3	Help students understand the parts of the process in statistical analysis to answer questions including how to obtain and generate data; how to visualize and analyze data; how to interpret numerical summaries of data.	L.O.4	Attitude

Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Identify and utilize different terms used in statistics, and different methods used to sample data	a	I,T
L.O.2	Learn how to obtain and generate data, and then utilize basic statistical methods to explore statistical data properly	b	I, T, U
L.O.3	Understand the applicability of statistical analysis and use R or Python programming for analyzing the real dataset and interpret statistical results in context. Develop a life-long learning attitude	c, h	I, T, U

Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude, Quizzes	10
	A1.2 Homework	10
A2. Midterm assessment	A2 Mid-term exam	30
A3. Final assessment	A3 Final exam	50

Course Outlines

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1-2	Chapter 1. Statistics and the Scientific Method Introduction Why study Statistics Key Statistical Concepts Some current applications of Statistics Large real dataset	L.O.1 L.O.2	Lecture Class discussion	Homework Quiz
3-6	Chapter 2. Organizing and Visualizing data 2.1. Ty of data information 2.2. Measurement scales 2.3 Organizing categorical data	L.O.1 L.O.2 L.O.4	Lecture Class discussion	Homework

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
	2.4. Organizing numerical data 2.5. Visualizing categorical data 2.6. Visualizing numerical data 2.7. Visualizing two numerical variables 2.8 Visualizing multidimensional data			
7-8	Chapter 3. Numerical Descriptive Measures 3.1. Central Tendency 3.2. Variation and Shape 3.3. Exploring numerical data 3.4. Numerical Descriptive measures for a population 3.5. The covariance and coefficient of correlation	L.O.2 L.O.4	Lecture Class discussion	Homework
Midterm Examination				Written exam
9-11	Chapter 4. Data collection and Sampling Method of collection data Sampling design for surveys Sampling plan Sampling and Nonsampling errors	L.O.1 L.O.2 L.O.3	Lecture Class discussion	Homework
12-14	Chapter 5. Index Numbers 5.1. Price relatives 5.2. Aggregate price indexes 5.3. Computing an Aggregate Price Index from Price Relatives 5.4. Deflating a Series by Price Indexes 5.5. Quantity Indexes	L.O.3 L.O.4	Lecture	Homework Quiz
15	Review			
Final examination				Written exam

Course Policy

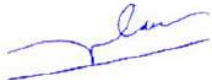
Class Participation: Student is expected that you will spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. Students are also reminded that careful time management is an important part of study and one of the identified

causes of plagiarism is poor time management. Students should allow sufficient time for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Ta Quoc Bao
- Email: baotq@hcmiu.edu.vn

	<p style="text-align: center;">HEAD OF DEPARTMENT</p> <p style="text-align: center;"></p> <p style="text-align: center;">Prof. Dr. Pham Huu Anh Ngoc</p>
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SCIENTIFIC SOCIALISM

1. General Information

- Course Title:
- + Vietnamese: Chủ nghĩa xã hội khoa học
- + English: Scientific Socialism
- Course ID: PE017IU
- Course type
 - General
 - Specialization (required)
 - Project/ Internship/ Thesis
 - Fundamental
 - Specialization (elective)
 - Others :
- Number of credits: 2
- + Lecture: 2
- + Laboratory: 0
- Prerequisites: PE015IU (Philosophy of Marxism and Leninism), PE016IU (Political economics of Marxism and Leninism)
- Parallel Course:
- Course standing in curriculum:
Year 2

2. Course Description

Nội dung chủ yếu của môn học là cung cấp cho sinh viên những hiểu biết cơ bản có hệ thống của chủ nghĩa xã hội khoa học.

3. Textbooks and References

Textbooks:

1. Bộ Giáo dục và Đào tạo (2019), Giáo trình Chủ nghĩa xã hội khoa học, 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 Chủ nghĩa xã hội khoa học, NXB Chính trị quốc gia, Hà Nội

References:

4. Course Objectives

- Môn học cung cấp những nội dung cơ bản của chủ nghĩa xã hội khoa học.
- Giúp sinh viên vận dụng những tri thức cơ bản của chủ nghĩa xã hội khoa học một cách sáng tạo trong hoạt động nhận thức và thực tiễn, nhằm giải quyết những vấn đề mà đời sống xã hội của đất nước, của thời đại đặt ra.

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes (*)
L.O.1	Hiểu biết những lý luận cơ bản nhất của chủ nghĩa xã hội khoa học	e (level 2)
L.O.2	Có thể vận dụng những tri thức cơ bản của chủ nghĩa xã hội khoa học một cách sáng tạo trong hoạt động nhận thức và thực tiễn, nhằm giải quyết những vấn đề mà đời sống xã hội của đất nước, của thời đại đặt ra.	f, h (level 3)

6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	Quiz, attendance	30
A2. Midterm assessment	Midterm exam	20
A3. Final assessment	Final exam	50

7. Course Outlines

Theo quy định của Bộ Giáo Dục và Đào Tạo

Theory

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1	Nhập môn chủ nghĩa xã hội khoa học	L.O.1	Lecture Class discussion	Quiz
2-4	Sứ mệnh lịch sử của giai cấp công nhân	L.O.1	Lecture Class discussion	Quiz
5-7	Chủ nghĩa xã hội và thời kỳ quá độ lên chủ nghĩa xã hội	L.O.1	Lecture Class discussion	Quiz
8	Dân chủ xã hội chủ nghĩa và nhà nước xã hội chủ nghĩa	L.O.1, L.O.2	Lecture Class discussion	Quiz
9	MIDTERM EXAM			Written exam
10	Dân chủ xã hội chủ nghĩa và nhà nước xã hội chủ nghĩa	L.O.1, L.O.2	Lecture Class discussion	Quiz
11-12	Cơ cấu xã hội – giai cấp và liên minh giai cấp, tầng lớp trong thời kỳ quá độ lên chủ nghĩa xã hội	L.O.1, L.O.2	Lecture Class discussion	Quiz
13-14	Vấn đề dân tộc và tôn giáo trong thời kỳ quá độ lên chủ nghĩa xã hội	L.O.1, L.O.2	Lecture Class discussion	Quiz
15-16	Vấn đề gia đình trong thời kỳ quá độ lên chủ nghĩa xã hội	L.O.1, L.O.2	Lecture Class discussion	Quiz

8. Course Policy

Class Participation: A minimum attendance of 80 % is compulsory for the class sessions and 100% is compulsory for the laboratory sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

9. Course Coordinator/ Lecturer

- Department of Civil Engineering:
- Course Coordinator/ Lecturer:
- Email:

Vietnam National University – HCMC
International University
SCHOOL OF BUSINESS ADMINISTRATION

COURSE SYLLABUS*

BA005IU
Financial Accounting

Note: The outline with specific venue and time, and updated learning materials for the current semester will be provided to the enrolled students by the lecturer

1. COURSE STAFF

Lecturer: Mr. Vu Tuan Anh, CMA, MSA

Room: O1. 307

E-mail: anhvtv@hcmiu.edu.vn

Consultation hours: Friday (8h00 – 16h00)

Teaching Assistant: TBA

E-mail:

Should the students wish to meet the staff outside the consultation hours, they are advised to make appointment in advance (via email)

2. COURSE INFORMATION

2.1 Teaching times and Locations

Time	Room
Monday, 13h15-15h40	A1.202
Wednesday, 8h00-10h25	A1.401

2.2 Units of Credit

This course is worth 3 credits.

2.3 Parallel teaching in the course

There is no parallel teaching involved in this course.

2.4 Relationship of this course to others

BA005IU– Financial Accounting is the entry-level course which explores the basis of accounting that would be beneficial to student seeking a degree in the business area. Students will be introduced to the importance of accounting within the business environment and how accounting information can be utilized to facilitate business decisions. Students who decide to choose the Accounting and Finance major may go on to take the course Managerial Accounting or Auditing in the following semesters, which will focuses on evaluating and auditing firms, and report information to stakeholders.

2.5 Approach to learning and teaching

The lecturer will utilize the following methods of instruction: lecture, on-class tutorial, end-of-chapter activities, and self-study. Students are also encouraged to seek assistance outside class from the lecturer / tutor or through group tutoring.

It is noted that the course materials, including the handouts and tutorial notes, will be uploaded in Blackboard to help the students to preview the materials and to concentrate on listening and critical thinking.

3. COURSE AIMS AND OUTCOMES

3.1 Course Aims

This course develops a basic understanding on the theories, principles, and applications of accounting and financial reporting, essentials in the IFRS standard, including topics such as the theory of debit and credit, accounts, special journals, the accounting cycle, notes and interest, accruals and deferrals, cash, receivables, inventory, fixed assets, and the analysis of financial statements. In general, its primary aim is to provide the basic knowledge in preparing and processing accounting transactions in order to present financial details in a relevant and effective manner, as well as interpreting these accounting information for different types of external and internal investors, management and other accounting information users.

3.2 Student Learning Outcomes

By the end of this course student should be able to:

- Identify the importance of accounting information in decision making and the role it plays within the business environment
- Appreciate, understand and demonstrate the relevant procedures of the accounting information life cycle and transformation of accounting information during this process, and
- Comprehend the development of accounting principles and policies through accounting theories and undertakings of the accounting professions

In generic terms, students completing this course are likely to achieve the following attributes:

- *In-depth knowledge of the field of the study:* A comprehensive and well-founded knowledge of the field of the study. All of the course objectives combined with lead to a comprehensive introduction to the field of accounting.

- *Effective communication:* The ability to collect, analyze and organize information and to convey those information clearly and fluently, in both written and spoken forms.
- *Critical judgment:* The ability to define and analyze problems, as well as to evaluate statements information, make decisions and reflect critically on the justification for decisions.

3.3 Teaching Strategies

The learning system in this course consists of lectures and scheduled tutorials. Lectures elaborate the appropriate theoretical content in the textbook and provide a more detailed and refined analysis of both concepts and applied materials. **Students are expected to read prior to lecture attendance in order to gain maximum benefit from lectures.** This applies to all of your university studies. Coming in ‘cold’ to lectures without some prior reading makes note-taking that much more difficult. Be aware that you may have to skim some of these for additional information. In fact a ‘skim read’ before lectures is most appropriate and valuable.

From the third week, a three-hour tutorial will be offered every 2 weeks and will cover selected tutorial questions and homework.

4. STUDENT RESPONSIBILITIES AND CONDUCT

4.1 Workload

It is expected that the students will spend at least *nine* hours per week studying this course. This time should be made up of reading, 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.

4.2 Attendance

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

5. LEARNING ASSESSMENT

5.1 Formal Requirements

In order 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).

5.2 Assessment Details

Mid-Term Exam	30%
Homework & Quiz	30%
<u>Final Exam</u>	<u>40%</u>
Total	100%

Assessment Rationale

Quiz & Homework: Student is required do homework on every class date. Quizzes will be conducted after lectures without advanced notice.

Examination: Mid-term and final tests will be a combination of MCQ, short answer questions, and application problems.

Programmable calculators will not be allowed for use during the exam. The use of programmable calculator will result in receiving a zero for the exam.

The examination schedule and room will be announced by the Office of Academic Affair. Any issues regarding the administration of, timetabling of and non-attendance at final examinations need to be directed to the Office of Academic Affair. **These issues are not the responsibility of the individual lecturer.**

Others: Students will not be allowed to attend the final exam if result of either homework or mid-term exam is zero mark.

5.3 Class participation and Presentation

A minimum attendance of 80 percent is compulsory. Students will be assessed on the basis of class attendance and participation

5.6 Special Consideration

Request for special consideration (for final examination only) must be made to the Office of Academic Affairs within one week after the examination. General policy and information on special consideration can be found at the Office of Academic Affairs.

6. ACADEMIC HONESTY AND PLAGIARISM

Plagiarism is the presentation of the thoughts or work of another as one's own (*definition proposed by the University of Newcastle*). Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items. The university regards plagiarism as a form of academic misconduct, and has very strict rules regarding plagiarism.

7. STUDENT RESOURCES

7.1 Course Resources

Textbook:

Accounting Principles IFRS Version, Global Edition, by: Jerry J. Weygandt; Paul D. Kimmel; Donald E. Kieso

Reference Books:

Additional materials

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 additional benefit of class interaction and demonstration.

Recommended Internet sites

N/A

Recommended Journals

N/A

7.2 Other Resources, Support and Information

Additional learning assistance is available for students in this course and will be made available in Blackboard. Academic journal articles are available through connections via the [VNU - Central Library](#). Recommended articles will be duly informed to the students.

8. COURSE SCHEDULE

The following is the outline that sets topics for the course. The instructor reserves the right to revise this outline throughout the semester to either add or delete material as necessary to accomplish the goals of the course.

WEEK	TOPICS	CONTENTS
1	Lecture 1: Introduction to Accounting and Business <ul style="list-style-type: none">- The Nature of Accounting and Business- Accounting Equation- Financial Statements	Ch 1
2	Lecture 2: Analyzing Transactions <ul style="list-style-type: none">- Double-entry Accounting System- Journalizing Entries and Posting Them to Accounts- Trial Balance	Ch 2
3	Lecture 3: The Adjusting Process <ul style="list-style-type: none">- Adjusting entries- Adjusted Trial Balance	Ch 3
4	Lecture 4: Completing the Accounting Cycle <ul style="list-style-type: none">- Flow of Accounting Information- Closing Entries- Accounting Cycle	Ch 4
5	Lecture 5: Accounting for Merchandising Businesses <ul style="list-style-type: none">- Financial Statements for a Merchandising Business- Merchandising Transactions	Ch 5

6	Lecture 6: Inventories <ul style="list-style-type: none"> - Inventory Costing Methods - Reporting Merchandising Inventory in the Financial Statements - Estimating Inventory Cost 	Ch 6
7	Revision session	
8	Revision session	
9	Midterm	
10	Lecture 7: Receivables <ul style="list-style-type: none"> - Direct write-off method for Uncollectible Accounts - Allowance Method for Uncollectible Accounts 	Ch 9
11	Lecture 8: Fixed Assets <ul style="list-style-type: none"> - Plant Asset Expenditures - Depreciation Methods 	Ch 10
12	Lecture 8: Fixed Assets <ul style="list-style-type: none"> - Plant Asset Disposals - Statement preparation and Analysis 	Ch 10
13	Lecture 9: Current liabilities <ul style="list-style-type: none"> - Accounting for liabilities - Reporting and Analyzing 	Ch 11
14	Lecture 10: Financial Analysis <ul style="list-style-type: none"> - Basics of Financial Statement Analysis 	Ch 18
15	Review	
16	Review	
	Final	

*The syllabus is prepared following the format provided by the School of Organisation and Management, University of New South Wales, with kind permission.

COURSE SYLLABUS

Course Name: Real Analysis

1. General Information

- Course Title	
+ Vietnamese:	Giải tích thực
+ English:	Real Analysis
- Course ID:	MAFE201IU
- Course type	
<input checked="" type="checkbox"/> General	<input checked="" type="checkbox"/> Fundamental
<input type="checkbox"/> Specialization (required)	<input type="checkbox"/> Specialization (elective)
<input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Others :
- Number of credits:	4
+ Lecture:	4
+ Laboratory:	0
- Prerequisites:	Analysis 2
- Parallel Course:	None
- Course standing in curriculum:	Year 2

2. Course Description

This course is a continuation of Analysis 2. After a short introduction to the theory of metric spaces, it concentrates on the fundamentals of measures and integrations.

3. Textbooks and References

1. H. L. Royden and P. M. Fitzpatrick (2010) *Real Analysis*, 4th Edition, Pearson Education
2. G. B. Folland (1999) *Real Analysis. Modern Techniques and Their Applications*, 2nd Edition, John Wiley & Sons
3. E. Kopp, J. Malczak, T. Zastawniak (2014) *Probability for Finance*, Cambridge University Press.

4. Course Objectives

The course will help students master 4 main topics of real analysis:

1. Basic theory of metric spaces: convergence, compactness, completeness, continuous mappings.
2. Lebesgue measure theory: σ -algebras, outer measures, measures, Lebesgue measure on \mathbb{R}^n , Borel measure on the real line.
3. Lebesgue integration theory: measurable functions, converge almost everywhere and convergence in measure, integration of nonnegative and general measurable functions, convergence theorems, the Riemann Integral as a Lebesgue Integral, product measures and Fubini's theorem.
4. Signed measures: Hahn and Jordan Decompositions, Radon-Nikodym Theorem.

Goals	Goal description	Course Learning Outcomes	Competency level
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G1	Provide students with the fundamentals of metric spaces and measure theory	L.O.1 L.O.2	Knowledge
G2	Introduce students to some applications of the concepts in this course to other fields such as Probability, Decision Making	L.O.3 L.O.4	Skill
G3	Help students to recognize the use of metric spaces and measure theory in practical applications.	L.O.5	Attitude

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Apply basic concepts in the theory of metric spaces in specific problems	a	I, T
L.O.2	Analyze and compute measures and Lebesgue integration and demonstrate the applications	a	I, T
L.O.3	Demonstrate ability to apply and explain basic concepts from real analysis.	b	T, U
L.O.4	Show the ability to utilize the knowledge from this course in studying other subjects such as Probability, Decision Making	b	T, U
L.O.5	Form a scientific thinking and integrate the professional development for long-life learning on applying measure theory and integrals in real life and graduate programs.	h	T, U

6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude	5
	A1.2 Homework	10
	A1.3 Quizzes, projects	5
A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	50

7. Course Outlines

Week	Content	Learning	Teaching	Assessment
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		Outcome	learning activities	
1	Sets, mappings, and sequences	1,3	Lecture	
2	Countable and uncountable sets. The extended real number system	1,3	Lectures and Qu	Quiz
3	Metric spaces, open sets, closed sets, interior and closure of a set Open and closed sets in subspaces; open sets in \mathbb{R}	1,3, 5	Lectures and Qu	Quiz
4	Convergent sequences. Convergence in \mathbb{R}^n . Continuous mappings between metric spaces. Uniform continuity and Lipschitz continuity	1, 3, 5	Lectures and HV	HW1
5	Complete and separable metric spaces. Baire category theorem and Banach contraction principle.	1, 3, 5	Lectures and Qu	Quiz
6	Compact metric spaces, Heine-Borel theorem and Bolzano-Weierstrass theorem	1, 3, 5	Lectures and HV	HW2
7	Algebras and σ -algebras. Borel σ -algebra. Measures	2	Lectures and Qu	Quiz
8	Outer measures, Caratheodory's theorem. Extension of a premeasure to a measure	2	Lectures and HV	HW3
Midterm Exam				Written Exam
9	Lebesgue measures on \mathbb{R}^n . Monotonic functions, Borel measures on the real line	2, 4, 5	Lectures and Qu	Quiz
10	Measurable functions. Convergence almost everywhere and convergence in measure	2, 4	Lectures and Qu	Quiz
11	Integrals of nonnegative	2, 4	Lectures and HV	HW4

	measurable functions. Monotone convergence theorem. Integrals of measurable functions.			
12	Properties of Lebesgue integral, Convergence theorems: Fatou's lemma and the dominated convergence theorem.	2, 4	Lectures and Qu	Quiz
13	Riemann and Lebesgue integrability. Product measures and Fubini's theorem.	2, 4, 5	Lectures and Qu	Quiz
14	Signed measures: Hahn and Jordan decompositions, Radon-Nikodym theorem	2, 4	Lectures and HV	HW5
15	Review	1, 2, 3, 4,	Exercises	Exercises
Final Exam		1, 2, 3, 4,		Written Exam

8. Course Policy

Class Participation: Students are expected to spend at least **8 hours** per week on this course. This time include attending lectures, reading assigned materials and doing homeworks. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment.

Academic Honesty and Plagiarism: Academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. All assignments are to be completed individually, unless explicitly indicated otherwise.

