

**CHƯƠNG TRÌNH ĐÀO TẠO KHÓA 2025 - NGÀNH KHOA HỌC DỮ LIỆU
TRÌNH ĐỘ ĐẠI HỌC**

(Kèm theo Quyết định số 1196/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: Khoa học Dữ liệu
- + Tiếng Anh: Data Science
- Mã ngành đào tạo: 7460108
- Trình độ đào tạo: Cử nhân
- Loại hình đào tạo: Chính quy
- Thời gian đào tạo: 4 năm (8 học kỳ)
- Tên văn bằng sau khi tốt nghiệp:
- + Tiếng Việt: Cử nhân Khoa học Dữ liệu
- + Tiếng Anh: Bachelor of Science in Data Science
- Nơi đào tạo: Trường Đại học Quốc tế - Đại học Quốc gia Thành phố Hồ Chí Minh

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: Toán – Tin học (IU03)

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, quy mô đào tạo: 50 sinh viên

3. Mục tiêu đào tạo

a. Mục tiêu chung

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
Ngành KHDL tại Khoa CNTT đào tạo ra các cử nhân đạt được: (i) nền tảng kiến thức cơ bản vững chắc về quản lý, xử lý và phân tích dữ liệu lớn, (ii) kiến thức chuyên ngành sâu và rộng về khoa học dữ liệu và hệ thống thông tin, (iii) kiến thức về hội nhập, khởi nghiệp, (iv) các kỹ năng mềm cần thiết, (v) đạo đức nghề nghiệp và ý thức trách nhiệm đối với bản thân và xã hội, (vi) khả năng tự học hoặc tham gia các khóa bồi dưỡng để nắm bắt các công nghệ mới, và (vii) đủ năng lực học tiếp sau đại học trong và ngoài nước.	Khoa CNTT là một trong các khoa của Trường Đại học Quốc tế, ĐHQG-TP.HCM. Do đó, tầm nhìn của Khoa phụ thuộc và tầm nhìn của Trường (Trường ĐHQG là trường đại học nghiên cứu thuộc топ đầu tại châu Á; là cơ sở giáo dục quốc tế, tự chủ, sáng tạo; là nơi vun đắp và phát triển nguồn nhân lực chất lượng cao cho thị trường lao động trong nước và quốc tế.)	Đào tạo chất lượng cao đa ngành – đa lĩnh vực cho bậc đại học và sau đại học. Tất cả các CTĐT được đánh giá theo tiêu chuẩn trong nước và quốc tế AUN. Nâng cao nghiên cứu cơ bản và nghiên cứu ứng dụng để đáp ứng được nhu cầu của doanh nghiệp, địa phương, xã hội và tiêu chuẩn quốc tế. Đảm nhận vai trò tiên phong tại Việt Nam bằng cách thực hành quản lý xuất sắc, truyền cảm hứng và hỗ trợ các thành viên của ĐHQG TP.HCM trong việc phát triển toàn diện	Mục tiêu giáo dục nhằm phát triển toàn diện con người Việt Nam có đạo đức, tri thức, văn hóa, sức khỏe, thẩm mỹ và nghề nghiệp; có phẩm chất, năng lực và ý thức công dân; có lòng yêu nước, tinh thần dân tộc, trung thành với lý tưởng độc lập dân tộc và chủ nghĩa xã hội; phát huy tiềm năng, khả năng sáng tạo của mỗi cá nhân; nâng cao dân trí, phát triển nguồn nhân lực, bồi dưỡng nhân tài, đáp ứng yêu cầu của sự nghiệp xây dựng, bảo vệ Tổ quốc và hội nhập quốc tế (Điều 2)

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

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

Kiến thức:

(PO1): Có kiến thức cơ bản và nâng cao về lĩnh vực Khoa học dữ liệu

Kỹ năng:

(PO2): Có kỹ năng làm việc vững chắc và tư duy hệ thống để giải quyết các vấn đề thực tế

Tự chủ và trách nhiệm

(PO3): Làm việc hiệu quả, có đạo đức và sáng tạo như một chuyên gia dữ liệu

(PO4): Có khả năng tiếp tục học hỏi suốt đời và phát triển chuyên môn

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

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

Bảng 2. Chuẩn đầu ra của CTĐT theo thang đo Bloom

Chuẩn đầu ra (CĐR)	Nội dung Chuẩn đầu ra (PLOs)	Trình độ năng lực*
Kiến thức		
1.1	PLO1. Phân tích một vấn đề máy tính phức tạp và áp dụng các nguyên lý của máy tính và các lĩnh vực liên quan khác để xác định các giải pháp	4.0
1.2	PLO6: Áp dụng lý thuyết khoa học dữ liệu và các nguyên tắc cơ bản của phát triển phần mềm để tạo ra các giải pháp dựa trên máy tính, thông tin học	5.0
Kỹ năng		
2.1	PLO2. Thiết kế, triển khai và đánh giá một giải pháp dựa trên máy tính để đáp ứng một tập hợp yêu cầu máy tính cụ thể trong bối cảnh của ngành học.	5.0
2.2	PLO5: Hoạt động hiệu quả như một thành viên hoặc lãnh đạo của một nhóm tham gia các hoạt động phù hợp với ngành học của chương trình	5.0

Chuẩn đầu ra (CDR)	Nội dung Chuẩn đầu ra (PLOs)	Trình độ năng lực*
Mức tự chủ và trách nhiệm		
3.1	PLO3: Giao tiếp hiệu quả trong nhiều ngữ cảnh chuyên nghiệp khác nhau	5.0
3.2	PLO4: Nhận biết trách nhiệm chuyên nghiệp và đưa ra nhận định có hiểu biết trong thực hành máy tính dựa trên nguyên tắc pháp lý và đạo đức	4.5

*Trình độ năng lực theo thang Bloom

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

Bảng 3. Mối quan hệ giữa CDR của CTĐT và mục tiêu đào tạo

	PLOs ⁽¹⁾	POs ⁽²⁾			
		PO1	PO2	PO3	PO4
Kiến thức	PLO1	x			
	PLO6				x
Kỹ năng	PLO2		x		
	PLO5			x	
Tự chủ và trách nhiệm	PLO3			x	
	PLO4			x	

6. Quy trình đào tạo, điều kiện tốt nghiệp

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

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

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

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

Bảng 4: Thang điểm

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

8. Khối lượng kiến thức toàn khoá

Tổng số tín chỉ: **124 tín chỉ**, trong đó phân bổ kiến thức như Bảng 5 (không bao gồm giáo dục thể chất và giáo dục quốc phòng):

Bảng 5. Cấu trúc chương trình đào tạo

TT	Các khối kiến thức ⁽³⁾	Khối lượng			
		Số tín chỉ			Tỷ lệ % (Tổng khối kiến thức/ Tổng số tín chỉ)
		Tổng	Lý thuyết	Thực hành	
I	Khối kiến thức giáo dục đại cương	38	38	0	30.65
	- Bắt buộc: 38 tín chỉ	38	38	0	30.65
	- Tự chọn: 0 tín chỉ	0	0	0	0
II	Khối kiến thức cơ sở ngành	27	21	6	21.77
	- Bắt buộc: 27 tín chỉ	27	21	6	21.77
	- Tự chọn: 0 tín chỉ	0	0	0	0
III	Kiến thức chuyên ngành	43			34.68
	- Bắt buộc: 32 tín chỉ	32	24	8	25.81
	- Tự chọn: 11 tín chỉ	11			8.87
IV	Kiến thức bổ trợ	0			0
V	Thực tập, khóa luận/luận văn tốt nghiệp	16	16	0	12.9
	Tổng cộng	124			100

9. Nội dung chương trình đào tạo

Bảng 6. Khung CTĐT chung của nhóm ngành Toán – Tin học

IU03	NHÓM 3	TOÁN - TIN HỌC	Số 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			10
7	MA001IU	Calculus 1	4
8	MA033IU	Linear Algebra	3
9	MA036IU	Probability and Statistics	3
Khối kiến thức Tin học			8
10	IT069IU	Object-Oriented Programming	4
11	IT079IU	Principles of Database Management	4
Khối kiến ngoại ngữ			8
12	EN007IU	Writing AE1	2
13	EN008IU	Listening AE1	2
14	EN011IU	Writing AE2	2
15	EN012IU	Speaking AE2	2
Giáo dục chung khác			6
16	PT001IU	Physical Training 1	3
17	PT002IU	Physical Training 2	3
18		Military Training	
Tổng			46