Course Coordinator/ Lecturer

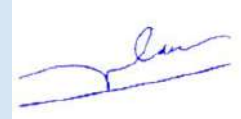
- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Assoc. Prof. Dr. Nguyen Ngoc Hai
- Email: nnhai@hcmiu.edu.vn

Ho Chi Minh City, 03/06/2025
Department of Mathematics

Nguyen Minh Quan

Ho Chi Minh City,

HEAD OF DEPARTMENT



Prof. Dr. Pham Huu Anh Ngoc



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

COURSE SYLLABUS
Course Name: Differential Equations

Course Code: **MA038IU**

1. General information

Course designation	This course introduces fundamental mathematical methods and analysis in ordinary differential equations and their applications and a short introduction to partial differential equations.
Semester(s) in which the course is taught	1, 2
Person responsible for the course	
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lectures, assignments
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 120 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 60 (lectures) Private study including examination preparation, specified in hours ¹ : 60
Credit points	3
Pre-course	Calculus 2

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	<ol style="list-style-type: none"> 1. This course introduces the theory of ordinary differential equations. Topics discussed include first-order differential equations, existence and uniqueness theorems, second-order linear equations, higher-order linear equations, systems of equations, non-linear equations. 2. The relationship between differential equations and linear algebra is emphasized in this course. 3. Applications of differential equations in physics, engineering, biology, and economics are presented. 4. This course also gives a very brief introduction to partial differential equations in particular using separation variables to solve heat equation, wave equation, and Laplace equation. 								
Course learning outcomes	<p>Upon the successful completion of this course students will be able to:</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td> <p>CLO1. Understand the concepts of differential equations and the methods to solve linear first/second differential equations.</p> <p>CLO2. Understand the method to solve linear n-th order differential equations. Know how to use separation of variable to solve the heat equation, wave equation and Laplace equation</p> </td> </tr> <tr> <td>Skill</td> <td> <p>CLO3. Can solve basic first order differential equations, higher order differential equations with constant coefficients and first order systems.</p> <p>CLO4. Can use differential equations to model and study real phenomena</p> </td> </tr> <tr> <td>Attitude</td> <td> <p>CLO5. Demonstrate confidence, a proactive attitude, and a commitment to lifelong learning when applying differential equations to solve real-world problems.</p> </td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	<p>CLO1. Understand the concepts of differential equations and the methods to solve linear first/second differential equations.</p> <p>CLO2. Understand the method to solve linear n-th order differential equations. Know how to use separation of variable to solve the heat equation, wave equation and Laplace equation</p>	Skill	<p>CLO3. Can solve basic first order differential equations, higher order differential equations with constant coefficients and first order systems.</p> <p>CLO4. Can use differential equations to model and study real phenomena</p>	Attitude	<p>CLO5. Demonstrate confidence, a proactive attitude, and a commitment to lifelong learning when applying differential equations to solve real-world problems.</p>
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Attitude	<p>CLO5. Demonstrate confidence, a proactive attitude, and a commitment to lifelong learning when applying differential equations to solve real-world problems.</p>								

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (4 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td> Introduction Some Basic Mathematical Models; Direction Fields Solutions of Differential Equations Classification of Differential Equations </td> <td>1</td> <td>I, T</td> </tr> <tr> <td> First-order differential equations Linear Equations Method of Integrating Factors Separable Equations Modeling with First Order Equations </td> <td>1</td> <td>T, U</td> </tr> <tr> <td> Differences Between Linear and Nonlinear Equations Autonomous Equations and Population Dynamics Exact Equations and Integrating Factors </td> <td>1</td> <td>T,U</td> </tr> <tr> <td> Linear second-order differential equations Fundamental solution set of homogeneous equations Linear independence and Wronskian Homogeneous linear second-order differential equations with constant coefficients </td> <td>2</td> <td>T, U</td> </tr> <tr> <td> Non-homogeneous equations Method of undermined coefficients Variation of Parameters Mechanical and Electrical Vibrations Forced Vibrations </td> <td>2</td> <td>T, U</td> </tr> <tr> <td> Higher Order Linear Equations General Theory of nth Order Linear Equations Homogeneous Equations with Constant Coefficients Method of Undetermined Coefficients Variation of Parameters </td> <td>2</td> <td>T, U</td> </tr> <tr> <td> Basic Theory of Systems of First Order Linear Equations Homogeneous Linear Systems with Constant Coefficients </td> <td>2</td> <td>T, U</td> </tr> <tr> <td> Non-homogeneous systems: Method of undetermined coefficients Variation of parameters </td> <td>2</td> <td>T, U</td> </tr> <tr> <td> Introduction Partial differential equations Separation of variables Heat conduction in a bar Wave equation, Laplace equation </td> <td>2</td> <td></td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction Some Basic Mathematical Models; Direction Fields Solutions of Differential Equations Classification of Differential Equations	1	I, T	First-order differential equations Linear Equations Method of Integrating Factors Separable Equations Modeling with First Order Equations	1	T, U	Differences Between Linear and Nonlinear Equations Autonomous Equations and Population Dynamics Exact Equations and Integrating Factors	1	T,U	Linear second-order differential equations Fundamental solution set of homogeneous equations Linear independence and Wronskian Homogeneous linear second-order differential equations with constant coefficients	2	T, U	Non-homogeneous equations Method of undermined coefficients Variation of Parameters Mechanical and Electrical Vibrations Forced Vibrations	2	T, U	Higher Order Linear Equations General Theory of nth Order Linear Equations Homogeneous Equations with Constant Coefficients Method of Undetermined Coefficients Variation of Parameters	2	T, U	Basic Theory of Systems of First Order Linear Equations Homogeneous Linear Systems with Constant Coefficients	2	T, U	Non-homogeneous systems: Method of undetermined coefficients Variation of parameters	2	T, U	Introduction Partial differential equations Separation of variables Heat conduction in a bar Wave equation, Laplace equation	2	
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Examination forms	Written examination																														

Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	<ol style="list-style-type: none"> 1. W.E. Boyce, R.C. DiPrime, Elementary Differential Equations and Boudnary Value problems, 8th Edition, John Wiley & Sons. 2. P. Hartman, Ordinary differential equations, SIAM Classics in applied mathematics 38, 2nd edition, Birkhauser, 1982 3. J.K. Hale, Ordinary differential equations, 2nd ed., Robert E. Krieger Publishing Co., Inc., Huntington, New York, 1980.

2. Learning Outcomes Matrix

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

The levels of the CLO are based on the Bloom taxonomy (levels from 1-6).

3. Planned learning activities and teaching methods

Week	Topics	CLO	Assessment	Teaching and Learning activities
1	Introduction <ul style="list-style-type: none"> - Some Basic Mathematical Models, Direction Fields. - Classification of Differential Equations - Solutions to Some Differential Equations First-order differential equations <ul style="list-style-type: none"> - Linear Equations - Method of Integrating Factors 	1,3		Lectures
2	<ul style="list-style-type: none"> - Separable Equations - Modeling with First Order Equations 	1,3	Quiz	Lectures and Quiz

	- Differences Between Linear and Nonlinear Equations			
3	Autonomous Equations and Population Dynamics Exact Equations and Integrating Factors	3, 5	Quiz	Lectures and Quiz
4	Second order linear differential equations Solutions of Linear Homogeneous Equations The Wronskian and linear independence.	3, 5	HW1	Lectures and HW
5	Homogeneous Equations with Constant Coefficients Complex Roots of the Characteristic Equation, Repeated Roots	3, 5	Quiz	Lectures and Quiz
6	Nonhomogeneous Equations: Method of Undetermined Coefficients	3, 5	HW2	Lectures and HW
7	Variation of Parameters Mechanical and Electrical Vibrations Forced Vibrations	3, 5	Quiz	Lectures and Quiz
8	Review	3, 5	HW3	Lectures and HW
Midterm Exam				
9	Higher Order Linear Equations General Theory of n -th Order Linear Equations	2, 4	Quiz	Lectures and Quiz
10	Homogeneous Equations with Constant Coefficients	2, 4	Quiz	Lectures and Quiz
11	Non-homogeneous equations: Method of undetermined coefficients Variation of parameters	4, 5	HW4	Lectures and HW
12	Linear systems of first-order differential equations Review of Linear Algebra, Basic Theory of Systems of First Order Linear Equations	2, 4	Quiz	Lectures and Quiz

13	Homogeneous Linear Systems with Constant Coefficients, Complex Eigenvalues and Repeated Eigenvalues	4, 5	Quiz	Lectures and Quiz
14	Method of undetermined coefficients Variation of parameters Review of Fourier Series	2, 4, 5	HW5	Lectures and HW
15	Separation of Variables. Heat Conduction Problems, Wave Equations, Laplace's Equations	1, 2, 3, 4, 5	Exercises	
Final Exam		1, 2, 3, 4, 5		

4. Assessment plan

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

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

5. Date revised: June 5, 2025

Ho Chi Minh City, 05/06/2025
Department of Mathematics



Nguyen Minh Quan



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
School of Computer Science and Engineering

COURSE SYLLABUS

Course Name: Machine Learning

Course Code: IT172IU

1. General information

Course name	- (In English): Machine Learning - (In Vietnamese): Nền tảng máy học
Course designation	This course intends to give student an overview on machine learning; fundamental knowledge & popular machine learning algorithms; and its application.
Course type	<input type="checkbox"/> <i>General knowledge</i> <input type="checkbox"/> <i>Fundamental</i> <input checked="" type="checkbox"/> <i>Specialized knowledge</i> <input type="checkbox"/> <i>Internship/Project/Thesis</i> <input type="checkbox"/> <i>Others:</i>
Semester(s) in which the course is taught	6, 8
Person responsible for the course	Mai Hoang Bao An, PhD.
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, project, seminar.

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 182.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Lecture: 37.5 hours + Laboratory: 25 hours Private study including examination preparation, specified in hours: 120 hours								
Credit points	4 credits (Theory: 3 + Practice: 1) 6.18 ECTS								
Number of periods	Theory: 45 Practice: 30								
Required and recommended prerequisites for joining the course	Recommended : Artificial intelligence								
Course objectives	The goal of this course is to equip students with the understanding, knowledge, and some sorts of practical skills to develop many Machine Learning models with the goal to focus on application. In this course, we emphasize on a class of popular Machine Learning methods in Classification, Regression, Clustering, and Time Series Analysis. Also, we attempt to introduce a list of potential tools that can help students play around with different Advanced Machine Learning techniques. So that, the general goal of this course is to provide students the Machine Learning techniques broadly, not deeply, and the contents are most likely application-based approach.								
Course learning outcomes	<p>CLO 1. gain understanding of machine learning in general and its applications.</p> <p>CLO 2. can practice with some popular machine learning algorithms at a basic level.</p> <p>CLO 3. can understand and reproduce different machine learning use cases based on popular platforms.</p> <p>CLO 4. learn how to select and use machine learning algorithms with a bunch of application.</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>CLO 1, CLO 2, CLO 3, CLO 4</td> </tr> <tr> <td>Skill</td> <td>CLO 3, CLO 4</td> </tr> <tr> <td>Attitude</td> <td>CLO 3, CLO 4</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO 1, CLO 2, CLO 3, CLO 4	Skill	CLO 3, CLO 4	Attitude	CLO 3, CLO 4
Competency level	Course learning outcome (CLO)								
Knowledge	CLO 1, CLO 2, CLO 3, CLO 4								
Skill	CLO 3, CLO 4								
Attitude	CLO 3, CLO 4								

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Why is Machine Learning important? History of Machine Learning</td> <td>1</td> <td>I</td> </tr> <tr> <td>Introduction to Google Cloud and the use of Colab.</td> <td>1</td> <td>I, U</td> </tr> <tr> <td>Fundamentals of Machine Learning and data pipeline</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Linear and Logistic Regression/Classification</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Gradient descent methods.</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>MLP for Classification and Regression, Regression with Regularization</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Support Vector Machine and Kernel Methods.</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Multi-class Classification, Probabilistic Classifiers</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Neural Networks</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Introduction to ensemble learning and popular algorithms</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Time Series Analytics based on Machine Learning</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Clustering, Mixture of Gaussians</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>PCA and Introduction to feature engineering.</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Practical session: Focused discussion on a bunch of problems.</td> <td>1</td> <td>I, U</td> </tr> </tbody> </table>	Topic	Weight	Level	Why is Machine Learning important? History of Machine Learning	1	I	Introduction to Google Cloud and the use of Colab.	1	I, U	Fundamentals of Machine Learning and data pipeline	1	T, U	Linear and Logistic Regression/Classification	1	T, U	Gradient descent methods.	1	T, U	MLP for Classification and Regression, Regression with Regularization	1	T, U	Support Vector Machine and Kernel Methods.	1	T, U	Multi-class Classification, Probabilistic Classifiers	1	T, U	Neural Networks	1	T, U	Introduction to ensemble learning and popular algorithms	2	T, U	Time Series Analytics based on Machine Learning	1	I, T	Clustering, Mixture of Gaussians	1	T, U	PCA and Introduction to feature engineering.	1	T, U	Practical session: Focused discussion on a bunch of problems.	1	I, U
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Examination forms	short-answer questions, long-answer questions, projects.																																													

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] Jerome H. Friedman, Robert Tibshirani, and Trevor Hastie., The Elements of Statistical Learning: Data Mining, Inference, and Prediction, Second Edition (Springer Series in Statistics). [2] Christopher M. Bishop., Pattern Recognition and Machine Learning (Information Science and Statistics). [3] Kevin P. Murphy., Machine Learning: A Probabilistic Perspective (Adaptive Computation and Machine Learning series). [4] Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007.

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Why is Machine Learning important? History of Machine Learning	1		Lecture, Discussion	[2,4] Chapter 1
2	Introduction to Google Cloud and the use of Colab.	1, 2	Exercises	Lecture, In-class exercises	[3] Chapter 1
3	Fundamentals of Machine Learning and data pipeline	1, 2	Exercises, lab	Lecture, In-class exercises	[4] Chapter 2, 3

Week	Topic	CLO	Assessments	Learning activities	Resources
4	Linear and Logistic Regression/Classification	2, 3	Exercises, lab	Lecture, In-class exercises	[4] Chapter 4, 5
5	Gradient descent methods.	2, 3	Exercises, lab	Lecture, In-class exercises	[2,3] Chapter 5,6
6	MLP for Classification and Regression, Regression with Regularization	2, 3	Exercises, lab	Lecture, In-class exercises	[2] Chapter 7, 8
7	Support Vector Machine and Kernel Methods.	2, 3	Exercises, lab	Lecture, In-class exercises	[1] Chapter 5, 6
8	Multi-class Classification, Probabilistic Classifiers	2, 3	Exercises, lab	Lecture, In-class exercises	[1] Chapter 2, 3, 4
9	Neural Networks	2, 3			
10	Midterm				
11-12	Introduction to ensemble learning and popular algorithms	2, 3	Exercises, lab	Lecture, In-class exercises	[3] Chapter 1, 2, 3
13	Time Series Analytics based on Machine Learning	2, 3	Exercises, lab	Lecture, In-class exercises	[1,2,3] Chapter 4, 5, 6
14	Clustering, Mixture of Gaussians	3, 4	Exercises, lab	Lecture, In-class exercises	[1,3] Chapter 6, 7, 8
15	PCA and Introduction to feature engineering.	3, 4	Lab	Lecture, In-class exercises	[1,2,3] Chapter 4, 5, 6
16	Practical session: Focused discussion on a bunch of problems.	4	Seminar	Lecture, In-class exercises	[3] Chapter 6, 7, 8
17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Quiz (5%)	10%		20%	20%
Labs (10%)	30%	30%		
Midterm examination (30%)	50%	40%		
Projects/Presentations/ Report (15%)	10%		30%	30%
Final examination (40%)		30%	50%	50%

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

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.↵

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

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

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone	Benchmark
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	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)	Delivery techniques (posture, gesture, eye contact, and vocal	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness)	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness)

	make the presentation compelling, and speaker appears polished and confident.	expressiveness) make the presentation interesting, and speaker appears comfortable.	make the presentation understandable, and speaker appears tentative.	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	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.

	strongly supported.)			
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Source: Association of American Colleges and Universities

Date revised: April 24, 2025

Ho Chi Minh City, 24/04/2025

Dean of the School of Computer Science and Engineering

(Signature)



Nguyen Van Sinh



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

COURSE SYLLABUS

Course Name: Statistics and Data Science with Python
Course Code: MAFE320IU

1. General Information

- Course Title	
+ Vietnamese:	Thống kê và Khoa học dữ liệu với Python
+ English:	Statistics and Data Science with Python
- Course ID:	MAFE320IU
- Course type	
<input type="checkbox"/> General	<input type="checkbox"/> Fundamental
<input checked="" type="checkbox"/> Specialization (required)	<input type="checkbox"/> Specialization (elective)
<input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory:	0
- Pre-courses:	MA036IU-Probability and Statistics
- Parallel Course: (môn học trước)	None
- Course standing in curriculum:	Semester 2 in the 2 nd Year

2. Course Description

This course bridges foundational statistics and practical data-science programming. We spend the first four weeks revisiting descriptive statistics and the Central Limit Theorem through hands-on Python simulations, then progress to key statistical-learning tools such as regression, classification, cross-validation, and basic unsupervised learning. Emphasis is on reproducible workflows in Jupyter/Colab with Python. A team capstone project integrates the full pipeline from data wrangling to model interpretation. The course is mainly organized as follows:

Weeks 1-4: Build the way from Statistics to Code Boot Camp: Percentiles, quantiles, IQR, correlation, EDA, and the Central Limit Theorem, writing Monte-Carlo simulations in Python. Students see how randomness turns into the bell curve that still underlies modern machine-learning confidence scores.

Weeks 5–15: Core Machine learning: Level-up to the algorithms at the heart of real products: feature-engineered linear regression for prediction, logistic regression and decision trees for classification, k-NN for pattern recognition, and k-means, PCA for unsupervised discovery. Along the way you will study and practice with Python the topics: hyper-parameter tuning, cross-validation, and basic model-explainability methods.

3. Textbooks and References

Role	Title	Notes
Bridge Weeks (Weeks 1-4)	Think Stats (Downey); Practical Statistics for Data Scientists (Bruce & Gedeck, 2 nd Edition, 2024).	Descriptive Statistics, Resampling, and CLT. https://github.com/gedeck/practical-statistics-for-data-scientists

Core (Week 5-15)	An Introduction to Statistical Learning with Applications in Python (James, Witten, Hastie, Tibshirani, Taylor 2023).	For Weeks 5 – 15; free online: https://www.statlearning.com/ https://github.com/intro-stat-learning/ISLP_labs
Reference	Python Data Science Handbook (VanderPlas, 2022).	Tutorials on NumPy, Pandas, Matplotlib.

4. Course Objectives

Equip students with the skills to transform real-world data into reproducible statistical insights by:

- mastering Python-based descriptive statistics and Central Limit Theorem simulations.
- applying core statistical-learning and machine learning techniques: Regression, Classification, cross-validation, and introductory unsupervised methods; and
- delivering a capstone project that spans data wrangling, modelling, and interpretive reporting.

Goals	Goal description	Course Learning Outcomes	Competency level
Goal 1 - Cultivate Data-Literacy & Exploratory Insight	Students will gain the ability to interrogate raw data, compute key descriptive measures, and create informative visualisations that reveal patterns, anomalies, and relationships.	L.O. 1	Knowledge
Goal 2 - Develop Sound Modelling & Analytical Reasoning	Students will master essential statistical-learning techniques, regression (with regularisation), supervised classification, and introductory unsupervised methods, and learn to evaluate, compare, and refine models through cross-validation.	L.O. 2 L.O. 3	Skill
Goal 3 - Build Machine-Learning Operations habits, Professional Workflow & Communication	Students will adopt version-controlled, transparent coding practices and articulate analytical findings clearly in both written reports and oral presentations, ensuring that results can be independently reproduced and audited.	L.O 1, L.O 4	Attitude

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Exploratory Data Analysis (EDA): Compute percentiles, quantiles, correlation matrices, and other descriptive statistics, and produce clear visual summaries of real-world data in Python (NumPy, pandas, Matplotlib/Seaborn).	PLO2	I,T
L.O.2	Regression Modelling & Regularization Fit, interpret, and diagnose simple and multiple linear-regression models, applying Ridge and Lasso	PLO2	I, T,U

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
	techniques to manage over-fitting and improve generalisation.		
L.O.3	Predictive & Unsupervised Learning Build, tune, and evaluate basic classification models (logistic regression, decision trees, k-NN) with cross-validation, and perform introductory unsupervised analyses (k-means clustering, PCA) to uncover data structure.	PLO4 PLO5	T, U
L.O.4	Reproducible Workflow & Communication Deliver a version-controlled, fully reproducible analysis, organising code, data, and results in a Git repository, and communicate findings clearly in both written and oral formats.	PLO7	I, T, U

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

The levels of the CLO are based on the Bloom taxonomy (levels from 1-6).

6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude	5
	A1.2 Homework, Quiz	15
	A1.3 Projects	10
A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	40

7. Course Outlines

Weekly Schedule (15 Weeks)

Week	Lecture Topics	Learning Outcome	Teaching and learning activities	Readings and Assessment
1	Course logistics, Git & Jupyter setup, Python refresher	LO1	Intro Descriptive Stats. Install Anaconda; Git & GitHub tutorial notebook.	PDSH Ch 1
2	Descriptive Stats: Centre & spread, percentiles, IQR; box/violin plots	LO1	Summarise a provided data set; write custom quantile() function	PSDSc Ch 2 Quiz
3	Descriptive Stats: covariance & correlation (Pearson/Spearman); scatterplots	LO1	Correlation heatmaps; pair-plots with Seaborn	PSDSc Ch 3
4	Sampling distributions & CLT; bootstrap confidence intervals; permutation tests	LO1	Simulate CLT; implement bootstrap estimator	Think Stats Ch 9-10 HW

5	Data wrangling with NumPy & pandas; “tidy data”; missing-value handling	LO1	Data cleaning notebook; mini-project proposal due	ISLP App A; PDSH Ch 2-3
6	Exploratory Data Analysis: visual grammar, histograms, density plots, faceting	LO1, LO2	Create EDA report on chosen capstone data	ISLP Ch 2 (lab)
7	Simple & multiple linear regression; assumptions & diagnostics	LO2	statsmodels summary; residual plots	ISLP Ch 3 Quiz
8	Model assessment & selection, cross-validation, train/test split, Ridge/Lasso	LO2	Model-selection criteria, K-fold, α tuning, Penalty term, LassoCV, RidgeCV	ISLP Ch 6 HW
Midterm Examination				Written exam
9	Logistic regression; confusion matrix, accuracy, precision/recall, ROC	LO2	Implement logistic regression from scratch; evaluate on benchmark data	ISLP Ch 4
10	k-Nearest Neighbours classification & regression; distance metrics; scaling	LO3	Compare k-NN vs logistic on prior data; hyper-parameter sweep	ISLP Ch 5 Quiz
11	Decision Trees, splitting criteria, pruning, interpretation	LO3	Visualise tree; discuss feature importance	ISLP Ch 8 (sections 8.1-8.3)
12	Intro to Unsupervised Learning, k-means clustering; silhouette score	LO3	Cluster customer-segmentation data; interpret clusters	ISLP Ch 9 (k-means)
13	Dimensionality reduction, PCA basics; variance explained plots	LO4	PCA on image or gene-expression data; scree plot	ISLP Ch 9 (PCA) Quiz
14	Revise. Ethics, fairness & reproducibility; project troubleshooting workshop	LO4	Capstone progress demo; peer feedback	PSDSc Ch 12 HW
15	Capstone presentations & course wrap-up	LO2, LO3, LO4	Final Git repo, report & presentation due	Report present assessment
Final examination				Written exam

8. Course Policy

Class Participation: Student is expected that you will spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particularly in view of the interactive teaching and learning approach adopted.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for preparation, research, drafting, and the proper reference of sources in preparing all assessment items.

9. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Assoc Prof. Nguyen Minh Quan, Dr. Ta Quoc Bao, Dr. Pham Hai Ha
- Email: quannm@hcmiu.edu.vn, baotq@hcmiu.edu.vn, phha@hcmiu.edu.vn

Ho Chi Minh City, 03/06/2025

Department of Mathematics



Nguyen Minh Quan

COURSE SYLLABUS

Course Name: Optimization 1

1. General Information

- Course Title	
+ Vietnamese:	Tối ưu hoá 1
+ English:	Optimization 1
- Course ID:	MAFE303IU
- Course type	
<input type="checkbox"/> General	<input type="checkbox"/> Fundamental
<input checked="" type="checkbox"/> Specialization (required)	<input type="checkbox"/> Specialization (elective)
<input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Others :
- Number of credits:	4
+ Lecture:	3
+ Laboratory (exercises):	1
- Prerequisites:	Analysis 3, Linear Algebra
- Parallel Course:	None
- Course standing in curriculum:	Year 3

2. Course Description

This is the first course on optimization for students of Financial Engineering and Risk management and Applied statistics. The course includes:

- Elements of convex analysis
- Linear programming problems: LP models from real problems (especially, problems from finance), properties of LP, simplex method, duality.
- Nonlinear programming, unconstrained problems: Karush-Kuhn-Tucker conditions, convex problems, some solution methods (steepest descent method, Newton's method, conjugate direction method, Quasi-Newton Methods).
- Nonlinear programming, constrained problems: Karush-Kuhn-Tucker conditions, some solution methods (gradient projection method, penalty methods, barrier methods, dual methods).
- Models in finance and risk management.

3. Textbooks and References

Main textbooks

1. D. G. Luenberger, Y. Ye, *Linear and Nonlinear Programming*, 4th edition, Springer, 2016
2. R. W. Cottle, M. N. Thapa, *Linear and Nonlinear Optimization*, Springer, 2017

Other reference:

3. G. Cornuejols, R. Tutuncu, *Optimization Methods in Finance*, 2nd edition, Cambridge University Press, 2018

4. Course Objectives

The course will help students master the following topics:

- Basic theory of linear programming (LP) and simplex method for solving LP problems.
- Theory of nonlinear programming together with some important solution methods.
- Some applications to risk management and to finance.

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Provide students with basic knowledge of linear programming problems and some nonlinear class of problems: Theory and solution methods	L.O.1	Knowledge
G2	How to model a real problem as a linear programming problem, or a nonlinear problem with or without constraints. Practice first and/or second order optimality conditions, strong duality, numerical methods (Newton/quasi-Newton methods), and penalty methods, barrier methods for problems with constraints. Volatility estimation.	L.O.2 L.O.3	Skill
G3	Help students how to apply the above knowledge and tools of optimization to some problems in risk management and finance.	L.O.4	Skill Attitude

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Identify different types of optimization problems, linear and nonlinear problems. Theory of linear / nonlinear programming problems: first/second optimality condition, duality theory.	a	I, T
L.O.2	Solution methods: simplex methods, Newton's method, quasi-Newton's method, method of steepest descent, penalty method, barrier method, ...	a, b	T, U
L.O.3	Able to apply linear/non-linear programs in management and finance	c	U
L.O.4	Able to modify the models and solution methods to solve real problems with mathematical models being not exact the same as the ones in the course.	e, f, h	T, U

6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude	5
	A1.2 Home work	10
	A1.3 Quizzes, projects	
A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	50

7. Course Outlines

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1-3	Chapter 1. Basic properties of linear programming 1.1. Convex Sets. Extreme Points 1.2. Hyperplanes and Separation 1.3. Examples of Linear Programming Problems. Basic solutions 1.4. The Fundamental Theorem of Linear Programming. Relations to Convexity 1.5. LP models: asset/liability cash-flow matching	L.O.1	Lecture Class discussion	Homework Quiz
4-6	Chapter 2. The Simplex Method 2.1 Pivots. 2.2 Adjacent Extreme Points. Determining a Minimum Feasible Solution 2.3 Computational Procedure—Simplex Method 2.4 Artificial Variables Dual Linear Programming. The Dual Theorem	L.O.2 L.O.3 L.O.4	Lecture Class discussion	Homework Project
7-8	Chapter 3. Unconstrained Minimization 3.1 First-Order Necessary Conditions for Unconstrained Problems 3.2 Second-Order Conditions for Unconstrained Problems 3.3 Convex and Concave Functions 3.4 The Method of Steepest Descent 3.5 Newton's Method	L.O.1 L.O.2 L.O.4	Lecture Class discussion	Quiz Homework
Midterm Examination				Written exam
9	Chapter 3. Unconstrained Minimization (cont'd) 3.6 Conjugate Direction Methods 3.7 Quasi-Newton Methods		Lecture Class discussion	Homework
10-15	Chapter 4. Constrained Minimization 4.1 Constraints 4.2 First-Order Necessary Conditions for Constrained Problems 4.3 Second-Order Conditions for Constrained Problems 4.4 Inequality Constraints 4.5 Penalty Methods 4.6 Barrier Methods 4.7 Lagrangian Duality 4.8 NLP Models: Volatility Estimation	L.O.1 L.O.3 L.O.4	Class discussion	Homework Project

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
Final examination				Written exam

8. Course Policy

Class Participation: Student is expected that you will spend at least **12 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

9. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Assoc. Prof. Nguyen Ngoc Hai
- Email: nnhai@hcmiu.edu.vn

HEAD OF DEPARTMENT



Prof. Dr. Pham Huu Anh Ngoc

COURSE SYLLABUS

Course Name: INTRODUCTION TO BUSINESS ADMINISTRATION

1. General Information

- Course Title	
+ Vietnamese:	Dẫn nhập quản trị kinh doanh
+ English:	Introduction to business administration
- Course ID:	BA115IU
- Course type <input checked="" type="checkbox"/> General <input type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory:	0
- Prerequisites:	None
- Parallel Course:	
- Course standing in curriculum:	Year 2

2. Course Description

This course is to introduce students to the complexities and the multi-dimensional aspects of business. It attempts to give familiarity as well as an applied understanding of each of the core subject areas: Marketing, Management, Human Resource. It also increases the student's awareness of global issues.

3. Textbooks and References

Textbooks:

- [1] James A. O'Brien, George Marakas (2008), Introduction to Information Systems, Mc-Graw Hill
- [2] Succeeding in Business with MS Office Excel 2007, Thomson Course Technology, 2008, ISBN 978-1-4239-0605-6
- [3] New Perspective MS Office Access 2007 Brief, Thomson Course Technology, 2008, ISBN 978-1-4239-0587-5
- [4] Case Grader - MS Office Excel 2007, Thomson Course Technology, 2008, ISBN 978-1-4239-9823-5

References:

- [5] *Fundamentals of Information Systems*, 4th Edition, Thomson Course Technology, 2007, ISBN 978-1-4239-0113-5.

4. Course Objectives

The course aims to provide students with knowledge of functional areas of business and the integration among those; global issues, including an understanding of approaches to business ethics and multinational issues; basic research, analysis, writing, computer, teaming, and presentation skills; and applying critical thinking skills and communication through the development of a portfolio of a firm in an industry in which they are interested.

Goals	Goal description	Program Learning Outcomes	Competency level
G1	Develop a high level of familiarity with one or more of the functional areas of business, team building skills and understand group dynamics and students' applied critical thinking skills and communication through the development of a portfolio of a firm in an industry in which they are interested.	L.O.1	Knowledge
G2	Explain how rapidly the business world is changing and the importance of life-long learning; how global issues influence business entities and how global issues impact customers	L.O.2	
G3	Organizing, analyzing and demonstrate information in an efficient and logical way: Theories and Concepts and information in a logical way: Skill Development and Practice	L.O.3	Skill

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes (*)
L.O.1	Develop a high level of familiarity with one or more of the functional areas of business, team building skills and understand group dynamics and students' applied critical thinking skills and communication through the development of a portfolio of a firm in an industry in which they are interested.	e
L.O.2	Explain how rapidly the business world is changing and the importance of life-long learning; how global issues influence business entities and how global issues impact customers	h
L.O.3	Organizing, analyzing and demonstrate information in an efficient and logical way: Theories and Concepts and information in a logical way: Skill Development and Practice	e

6. Course Assessment

Assessment Component	Assessment form	Assessment form
A1. Process assessment	A1.1	10%
	A1.2	15%
	A1.3	5%
A2. Midterm assessment	A2.1	15%
	A2.2	15%
A3. Final assessment	A3.1	25%
	A3.2	25%

7. Course Outlines

Theory

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1	<p>Chapter 1: Managing Within The Dynamic Business Environment: Taking Risks And Making Profits Business And Entrepreneurship: Revenues, Profits And Losses Entrepreneurship Versus Working For Others The Business Environment The Evolution Of American Business</p>	<p>L.O.1 L.O.2</p>	<p>Lecture Class discussion</p>	<p>Quiz</p>
2	<p>Chapter 2: How Economics Affects Business: the Creation and Distribution of Wealth How Economic conditions Affect Businesses Understanding Free-Market Capitalism Understanding Socialism Understanding Communism The Trend toward Mixed Economies Understanding the Economic System of the United States</p>	<p>L.O.1 L.O.2</p>	<p>Lecture Class discussion</p>	<p>Quiz</p>
3	<p>Chapter 5: Choosing a Form of Business Ownership Basic Forms of Business Ownership Sole Proprietorships Partnerships Corporations Corporate Expansion: Mergers and Acquisitions Special Forms of Business Ownership Franchises Cooperatives Which Form of Ownership is for You?</p>	<p>L.O.1 L.O.2</p>	<p>Lecture Class discussion</p>	<p>Quiz Presentation</p>
4	<p>Chapter 7: Management, Leadership, And Employee Empowerment Managers' Roles Are Evolving Functions Of Management Planning: Creating A Vision Based On Values Organizing: Creating A Unified System Leading: Providing Continuous Vision And Values Controlling: Making Sure It Works</p>	<p>L.O.1 L.O.2 L.O.3</p>	<p>Lecture Class discussion</p>	<p>Quiz Presentation</p>
5	<p>Chapter 8: Adapting Organizations To Today's Markets Everyone Is Doing It Issues Involved In Structuring Organizations Organization Models Managing the Interactions among Firms</p>	<p>L.O.1 L.O.2 L.O.3</p>	<p>Lecture Class discussion</p>	<p>Quiz Presentation</p>

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
	Adapting to Change			
6	Chapter 9: Producing World-Class Goods and Services US Manufacturing in Perspective From Production to Operations Management Production Processes Operations Management Planning Controlling Procedures: PERT and Gantt Charts Preparing for the future	L.O.1 L.O.2	Lecture Class discussion	Quiz Presentation
7-8	Chapter 10: Motivating Employees And Building Self-Managed Teams The Importance Of Motivation Motivation And Maslow's Hierarchy Of Needs Herzberg's Motivating Factors Job Enrichment McGregor's Theory X And Theory Y Ouchi's Theory Goal-Setting Theory And Management By Objectives Meeting Employee Expectations: Expectancy Theory Reinforcing Employee Performance: Reinforcement Theory Treating Employees Fairly: Equity Theory Building Teamwork through Open Communication Motivation in the Future	L.O.1 L.O.2 L.O.3	Lecture Class discussion	Quiz Presentation
9-10	Chapter 11: HRM: Finding and Keeping the Best Employees Working with People is Just the Beginning Determining Your Human Resource Needs Recruiting Employees from a Diverse Population Selecting Employees Who will Be Productive Training and Developing Employees for Optimum Performance Appraising Employee Performance to Get Optimum Results Compensating Employees: Attracting and Keeping the Best Scheduling Employees to Meet Organizational and Employee Needs Moving Employees Up, Over, and Out Laws Affecting HRM	L.O.1 L.O.2 L.O.3	Lecture Class discussion	Quiz Presentation
11	Chapter 13: Marketing: Building Customer Relationships What Is Marketing?	L.O.1 L.O.2 L.O.3	Lecture Class discussion	Quiz Presentation

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
	The Marketing Mix Providing Marketers With Information The Consumer Market The B2B Market Your Prospects in Marketing			
12	Chapter 14: Developing and Pricing Products and Services Product Development and the Total Product Offer Product Differentiation Packaging Changes the Product Branding and Brand Equity The New-Product Development Process The Product Life Cycle Competitive Pricing Nonprice Competition	L.O.1 L.O.2 L.O.3	Lecture Class discussion	Quiz Presentation
13	Chapter 15: Distributing Products Quickly and Efficiently The Emergence of Marketing Intermediaries The Utilities Created by Intermediaries Wholesale Intermediaries Retail Intermediaries Building Cooperation in Channel Systems The Emergence of Logistics Getting Goods from Producers to Consumers Efficiently Dealing with Change: Responding to National Emergencies What All This Means to You	L.O.1 L.O.2 L.O.3	Lecture Class discussion	Quiz Presentation
14-15	Chapter 16: Using Effective Promotional Techniques Promotion and the Promotion Mix Advertising: Fighting to Keep Consumer Interest Personal Selling: Providing Personal Attention Public Relation: Building Relationships Sales Promotion: Getting a Good Deal Managing the Promotion Mix: Putting It All Together	L.O.1 L.O.2 L.O.3	Lecture Class discussion	Quiz Presentation


8. Course Policy

Class Participation: Students are expected to spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignments and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

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9. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer:
- Email:

	<p style="text-align: center;">HEAD OF DEPARTMENT</p> <p style="text-align: center;"></p> <p style="text-align: center;">Prof. Dr. Pham Huu Anh Ngoc</p>
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COURSE SYLLABUS

Course Name: Stochastic Modeling

1. General Information

- Course Title	
+ Vietnamese:	Mô hình ngẫu nhiên
+ English:	Stochastic Modeling
- Course ID:	MAAS318IU
- Course type <input type="checkbox"/> General <input checked="" type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory:	0
- Prerequisites:	Probability
- Parallel Course:	
- Course standing in curriculum:	Year 2

2. Course Description

The aim of this course is to provide solid foundations in random processes. This includes basic concepts in stochastic processes, such as the Markov property, and focuses on building a framework to formulate and analyze probabilistic system to understand potential outcomes and inform decision – making

3. Textbooks and References

Textbooks:

[1] N. Privault, *Understanding Markov Chains – Examples and Applications*, Springer (2nd Edition), 2018

[2] N. Privault, *Lecture note Topics in Discrete Stochastic Processes*, 2022

4. Course Objectives

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Basic understanding of stochastic processes and their characterization	L.O.1	Knowledge Skill
G2	Be able to formulate and analyze probabilistic system	L.O.2	
G3	Apply stochastics models to solve real world problems	L.O.3	

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Be able to understanding basic concept of stochastic processes and their characterization	a	T, U
L.O.2	Be able to formulate and analyze probabilistic system	b	T, U
L.O.3	Be able to apply stochastics models to solve real world problems	g	I, U

6. Course Assessment

Assessment Component	Assessment form	Assessment form
A1. Process assessment	A1.1	10%
	A1.2	15%
	A1.3	5%
A2. Midterm assessment	A2.1	15%
	A2.2	15%
A3. Final assessment	A3.1	25%
	A3.2	25%

7. Course Outlines

Theory

Week	Topic	Learning Outcomes	Assessments	Learning activities
1-2	Markov Chain	1, 2	HW1	Lecture, Discussion
3	Probabilistic Automata	3	HW2	Lecture, HW
4-5	Random Walk	1, 2	HW3 Quiz1	Lecture, HW Inclass-Quiz
6	Convergence to Equilibrium	1, 3	HW4	Lecture, HW
7- 8	Ising Model	1, 3	HW5 Quiz2	Lecture, HW Inclass-Quiz
9	Midterm			
10 -11	Search Engines	2, 3	HW8 Quiz3	Lecture, HW Inclass-Quiz
12 – 13	Hidden Markov Model	1, 3	HW9	Lecture, HW
14 -16	Markov Decision Processes	1, 3	HW10	Lecture, HW
17	Final exam			

8. Course Policy

Class Participation: Student is expected that you will spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

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9. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Pham Hai Ha
- Email: phha@hcmiu.edu.vn

Ho Chi Minh City, 03/06/2025

Department of Mathematics



Nguyen Minh Quan

COURSE SYLLABUS

Course Name: Numerical Analysis

1. General Information

- Course Title	
+ Vietnamese:	Giải tích số
+ English:	Numerical Analysis
- Course ID:	MAFE208IU
- Course type <input type="checkbox"/> General <input checked="" type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
- Number of credits:	4
+ Lecture:	4
+ Laboratory:	0
- Prerequisites:	None
- Previous courses (pre-take):	Analysis 3
- Parallel Course:	None
- Course standing in curriculum:	Year 2

2. Course Description

The aim of this course is to provide students with basic concepts and problem solving skills in numerical analysis. The course include the following topics: Accuracy and precision, errors, roots of nonlinear equations, solving systems of linear equations, curve fitting and interpolation, spline interpolation, numerical differentiation and integration, numerical methods for differential equations, numerical methods for partial differential equations.

3. Textbooks and References

Textbooks:

- 1) R.L. Burden and J.D. Faires, Numerical Analysis, 7th edition, Brooks/Cole, Pacific Grove, CA, 2001.
- 2) S. Chapra & R.P. Canale, Numerical Methods for Engineers: with software and Programming Appl, McGraw-Hill, 7th ed., 2015

References:

- 1) G. Allaire, Numerical Analysis and Optimization, Oxford University Press, 2007.
- 2) S.S. Rao, Applied Numerical methods for Engineers and Scientists, Prentice Hall, 2001

4. Course Objectives

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

- | |
|---|
| <ol style="list-style-type: none">1. Have basic knowledge in numerical analysis2. Be equipped with skills and to derive algorithms to solve problems numerically |
|---|

3. Analyze an algorithm's accuracy, efficiency and convergence properties.

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Provide student with basic knowledge in numerical analysis	L.O.1	Knowledge
G2	Students are equipped with skills and derive algorithms to solve problems numerically	L.O.2	Skill
G3	Analyze an algorithm's accuracy, efficiency and convergence properties.	L.O.3	Attitude

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Have basic knowledge in numerical analysis	a	I,T
L.O.2	Be equipped with skills and to derive algorithms to solve problems numerically.	b	I, T,U
L.O.3	Analyze an algorithm's accuracy, efficiency and convergence properties	c	T, U

6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Class Assignments	10
	A1.2 Homework	10
A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	50

7. Course Outlines

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1-3	Chapter 1. Errors and Solutions of nonlinear equations 1.1 Errors 1.2 Bracketing methods for nonlinear equations 1.3 Open methods for nonlinear equations 1.4 Multiple roots 1.5 Systems of nonlinear equations	L.O.1 L.O.2 L.O.3	Lecture Class discussion	Homework Quiz
4-5	Chapter 2. Linear Systems of Equations 2.1 Gauss elimination method 2.2 LU decomposition methods 2.3 Iterative methods	L.O.1 L.O.2 L.O.3	Lecture Class discussion	Homework Quiz
6-8	Chapter 3. Curve Fitting and Interpolation 3.1. Least squares regression models 3.2 Multidimensional least-square models 3.3 Polynomial regression 3.4 Linearized models 3.5 Interpolation: Newton and Lagrange interpolating polynomials 3.6 Inverse Interpolation 3.7 Spline interpolation	L.O.1 L.O.2 L.O.3	Lecture Class discussion	Quiz Homework
Midterm Examination				Written exam
9-10	Chapter 4. Numerical Differentiation and Integration 4.1. Numerical Differentiation 4.2 Higher-order formulas 4.3 Approximations of Partial derivatives 4.4 Trapezoidal rule 4.5 Simpson's rule 4.6 Multiple integrals	L.O.1 L.O.2 L.O.3	Lecture Class discussion	Homework Quiz
11-13	Chapter 5. Numerical methods for differential equations 5.1. One-step methods 5.2 Euler's method 5.3 Improvements of Euler's methods 5.4 Runge-Kutta methods 5.5 Systems of differential equations and higher-order differential equations 5.6 Multi-step methods	L.O.1 L.O.2 L.O.3	Lecture Class discussion	Homework Quiz
14-15	Chapter 6. Numerical methods for partial differential equations 6.1 Finite difference methods for elliptic equations	L.O.1 L.O.2 L.O.3	Lecture Class discussion	Homework Quiz

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
	6.2. Finite difference methods for parabolic differential equations 6.3. Finite difference methods for hyperbolic partial differential equations			
Final examination				Written exam

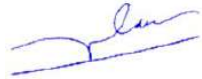
8. Course Policy

Class Participation: Students are expected to spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignments and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

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9. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Assoc.Prof. Mai Duc Thanh
- Email: mdthanh@hcmiu.edu.vn

	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
 School of Computer Science and Engineering

COURSE SYLLABUS

Course Name: Regression Analysis

Course Code: IT136

1. General information

Course name	- (in English): Regression Analysis - (in Vietnamese): Phân tích hồi qui
Course designation	This course covers linear regressions, inference and diagnostic for linear regression models, model selection and transformation.
Course type	<input type="checkbox"/> <i>General knowledge</i> <input type="checkbox"/> <i>Fundamental</i> <input checked="" type="checkbox"/> <i>Specialized knowledge</i> <input type="checkbox"/> <i>Internship/Project/Thesis</i> <input type="checkbox"/> <i>Others:</i>
Semester(s) in which the course is taught	2,4
Person responsible for the course	Assoc. Prof. Vo Thi Luu Phuong, Ph.D.
Language	English
Relation to curriculum	Compulsory, Data Science major
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 182.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Lecture: 37.5 hours + Laboratory: 25 hours Private study including examination preparation, specified in hours: 120 hours
Credit points	4 credits (Theory: 3 + Practice: 1)

	6.18 ECTS															
Number of periods	Theory: 45 Practice: 30															
Required and recommended prerequisites for joining the course	Recommended : Statistical Method															
Course objectives	Regression analysis is one of the most powerful methods in statistics for determining the relationships between variables and using these relationships to forecast future observations. The foundation of regression analysis is very helpful for any modeling exercise. Regression models are used to predict and forecast future outcomes. Its popularity in finance is very high; it is also very popular in other disciplines like life and biological sciences, management, engineering, <i>etc.</i>															
Course learning outcomes	<p>CLO 1. Determine the models representing the relationships between variables and use the models to forecast future observations.</p> <p>CLO 2. Perform inference and diagnostic of the models; select the best model.</p> <p>CLO 3. Apply knowledge to various practical datasets.</p> <table border="1"> <thead> <tr> <th>Competency level</th> <th>Course learning outcome (CLO)</th> </tr> </thead> <tbody> <tr> <td>Knowledge</td> <td>CLO1</td> </tr> <tr> <td>Skill</td> <td>CLO2, CLO3</td> </tr> <tr> <td>Attitude</td> <td>CLO2</td> </tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1	Skill	CLO2, CLO3	Attitude	CLO2							
Competency level	Course learning outcome (CLO)															
Knowledge	CLO1															
Skill	CLO2, CLO3															
Attitude	CLO2															
Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight (Theory + Lab.)</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Basic of probabilities and statistics</td> <td>6</td> <td>T, U</td> </tr> <tr> <td>Some tips on R, Python</td> <td>3</td> <td>U</td> </tr> <tr> <td>Simple Linear Regression</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Simple Linear Regression: inferences and diagnostics</td> <td>6+4</td> <td>T, U</td> </tr> </tbody> </table>	Topic	Weight (Theory + Lab.)	Level	Basic of probabilities and statistics	6	T, U	Some tips on R, Python	3	U	Simple Linear Regression	3	T, U	Simple Linear Regression: inferences and diagnostics	6+4	T, U
Topic	Weight (Theory + Lab.)	Level														
Basic of probabilities and statistics	6	T, U														
Some tips on R, Python	3	U														
Simple Linear Regression	3	T, U														
Simple Linear Regression: inferences and diagnostics	6+4	T, U														