Bảng 7. Các môn học thuộc CTĐT

Stt	Mã MH	Tên môn học (MH)		Loại MH (bắt buộc/ tự chọn)	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
I	Kiến thức giáo dục đại cương							
1.1	Lý luận chính trị							
1	PE015IU	Philosophy Marx – Lenin	Triết học Mác-Lênin	Bắt buộc	3	3	0	
2	PE016IU	Marx-Lenin Political Economy	Kinh tế chính trị Mác-Lênin	Bắt buộc	2	2	0	
3	PE017IU	Scientific Socialism	Chủ nghĩa xã hội khoa học	Bắt buộc	2	2	0	
4	PE018IU	History of Vietnamese Communist Party	Lịch sử Đảng công sản Việt Nam	Bắt buộc	2	2	0	
5	PE019IU	Ho Chi Minh's Thoughts	Tư tưởng Hồ Chí Minh	Bắt buộc	2	2	0	
1.2	Khoa học xã hội - Nhân văn - Nghệ thuật							
6	PE021IU	General law	Pháp luật đại cương	Bắt buộc	3	3	0	
7	MA001IU	Calculus 1	Toán 1	Bắt buộc	4	4	0	
8	MA033IU	Linear Algebra	Đại số tuyến tính	Bắt buộc	3	3	0	
9	MA036IU	Probability & Statistics	Xác suất và thống kê	Bắt buộc	3	3	0	
10	IT151IU	Statistical Method	Phương pháp thống kê	Bắt buộc	3	3	0	
11	IT176IU	Algorithmic Statistics	Thuật toán thống kê	Bắt buộc	3	3	0	
1.3	Ngoại ngữ							
12	EN008IU	Academic English 1 (listening skill)	Tiếng Anh chuyên ngành 1 (kỹ năng nghe)	Bắt buộc	2	2	0	
13	EN007IU	Academic English 1 (writing skill)	Tiếng Anh chuyên ngành 1 (kỹ năng viết)	Bắt buộc	2	2	0	
14	EN012IU	Academic English 2 (speaking skill)	Tiếng Anh chuyên ngành 2 (kỹ năng nói)	Bắt buộc	2	2	0	

Stt	Mã MH	Tên môn học (MH)		Loại MH (bắt buộc/ tự chọn)	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
15	EN011IU	Academic English 2 (writing skill)	Tiếng Anh chuyên ngành 2 (kỹ năng viết)	Bắt buộc	2	2	0	
1.4	Giáo dục thể chất							
16	PT001IU	Physical Training 1	Giáo dục thể chất 1	Bắt buộc	3	0	3	
17	PT002IU	Physical Training 2	Giáo dục thể chất 2	Bắt buộc	3	0	3	
1.5	Giáo dục quốc phòng							
II	Kiến thức cơ sở ngành							
18	IT135IU	Introduction to Data Science	Nhập môn khoa học dữ liệu	Bắt buộc	3	3	0	
19	IT149IU	Fundamentals of Programming	Lập trình cơ bản	Bắt buộc	4	3	1	Phòng TN. CNTT
20	IT069IU	Object-Oriented Programming	Lập trình hướng đối tượng	Bắt buộc	4	3	1	Phòng TN. CNTT
21	IT013IU	Data Structures and Algorithms	Cấu trúc dữ liệu và giải thuật	Bắt buộc	4	3	1	Phòng TN. CNTT
22	IT079IU	Principles of Database Management	Nguyên tắc của quản trị cơ sở dữ liệu	Bắt buộc	4	3	1	Phòng TN. CNTT
23	IT159IU	Artificial Intelligence	Trí tuệ nhân tạo	Bắt buộc	4	3	1	Phòng TN. CNTT
24	IT140IU	Fundamental Concepts of Data Security	Khái niệm cơ bản về bảo mật dữ liệu	Bắt buộc	4	3	1	Phòng TN. CNTT
III	Kiến thức chuyên ngành							
25	IT137IU	Data Analysis	Phân tích dữ liệu	Bắt buộc	4	3	1	Phòng TN. CNTT
26	IT136IU	Regression Analysis	Phân tích hồi qui	Bắt buộc	4	3	1	Phòng TN. CNTT
27	IT138IU	Data Science and Data Visualization	Khoa học dữ liệu và trực quan hóa	Bắt buộc	4	3	1	Phòng TN. CNTT