	Matrix approach for Simple regression model	3+4	T, U
	Multiple Linear Regression	6+4	T, U
	Selecting the best regression model	3+4	T, U
	Multiple Linear Regression: Diagnostic	3+4	T, U
	Transformations	3	T, U
	Logistic regression	3+4	T, U
	Autocorrelation in Time series data	3	T, U
	Final review	3+2	T
Examination forms	Multiple-choice questions, short-answer questions, programming		
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	<ol style="list-style-type: none"> 1. Michael H. Kutner, Christopher J Nachtsheim, John Neter, Applied Linear Regression Models, 4th, 2004 2. Montgomery, D. C., Peck, E. A., and Vining, G., Introduction to Linear Regression Analysis, 5th, 2012 		

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Basic of probabilities and statistics	1, 2	Quiz	Lecture, discussion, in-class exercise	1,2

2	Some tips on R, Python	1, 2		Lecture, discussion, in-class exercise	1,2
3	Simple Linear Regression	1, 2	Midterm	Lecture, discussion, in-class exercise, laboratory	1,2
4-5	Simple Linear Regression: inferences and diagnostics	1, 2, 3	Quiz, Midterm, Homework	Lecture, discussion, in-class exercise, laboratory	1,2
6	Matrix approach for Simple regression model	1, 2	Midterm	Lecture, discussion, in-class exercise, laboratory	1,2
7-8	Multiple Linear Regression	1, 2, 3	Quiz, Midterm, Homework	Lecture, discussion, in-class exercise, laboratory	1,2
	Midterm Exam				
8	Selecting the best regression model	2, 3	Final, Homework	Lecture, discussion, in-class exercise, laboratory	1,2
9-10	Multiple Linear Regression: Diagnostic	2, 3	Quiz, Final, Homework	Lecture, discussion, in-class exercise, laboratory	1,2
11	Transformations	2, 3	Final, Homework	Lecture, discussion, in-class exercise, laboratory	1,2
12-13	Logistic regression	1, 2, 3	Quiz, Final, Lab, Homework	Lecture, discussion, in-class	1,2

				exercise, laboratory	
14	Autocorrelation in Time series data	2, 3	Final, Homework	Lecture, discussion, in-class exercise	1,2
15	Final review	1, 2, 3	Final, Homework	Lecture, discussion	1,2
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Quiz, homework (10%)	25%	25%	
Labs (25%)	25%	25%	50%
Midterm examination (30%)	25%	25%	25%
Final examination (35%)	25%	25%	25%

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

- 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.↔

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	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is not seriously	Issue/ problem to be considered critically is stated but description leaves some terms	Issue/ problem to be considered critically is stated without clarification or description.

	information necessary for full understanding.	impeded by omissions.	undefined, ambiguities unexplored, boundaries undetermined, and/ or backgrounds unknown.	
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	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others'	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some

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

	discussed in priority order.	are identified clearly.	and implications) are identified clearly.	are oversimplified.
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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.
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Source: Association of American Colleges and Universities

Date revised: April 24, 2025

Ho Chi Minh City, 24/04/2025

Dean of the School of Computer Science and Engineering

(Signature)

Nguyen Van Sinh



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
School of Computer Science and Engineering

COURSE SYLLABUS

Course Name: Algorithms and Data Structure

Course Code: IT013IU

1. General information

Course designation	This subject introduces students to basic data structures and algorithms
Semester(s) in which the course is taught	4,6
Person responsible for the course	Dr. Tran Thanh Tung
Language	English
Relation to curriculum	Compulsory (All programs)
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	Total workload: 195 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 (lecture) + 30 (laboratory) Private study including examination preparation, specified in hours: 120
Credit points	Number of credits : 4 Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	Object-Oriented Programming
Course objectives	Introduction to data structures and algorithms, including their design, analysis, and implementation.
Course learning outcomes	CLO 1. Understand basic data structures and algorithms CLO 2. Analyze and evaluate data structures and algorithms. CLO 3. Design algorithms and select data structures for real world applications.

		Competency level	Course learning outcome (CLO)																																							
		Knowledge	CLO1																																							
		Skill	CLO2, CLO3																																							
		Attitude	CLO3																																							
Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Review OOP & Java</td> <td>3</td> <td>I</td> </tr> <tr> <td>Arrays</td> <td>3</td> <td>T</td> </tr> <tr> <td>Complexity</td> <td>3</td> <td>T</td> </tr> <tr> <td>Sorting</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Queue, Stack</td> <td>3</td> <td>T</td> </tr> <tr> <td>List</td> <td>6</td> <td>T</td> </tr> <tr> <td>Recursion</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Advanced Sorting</td> <td>6</td> <td>T</td> </tr> <tr> <td>Binary Tree</td> <td>3</td> <td>T</td> </tr> <tr> <td>Hash Table</td> <td>3</td> <td>T</td> </tr> <tr> <td>Graphs</td> <td>3</td> <td>T</td> </tr> <tr> <td>Algorithms on graphs</td> <td>3</td> <td>T, U</td> </tr> </tbody> </table>			Topic	Weight	Level	Review OOP & Java	3	I	Arrays	3	T	Complexity	3	T	Sorting	3	T, U	Queue, Stack	3	T	List	6	T	Recursion	3	T, U	Advanced Sorting	6	T	Binary Tree	3	T	Hash Table	3	T	Graphs	3	T	Algorithms on graphs	3	T, U
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Examination forms	Short-answer questions																																									
Study and examination requirements	<p>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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																																									
Reading list	<ol style="list-style-type: none"> 1. Michael T. Goodrich and Roberto Tamassia, Data Structures and Algorithms in Java 6th, 2014 2. Cormen, Thomas H., et al. Introduction to algorithms. MIT press, 2009. 3. Lafore, Robert. Data structures and algorithms in Java. Sams publishing, 2017. 																																									

2. Learning Outcomes Matrix

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

	PLO					
CLO	a	b	c	d	e	f
1	XX					

2		XXX				
3						X

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Review OOP & Java	1	Quiz	Lecture	
2	Arrays	1	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
3	Complexity	2	Quiz	Lecture, Discussion	[2]
4	Sorting	1,2	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
5	Queue, Stack	2,3	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
6	List part 1	1,2	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
7	List part 2	2,3	Lab, Quiz, Midterm	Lecture, Discussion	
8	Recursion	2,3	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
9	Midterm				
10	Advanced Sorting part 1	1,2	Lab, Quiz, Final	Lecture, Discussion, In class exercises	[1,3]
11	Advanced Sorting part 2	2,3	Lab, Quiz, Final	Lecture, Discussion	[1,2,3]
12	Binary Tree	1,2	Lab, Quiz, Final	Lecture, Discussion, In class exercises	[1,3]
13	Hash Table	2,3	Lab, Quiz, Final	Lecture, Discussion	[1,3]
14	Graphs	1,2	Lab, Quiz, Final	Lecture, Discussion, In class exercises	[2,3]
15	Algorithms on graphs	2,3	Lab, Quiz, Final	Lecture, Discussion	[2,3]
16	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Quiz (5%)	20%	5%	
Labs (10%)		10%	
Midterm examination (30%)	40%	30%	30%
Projects/Presentations/ Report (15%)		15%	40%
Final examination (40%)	40%	40%	30%

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

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%)			
TOTAL SCORE			
	100		

5.2. Holistic rubric

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

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

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling,	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting,	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

HISTORY OF VIETNAMESE COMMUNIST PARTY

1. General Information

-	Course Title:	
+	Vietnamese: Lịch sử Đảng Cộng Sản Việt Nam	
+	English: History of Vietnamese Communist Party	
-	Course ID: PE018IU	
-	Course type	
	<input type="checkbox"/> General	<input type="checkbox"/> Fundamental
	<input type="checkbox"/> Specialization (required)	<input type="checkbox"/> Specialization (elective)
	<input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Others :
-	Number of credits: 2	
+	Lecture: 2	
+	Laboratory: 0	
-	Previous courses: PE015IU (Philosophy of Marxism and Leninism), PE016IU (Political economics of Marxism and Leninism), PE017IU (Scientific Socialism)	
-	Parallel Course:	
-	Course standing in curriculum:	
	Year 2	

2. Course Description

Cung cấp những tri thức có tính hệ thống, cơ bản 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 (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 (1975-2018).

3. Textbooks and References

Textbooks:

- Bộ Giáo dục và Đào tạo (2019), Chương trình môn học Lịch sử Đảng Cộng sản Việt Nam, ban hành 2019.
- Hội đồng Trung ương chỉ đạo biên soạn giáo trình quốc gia các môn khoa học Mác-Lênin, tư tưởng Hồ Chí Minh (2018), Giáo trình Lịch sử Đảng Cộng sản Việt Nam, HXB. Chính trị quốc gia, Hà Nội.

4. Course Objectives

- Cung cấp cho sinh viên hiểu biết về lịch sử của Đảng Cộng sản Việt Nam. Xây dựng cho sinh viên niềm tin vào sự lãnh đạo của Đảng, theo mục tiêu, lý tưởng của Đảng.
- Giúp sinh viên vận dụng kiến thức chuyên ngành để chủ động, tích cực trong giải quyết những vấn đề kinh tế, chính trị, văn hoá, xã hội theo đường lối, chính sách, pháp luật của Đảng và Nhà nước.

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes (*)
L.O.1	Hiểu rõ những nội dung cơ bản của đường lối cách mạng của Đảng Cộng sản Việt Nam, trong đó chủ yếu tập trung vào đường lối của Đảng thời kỳ đổi mới trên một số lĩnh vực cơ bản của đời sống xã hội phục vụ cho cuộc sống và công tác.	h (level 2)
L.O.2	Vận dụng kiến thức chuyên ngành để chủ động, tích cực trong giải quyết những vấn đề kinh tế, chính trị, văn hoá,	d ((level 3)

	xã hội theo đường lối, chính sách, pháp luật của Đảng và Nhà nước.	
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6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	Quiz, attendance	30
A2. Midterm assessment	Midterm exam	20
A3. Final assessment	Final exam	50

7. Course Outlines

Theory

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1	Đối tượng, chức năng, nhiệm vụ, nội dung và phương pháp nghiên cứu, học tập lịch sử Đảng Cộng sản Việt Nam	L.O.1, L.O.2	Lecture Class discussion	Quiz
2-6	Đảng Cộng sản Việt Nam ra đời và lãnh đạo đấu tranh giành chính quyền (1930-1945)	L.O.1	Lecture Class discussion	Quiz
7-11	Đảng lãnh đạo hai cuộc kháng chiến, hoàn thành giải phóng dân tộc, thống nhất đất nước (1945-1975)	L.O.1, L.O.2	Lecture Class discussion	Quiz
12-15	Đảng lãnh đạo cả nước quá độ lên Chủ nghĩa Xã hội và tiến hành công cuộc đổi mới (1975-2018)	L.O.1, L.O.2	Lecture Class discussion	Quiz

8. Course Policy

Class Participation: A minimum attendance of 80 % is compulsory for the class sessions and 100% is compulsory for the laboratory sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

9. Course Coordinator/ Lecturer

- Department of Civil Engineering:
- Course Coordinator/ Lecturer:
- Email:

		<i>Ho Chi Minh City,</i> HEAD OF DEPARTMENT
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COURSE SYLLABUS

Course Name: Multivariate Statistical Analysis

General Information

Course Title	
Vietnamese:	Phân tích thống kê nhiều chiều
English:	Multivariate Statistical Analysis
Course ID:	MAAS413IU
Course type <input type="checkbox"/> General <input checked="" type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
Number of credits:	3
Lecture:	3
Laboratory:	0
Prerequisites:	Regression models, Machine learning
Parallel Course:	None
Course standing in the curriculum:	Year 3

Course Description

The course is designed to provide students with comprehensive methods used in multivariate statistical analysis. Topics introduced and applied include reviewing matrix Algebra, descriptive techniques, multivariate distributions, theory of estimate and testing hypothesis, principle component analysis, especially, Copula theory, and some applications in finance.

Textbooks and References

Textbooks:

W. K. Härdle, L. Simar (2019). Applied Multivariate Statistical Analysis. 5th ed, Springer
R. Johnson, D. W. Wichern (2014). Applied Multivariate Statistical Analysis. 6th ed, Pearson
Bryan F.J. Manly (2014). Multivariate Statistical Methods. 3rd ed, Taylor and Francis

Course Objectives

The course is devoted to multivariate statistical analysis. Upon completion of the course, students are expected to understand the underlying theory of multivariate statistical methods. Students are also able to utilize techniques in multivariate statistical analysis in business analytics and data science.

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Identify descriptive methods used in multivariate statistical analysis	L.O.1	Knowledge

G2	Students are able to work with various types of datasets, able to create graphs of data with R or Python programming, and use performance measures to evaluate predictive modeling.	L.O.2 L.O.3	Skill
G3	Students are able to utilize statistical and machine learning models to model business problems. Furthermore, students will be able to effectively communicate the results of applying predictive analytics to solve a business problem.	L.O.4	Attitude

Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Identify and understand different descriptive techniques in multivariate statistical analysis. Translate questions into ones that can be analyzed with statistical models.	a	I,T
L.O.2	Demonstrate important multivariate distribution, especially multinormal distribution. Identify methods of estimation and testing hypothesis	c	I, T,U
L.O.3	Demonstrate the principle component analysis and theory of copula	d	I, T, U
L.O.4	Articulate the applicability of multivariate statistical methods and use R or Python programming for analyzing the real dataset in finance and business. Be able to interpret empirical results. Develop a life-long learning attitude	f, g, h	T, U

Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude	5
	A1.2 Homework	10
	A1.3 Quizzes, projects	5
A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	50

Course Outlines

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1-2	Chapter 1. Descriptive techniques: Comparison of Batches Boxplots Histograms Kernel density Scatterplots Chenoff-Flury faces Andrew's curves Parallel coordinate plots	L.O.1	Lecture Class discussion	Homework Quiz

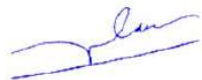
Week	Content	Learning Outcome	Teaching and learning activities	Assessment
	Hexagon plots			
3-5	Chapter 2. Multivariate distributions 2.1. Introduction to matrix algebra 2.2. Distribution and density function 2.3. Moments and characteristic functions 2.4. Transformations 2.5. The multivariate normal distribution 2.6. Sampling distribution and limit theorems	L.O.1 L.O.2	Lecture Class discussion	Homework
5-7	Chapter 3. Theory of estimation and hypothesis testing The likelihood function The Cramer-Rao lower bound Likelihood ratio test Linear hypothesis	L.O.2	Lecture Class discussion	Homework project
Midterm Examination				Written exam
8-10	Chapter 4. Principle component analysis 4.1. Standardized linear combination 4.2. Principle components in practice 4.3. Interpretation of the principle components 4.4. Asymptotic properties of the principle components 4.5. Normalized the principle components analysis 4.6. Common Principle components	L.O.3 L.O.4	Lecture Class discussion	Homework
11-13	Chapter 5. Copula theory 5.1. Definitions 5.2. Copula classes 5.3. Dependence 5.4. Monte Carlo Simulation 5.5. Copula estimation	L.O.3 L.O.4	Lecture Class discussion	Homework Project
14-15	Chapter 6. Applications in Finance 6.1. Portfolio choice 6.2. Efficient portfolio 6.3. Efficient portfolios in practice 6.4. Capital Asset Pricing Model (CAPM)	L.O.1 L.O.2 L.O.3 L.O.4	Lecture Class discussion	Homework
Final examination				Written exam

Class Participation: Student is expected that you will spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particularly in view of the interactive teaching and learning approach adopted.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. 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 preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Ta Quoc Bao
- Email: baotq@hcmiu.edu.vn

	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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COURSE SYLLABUS

Course Name: Decision making

1. General Information

- Course Title	
+ Vietnamese:	Lý thuyết ra quyết định
+ English:	Decision making
- Course ID:	MAFE207IU
- Course type <input type="checkbox"/> General <input checked="" type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory (exercises):	0
- Prerequisites:	None
- Parallel Course:	None
- Course standing in curriculum:	Year 3

2. Course Description

Decision making is one of the important parts in operations research or management science. Decision making techniques help managers to choose the best alternative based on quantitative criteria. This course provides students with basic knowledge about decision model formulation so that they can make decisions based on the models. This course also provides students with basic knowledge on decision making in the relation to game theory. Concretely, students are supplied with the structure of decision making problems, with or without uncertainty, game theory and decision making, and Project management PERT/CPM.

3. Textbooks and References

Main textbooks

[1] F.S. Hillier, G.J. Lieberman, Introduction to Operations Research, 10th Edition, McGraw-Hill, 2015.

[2] H.A. Taha, Operations research: An introduction (Eight Edition), Pearson Prentice Hall, 2007.

Other references

[3] E. Jonathan, Jr. Ingersoll, *Theory of financial decision making*. Rowman & Littlefield Publisher, 1987.

[4] R.T. Clemen, T. Reilly, *Making hard decision with decision tools*. South-Western, Mason USA, 2013.

4. Course Objectives

Master mathematical models and solution methods of decision-making problems, game theory, group decisions, and multi-criteria decision making.

Realize problems in management having the mentioned models in decision making and have the ability to model using such models.

This course examines the decision-making processes in various contexts of deterministic or stochastic. To complete this course, students would be able to analyze alternatives, formulate decision models, and make decisions based on the results of the decision models.

Realize mathematical models when applying the knowledge studied to real-world problems (even in case the models are not exactly as the models in the course) and possess the ability to modify the algorithm, theory to deal with the new situation. To develop abilities to think reasonably, of realizing new problems/questions and answer/solve/prove them under some new conditions arising in practice.

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Provide students with basic knowledge of mathematical models and solution methods of decision-making problems, game theory, group decisions, and multi-criteria decision making.	L.O.1	Knowledge
G2	How to model real problems in management as models in decision making and have the ability to find the right/good decision in such concrete situations.	L.O.2 L.O.3	Skill
G3	Help students realize decision-making processes in various contexts of deterministic or stochastic situations. Students would be able to analyze variant alternatives and to make suitable/good decisions.	L.O.3 L.O.4	Skill Attitude

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Comprehend and demonstrate the ability to make decisions in the theory of decision analysis, game theory, and project management.	a	I
L.O.2	Build mathematical models problems from real-world problems, in various contexts of deterministic or stochastic (even not in textbooks) and probably not in the same conditions as students have learned and modify/judge the known algorithms/methods to solve these new problems.	a, b	T, U
L.O.3	Display the ability to realize “problems” arising (i.e., realize factors/things that are not the same as) when	c, e	T, U

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
	applying the knowledge (from lecture notes/textbook) and also the ability to think reasonably to find the way to solve such problems.		
L.O.4	Build independent thinking, require for independent research, on some content in the uncertain real world, beyond the confines of the textbook, through projects, presentations, seminar, assignments, and exercises. Develop a life-long learning attitude	e, f, h	T, U

6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude	5
	A1.2 Home work	10
	A1.3 Quizzes, projects	
A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	50

7. Course Outlines

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1	Chapter 1. Introduction to Decision making – steps to effective decision making	L.O.1	Lecture Class discussion	Homework Quiz
2-5	Chapter 2. Decision analysis 2.1 Decision making under certainty 2.2 Decision making under risk 2.3 Decision making under uncertainty	L.O.1 L.O.2 L.O.3	Lecture Presentation (students)	Homework Project
6-7	Chapter 3. Game theory: two-person zero-sum games 3.1 Solving simple games 3.2 Stable and unstable solutions	L.O.1 L.O.2 L.O.4	Lecture Class discussion	Quiz Homework
Midterm Examination				Written exam
9	Chapter 3. Game theory: two-person zero-sum games (cont'd) 3.3 Game with mixed strategies – graphical solution procedure		Lecture Class discussion	Homework
10-12	Chapter 4. More on games 4.1 Non zero-sum games 4.2 Cooperative games 4.3 Finite two-person zero-sum games 4.4 Finite two person games	L.O.1 L.O.3 L.O.4	Lecture Class discussion Presentation	Homework Project

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
13-15	Chapter 5. Project management with PERT/CPM 5.1 Project management with PERT/CPM 5.2 Project management with uncertain activity duration	L.O.1 L.O.2 L.O.3 L.O.4	Lecture Presentation	Quiz Project
Final examination				Written exam

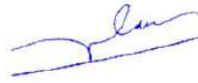
8. Course Policy

Class Participation: Student is expected that you will spend at least **10 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

9. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Prof. DrSc, Nguyen Dinh
- Email: ndinh@hcmiu.edu.vn

	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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COURSE SYLLABUS

Course Name: Applied Time Series Analysis

1. General Information

- Course Title	
+ Vietnamese:	Phân tích chuỗi thời gian ứng dụng
+ English:	Applied Time Series Analysis
- Course ID:	MAAS324IU
- Course type <input type="checkbox"/> General <input checked="" type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory:	0
- Prerequisites:	Probability, Regression Methods
- Parallel Course:	
- Course standing in curriculum:	Year 3

2. Course Description

This course introduces students to the theory and application of time series methods for data that are collected over time. Topics include exploratory data analysis tools, methods for detrending, and seasonal adjustment of data, smoothing techniques including exponential smoothing, modeling and forecasting based on the ARIMA class of models, and ARCH/GARCH models. Students gain hands-on experience of applied time series methods for real data sets using the statistical software.

3. Textbooks and References

Textbooks:

[1] Jonathan D. Cryer, Kung-Sik Chan, *Time Series Analysis with Application in R*, Springer, 2nd edition, 2008

[2] Robert H. Shumway David S. Stoffer, *Time Series Analysis and Its Applications With R Examples*, Springer, 2nd edition, 2017

[3] James D. Hamilton, *Time Series Analysis*, Princeton University Press, 1994

4. Course Objectives

As a result of taking the course, students should:

1. understand basic time series concepts and terminology
2. be able to select time series methods appropriate to goals
3. be able to critically evaluate scientific literature applying the time series methods covered

Goals	Goal description	Course Learning Outcomes	Competency level

G1	Understand basic concepts and terminology of time series	L.O.1	Knowledge
G2	Be able to apply time series methods for real data	L.O.2	Skill
G3	Be able to handle statistical software to analyze time series data	L.O.3	Skill

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Understand basic concepts and terminology of time series	c	T, U
L.O.2	Be able to apply time series methods for real data	b	T, U
L.O.3	Be able to handle statistical software to analyze time series data	g	I, U

6. Course Assessment

Assessment Component	Assessment form	Assessment form
A1. Process assessment	A1.1	10%
	A1.2	15%
	A1.3	5%
A2. Midterm assessment	A2.1	15%
	A2.2	15%
A3. Final assessment	A3.1	25%
	A3.2	25%

7. Course Outlines

Theory

Week	Topic	Learning outcome	Assessments	Learning activities
1	Fundamental concept	1, 2	HW1	Lecture, Discussion
2	Trends	1, 3	HW2	Lecture, HW
3	Models for stationary time series	1, 2	HW3 Quiz1	Lecture, HW Inclass-Quiz

4	Models for nonstationary time series	1, 3	HW4	Lecture, Group work, HW
5	Model specification	1, 3	HW5 Quiz2	Lecture, HW Inclass-Quiz
6 – 7	Parameter estimation	1, 3	HW6	Lecture, HW
8	Model diagnostics	2, 3	HW7	Lecture, HW
9	Midterm			
10	Forecasting	2, 3	HW8 Quiz 3	Lecture, HW Inclass-Quiz
11	Seasonal models	1, 3	HW9	Lecture, HW
12	Time series regression models	1, 3	HW10 Quiz 4	Lecture, HW Inclass-Quiz
13	Time series models of heteroscedasticity	2, 3	HW11	Lecture, HW, Inclass-Quiz
14 - 15	Spectral analysis	1	HW12	Lecture, HW
16	Threshold models	1, 2	HW13	Lecture, HW
17	Final exam			

8. Course Policy

Class Participation: Student is expected that you will spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

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9. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Pham Hai Ha
- Email: phha@hcmiu.edu.vn

Ho Chi Minh City, January 04, 2025

HEAD OF DEPARTMENT



Prof. Dr. Pham Huu Anh Ngoc

COURSE SYLLABUS

Course Name: Multivariate Statistical Analysis

General Information

Course Title	
Vietnamese:	Phân tích thống kê nhiều chiều
English:	Multivariate Statistical Analysis
Course ID:	MAAS413IU
Course type <input type="checkbox"/> General <input checked="" type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
Number of credits:	3
Lecture:	3
Laboratory:	0
Prerequisites:	Regression models, Machine learning
Parallel Course:	None
Course standing in the curriculum:	Year 3

Course Description

The course is designed to provide students with comprehensive methods used in multivariate statistical analysis. Topics introduced and applied include reviewing matrix Algebra, descriptive techniques, multivariate distributions, theory of estimate and testing hypothesis, principle component analysis, especially, Copula theory, and some applications in finance.

Textbooks and References

Textbooks:

W. K. Härdle, L. Simar (2019). Applied Multivariate Statistical Analysis. 5th ed, Springer
R. Johnson, D. W. Wichern (2014). Applied Multivariate Statistical Analysis. 6th ed, Pearson
Bryan F.J. Manly (2014). Multivariate Statistical Methods. 3rd ed, Taylor and Francis

Course Objectives

The course is devoted to multivariate statistical analysis. Upon completion of the course, students are expected to understand the underlying theory of multivariate statistical methods. Students are also able to utilize techniques in multivariate statistical analysis in business analytics and data science.

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Identify descriptive methods used in multivariate statistical analysis	L.O.1	Knowledge

G2	Students are able to work with various types of datasets, able to create graphs of data with R or Python programming, and use performance measures to evaluate predictive modeling.	L.O.2 L.O.3	Skill
G3	Students are able to utilize statistical and machine learning models to model business problems. Furthermore, students will be able to effectively communicate the results of applying predictive analytics to solve a business problem.	L.O.4	Attitude

Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Identify and understand different descriptive techniques in multivariate statistical analysis. Translate questions into ones that can be analyzed with statistical models.	a	I,T
L.O.2	Demonstrate important multivariate distribution, especially multinormal distribution. Identify methods of estimation and testing hypothesis	c	I, T,U
L.O.3	Demonstrate the principle component analysis and theory of copula	d	I, T, U
L.O.4	Articulate the applicability of multivariate statistical methods and use R or Python programming for analyzing the real dataset in finance and business. Be able to interpret empirical results. Develop a life-long learning attitude	f, g, h	T, U

Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude	5
	A1.2 Homework	10
	A1.3 Quizzes, projects	5
A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	50

Course Outlines

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1-2	Chapter 1. Descriptive techniques: Comparison of Batches Boxplots Histograms Kernel density Scatterplots Chenoff-Flury faces Andrew's curves Parallel coordinate plots	L.O.1	Lecture Class discussion	Homework Quiz

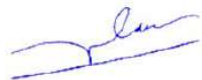
Week	Content	Learning Outcome	Teaching and learning activities	Assessment
	Hexagon plots			
3-5	Chapter 2. Multivariate distributions 2.1. Introduction to matrix algebra 2.2. Distribution and density function 2.3. Moments and characteristic functions 2.4. Transformations 2.5. The multivariate normal distribution 2.6. Sampling distribution and limit theorems	L.O.1 L.O.2	Lecture Class discussion	Homework
5-7	Chapter 3. Theory of estimation and hypothesis testing The likelihood function The Cramer-Rao lower bound Likelihood ratio test Linear hypothesis	L.O.2	Lecture Class discussion	Homework project
Midterm Examination				Written exam
8-10	Chapter 4. Principle component analysis 4.1. Standardized linear combination 4.2. Principle components in practice 4.3. Interpretation of the principle components 4.4. Asymptotic properties of the principle components 4.5. Normalized the principle components analysis 4.6. Common Principle components	L.O.3 L.O.4	Lecture Class discussion	Homework
11-13	Chapter 5. Copula theory 5.1. Definitions 5.2. Copula classes 5.3. Dependence 5.4. Monte Carlo Simulation 5.5. Copula estimation	L.O.3 L.O.4	Lecture Class discussion	Homework Project
14-15	Chapter 6. Applications in Finance 6.1. Portfolio choice 6.2. Efficient portfolio 6.3. Efficient portfolios in practice 6.4. Capital Asset Pricing Model (CAPM)	L.O.1 L.O.2 L.O.3 L.O.4	Lecture Class discussion	Homework
Final examination				Written exam

Class Participation: Student is expected that you will spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particularly in view of the interactive teaching and learning approach adopted.

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Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Ta Quoc Bao
- Email: baotq@hcmiu.edu.vn

	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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HO CHI MINH'S THOUGHTS

1. General Information

- Course Title:
- + Vietnamese: Tư tưởng Hồ Chí Minh
- + English: Ho Chi Minh's Thoughts
- Course ID: PE019IU
- Course type
 - General
 - Specialization (required)
 - Project/ Internship/ Thesis
 - Fundamental
 - Specialization (elective)
 - Others :
- Number of credits: 2
- + Lecture: 2
- + Laboratory: 0
- Prerequisites: PE015IU (Philosophy of Marxism and Leninism), PE016IU (Political economics of Marxism and Leninism), PE017IU (Scientific Socialism)
- Parallel Course:
- Course standing in curriculum:
Year 2

2. Course Description

Môn học 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.

3. Textbooks and References

Textbooks:

1. Bộ Giáo dục và Đào tạo (2019), Giáo trình Tư tưởng Hồ Chí Minh. NXB. Chính trị quốc gia. Hà Nội.
2. Khoa Chính trị - Hành chính, ĐHQG-HCM, Tài liệu hướng dẫn học tập Tư tưởng Hồ Chí Minh.
3. Hồ Chí Minh (2011), Toàn tập, NXB. Chính trị quốc gia Sự thật, Hà Nội.
4. Hồ Chí Minh (2016), Biên niên tiểu sử, NXB. Chính trị quốc gia Sự thật, Hà Nội.

4. Course Objectives

- Trang bị cho sinh viên những kiến thức cơ bản về khái niệm, nguồn gốc, quá trình hình thành và phát triển tư tưởng Hồ Chí Minh; những nội dung cơ bản của tư tưởng Hồ Chí Minh; 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.

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes (*)
L.O.1	Hiểu biết có tính hệ thống về tư tưởng, đạo đức, giá trị văn hoá, Hồ Chí Minh.	h (level 3)
L.O.2	Hiểu biết về nền tảng tư tưởng, kim chỉ nam hành động của Đảng và của cách mạng nước ta.	h (level 3)
L.O.3	Thấm nhuần đạo đức con người mới.	d (level 3)

6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	Quiz, attendance	30
A2. Midterm assessment	Midterm exam	20
A3. Final assessment	Final exam	50

7. Course Outlines

Theo quy định của Bộ Giáo dục và Đào tạo

Theory

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1	Khái niệm, đối tượng, phương pháp nghiên cứu và ý nghĩa học tập môn tư tưởng Hồ Chí Minh	L.O.1, L.O.2	Lecture Class discussion	Quiz
2-4	Cơ sở, quá trình hình thành và phát triển tư tưởng Hồ Chí Minh	L.O.1	Lecture Class discussion	Quiz
5-7	Tư tưởng Hồ Chí Minh về độc lập dân tộc gắn liền với Chủ nghĩa xã hội	L.O.1, L.O.2	Lecture Class discussion	Quiz
8	Tư tưởng Hồ Chí Minh về Đảng Cộng sản Việt Nam và nhà nước của nhân dân, do nhân dân và vì nhân dân	L.O.1, L.O.2	Lecture Class discussion	Quiz
9	MIDTERM			Written exam
10-11	Tư tưởng Hồ Chí Minh về Đảng Cộng sản Việt Nam và nhà nước của nhân dân, do nhân dân và vì nhân dân	L.O.1, L.O.2	Lecture Class discussion	Quiz
12-14	Tư tưởng Hồ Chí Minh về đại đoàn kết dân tộc và đoàn kết quốc tế	L.O.1, L.O.2	Lecture Class discussion	Quiz
15-16	Tư tưởng Hồ Chí Minh về văn hóa, đạo đức, con người	L.O.1, L.O.2, L.O.3		

8. Course Policy

- Phải nghiên cứu giáo trình, chuẩn bị các ý kiến hỏi, đề xuất khi nghe giảng. Chuẩn bị thảo luận và đọc, sưu tầm các tư liệu có liên quan đến nội dung của chương.
- Dành thời gian cho việc nghiên cứu trước bài giảng dưới sự hướng dẫn của giảng viên.
- Tham dự các buổi thảo luận, các buổi lên lớp theo quy định.

9. Course Coordinator/ Lecturer

- Department of Civil Engineering:
- Course Coordinator/ Lecturer:
- Email:

Ho Chi Minh City,

HEAD OF DEPARTMENT



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

COURSE SYLLABUS

Course Name: Summer Internship

Course Code: **MAAS328IU**

1. General information

Course designation	This syllabus includes an overview of the process of obtaining academic credit for an internship through IU and an Industry company. It includes information on eligibility, registration, and requirements. Summer Internship is the requirement course for the BSc. degree in Applied Statistics. It is supervised academically by a faculty member and professionally by an internship supervisor in industry.
Semester(s) in which the course is taught	Summer of the third academic year
Mentors/Advisors	Industrial mentor and IU lecturers
Language	English
Relation to curriculum	Compulsory
Training and teaching methods	Industrial training, advice, personal and team meetings
Workload (incl. contact hours, self-study hours)	During the internship phase, students will be working at their internship placement for about 40 hours a week for at least 32 business days (around 1 month and 2 weeks).
Credit points	3

<p>Required and recommended prerequisites for joining the course</p>	<ol style="list-style-type: none"> 1. The student must maintain a minimum cumulative GPA of 50 or higher. 2. The student must have a minimum of cumulative credits of 85 credits. <p>Students will work one-on-one with their university coordinator to identify times they will meet and create a plan for completing the internship.</p>
<p>Internship objectives</p>	<ol style="list-style-type: none"> 1. Critical Thinking/Problem Solving: Based on industrial projects or training exercises, one can analyze issues, make decisions, and overcome problems. 2. Oral/Written Communications: Articulate thoughts and ideas clearly and effectively in written and oral forms. Students are able to express ideas to others; and can write/edit memos, letters, and reports clearly and effectively. 3. Teamwork/Collaboration: Build collaborative relationships with industrial colleagues and customers representing diverse cultures, ages, genders, religions, lifestyles, and viewpoints. 4. Leadership and Career Management: Leverage the strengths of others to achieve common goals and use interpersonal skills to coach and develop others. Identify and articulate one's skills, strengths, knowledge, and experiences relevant to the position desired and career goals and identify areas necessary for professional growth. 5. Professionalism/Work Ethic: Demonstrate effective work habits, e.g., punctuality, working productively with many others, and time workload management. 6. Global/Intercultural Fluency: Value, respect, and learn from diversity of cultures, ages, genders, sexual orientations, and religions. The individual demonstrates, openness, inclusiveness, sensitivity, and the ability to interact respectfully with all people and understand individuals' differences.

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO 1. Implement the statistical models and make decisions using their statistical background and DS.
	Skill	CLO 2. Articulate thoughts and ideas clearly and effectively with colleagues and customers in written reports and oral forms. CLO 3. Demonstrate effective work habits, e.g., punctuality working productively with many others, and time workload management. CLO 4. Build the financial/risk models for industrial projects using logical thinking and mathematical modelling techniques
	Attitude	CLO 5. Show a good ability to communicate effectively in a diversity environment. CLO6. Adhere professional and ethical, legal, and responsibilities CLO 7. Formulate their professional development and lifelong learning
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>	

2. Learning Outcomes Matrix (optional)

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

CLO	PLO							
	a	b	c	d	e	f	g	h
1		x	x		x			
2						x		
3				x				
4					x			
5						x	x	
6				x				
7								x

3. Internship report:

The report includes the following sections.

1. Introduction
2. General information about the company.
3. Describe the tasks/projects/work in the company
4. Report the skills and knowledge gained during the internship
5. Discussion and conclusion.

4. Assessments:

4.1 Assessment plan for the Internship report and the presentation:

The internship report will be checked plagiarism by Turnitin.

No.	Valuation for he internship report	Maximum scores
1	Introduction	5
2	General information about the company	15
3	Describe the tasks/projects/work in the company	35
4	Report the skills and knowledge gained during the internship	40
5	Discussion and conclusion	5
6	Total:	A/100

4.2 Student internship evaluation by supervisor in the industrial company

Ranking: Excellent = 5, Good = 4, Fair = 3, Poor = 2, NO = Not Observe = 1.

No.		1	2	3	4	5
I	Attitude and Manner at working place (Thái độ và tác phong làm việc)					

1	Willingness to learn (<i>Sẵn sàng học hỏi</i>)						
2	Responsibility (<i>Có tinh thần trách nhiệm</i>)						
3	Oral communication skills (<i>Kỹ năng giao tiếp</i>)						
4	Punctuality (<i>Đảm bảo giờ giấc làm việc</i>)						
5	Written communication skills (<i>Kỹ năng giao tiếp bằng văn bản</i>)						
II	Professional Abilities (năng lực chuyên môn)						
6	Analysis, and problem solving skills (<i>Kỹ năng phân tích và giải quyết vấn đề</i>)						
7	Team work skills (<i>khả năng làm việc nhóm</i>)						
8	Ability to implementing knowledge/skills into work (<i>Khả năng áp dụng kiến thức/kỹ năng đã học vào công việc</i>)						
9	Ability to fulfill tasks (<i>Khả năng hoàn thành nhiệm vụ được giao</i>)						


Total score evaluated by the industrial supervisor: B/100.

The final score for internship will be determined by $(2A+B)/3$

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
Internship report	90% Pass	90% Pass	80% Pass	90% Pass	80% Pass	80% Pass	90% Pass
Performance In Company	90% Pass	90% Pass	80% Pass	90% Pass	80% Pass	80% Pass	90% Pass

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

5. Date revised: January 10, 2025

	<p><i>Ho Chi Minh City, 10/01/2025</i> <i>Head of Department of Mathematics</i> <i>(Signature)</i></p>  <p><i>Prof. Dr. Pham Huu Anh Ngoc</i></p>
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**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
Department of Mathematics

COURSE SYLLABUS

Course Name: GRADUATION THESIS

Course Code: **MAAS420IU**

1. General information

Course designation	Thesis fulfills the research requirement for the BSc. degree in Applied Statistics. Students will work one-on-one with their thesis advisor and the thesis coordinator to identify times that they will meet and create a plan for communication throughout the process of completing the BSc's Thesis.
Semester(s) in which the course is taught	7-8
Advisors	IU lecturers and visiting lectures
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, advice, seminar, presentation

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 540 Contact hours (please specify whether lecture, discussions, seminar, etc.): 15 Private study including examination preparation, specified in hours ¹ : 525
Credit points	10
Required and recommended prerequisites for joining the course	<ol style="list-style-type: none"> 1. The student must maintain a minimum cumulative GPA of 50 or higher. 2. The student must have a minimum of cumulative credits of 112 credits. <p>Students will work one-on-one with their thesis advisor and the thesis coordinator to identify times that they will meet and create a plan for completing the graduation thesis.</p>
Course objectives	This thesis graduation is to create, to do, and to complete a project in Applied Statistics. Students need to make a thesis proposal and produce the first draft of the thesis. Writing a graduate thesis requires independent research, scientific writing, critical thinking, independent thinking, and effective communication.

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

Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	<p>CLO 1. Analyze problems using their mathematical and statistical background in modeling and simulations.</p> <p>CLO 2. Evaluate the results and product of a statistical model to meet needs and constraints of industry.</p>
	Skill	<p>CLO 3. Build the statistical models using logical thinking, statistical modeling, and ML techniques.</p> <p>CLO 4. Integrate knowledge of modern financial models and/or ML, AI techniques.</p> <p>CLO 5. Adapt the broad knowledge to adjust applied statistical solutions on a specific problem in data science, economics, finance, and societal problems.</p>
	Attitude	<p>CLO 6. Perform effectively on professional collaboration with advisor and other students in a seminar group.</p> <p>CLO 7. Show a good ability to communicate effectively with audiences.</p> <p>CLO8. Adhere professional and ethical, legal, and responsibilities.</p>
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>	

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-8) and 08 Program/Expected Learning Outcomes (PLO) (a-h) is shown in the following table:

CLO	a	b	c	d	e	f	g	h
1	x		x					
2					x			
3		x						
4				x				
5					x			x
6							x	

7						x		
8							x	

Planned learning activities and teaching methods

3.1 Thesis Proposal

Students need to submit the proposal by Mid-semester and present the proposal with the Thesis Committee. The proposal should explain the purpose of the study or inquiry, including the following sections:

1. Introduction: An initial Introduction will be composed to establish a summary of existing research related to the question, a statement of the problem, and the purpose of the study. Review of relevant research.
2. Proposal Methodologies and approaches. The student will outline and describe appropriate research design
3. Timeline: A proposed timeline for the study will be included.

Thesis proposals should be roughly 10-20 pages excluding references. Guidelines for specific requirements of each section of the proposal will be assigned by the thesis advisor. The thesis committee will review the proposal and request for revisions to students as necessary.

3.2 Thesis report:

Generally, the thesis report includes the following sections.

1. Abstract
2. Introduction (5pts): Introduce the topic, and clearly state the problem or question, setting, motivation, and data.
3. Literature review. Review of relevant research
4. Background
5. Methodology
6. Simulations and results
7. Discussion and conclusion.

3. Assessment plan for the thesis report and the presentation:

The thesis will be checked for plagiarism by Turnitin.


No.	Valuation for thesis graduation	Scores
1	Value of content	50
2	Writing quality of thesis	15
3	Level of difficulty	10
4	Response to questions	15
5	Quality of presentation	10
6	Total:	100

<i>Grading scheme</i>	Needs Work	Maximum score	Suggested scores
1. Purpose/motivation/problem stated clearly and organized and easy to follow.		2	
2. Presenter(s) exhibited a good understanding of the topic.		2	
3. Presenter(s) were/was well-prepared, logical order of presentation		1.5	
4. Presenter(s) spoke clearly/effectively and engaged with audience		1.5	
5. Time for presentation is used effectively.		1.5	
6. Presenter responded effectively to the Committee's questions and comments.		1.5	
Total		10	

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Thesis proposal	70% Pass	70% Pass	70% Pass	70% Pass	70% Pass	70% Pass	70% Pass	70% Pass
Thesis report	90% Pass	90% Pass	90% Pass	90% Pass	90% Pass	90% Pass		90% Pass
Thesis presentation	90% Pass	90% Pass	90% Pass	90% Pass	90% Pass	90% Pass	90% Pass	90% Pass

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

4. Date revised: June 05, 2025

	<p><i>Ho Chi Minh City, June 05, 2025</i></p> <p>DEPARTMENT OF MATHEMATICS</p>  <p>Nguyen Minh Quan</p>
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MAAS SELECTIVE 1

COURSE SYLLABUS

Course Name: Critical thinking

1. General Information

- Course Title	
+ Vietnamese:	Tư duy biện luận
+ English:	Critical thinking
- Course ID:	PE008IU
- Course type	
<input type="checkbox"/> General	<input type="checkbox"/> Fundamental
<input type="checkbox"/> Specialization (required)	<input type="checkbox"/> Specialization (elective)
<input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory (exercises):	0
- Prerequisites:	None
- Parallel Course:	None
- Course standing in curriculum:	Year 1 or 2

2. Course Description

This course provides the nature and techniques of thought as a basis for our claims, beliefs, and attitudes about the world. The course also explores the process in which people develop their claims and support their beliefs.

Specifically, the course includes the theory and practice of presenting arguments in oral and written forms, making deductive and inductive arguments, evaluating the validity or strength of arguments, detecting fallacies in arguments, and refuting fallacious arguments.

Resources for the reasoning process include hypothetical and real-life situations in various fields of natural sciences, social sciences, and humanities.

3. Textbooks and References

Main textbooks

[1] Bassham, Irwin, Nardone, and Wallace, *Critical Thinking: A Student's Introduction*, 6th edition, McGraw-Hill Education, 2020.