Stt	Mã MH	Tên môn học (MH)		Loại MH (bắt buộc/ tự chọn)	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
			dữ liệu					
28	IT139IU	Scalable and Distributed Computing	Tính toán khả năng mở rộng và phân bố	Bắt buộc	4	3	1	Phòng TN. CNTT
29	IT160IU	Data Mining	Khai thác dữ liệu	Bắt buộc	4	3	1	Phòng TN. CNTT
30	IT157IU	Deep Learning	Học sâu	Bắt buộc	4	3	1	Phòng TN. CNTT
31	IT172IU	Machine Learning	Học máy	Bắt buộc	4	3	1	Phòng TN. CNTT
32	IT173IU	Big Data Analytics	Phân tích dữ liệu lớn	Bắt buộc	4	3	1	Phòng TN. CNTT
Kiến thức tự chọn Nhóm DS (SV chọn tối thiểu 7 tín chỉ trong danh sách sau)								
33	IT169IU	Time Series Analysis	Phân tích chuỗi thời gian	Tự chọn	4	3	1	Phòng TN. CNTT
34	IT150IU	Blockchain	Blockchain	Tự chọn	4	3	1	Phòng TN. CNTT
35	IT076IU	Software Engineering	Công nghệ phần mềm	Tự chọn	4	3	1	Phòng TN. CNTT
36	IT170IU	Natural Language Processing	Xử lý ngôn ngữ tự nhiên	Tự chọn	4	3	1	Phòng TN. CNTT
37	IT044IU	Human-Computer Interaction	Thiết kế giao diện và trải nghiệm người dùng	Tự chọn	4	3	1	Phòng TN. CNTT
38	IT093IU	Web Application Development	Phát triển ứng dụng web	Tự chọn	4	3	1	Phòng TN. CNTT
39	IT144IU	Business Process Analysis	Phân tích quy trình nghiệp vụ	Tự chọn	4	3	1	Phòng TN. CNTT
40	IT145IU	Decision Support Systems	Hệ thống hỗ trợ quyết định	Tự chọn	4	3	1	Phòng TN. CNTT

Stt	Mã MH	Tên môn học (MH)		Loại MH (bắt buộc/ tự chọn)	Tín chỉ			Phòng TN (**)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
41	IT146IU	Theory of Networks	Lý thuyết mạng máy tính	Tự chọn	4	3	1	Phòng TN. CNTT
42	IT056IU	IT Project Management	Quản trị dự án CNTT	Tự chọn	4	3	1	Phòng TN. CNTT
43	IT094IU	Information System Management	Quản lý hệ thống thông tin	Tự chọn	4	3	1	Phòng TN. CNTT
44	IT164IU	Cloud Computing	Điện toán đám mây	Tự chọn	4	3	1	Phòng TN. CNTT
45	IT120IU	Entrepreneurship	Khởi nghiệp	Tự chọn	3	3	0	
46	IT163IU	Optimization and Applications	Tối ưu hóa và ứng dụng	Tự chọn	4	3	1	
47	IT153IU	Discrete Mathematics	Toán rời rạc	Tự chọn	3	3	0	
Kiến thức tự chọn tự do (4 TC)								
48		Free elective	Tự chọn tự do	Tự chọn	4	3 or 4	1 or 0	
IV	Thực tập, khóa luận/luận văn tốt nghiệp							
49	IT082IU	Internship	Thực tập công nghiệp	Bắt buộc	3	3	0	
50	IT083IU	Special Study of the Field	Thực tập tốt nghiệp	Bắt buộc	3	3	0	
51	IT058IU	Thesis	Luận văn tốt nghiệp	Bắt buộc	10	10	0	
	Tổng số (tín chỉ)				124	(Không tính GDTC)		

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

Bảng 8. Các môn học được phân theo từng học kỳ (tham khảo)