[2] Moore, B.N. et al. (2009). *Critical Thinking*, 9th ed. McGraw-Hill

[3] Patrick J. Hurley (2012). *A Concise Introduction to Logic* (11th ed.), Wadsworth, Cengage Learning

Other references

Relevant web resources

4. Course Objectives

This course will enable students to

- develop the habits of assessing and defending the reasonableness of their beliefs and values as well as those of others
- appreciate the importance of looking at an issue from a variety of perspectives
- apply critical thinking skills in both public and personal settings

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Provide students with basic knowledge of critical thinking, including fallacies, ways of reasoning, evaluate and refuse an argument.	L.O.1 L.O.2	Knowledge
G2	Develop the habits of assessing and defending the reasonableness of their beliefs	L.O.3- L.O.7	Skill
G3	Emphasize the importance of looking at an issue from a variety of perspectives	L.O.3 L.O.4	Skill Attitude
G4	Apply critical thinking skills in both public and personal settings	L.O.5 - L.O.9	Skill Attitude

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	CLO1. Know the general concepts and standards of critical thinking; and comprehend the disadvantages of barriers to critical thinking in various contexts	e	I
L.O.2	Know the elements of an argument and two patterns of reasoning	e	I, T
L.O.3	Know the fallacies of relevance and insufficient evidence in arguments	e	I, T
L.O.4	Construct and evaluate deductive and inductive arguments in spoken and written forms	e	I, T, U
L.O. 5	Test the validity of deductive arguments using Venn diagram and truth tables	e	I, T, U
L.O. 6	Analyze and standardize arguments	h	T, U
L.O. 7	Evaluate truth claims and refute arguments		T, U
L.O. 8	Analyze weaknesses in inductive arguments to strengthen them	h	T, U
L.O. 9	Defend personal/group beliefs with good arguments and in appropriate manners (project presentations)	h	T, U

6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude	5
	A1.2 Home work	10
	A1.3 Quizzes, projects	15

A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	40

7. Course Outlines

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1	Introduction to Critical thinking (Chapter 1 in [1])	L.O.1	Lecture Class discussion	Homework Quiz
2	Recognizing arguments (Chapter 2 in [1])	L.O.1 L.O.2	Lecture Presentation (students)	Homework Project
3	Basic logical concepts (Chapter 3 in [1])	L.O.1 L.O.2 L.O.4	Lecture Class discussion	Quiz Homework
4	A little categorical logic (Chapter 9 in [1])	L.O.3 L.O.4 L.O.5	Lecture Class discussion	Quiz Homework
5	A little propositional logic (Chapter 10 in [1])	L.O.3 L.O.4 L.O.5	Lecture Class discussion	Quiz Homework
6	Logical fallacies I (Chapter 5 in [1])	L.O.3 L.O.5 L.O.7	Lecture Class discussion	Quiz Homework
7	Logical fallacies II (Chapter 6 in [1])	L.O.3 L.O.5 L.O.7	Lecture Class discussion	Quiz Homework
8	Review for midterm exam + sample test			
9 + 10 Midterm Examination (Chapters 1, 2, 3, 9, 10 in [1])				Written exam
11	Analyzing arguments	L.O. 1 L.O. 2 L.O.8 L.O. 9	Lecture Class discussion	Homework
12	Evaluating arguments and truth claims	L.O. 3 L.O.4 L.O.5 L.O.8 L.O. 9	Lecture Class discussion Presentation	Homework Project

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
13	Inductive reasoning	L.O.3 L.O.4 L.O.8 L.O. 9	Lecture Presentation	Quiz Project
14	Project: Group presentation	L.O.1- L.O. 9	Group work	Presentation, Discussion
15	Project: Group presentation	L.O.1- L.O. 9	Group work	Presentation, Discussion
16	Project: Group presentation	L.O.1- L.O. 9	Group work	Presentation, Discussion
17	Review for final exam + sample test			
18	Reserved week			
19 + 20 - Final examination: Chapters 5, 6, 7, 8, 11 in [1]				

8. Course Policy

Class Participation: Student is expected that you will spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

9. Course Coordinator/ Lecturer

- Department of English
- Course Coordinator: Do Thi Dieu Ngoc
- Email: dtdngoc@hcmiu.edu.vn
- Mobile: 0904361717

HEAD OF DEPARTMENT

Nguyen Huy Cuong



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

COURSE SYLLABUS

Course Name: Financial Markets

Course Code: **MAFE209IU**

1. General information

Course designation	This course provides students with the knowledge and understanding of the roles of the intermediary financial institutions in the financial markets. It helps students to differentiate between financial institutions with deposits and ones without deposits, understand and analyze the operational structure of the financial markets. Distinguish the types of securities such as stocks, currencies, bonds and other financial instruments.
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Lecturers at Faculty of Economics, Finance and Accounting
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, project presentation, discussion
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 70 Contact hours (lecture, laboratory session, exercise, project presentation, discussion): 45 Private study including examination preparation, specified in hours ¹ : 25

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

Credit points	3	
Required and recommended prerequisites for joining the course	None	
Course objectives	The course aims to provide students with knowledge and skills to (1) Apply concepts relevant to financial markets and financial institutions, such as the flow of funds, levels of interest rates to current events or topical issues (2) Evaluate empirical evidence of market performance and contrast it with theories of market performance (3) Research and analyze specific problems or issues related to financial markets and institutions	
Course Learning Outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understand the structure and operation of the financial markets as a whole and different individual financial market such as stock markets, bond markets, etc. (Program outcome: a, b)
	Skill	CLO2. Apply and analyze the industry and characteristics of each different financial sector such as banking, insurance, and securities (Program outcome: a, b, d) CLO3. Research and analyze macroeconomic policies and impact on the financial system (Program outcomes: c, h) CLO3. Research and analyze macroeconomic policies and impact on the financial system (Program outcomes: h, j)
Attitude	CLO5. Display the effective work and communication within a team in a responsible environment (Program outcome: e, f, g) CLO6. Articulate applicability of portfolio management concepts and techniques to their specific business problems, develop a life-long learning attitude (Program outcome: i, k)	

Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Interest rate</td> <td>1</td> <td>T,U</td> </tr> <tr> <td>Interest rate and Macroeconomic policies</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Risk and Interest rate</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Financial Market Efficiency</td> <td>2</td> <td>I, T</td> </tr> <tr> <td>Central bank and Federal reserve system</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Monetary Policy and Central Bank</td> <td>2</td> <td>I, T</td> </tr> <tr> <td>Money Market</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Bond Market</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Stock Market</td> <td>2</td> <td>I, T</td> </tr> <tr> <td>Banking operation and Financial management</td> <td>1</td> <td>T, U</td> </tr> <tr> <td>Insurance Industry</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Securities brokerage and Investment banking</td> <td>2</td> <td>T,U</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction	1	T, U	Interest rate	1	T,U	Interest rate and Macroeconomic policies	2	T, U	Risk and Interest rate	2	T, U	Financial Market Efficiency	2	I, T	Central bank and Federal reserve system	1	I, T	Monetary Policy and Central Bank	2	I, T	Money Market	1	T, U	Bond Market	2	T, U	Stock Market	2	I, T	Banking operation and Financial management	1	T, U	Insurance Industry	2	T, U	Securities brokerage and Investment banking	2	T,U
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Stock Market	2	I, T																																									
Banking operation and Financial management	1	T, U																																									
Insurance Industry	2	T, U																																									
Securities brokerage and Investment banking	2	T,U																																									
Examination forms	Written examination																																										
Study and examination requirements	<p>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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																																										
Reading list	1. Frederic S. Mishkin, Stanley G. Eakins, Financial Markets and Institutions, Addison Wesley, 2009																																										

2. Learning Outcomes Matrix (optional)

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

	PLO										
CLO	a	b	c	d	e	f	g	h	i	j	k
1	x	x									
2	x	x		x							
3			x					x			
4								x		x	
5					x	x	x				
6									x		x

More specifically, the levels of the CLO are based on the Bloom taxonomy (levels from 1-6):

	PLO										
CLO	a	b	c	d	e	f	g	h	i	j	k
1	2	2									
2	3	3		3							
3			4					4			
4								4		4	
5					4	4	4				
6									5		5

3. Planned learning activities and teaching methods

Week	Topics	CLO	Assessment	Teaching and Learning activities
1	Introduction 1. Why study Financial Markets 2. Overview of the financial system 3. The functions of financial markets	1,2	Quiz	Lecture
2	Interest Rate	1,2	HW	Lecture

	<ul style="list-style-type: none"> 1. Overview of interest rate 2. Determination of interest rate 3. Types of interest rates 			
3	<p>Interest rate and Macroeconomic policy</p> <ul style="list-style-type: none"> 1. Factors that affect interest rate 2. Bond market and interest rate 3. Change in market equilibrium of interest 	1,2,3,5	Quiz, HW	Lectures
4	<p>Risk and Interest Rate</p> <ul style="list-style-type: none"> 1. The structure of interest rate risk 2. The relationship between risk and interest rate 3. Case analysis 	1,2,4	HW	Lecture
5	<p>Financial Market Efficiency</p> <ul style="list-style-type: none"> 1. General definitions 2. Theory of financial market efficiency 3. The evident of market efficiency 4. Behavioral finance 	1,2,3,5	Quiz, HW	Lecture
6	<p>Central bank and Federal reserve system</p> <ul style="list-style-type: none"> 1. Overview 2. Formation of federal reserve system 3. Activities of central bank 	1,2,4	HW	Lecture
7	<p>Monetary Policy and Central Bank</p> <ul style="list-style-type: none"> 1. The objectives of monetary policy 2. Practice 3. Analysis of the current world events 	1,2,3,5	Quiz, HW	Lecture

8	<p>Money Market</p> <ol style="list-style-type: none"> 1. Overview 2. Objectives of monetary market 3. Money market instruments 	1,2,4	HW	Lectures
Midterm Exam				
9	<p>Bond Market</p> <ol style="list-style-type: none"> 1. Types of bonds 2. Calculation of bond income 3. Bond investment activity 	1,2,3,5	Quiz, HW	Lecture and discussion
10	<p>Stock Market</p> <ol style="list-style-type: none"> 1. Stock investment 2. Share valuation 3. Participants in the stock market 4. Stock market management 	1,2,5	Quiz, HW	Lecture and discussion
11	<p>Banking operation and Financial management</p> <ol style="list-style-type: none"> 1. Basic knowledge of banks 2. Measuring effectiveness of banks 3. Bank management 4. Competition in the banking sector 	1,2,4,5	HW	Lecture and discussion
12	<p>Insurance industry</p> <ol style="list-style-type: none"> 1. Basic knowledge of insurance industry 2. Insurance management system 3. Competition and management in the insurance industry 	1,2,3,4,5	Quiz, HW	Lecture and discussion
13	<p>Securities brokerage and Investment banking</p> <ol style="list-style-type: none"> 1. Overview 2. Investment bank 	4,5,6		Lectures and discussion

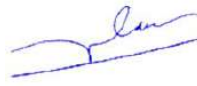
	3. Brokerage company			
14,15	Revision	1,2,4,6		Lecture and discussion
Final Exam		1,2,3,4,6		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Participation/ Attendance/ Project/ Homework/ Quiz (30%)	Quiz/ HW 80% Pass	Quiz/ HW 80% Pass	HW/ Project 80% Pass	HW/ Project 80% Pass	Project/ Homework 80% Pass	HW/ Project 80% Pass
Midterm exam (30%)	Q1 80% Pass	Q2 80% Pass	Q3 70% Pass	Q4 60% Pass		Q5 50% Pass
Final exam (40%)	Q1 80% Pass	Q2 80% Pass	Q3 70% Pass	Q4 60% Pass		Q5 50% Pass

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

5. Date revised: Jan 06, 2025

	<p><i>Ho Chi Minh City, January 06, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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COURSE SYLLABUS

Course Name: Financial Mathematics 1

1. General Information

- Course Title	
+ Vietnamese:	Toán tài chính 1
+ English:	Financial Mathathematics 1
- Course ID:	MAFE306IU
- Course type <input type="checkbox"/> General <input checked="" type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory:	0
- Prerequisites:	MAFE206IU-Probability
- Parallel Course:	None
- Course standing in curriculum:	Year 2

2. Course Description

This course provides students fundamental tools in Mathematics corresponding to the ones in finance: profit, interest, money/cash flow, bonds, portfolios, asset pricing, and fundamental principles of finance.

3. Textbooks and References

1. David Luenberger, Investment Science, David, Oxford University Press, 1998,
2. Bill Dalton, Financial products- an introduction using mathematics and Excel, Cambridge University Press (2008)
3. John-C.-Hull, Options, Futures and other derivatives, Prentice Hall 2014.
4. Mondher Bellalah, Derivatives, Risk management and value, World Scientific Publishing Co. Pte. Ltd., 2010.

4. Course Objectives

The purpose of this course is to provide students with basic knowledge on simple and compounded interest rates, and then evaluate fixed-income securities. Provide tools to build optimal portfolios based on Markowitz mean-variance theory. Student will be able to hedge and speculate and can apply binomial trees to evaluate options.

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Provide students with basic knowledge in evaluating simple and compounded interest, and then fixed-income securities	L.O.1	Knowledge
G2	Apply to build optimal portfolios based on Markovitz mean-variance theory. Construct financial derivatives to hedge and speculate. Employ binomial trees to evaluate options	L.O.2 L.O.3 L.O.4	Skill
G3	Help students to be confident in applying tools of financial mathematics in investment funds, stock market. Integrate a life-long learning attitude	L.O.5	Attitude

4. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Evaluate simple and compounded interest, and then evaluate fixed-income securities	a	I, T
L.O.2	Apply to build optimal portfolios based on Markovitz mean-variance theory	c	I, T
L.O.3	Construct financial derivatives to hedge and speculate	b	T, U
L.O.4	Employ binomial trees to evaluate options	c	T, U
L.O.5	Articulate applicability of conduct tools in financial mathematics in investment funds, stock market. Integrate a life-long learning attitude	h	T, U

5. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude	5
	A1.2 Home work	10
	A1.3 Quizzes,	5

	projects	
A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	50

6. Course Outlines

Week	Content	Learning Outcome	Teaching learning activities	Assessment
1	Introduction to risk management	1,2	Discussion	
2	Introduction to risk management Basic concepts in risk management	1,2	Lectures and exercises	HW1
3	Fundamentals of Probability theory	1,2	Lectures and exercises	exercises
4	Value-at-Risk (1)	1,2,3	Lectures and exercises	HW2
5	Value-at-Risk (2),	1,2,3,4	Lectures and exercises	HW3/Quiz
6	Coherent measures of Risk Expected Shortfall (1)	1,2,3	Lectures and exercises	exercises
7	Expected Shortfall (2)	1,2,3,4	Lectures and exercises	HW4/Group presentation
8	Portfolio Risk: Analytic methods (1)	1,2	Lectures and exercises	Exercises
Midterm Exam				Midterm Exam
9	Portfolio Risk: Analytic methods (2)	1,2,3	Lectures and exercises	HW5
10	Risk Budgeting Approach (1)	1,2,3,4	Lectures and exercises	In class exercises
11	Risk Budgeting Approach (2)	1,2,3,4,5	Lectures and exercises	HW6


12	Fixed Income Securities (1)	1,2	Lectures and exer	HW7
13	Fixed Income Securities (2)	1,2,3	Lectures and exer	Quiz/ Group presentation
14	Fixed Income Securities (3)	1,2,3,4,5	Lectures and exer	HW8/Quiz
15	Course revision	1,2,3,4,5	Lectures and exer	
Final Exam				Written Exam

7. Course Policy

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged. Students must have more than 50/100 points overall to pass this course.

Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Lê Nhật Tân
- Email:

	<p><i>Ho Chi Minh City, January 06, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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COURSE SYLLABUS

Course Name: Principles of Logistics and Supply Chain Management

1. General Information

- Course Title	
+ Vietnamese:	Các nguyên lý Logistics và Quản lý chuỗi cung ứng
+ English:	Principles of Logistics and Supply Chain Management
- Course ID:	IS055IU
- Course type <input type="checkbox"/> General <input type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory:	0
- Prerequisites:	None
- Parallel Course:	None
- Course standing in curriculum:	Year 3

2. Course Description

This is an introductory course to Logistics and supply chain management (SCM). It provides an overview of fundamental concepts, business processes and models/tools. This course combines SCM business knowledge with analytical thinking and pinpoints the role of SCM relative to other business disciplines. It serves as a roadmap to more in-depth courses on related topics.

3. Textbooks and References

Textbooks:

1. "Management of Business Logistics, 8th edition", Coyle, Bardi, and Langley, South-Western Publishing Company, 2008
2. "Business Logistics / Supply Chain Management: planning, organizing, and controlling the supply chain, 5th ed", Ronald H. Ballou, Prentice Hall, 2004
3. "Supply chain management: strategy, planning, and operation, 4th ed.", S. Chopra and P. Meindl, Prentice Hall, 2010.

4. Course Objectives

The purpose of this course is to provide students with an understanding of the role of logistics management in operations and supply chain management including the contribution of logistics to creating and adding value through domestic and global supply chains.

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Able to identify problems, issues and strategies in today's supply chain operations via real-world cases.	L.O.1 L.O.2	Knowledge
G2	Apply analytical models in supply chain management.	L.O.3 L.O.4	Skill
G3	Able to use technical tools to solve supply chain problems.	L.O.5	Skill

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Understanding new concepts of logistics and supply chain management.	a	I,T
L.O.2	Comparing the differences between in-bound supply chain, and out-bound supply chain.	a, b	T
L.O.3	Apply the models, processes and tools used to analyze, design and implement operations and supply chain management solutions.	c	T
L.O.4	Able to complete an engineering project related to supply chain management	e, f, h	T
L.O.5	Identify and apply a range of operations management initiatives and techniques that can be considered in the development of an operations strategy.	c	T

6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Quiz	5
	A1.2 Homework	5
	A1.3 Projects	20
A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	40

7. Course Outlines

Week	Content	CLOs	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Lecture 1: Logistics, the Supply Chain & Competitive Strategy	L.O.1	- Lecture presentation	- Group forming. - Class discussion - Read book & lecture 2.	
2 & 3	Lecture 2: Locating facilities	L.O.1	- Lecture presentation	- Class discussion - Read book & lecture 3.	- Quiz /HW A1.1, A1.2
4 & 5	Lecture 3: Resources Planning	L.O.1	- Lecture presentation	- Class discussion - Read book & lecture 4.	- Quiz /HW A1.1, A1.2

6	Lecture 4: Controlling Materials Flow	L.O.1	- Lecture presentation	- Class discussion - Read book & lecture 5.	- Homework A1.2
7	Review for Midterm	L.O.1 L.O.2 L.O.3	- Problems solving	- Class discussion	
Midterm exam					A2
9 & 10	Lecture 5: Inventory Management	L.O.2 L.O.4	- Lecture presentation	- Class discussion - Read book & lecture 6.	- Quiz /HW A1.1, A1.2
11&12	Lecture 6: Warehousing & material handling	L.O.2 L.O.4	- Lecture presentation	- Class discussion - Read book & lecture 7.	- Quiz /HW A1.1, A1.2
13	Lecture 7: Procurement	L.O.2 L.O.4	- Lecture presentation	- Class discussion - Read book & lecture 8.	- HW A1.2
14	Lecture 8: Transportation in Logistics & Supply chain	L.O.2 L.O.4	- Lecture presentation	- Class discussion	- Quiz /HW A1.1, A1.2
15	Project presentation Review for Final Exam	L.O.2 L.O.3 L.O.4	- Problems solving	- Class discussion	- Project A1.3
FINAL EXAMINATION					A3

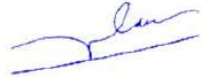
8. Course Policy

Class Participation: 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.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

9. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Nguyen Hoang Huy
- Email: nhhuy@hcmiu.edu.vn

	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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MAAS ELECTIVE 2

COURSE SYLLABUS

Course Name: Actuarial Mathematics for Life Contingent

1. General Information

- Course Title	
+ Vietnamese:	Toán bảo hiểm cho cuộc sống
+ English:	Actuarial Mathematics for Life Contingent
- Course ID:	MAAS326IU
- Course type <input type="checkbox"/> General <input type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory:	0
- Prerequisites:	Probability
- Parallel Course:	
- Course standing in curriculum:	Year 3

2. Course Description

Mathematical foundations of actuarial science emphasize probability models for life contingencies as the basis for analyzing life insurance and life annuities and determining premiums

3. Textbooks and References

Textbooks:

[1] D. C. M. Dickson, M. R. Hardy, Howard R. Waters, *Actuarial Mathematics for Life Contingent Risks*, Cambridge University press, Third Edition (2009)

[2] Bowers, Gerber, Hickman, Jones & Nesbitt, *Actuarial Mathematics*, Cambridge University , 2nd Edition (1997)

4. Course Objectives

Student will be able to

- Identify the future loss random variables associated with whole life, term life, and endowment insurance, and with term and whole life annuities, on single lives.
- Calculate premiums based on the equivalence principle, the portfolio percentile principle, and for a given expected present value of profit
- Calculate and interpret gross premium, net premium and modified net premium policy values for the policies.
- Calculate the effect of changes in underlying assumptions (e.g., mortality and interest).

e) Apply the following methods for modelling extra risk: age rating; constant addition to the force of mortality, constant multiple of the rate of mortality.

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Be familiar with basic concept in life insurance	L.O.1	Knowledge
G2	Be able to identify the future loss random variables; to calculate premium and effect of changes in underlying assumptions	L.O.2	Skill
G3	Be able to apply some special methods for modeling extra risk	L.O.3	Knowledge

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Be able to understanding basic concept in life insurance	c	T, U
L.O.2	Be able to identify the future loss random variables; to calculate premium and effect of changes in underlying assumptions	b	T, U
L.O.3	Be able to apply some special methods for modelling extra risk	e	I, U

6. Course Assessment

Assessment Component	Assessment form	Assessment form
A1. Process assessment	A1.1	10%
	A1.2	15%
	A1.3	5%
A2. Midterm assessment	A2.1	15%
	A2.2	15%
A3. Final assessment	A3.1	25%
	A3.2	25%

7. Course Outlines

Theory

Week	Topic	Learning Outcome	Assessments	Learning activities
1	Introduction to life insurance	1, 2	HW1	Lecture, Discussion
2	Survival model		HW2	Lecture, HW

3-4	Life tables and selection		HW3 Quiz1	Lecture, HW Inclass-Quiz
5-6	Insurance Benefit	1, 3	HW4 Quiz2	Lecture, HW Inclass-Quiz
7-8	Annuities	1, 2	HW4 Quiz2	Lecture, HW Inclass-Quiz
9	Midterm			
10 - 11	Premiums Calculation	2, 3	HW5	Lecture, HW Inclass-Quiz
12	Policy value	1,3	HW7	Lecture, HW Inclass-Quiz
13-14	Multiple State Models	1, 2	HW8	Lecture
15-16	Emerging Costs for Traditional Life Insurance	1, 3	HW9	Lecture, HW
17	Final exam			

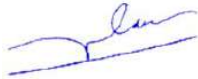
8. Course Policy

Class Participation: Student is expected that you will spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

9. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Pham Hai Ha
- Email: ppha@hcmiu.edu.vn

	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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COURSE SYLLABUS

Course Name: Supply Chain Security and Risk Management

1. General Information

- Course Title	
+ Vietnamese:	Quản lý rủi ro và an toàn chuỗi cung ứng
+ English:	Supply Chain Security and Risk Management
- Course ID:	IS065IU
- Course type	
<input type="checkbox"/> General	<input type="checkbox"/> Fundamental
<input type="checkbox"/> Specialization (required)	<input checked="" type="checkbox"/> Specialization (elective)
<input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory:	0
- Prerequisites:	None
- Parallel Course:	None
- Course standing in curriculum:	Year 3

2. Course Description

This course aims to provide students basic understanding of supply chain risk management, from strategic to operations probabilistic modeling and analytics. The course also equips students with tools and techniques to qualify and quantify strategic risk, financial risk, and operational risks.

3. Textbooks and References

Textbooks:

[1] Schlegel, G.L, Trent R.J., Supply Chain Risk Management: An emerging discipline, 1st ed. CRC Press: 2014.

4. Course Objectives

The purpose of this course is to provide students with an understand the complexities and impact of supply chain risk and be able to plan accordingly. By completing this course, students should be able to (1) Implement a robust disaster recovery plan, (2) Utilize relevant technology or software for risk modelling and identification, (3) Recognize, assess and mitigate various types of risk throughout the supply chain, and (4) Prepare in advance for external or political events that may impact supply chain management

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Identify risk types, analyze risk sources and approaches to tackle risks in a supply chain with the support of several risk management frameworks	L.O.1 L.O.2 L.O.3	Knowledge

G2	Apply business and management knowledge to qualify risk impacts in a supply chain	L.O.4	
G3	Apply statistics and stochastic processes to quantify the impacts of risks to business and to the supply chain.	L.O.5 L.O.6	Skill
G4	Work in a team to address real risk-related projects	L.O.7 L.O.8	Attitude

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Design Logistics and Supply Chain Management systems	a, b	I, T
L.O.2	Redesign Logistics and Supply Chain Management systems	a, b	I, T
L.O.3	Support to decision making in Logistics and Supply Chain Management	c, h	I, T
L.O.4	Political and health qualities and soft skills Logistics and Supply Chain Management	d, e, f	I, T
L.O.5	Well-disciplined and efficient teamwork skills	e, f	I, T
L.O.6	Well-disciplined and professional communication skills	e, f	I, T, U
L.O.7	Operate Logistics and Supply Chain Management Systems	b, c	I, T, U
L.O.8	Improve Logistics and Supply Chain Management Systems	b, c	I, T, U

6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Assignments, quiz and attendance	15
	A1.2 Semester projects	20
A2. Midterm assessment	A2.1 Mid-term exam	25
A3. Final assessment	A3.1 Final exam	40

7. Course Outlines

Week	Content	CLOs	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1, 2	Chapter 1: Supply Chain Risk Management: Setting the stage	L.O.1	- Lecture presentation	- Class discussion - Read book	- Quiz A1.1
3	Chapter 2: Building the Risk Management Foundation	L.O.1 L.O.2	- Lecture presentation	- Class discussion - Read book	- Quiz A1.1

4	Chapter 3: Strategic Risk	L.O.1 L.O.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW A1.1, A1.2
5	Chapter 4: Financial Risk	L.O.1 L.O.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW A1.1, A1.2
6	Chapter 5: Operational Risk	L.O.1 L.O.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW A1.1, A1.2
7	Review	L.O.1 L.O.2	- Lecture presentation	- Class discussion - Read book	- Quiz /HW A1.1, A1.2
Midterm exam					A2
9	Chapter 6: Emerging Risk Management Framework for Success	L.O.1 L.O.2 L.O.3	- Lecture presentation	- Class discussion - Read book	- Quiz /HW A1.2 A3.1
10, 11	Chapter 7: Using Probabilistic Models to understand risk	L.O.1 L.O.2 L.O.3	- Lecture presentation	- Class discussion - Read book	- Quiz /HW A1.2 A3.1
12, 13	Chapter 8: Emerging Risk Management Tools, Techniques, and Approaches	L.O.1 L.O.2 L.O.3	- Lecture presentation	- Class discussion - Read book	- Quiz /HW A1.2 A3.1
14	Group presentation & Review	L.O.5 L.O.6	- Lecture presentation	- Class discussion - Read book	- Quiz /HW A1.2 A3.1
FINAL EXAMINATION					A3

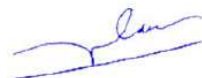
8. Course Policy

Class Participation: 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.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

9. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Nguyen Van Hop
- Email: nvhop@hcmiu.edu.vn

	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
Department of Mathematics

COURSE SYLLABUS

Course Name: Financial Risk Management 1

Course Code: **MAFE318IU**

1. General information

Course designation	This course provides students basic concepts, and mathematical tools for quantitative risk management at banking, financial institutions, and insurance. The course focuses mainly on financial market risk, the risk arising from unexpected changes in prices and interest rates. The course also provides toolkits for measuring risk quantifying. Quantitative risk measures, e.g., Value at-Risk, Expected shortfall, interest risk are introduced and treated.
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Dr. Ta Quoc Bao
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, assignment, seminar.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 70 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 Private study including examination preparation, specified in hours¹: 25

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

Credit points	3	
Pre-course	Probability and Statistics	
Course objectives	<p>The purpose of this course is to provide students with an in-depth knowledge of financial risk management techniques and fixed income securities tools that are mostly used in banking and financial institutions. The course concentrates on learning to build mathematical models aiming to help a bank, insurance and other financial institution from losses, insolvency or uncertainty resulting from market risk and interest risk.</p>	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	<p>CLO1. Analyze the overall process of risk management.</p> <p>CLO2. Illustrate general concepts of risk management, distinguish types of financial risks, different types of fixed income securities and different sources of risk faced by financial institutions.(Program outcomes: a)</p>
	Skill	<p>CLO3. Demonstrate quantitative tools for measuring risks of single assets, portfolios and interest rates, and learn how to employ these techniques for hedging. (Program outcomes: c, level 3: precision)</p> <p>CLO4. Manipulate Value at Risk and other risk measures for single assets and portfolios. Analyze decompose risk components of the portfolio. Apply analytic tools in pricing bonds and illustrate the effects of interest rate risk (Program outcomes: d, i)</p>
Attitude	CLO5. Organize the processes of conduct risks in financial institutions, its drivers and mitigation techniques. develop a life-long learning attitude (Program outcome: h, j)	

<p>Content</p>	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduce); T (Teach); U (Utilize)</p> <table border="1"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction to risk management</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Basic concepts in risk management</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Fundamentals of Probability theory</td> <td>1</td> <td>I, T</td> </tr> <tr> <td>Value-at-Risk</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Coherent measures of Risk Expected Shortfall</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Portfolio Risk: Analytic methods</td> <td>3</td> <td>T, U</td> </tr> <tr> <td>Risk Budgeting Approach</td> <td>2</td> <td>T, U</td> </tr> <tr> <td>Fixed Income Securities</td> <td>4</td> <td>T,U</td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction to risk management	1	I, T	Basic concepts in risk management	2	T, U	Fundamentals of Probability theory	1	I, T	Value-at-Risk	2	T, U	Coherent measures of Risk Expected Shortfall	3	T, U	Portfolio Risk: Analytic methods	3	T, U	Risk Budgeting Approach	2	T, U	Fixed Income Securities	4	T,U
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Introduction to risk management	1	I, T																										
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Fixed Income Securities	4	T,U																										
<p>Examination forms</p>	<p>Written examination</p>																											
<p>Study and examination requirements</p>	<p>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.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																											
<p>Reading list</p>	<ol style="list-style-type: none"> 1. McNeil, Frey and Embrecht, Quantitative Risk Management. Princeton University Press, 2ed, 2015. 2. Peter Christoffersen, Elements of Financial Risk Management. Academic Press, 2003. 3. Fabozzi, F., Bond Markets, Analysis and Strategies, 7th edition, Prentice Hall, 2010. 4. Allan M. Malz, Financial Risk Management: Models, History, and Institutions, Wiley, 20011. 5. J. Hull, Risk Management and Financial Institutions, 5th ed, Wiley, 2018. 																											

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-5) and Program/Expected Learning Outcomes (PLO) (a-k) is shown in the following table:

	PLO										
CLO	a	b	c	d	e	f	g	h	i	j	k
1	x										
2	x										
3			x								
4				x					x		
5								x		x	

More specifically, the below levels are from 1-6 corresponding to the levels of the Bloom taxonomy.

	PLO										
CLO	a	b	c	d	e	f	g	h	i	j	k
1	4										
2	4										
3		3				3					
4				4					4		
5								5		5	

3. Planned learning activities and teaching methods

Week	Topics	CLO	Assessment	Teaching and Learning activities
1	Introduction to risk management (1)	1,2		discussions
2	Introduction to risk management (2) Basic concepts in risk management	1,2	HW1	Lectures and HW/ discussions
3	Fundamentals of Probability theory	1,2	exercises	Lectures and exercises
4	Value-at-Risk (1)	1,2,3	HW2	Lectures and HW
5	Value-at-Risk (2),	1,2,3,4	HW3/Quiz	Lectures and Quiz /homework


6	Coherent measures of Risk Expected Shortfall (1)	1,2,3	exercises	Lecture/exercise
7	Expected Shortfall (2)	1,2,3,4	HW4/Group presentation	Lectures and exercises /homework
8	Portfolio Risk: Analytic methods (1)	1,2	Exercises/ HW5	Lectures and exercises /homework
Midterm Exam				
9	Portfolio Risk: Analytic methods (2)	1,2,3	HW6	Lectures and exercises /homework
10	Risk Budgeting Approach (1)	1,2,3,4	HW7	Lectures and exercises /homework
11	Risk Budgeting Approach (2)	1,2,3,4,5	HW8	Lectures and exercises /homework
12	Fixed Income Securities (1)	1,2	HW9	Lectures and exercises /homework
13	Fixed Income Securities (2)	1,2,3	Quiz/ Group presentation	Lectures and exercises /homework
14	Fixed Income Securities (3)	1,2,3,4,5	HW10/Quiz	Lectures and exercises /homework
15	Course revision	1,2,3,4,5		Discussions/ presentations
Final Exam		1,2,3,4,5		

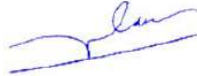
4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	
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					CLO5
In-class exercises/ quizzes (10%)	Qz1/Group presentation 80%Pass	Exercises/Qz 2 80%Pass	Exercises/Qz 3 80%Pass	Exercises/ Group presentation 80	Exercises/ Group presentation Pass
Homework exercises (20%)	HW1->HW10 70%Pass	HW1->HW10 70%	H2->HW4, HW6->HW8, HW10 65%Pass	H1, HW1, HW8, HW10 65%Pass	60%Pass
Midterm exam (30%)	Q1 80%Pass	Q2 80%Pass	Q3 70%Pass	Q4 60%Pass	Q5 60%
Final exam (40%)	Q1 80%Pass	Q2 80%Pass	Q3 70%Pass	Q4 60% Pass	Q5 50%

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

	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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6	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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COURSE SYLLABUS

Course Name: Predictive Analytics

General Information

Course Title	
Vietnamese:	Phân tích dự đoán
English:	Predictive Analytics
Course ID:	MAAS325IU
Course type <input type="checkbox"/> General <input type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
Number of credits:	3
Lecture:	3
Laboratory:	0
Prerequisites:	Regression models, Machine learning
Parallel Course:	None
Course standing in the curriculum:	Year 3

Course Description

The course is designed to provide students with advanced statistical techniques for predictive modeling with applications in business analytics. The course covers the fundamental concepts of statistical learning and the uses of R programming language. It also provides the transition from the theory of mathematical statistics to predictive analytics and applications in, e.g., business and actuarial science.

Textbooks and References

Textbooks:

Galit Shmueli, Peter C. Bruce, Inbal Yahav, Nitin R. Patel, Kenneth C. Lichtendahl Jr.(2017) Data Mining for Business Analytics: Concepts, Techniques, and Applications in R. Wiley
Max Kuhn and Kjell (2018). Applied Predictive Modeling. Springer.
Daniel T. Larose (2015). Data Mining and Predictive Analytics. Wiley.

Course Objectives

The course is devoted to applied predictive modeling to economics, business, and insurance. Upon completion of the course, students are able to articulate the types of problems that can be addressed by predictive analytics. Furthermore, students are also able to use R or Python programming to practice predictive models.

Goals	Goal description	Course Learning Outcomes	Competency level
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G1	Provide students knowledge of business problems, types of models, and process of predictive modeling	L.O.1	Knowledge
G2	Students are able to work with various types of datasets, are able to create graphs of data with R or Python programming, and use performance measures to evaluate predictive modeling.	L.O.2 L.O.3	Skill
G3	Students are able to utilize statistical and machine learning models to model business problems. Furthermore, students will be able to effectively communicate the results of applying predictive analytics to solve a business problem.	L.O.4	Attitude

Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Identify and understand different types of problems, in predictive analytics. Translate questions into ones that can be analyzed with statistical and predictive models.	a	I,T
L.O.2	Demonstrate important principles of constructing grapes. Identify structured, unstructured, and semi-structured data, types of variables, and terminology used in predictive modeling.	a, b	I, T,U
L.O.3	Demonstrate the foundations of predictive models and assumptions of the models	c	I, T, U
L.O.4	Articulate the applicability of predictive modeling and use R or Python programming for analyzing the real dataset in business and interpreting empirical results. Develop a life-long learning attitude	e, f, h	T, U

Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude	5
	A1.2 Homework	10
	A1.3 Quizzes, projects	5
A2. Midterm assessment	A2.1 Mid-term exam	35
A3. Final assessment	A3.1 Final exam	45

Course Outlines

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1-2	Chapter 1. Introduction What is predictive and business analytics	L.O. L.O.	Lecture Class discussion	Homework Quiz

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
	What is data mining Big data and Data Science Prediction versus Interpretation Key ingredients of Predictive models Type of Models The process of Predictive modeling			
3-6	Chapter 2. Data exploration and Dimension deduction 2.1. Uses of data visualization 2.2. Data examples and basic charts 2.3. Multidimensional visualization 2.4. Specialized visualization 2.5. Correlation analysis 2.6. Reducing the Number of Categories in Categorical Variables 2.7. Converting a Categorical Variable to a Numerical Variable 2.8. Principal Components Analysis 2.9. Dimension Reduction Using Regression Models 2.10 Dimension Reduction Using Classification and Regression Trees	L.O. L.O. L.O.	Lecture Class discussion	Homework
7-8	Chapter 3. Evaluating Predictive Performance Evaluating Predictive Performance Judging Classifier Performance Judging Ranking Performance Oversampling	L.O. L.O.	Lecture Class discussion	Homework project
Midterm Examination				Written exam
9-10	Chapter 4. Multiple Linear Regression 4.1. Explanatory and Predictive 4.2. Modeling Estimating the Regression Equation and Prediction 4.3. Variable Selection in Linear Regression, Reducing the Number of Predictors, How to Reduce the Number of Predictors	L.O. L.O. L.O.	Lecture Class discussion	Homework
11-13	Chapter 5. Classification Models 5.1. K-Nearest Neighbors (KNN) 5.2. The Naive Bayes Classifier 5.3. Support Vector Machines 5.4. Logistic regression	L.O. L.O.	Lecture Class discussion	Homework Project
14-15	Chapter 6. Forecasting time series 6.1. Handling Time Series 6.2. Regression-Based Forecasting	L.O. L.O. L.O.	Lecture Class discussion	Homework

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
	6.3. Smoothing Methods	L.O.		
Final examination				Written exam

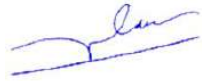
Course Policy

Class Participation: Students are expected to spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignments and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. 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 preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Ta Quoc Bao
- Email: baotq@hcmiu.edu.vn

	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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MAAS ELECTIVE 3

COURSE SYLLABUS

Course Name: Data Mining in Supply Chain

1. General Information

- Course Title	
+ Vietnamese:	Khai thác dữ liệu trong chuỗi cung ứng
+ English:	Data Mining in Supply Chain
- Course ID:	IS066IU
- Course type	
<input type="checkbox"/> General	<input type="checkbox"/> Fundamental
<input type="checkbox"/> Specialization (required)	<input checked="" type="checkbox"/> Specialization (elective)
<input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory:	0
- Prerequisites:	None
- Parallel Course:	None
- Course standing in curriculum:	Year 3

2. Course Description

An overview of business intelligence in the field of supply chain management and marketing. Addresses how to leverage business intelligence systems to define KPIs, sharpen the accuracy of forecasting and planning, track business activities, and deliver dashboards, scorecards, strategic reporting, and operational/real-time reporting to enhance decision making for supply chain and marketing. SAP business intelligence solution is introduced to illustrate the concepts.

3. Textbooks and References

Textbooks:

1. “Data Mining: Concepts and Techniques, 3rd Edition”, Jiawei Han; Micheline Kamber; Jian Pei, Morgan Kaufmann

4. Course Objectives

Upon successful completion of this course, students will be able to (1) Articulate the philosophy and approach in data-driven Supply Chain Management, (2) Understand the important role of change management, develop key skills to implement new business solutions and processes, (3) Explain the key principles of Supply Chain Planning, and a typical end-to-end planning process flow, and (4) Evaluate a variety of business constraints and inputs in Supply Planning

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Understand major principles and concepts of data mining	L.O.1 L.O.2	Knowledge

G2	Select and apply data mining algorithms to build analytical applications	L.O.3 L.O.4	Skill
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5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Understand the need for data mining in business contexts.	a	I,T
L.O.2	Understand fundamental concepts of ML/DM	a	T
L.O.3	Select and apply data mining algorithms to build analytical applications	c	T
L.O.4	Evaluate models and algorithms w.r.t their accuracy	c, g	T

6. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Quiz	15
	A1.2 Homework	15
A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	40

7. Course Outlines

Week	Content	Learning Outcome	Teaching and Learning activities		Assessment Activities
			Lecturer	Student	
1	Introduction to DataMining	L.O.1	- Lecture presentation	- Group forming. - Class discussion - Read book	- Quiz A1.1
2	Data preprocessing	L.O.1	- Lecture presentation	- Class discussion - Read book	- Quiz A1.1 - Homework A1.2
3	Data Warehousing and Online Analytical Processing	L.O.1	- Lecture presentation	- Class discussion - Read book	- Quiz /HW A1.1, A1.2
4&5	Data Cube Technology	L.O.1	- Lecture presentation	- Class discussion - Read book	- Homework A1.2
6 & 7	Mining Frequent Patterns,	L.O.3	- Lecture presentation	- Class discussion - Read book	- Quiz /HW A1.1, A1.2

	Associations, and Correlations: Basic Concepts and Methods				
8	Review for Midterm	L.O.1 L.O.2 L.O.3	- Problems solving	- Class discussion	- Quiz /HW A1.1, A1.2
Midterm exam					A2
9 & 10	Developing Business Intelligence and Market Intelligence	L.O.2 L.O.4	- Lecture presentation	- Class discussion - Read book	- Quiz /HW A1.1, A1.2
11&12	Supply Market Intelligence	L.O.2 L.O.4	- Lecture presentation	- Class discussion - Read book	- Quiz /HW A1.1, A1.2
13	Developing Sourcing Strategy	L.O.2 L.O.4	- Lecture presentation	- Class discussion - Read book	- Quiz /HW A1.1, A1.2
14	Benchmarking	L.O.2 L.O.4	- Lecture presentation	- Class discussion	- Quiz /HW A1.1, A1.2
15	Review	L.O.2 L.O.3 L.O.4	- Problems solving	- Class discussion	- Quiz /HW A1.1, A1.2
FINAL EXAMINATION					A3


8. Course Policy

Class Participation: 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.

Academic Honesty and Plagiarism: Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade. For this class, all assignments are to be completed by the individual student unless otherwise specified. Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for preparation, research, drafting, and the proper referencing of sources in preparing all assessment items.

9. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dao Vu Truong Son
- Email: dvtson@hcmiu.edu.vn

	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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COURSE SYLLABUS

Course Name: Statistical Methods for Finance

General Information

Course Title	
Vietnamese:	Phương pháp Thống kê trong Tài chính
English:	Statistical Methods for Finance
Course ID:	MAAS412IU
Course type <input type="checkbox"/> General <input type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
Number of credits:	3
Lecture:	3
Laboratory:	0
Prerequisites:	Probability, Statistics, Stochastic modeling
Parallel Course:	None
Course standing in curriculum:	Year 3

Course Description

The course is designed for students with emphasizing the understanding of significant quantitative methods and statistical techniques for finance and economics. Furthermore, the course also provides the uses of R or Python programming in the financial analysis of financial data.

Textbooks and References

Textbooks:

E. Lindstrom, H. Madsen, and J.N. Nielsen (2015). Statistics for Finance. Taylor and Francis.
J. Franke, W. K. Hardle, and C.M. Hafner (2019). Statistics of Financial Markets. 5th ed. Springer
J. Danielsson (2011). Financial Risk Forecasting. Wiley

Course Objectives

The course is devoted to statistical methods for financial markets. Upon completion of the course, students are expected to understand the underlying theory of important statistical methods used in financial data analysis. Students are also able to utilize statistical programming to analyze financial datasets, interpret empirical results, and make forecasts.