Học kỳ	Mã MH	Tên MH		Loại MH (bắt buộc/ tự chọn)	Tín chỉ			Môn học tiên quyết (TQ)/ học trước (HT)/ song hành (SH)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
I (17 tín chỉ)	MA001IU	Calculus 1	Toán 1	Bắt buộc	4	4	0	
	PE015IU	Philosophy Marx – Lenin	Triết học Mác-Lênin	Bắt buộc	3	3	0	
	PT001IU	Physical Training 1	Giáo dục thể chất 1	Bắt buộc	3	0	3	
	PE016IU	Marx-Lenin Political Economy	Kinh tế chính trị Mác-Lênin	Bắt buộc	2	2	0	
	EN008IU	Academic English 1 (listening skill)	Tiếng Anh chuyên ngành 1 (kỹ năng nghe)	Bắt buộc	2	2	0	
	EN007IU	Academic English 1 (writing skill)	Tiếng Anh chuyên ngành 1 (kỹ năng viết)	Bắt buộc	2	2	0	
	IT149IU	Fundamentals of Programming	Lập trình cơ bản	Bắt buộc	4	3	1	
Tổng cộng					17	16	1	
II (16 tín chỉ)	PE017IU	Scientific Socialism	Chủ nghĩa xã hội khoa học	Bắt buộc	2	2	0	
	PE021IU	General law	Pháp luật đại cương	Bắt buộc	3	3	0	
	MA036IU	Probability & Statistics	Xác suất và thống kê	Bắt buộc	3	3	0	HT: MA001IU
	MA033IU	Linear Algebra	Đại số tuyến tính	Bắt buộc	3	3	0	HT: MA001IU , T149IU
	PT002IU	Physical Training 2	Giáo dục thể chất 2	Bắt buộc	3	0	3	
	IT069IU	Object-Oriented Programming	Lập trình hướng đối tượng	Bắt buộc	4	3	1	HT: IT149IU
	EN011IU	Academic English 2 (writing skill)	Tiếng Anh chuyên ngành 2 (kỹ năng viết)	Bắt buộc	2	2	0	HT: EN007IU

Học kỳ	Mã MH	Tên MH		Loại MH (bắt buộc/ tự chọn)	Tín chỉ			Môn học tiên quyết (TQ)/ học trước (HT)/ song hành (SH)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
	EN012IU	Academic English 2 (speaking skill)	Tiếng Anh chuyên ngành 2 (kỹ năng nói)	Bắt buộc	2	2	0	
Tổng cộng					19	18	1	
III (17 tín chỉ)	IT135IU	Introduction to Data Science	Nhập môn khoa học dữ liệu	Bắt buộc	3	3	0	
	IT151IU	Statistical Method	Phương pháp thống kê	Bắt buộc	3	3	0	HT: MA026IU
	IT013IU	Data Structures and Algorithms	Cấu trúc dữ liệu và giải thuật	Bắt buộc	4	3	1	HT: IT069IU
	IT079IU	Principles of Database Management	Nguyên tắc của quản trị cơ sở dữ liệu	Bắt buộc	4	3	1	HT: IT149IU
	IT138IU	Data Science and Data Visualization	Khoa học dữ liệu và trực quan hóa dữ liệu	Bắt buộc	4	3	1	
Tổng cộng					18	15	3	
IV (19 tín chỉ)	IT140IU	Fundamental Concepts of Data Security	Khái niệm cơ bản về bảo mật dữ liệu	Bắt buộc	4	3	1	
	IT159IU	Artificial Intelligence	Trí tuệ nhân tạo	Bắt buộc	4	3	1	HT: IT013IU
	IT176IU	Algorithmic Statistics	Thuật toán thống kê	Bắt buộc	3	3	0	HT: IT151IU
	IT136IU	Regression Analysis	Phân tích hồi qui	Bắt buộc	4	3	1	HT: IT151IU
	IT137IU	Data Analysis	Phân tích dữ liệu	Bắt buộc	4	3	1	HT: IT151IU
Tổng cộng					19	15	4	
V (17 tín chỉ)	PE018IU	History of Vietnamese Communist Party	Lịch sử Đảng Cộng sản Việt Nam	Bắt buộc	2	2	0	
	IT172IU	Machine Learning	Học máy	Bắt buộc	4	3	1	HT: IT159IU
	IT160IU	Data Mining	Khai thác dữ liệu	Bắt buộc	4	3	1	HT: IT159IU
	IT139IU	Scalable and Distributed Computing	Tính toán khả năng mở rộng và phân bố	Bắt buộc	4	3	1	HT: IT013IU, IT079IU