Goals	Goal description	Course Learning Outcomes	Competency level
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G1	Students are able to manage important models and techniques focused on finance and economics.	L.O.1	Knowledge
G2	Students are able to work with various types of statistical models for finance and economics, able to create graphs of data and present empirical results with R or Python programming, and use performance measures to evaluate the effectiveness of statistical models	L.O.2 L.O.3	Skill
G3	Students are able to utilize statistical models to modeling financial problems. Furthermore, students will be able to effectively communicate the results of applying statistical methods to solve a financial problem.	L.O.4	Attitude

Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Demonstrate an understanding of statistical inferential procedures in analyzing financial and economic data	a	I,T
L.O.2	Formulate models to solve some empirical financial and economic problems, also actuarial problems	c	I, T,U
L.O.3	Utilize appropriate statistical methods, techniques and statistical computing programs to understand relationships between variables used in finance and economics.	d	I, T, U
L.O.4	Demonstrate an understanding of the power and limitations of applied statistical analysis for financial engineering, economics, and business. Demonstrate comprehensive knowledge beyond the content in the syllabus from a personal exploration of the subject. Develop a life-long learning attitude	f, g, h	T, U

Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude	5
	A1.2 Homework	10
	A1.3 Quizzes, projects	5
A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	50

Course Outlines

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1-3	Chapter 1. Stock prices and Rates of Return Introduction	L.O.1	Lecture Class discussion	Homework Quiz

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
	Rates of return Ratios of Mean and Standard deviation Distributions for RORs Review of Covariance and Correlation Stylized facts			
4-5	Chapter 2. Discrete-time finance 2.1. Fundamentals 2.2. The binomial one-period model 2.3. Multiperiod model	L.O.1 L.O.2	Lecture Class discussion	Homework
6-7	Chapter 3. Linear time series models Linear system in time domain Linear Stochastic processes Linear processes with rational transfer function Prediction in linear processes	L.O.2	Lecture Class discussion	Homework project
Midterm Examination				Written exam
8-10	Chapter 4. Nonlinear time series models 4.1. Aim of model building 4.2. Parameter estimation 4.3. Parametric models 4.4. Models with conditional heteroskedasticity 4.5. Model identification 4.6 Prediction in nonlinear models	L.O.3 L.O.4	Lecture Class discussion	Homework Quiz
11-13	Chapter 5. Multivariate volatility models 5.1. Multivariate volatility forecasting 5.2. EWMA 5.3. Orthogonal GARCH 5.4. CCC and DCC model 5.5. Estimation comparison 5.6. Multivariate extensions of GARCH	L.O.3 L.O.4	Lecture Class discussion	Homework Project
14-15	Chapter 6. Kernel estimators in time series analysis 6.1. Non-parametric estimation 6.2. Kernel estimators for time series 6.3. Kernel estimation for regression 6.4. Applications of kernel estimators	L.O.1 L.O.2 L.O.3 L.O.4	Lecture Class discussion	Homework
Final examination				Written exam

Course Policy

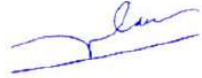
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Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Ta Quoc Bao
- Email: baotq@hcmiu.edu.vn

	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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COURSE SYLLABUS

Course Name: Statistical Models for Actuarial Science

1. General Information

- Course Title
- + Vietnamese: **Mô hình thống kê cho khoa học bảo hiểm**
- + English: **Statistical Models for Actuarial Science**
- Course ID: MAAS411IU
- Course type
 - General
 - Specialization (required)
 - Project/ Internship/ Thesis
 - Others :
- Number of credits: 3
- + Lecture: 3
- + Laboratory: 0
- Prerequisites: Regression Methods
- Parallel Course:
- Course standing in curriculum: Year 4

2. Course Description

This course aims to present theoretical and conceptual framework for statistical modelling such as generalized linear models, non – linear models, Poisson regression ... with applications in actuary science.

3. Textbooks and References

Textbooks:

- [1] J. Dobson, *Introduction to Generalized Linear Models*. Chapman and Hall/CRC Press. 2001..
- [2] E. Ohlsson and B. Johansson. *Non-life Insurance Pricing with Generalized Linear Models*. Springer, EEA Series Textbook. 2010.
- [3] P. de Jong and G.Z. Heller, *Generalized Linear Models for Insurance Data*. Cambridge University Press. 200
- [4] Arthur Charpentier, *Computational Actuarial Science with R*, CRC Press, 2015

Course Objectives

Goals	Goal description	Course Learning Outcomes	Competency level
G1	be able to specify and estimate statistical models for different kind of data	L.O.1	Knowledge

G2	be able to choose the most appropriate statistical model for a specific problem, estimate the parameters and make inference	L.O.2	Skill
G3	be able to use statistical software designed for actuarial models.	L.O.3	

4. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	be able to specify and estimate statistical models for different kind of data	e	T, U
L.O.2	be able to choose the most appropriate statistical model for a specific problem, estimate the parameters and make inference	f	T, U
L.O.3	be able to use statistical software designed for actuarial models.	b	I, U

5. Course Assessment

Assessment Component	Assessment form	Assessment form
A1. Process assessment	A1.1	10%
	A1.2	15%
	A1.3	5%
A2. Midterm assessment	A2.1	15%
	A2.2	15%
A3. Final assessment	A3.1	25%
	A3.2	25%

6. Course Outlines

Theory

Week	Topic	Learning Outcomes	Assessments	Learning activities
1	Non – life Insurance Pricing	1, 2	HW	Lecture, Discussion
2	Generalized Linear Model (GLM)			
3	Basics of Pricing with GLM			
4-5	Estimation of the Generalized Linear Model	1, 3	HW	Lecture, Discussion HW
6-7	Hypothesis Testing, Model and Variable Selection. Interactions	1, 2	HW Quiz	Lecture, HW Inclass-Quiz

8	Nonlinear Model	2, 3	HW	Lecture, Discussion, HW
9	Midterm			
10-12	Count Data, Poisson Regression and Log – linear Models	1, 2	HW Quiz	Lecture, Discussion
13-14	Survival Analysis	1, 3	HW	Lecture, Discussion HW
15-16	Clustering and Longitudinal Data	2, 3	HW	Lecture, Discussion, HW
17	Final exam			

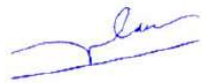
7. Course Policy

Class Participation: Student is expected that you will spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

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8. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Pham Hai Ha
- Email: phha@hcmiu.edu.vn

	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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MAAS ELECTIVE 4

COURSE SYLLABUS

Course Name: Applied Probability Models in Actuarial Science

1. General Information

- Course Title	
+ Vietnamese:	Mô hình xác suất ứng dụng trong khoa học Bảo hiểm
+ English:	Applied Probability Models in Actuarial Science
- Course ID:	MAAS415IU
- Course type <input type="checkbox"/> General <input type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory:	0
- Prerequisites:	Probability, Statistics
- Parallel Course:	
- Course standing in curriculum:	Year 4

2. Course Description

This course focus on applications of probability model for property and casualty insurance. First the course introduces some useful and severity models. Then the course helps students to understand the steps involved in the modelling process and how to carry out these steps in solving business problems.

3. Textbooks and References

Textbooks:

[1] Klugman, S.A., Panjer, H.H. and Willmot, G.E. *Loss Models: From Data to Decisions*, Wiley, 5th Edition, 2019.

[2] Brown, R. L. and Lennox, W. S. *Introduction to Ratemaking and Loss Reserving for Property and Casualty Insurance*, Actex Publication, 4th Edition, 2015

4. Course Objectives

Students will be introduced to useful frequency and severity models. Students will be required to understand the steps involved in the modeling process and how to carry out these steps in solving business problems. Students should be able to:

- 1) analyze data from an application in a business context;
- 2) determine a suitable model including parameter values; and
- 3) provide measures of confidence for decisions based upon the model.
- 4) Use a variety of tools for the calibration and evaluation of the models.

Goals	Goal description	Course Learning	Competency level
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		Outcomes	
G1	Be familiar with survival, severity, frequency, and aggregate models.	L.O.1	Knowledge
G2	Be able to use statistical methods to estimate parameters of such models given sample data.	L.O.2	Knowledge
G3	Be able to identify steps in the modeling process, understand the underlying assumptions implicit in each family of models, recognize which assumptions are applicable in a given business application, and appropriately adjust the models for impact of insurance coverage modifications	L.O.3	Knowledge

5. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Be familiar with survival, severity, frequency, and aggregate models.	a	T, U
L.O.2	Be able to use statistical methods to estimate parameters of such models given sample data.	c	T, U
L.O.3	Be able to identify steps in the modeling process, understand the underlying assumptions implicit in each family of models, recognize which assumptions are applicable in a given business application, and appropriately adjust the models for impact of insurance coverage modifications	e	I, U

6. Course Assessment

Assessment Component	Assessment form	Assessment form
A1. Process assessment	A1.1	10%
	A1.2	15%
	A1.3	5%
A2. Midterm assessment	A2.1	15%
	A2.2	15%
A3. Final assessment	A3.1	25%
	A3.2	25%

7. Course Outlines

Theory

Week	Topic	Learning Outcomes	Assessments	Learning activities
1	Review Random variables	1, 2	HW1	Lecture, Discussion

2	Basic Quantiles	Distributional	1, 3	HW2	Lecture, HW
3	Characteristics of Actuarial Models		1, 2	HW3 Quiz1	Lecture, HW Inclass-Quiz
4	Frequency and Severity with Coverage Modifications		1, 3	HW5 Quiz2	Lecture, HW Inclass-Quiz
5 – 6	Aggregate Loss Models		1, 3	HW6	Lecture, HW
7-8	Construction of Empirical Models		2, 3	Quiz 3	Lecture, HW
9	Midterm				
10-11	Model selection		2, 3	HW8	Lecture, HW Inclass-Quiz
12-13	Coverages		1, 2		Lecture
14-15	Loss Reverting		1, 3	HW9	Lecture, HW
16	Ratemaking		2, 3	HW11	Lecture, HW, Inclass-Quiz
17	Final exam				

8. Course Policy

Class Participation: Student is expected that you will spend at least **8 hours** per week on studying this course. This time should be made up of reading, working on exercises and problems, group assignment and attending class lectures and tutorials. University regulations indicate that if students attend less than 80% of scheduled classes, they may be refused final assessment. Regular attendance is essential for successful performance and learning in this course, particular in view of the interactive teaching and learning approach adopted.

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9. Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Pham Hai Ha
- Email: phha@hcmiu.edu.vn

Ho Chi Minh City, January 04, 2025

HEAD OF DEPARTMENT



Prof. Dr. Pham Huu Anh Ngoc

COURSE SYLLABUS

Course Name: Optimization 2

1. General Information

- Course Title	
+ Vietnamese:	Tối ưu 2
+ English:	Optimization 2
- Course ID:	MAFE307IU
- Course type <input type="checkbox"/> General <input type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
- Number of credits:	3
+ Lecture:	3
+ Laboratory:	0
- Prerequisites:	Probability, Optimization 1.
- Parallel Course:	None
- Course standing in curriculum:	Year 2

2. Course Description

Following Optimization 1, this course mainly aims to supply students with higher level knowledge of optimization. Topics include applications of linear programming in management such as network flow problems, transportation problems, multi-objective linear programming problems. Some optimization models in finance are also studied.

3. Textbooks and References

1. F.S. Hillier, G.J. Lieberman, Introduction to Operations Research, 10th Edition, McGraw-Hill, 2015.
2. H.A. Taha, Operations research: An introduction (Eight Edition), Pearson Prentice Hall, 2007.
3. M. Sakawa, H. Yani, I. Nishizaki, Linear and multiobjective programming with fuzzy stochastic extension. Springer, New York, 2013
4. D. T. Luc, Multiobjective linear programming - An Introduction. Springer, 2016.
5. G. Cornuejols, R. Tutuncu, Optimization Methods in Finance, Cambridge University Press, 2007

4. Course Objectives

To provide the students with the main ideas and techniques of Applied Linear programming and basic knowledge of multi-objective linear programming.

To develop skills in mathematical modeling and problem solving. To provide an understanding of the practical meaning and applications of these ideas and techniques, through practical examples drawn from many areas of engineering, life sciences, management, and finance.

To develop abilities to think reasonably, of realizing new problems/questions and answer/solve/prove them under some new conditions arising in practice.

Goals	Goal description	Course Learning Outcomes	Competency level
G1	Provide students with basic knowledge of vector functions, functions of several variables, partial derivatives and multiple integrals	L.O.1 L.O.2	Knowledge
G2	Introduce students to solving optimal problems using partial derivatives and evaluating lengths, areas and volumes.	L.O.3 L.O.4	Skill
G3	Help students to be confident and efficient when dealing with derivatives and integrals of vector functions and functions of several variables.	L.O.5	Attitude

4. Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Illustrate the ability to establish mathematical models and solution methods of network flow problems, transportation problems.	a, b	I, T
L.O.2	Evaluate models of linear multi-objective problems, solution methods (graphical solution method, scalarization methods) with applications in finance, management.	a, b	I, T
L.O.3	Build mathematical models of network problems and multi-objective linear problems from real-world problems, not in textbooks and probably not in the same conditions.... and modifying/judging the known algorithms to solve these problems.	c	T, U
L.O.4	Construct the ability to realize “problems” arising when applying the knowledge (from lecture notes/textbook) and also the ability to think reasonably and to find the way to solve.	e	T, U
L.O.5	Demonstrate independent thinking, required for independent research, on some content in the uncertain real world, beyond the confines of the textbook, through projects, presentations, seminars, assignments, and exercises. Develop a life-long learning attitude	e	T, U

5. Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude	5
	A1.2 Home work	10
	A1.3 Quizzes, projects	5
A2. Midterm assessment	A2.1 Mid-term exam	30
A3. Final assessment	A3.1 Final exam	50

6. Course Outlines

Week	Content	Learning Outcome	Teaching learning activities	Assessment
1	Network flow problems	1,2	Lecture	
2	Networks and terminologies networks: Trees, cycles, spanning trees	1,2	Lectures, Exercises	
3	Reduced cost, Network simplex method	1,2, 4, 5	Lectures, exercises	Quiz 1
4	Maximum flow problem, Seminar 1	1,2, 3	Lecture, discussion presentation	Assignment 1 Presentation
5	Transportation problems: Statement of the transportation problem, Properties of transportation problems	1,2,3, 4	Lectures, exercises	
6	Properties of transportation problems, Initial BF solutions for transportation problems	1,2,3	Lecture, exercises	Quiz 2
7	Streamlined simplex method	1,2,3	Lectures, exercises	Quiz 3
8	Assignment problems Seminar 2	1,2,4	Lectures, presentation discussion	Assignment 2 presentation
Midterm Exam				Midterm Exam
9	Multi-objective linear	1,2,4	Lectures, exercises	Presentation

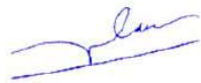
	problems			(cont'd)
10	Problem formulation, solution concepts	4, 5	Lecture, presentation and discussion	Quiz 4
11	Graphical solution methods	3, 4,5	Lecture, Exercise	
12	Scalarization methods Seminar 3	4,5	Lecture, Presentation Discussion	Assignment 3 Presentation
13	Some optimization models in finance	3,5	Presentation, Discussion, Revision	Quiz 5
14	Some optimization models in finance Seminar 4	3, 5	Lecture	Assignment 4 Presentation
15	Project presentations. Exercises. Revisions.	1,2,3,4,5	Lecture	Project presentation
Final Exam				Written Exam

7. Course Policy

Class Participation: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged. Students must have more than 50/100 points overall to pass this course.

Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Prof. Dr. Sc. Nguyen Dinh
- Email: ndinh@hcmiu.edu.vn

	<p><i>Ho Chi Minh City, January 04, 2025</i></p> <p>HEAD OF DEPARTMENT</p>  <p>Prof. Dr. Pham Huu Anh Ngoc</p>
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**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**
Department of Mathematics

COURSE SYLLABUS
Course Name: Survey Sampling

General Information

Course Title	
Vietnamese:	Phương pháp lấy mẫu điều tra
English:	Survey Sampling
Course ID:	MAAS414IU
Course type <input type="checkbox"/> General <input type="checkbox"/> Specialization (required) <input type="checkbox"/> Project/ Internship/ Thesis	<input type="checkbox"/> Fundamental <input checked="" type="checkbox"/> Specialization (elective) <input type="checkbox"/> Others :
Number of credits:	3
Lecture:	3
Laboratory:	0
Prerequisites:	Statistics
Parallel Course:	None
Course standing in the curriculum:	Year 4

Course Description

The aim of this course is to provide students the methods and sampling techniques to the practical aspects of survey problems. The course begins with brief chapters on the role of sample surveys in the modern world. Thereafter, each chapter introduces a sample survey design or estimation procedure followed by describing the pertinent practical problem. The course provides the methodology proposed for solving the problem is described, followed by details of the estimation procedure, including a compact presentation of the formulas needed to complete the analysis. Many practical examples are worked out in complete detail.

Textbooks and References

Textbooks:

- [1] Elementary Survey Sampling, Richard L. Scheaffer, Cengage Learning; 7th edition (2011).
- [2] Sampling: Design and Analysis, Sharon L. Lohr, Chapman & Hall/CRC Texts in Statistical Science, 3rd Edition (2021).

Course Objectives

On completion of the course, students should be able to design and to analyze the sample surveys via a practical, engaging approach. They can comprehend the important role that sample surveys play in the modern world. They are able evaluate the methodology needed for solving the problem and provide the details of the estimation procedure using a compact presentation of the necessary formulas. Students can work out the practical example in full detail. Students are able to demonstrate the simulations for properties of estimators.

Goals	Goal description	Course Learning Outcomes		Competency level
G1	Provide students with the fundamental methods for the survey sampling in the modern world. Describe the methodology needed for solving the problem and provide the details of the estimation procedure using a compact presentation of the necessary formulas	L.O.1 L.O.2		Knowledge
G2	Be able to design and to analyze the sample surveys via a practical, engaging approach.	L.O.3		Skill
G3	Be able to develop lifelong learning and further applications of survey sampling in industry	L.O.4		Attitude

Learning Outcomes

Learning Outcome Codes	Course Learning Outcomes	Program Learning Outcomes	Teaching Level
L.O.1	Provide students with the fundamental methods for the survey sampling in the modern world.	a	I,T
L.O.2	Evaluate the methodology needed for solving the problem and provide the details of the estimation procedure using a compact presentation of the necessary formulas	c	T, U
L.O.3	Be able to design and to analyze the sample surveys via a practical, engaging approach.	b	T, U
L.O.4	Be able to develop lifelong learning and further applications of survey sampling in industry	d, h	T, U

Course Assessment

Assessment Component	Assessment form	Percentage %
A1. Process assessment	A1.1 Attendance, attitude, Quizzes	10
	A1.2 Homework	10
	A1.3 Project	10
A2. Midterm assessment	A2 Mid-term exam	30
A3. Final assessment	A3 Final exam	40

Course Outlines

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
1-2	Chapter 1 Introduction to Survey Sampling	L.O.1 L.O.2	Lecture Class discussion	Homework Quiz

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
	<p>Chapter 2. Elements of the Sampling Problem</p> <p>2.1 Technical Terms</p> <p>2.2 How to Select the Sample: Design of the Sample Survey</p> <p>2.3 Sources of Errors in Surveys</p> <p>2.4 Designing a Questionnaire</p> <p>2.5 Planning a Survey</p> <p>2.6 Critical Thinking with Real Data</p>			
3-4	<p>Chapter 3 Some Basic Concepts of Statistics</p> <p>3.1 Introduction</p> <p>3.2 Summarizing Information in Populations and Samples: The Infinite Population Case</p> <p>3.3 Summarizing Information in Populations and Samples: The Finite Population Case</p> <p>3.4 Sampling Distributions</p> <p>3.5 Covariance and Correlation</p> <p>3.6 Estimation</p>	L.O.1 L.O.2	Lecture Class discussion	Homework, Quiz
5-6	<p>Chapter 4 Simple Random Sampling</p> <p>4.1 How to Draw a Simple Random Sample</p> <p>4.2 Estimation of a Population Mean and Total</p> <p>4.3 Selecting the Sample Size for 4.4 Estimating Population Means and Totals</p> <p>4.5 Estimation of a Population Proportion</p> <p>4.6 Comparing Estimates</p> <p>4.7 Sampling from Real Populations</p>	L.O.1 L.O.2	Lecture Class discussion	Homework, Quiz
7-8	<p>Chapter 5 Stratified Random Sampling</p> <p>5.1 Introduction</p> <p>5.2 How to Draw a Stratified Random Sample</p> <p>5.3 Estimation of a Population Mean and Total</p> <p>5.4 Selecting the Sample Size for Estimating Population Means and Totals</p> <p>5.5 Allocation of the Sample</p> <p>5.6 Estimation of a Population Proportion</p> <p>5.7 Selecting the Sample Size and Allocating the Sample to Estimate Proportions</p> <p>5.8 Additional Comments on Stratified Sampling</p>	L.O.2 L.O.3	Lecture Class discussion	Homework, Quiz

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
	5.9 An Optimal Rule for Choosing Strata 5.10 Stratification after Selection of the Sample 5.11 Double Sampling for Stratification			
Midterm Examination				Written exam
9-10	Chapter 6 Ratio, Regression, and Difference Estimation 6.1 Introduction 6.2 Surveys that Require the Use of Ratio Estimators 6.3 Ratio Estimation Using Simple Random Sampling 6.4 Selecting the Sample Size 6.5 Ratio Estimation in Stratified Random Sampling 6.6 Regression Estimation 6.7 Difference Estimation 6.8 Relative Efficiency of Estimators	L.O.1 L.O.2 L.O.3	Lecture	Homework Quiz, Project
11	Chapter 7. Systematic Sampling 7.1 Introduction 7.2 How to Draw a Systematic Sample 7.3 Estimation of a Population Mean and Total 7.4 Estimation of a Population Proportion 7.5 Selecting the Sample Size 7.6 Repeated Systematic Sampling 7.7 Further Discussion of Variance Estimators	L.O.2 L.O.3	Lecture	Homework Quiz, Project
12-13	Chapter 8 Cluster Sampling 8.1 Introduction 8.2 How to Draw a Cluster Sample 8.3 Estimation of a Population Mean and Total 8.4 Equal Cluster Sizes: Comparison to Simple Random Sampling 8.5 Selecting the Sample Size for Estimating Population Means and Totals 8.6 Estimation of a Population Proportion 8.7 Selecting the Sample Size for Estimating Proportions 8.8 Cluster Sampling Combined with Stratification 8.9 Cluster Sampling with Probabilities Proportional	L.O.3 L.O.4	Lecture	Homework Quiz, Project

Week	Content	Learning Outcome	Teaching and learning activities	Assessment
14	Chapter 9 Two-Stage Cluster Sampling 9.1 Introduction 9.2 How to Draw a Two-Stage Cluster Sample 9.3 Unbiased Estimation of a Population Mean and Total 9.4 Ratio Estimation of a Population Mean 9.5 Estimation of a Population Proportion 9.6 Two-Stage Cluster Sampling with Probabilities Proportional to Size	L.O.3 L.O.4	Lecture	Homework Quiz, Project
15	Chapter 10 Estimating the Population Size Estimation of a Population Size Using Direct Sampling Estimation of a Population Size Using Inverse Sampling Review	L.O.3 L.O.4	Lecture	Homework Quiz, Project
Final examination				Written exam

Course Policy

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Course Coordinator/ Lecturer

- Department of Mathematics: Room A2.610
- Course Coordinator/ Lecturer: Dr. Nguyen Minh Quan
- Email: quanm@hcmu.edu.vn

Ho Chi Minh City, January 04, 2025

HEAD OF DEPARTMENT



Prof. Dr. Pham Huu Anh Ngoc