Học kỳ	Mã MH	Tên MH		Loại MH (bắt buộc/ tự chọn)	Tín chỉ			Môn học tiên quyết (TQ)/ học trước (HT)/ song hành (SH)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
		Elective	Tự chọn	Tự chọn	4	3	1	
Tổng cộng					18	14	4	
VI (18 tín chỉ)	PE019IU	Ho Chi Minh's Thoughts	Tư tưởng Hồ Chí Minh	Bắt buộc	2	2	0	
	IT173IU	Big Data Analytics	Phân tích dữ liệu lớn	Bắt buộc	4	3	1	HT: IT137IU
	IT157IU	Deep Learning	Học sâu	Bắt buộc	4	3	1	HT: IT159IU
		Free Elective	Tự chọn tự do	Tự chọn	4	4/3	0/1	
		Elective	Tự chọn	Tự chọn	3	3	0	
Tổng cộng					17	14 or 15	3 or 2	
Sum mer (3 tín chỉ)	IT082IU	Internship	Thực tập công nghiệp	Bắt buộc	3	3	0	
Tổng cộng					3	3	0	
VII (3 tín chỉ)	IT083IU	Special Study of the Field	Thực tập tốt nghiệp	Bắt buộc	3	3	0	
Tổng cộng					3	3	0	
VIII (10 tín chỉ)	IT058IU	Thesis	Luận văn tốt nghiệp	Bắt buộc	10	10	0	TQ: IT083IU
Tổng cộng					10	10	0	
Tổng CTĐT					124			
Danh sách môn học tự chọn Nhóm DS (SV chọn tối thiểu 7 tín chỉ trong danh sách sau)								
	IT169IU	Time Series Analysis	Phân tích chuỗi thời gian	Tự chọn	4	3	1	HT: IT137IU
	IT150IU	Blockchain	Blockchain	Tự chọn	4	3	1	
	IT076IU	Software Engineering	Công nghệ phần mềm	Tự chọn	4	3	1	HT: IT069IU, IT079IU

Học kỳ	Mã MH	Tên MH		Loại MH (bắt buộc/ tự chọn)	Tín chỉ			Môn học tiên quyết (TQ)/ học trước (HT)/ song hành (SH)
		Tiếng Anh	Tiếng Việt		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
	IT170IU	Natural Processing Language	Xử lý ngôn ngữ tự nhiên	Tự chọn	4	3	1	HT: IT013IU
	IT044IU	Human-Computer Interaction	Thiết kế giao diện và trải nghiệm người dùng	Tự chọn	4	3	1	
	IT093IU	Web Application Development	Phát triển ứng dụng web	Tự chọn	4	3	1	HT: IT069IU, IT079IU
	IT144IU	Business Process Analysis	Phân tích quy trình nghiệp vụ	Tự chọn	4	3	1	
	IT145IU	Decision Support Systems	Hệ thống hỗ trợ quyết định	Tự chọn	4	3	1	HT: IT069IU
	IT146IU	Theory of Networks	Lý thuyết mạng máy tính	Tự chọn	4	3	1	
	IT056IU	IT Project Management	Quản trị dự án CNTT	Tự chọn	4	3	1	HT: IT069IU, IT079IU
	IT094IU	Information System Management	Quản lý hệ thống thông tin	Tự chọn	4	3	1	HT: IT079IU
	IT164IU	Cloud Computing	Điện toán đám mây	Tự chọn	4	3	1	HT: IT140IU
	IT120IU	Entrepreneurship	Khởi nghiệp	Tự chọn	3	3	0	
	IT163IU	Optimization and Applications	Tối ưu hóa và ứng dụng	Tự chọn	4	3	1	
	IT153IU	Discrete Mathematics	Toán rời rạc	Tự chọn	3	3	0	HT: MA001IU, IT149IU
Tự chọn tự do (4 tín chỉ)								
		Free elective	Tự chọn tự do	Tự chọn	4	3 or 4	1 or 0	

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

Mức độ đóng góp của các môn học vào chuẩn đầu ra của CTĐT ngành Khoa học Dữ liệu được trình bày như Bảng 9. Mức độ đóng góp nhiều hay ít tùy thuộc vào số dấu x trong ô được đánh.

Bảng 9. Đóng góp của các môn học vào CDR của CTĐT

Học kỳ	Mã môn học	Tên môn học ⁽⁴⁾	Chuẩn đầu ra của CTĐT ⁽⁵⁾					
			PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
I.	MA001IU	Toán 1	xx		x			
	PE015IU	Triết học Mác-Lênin				xx		
	PE016IU	Kinh tế chính trị Mác-Lênin				xx		
	EN008IU	Tiếng Anh chuyên ngành 1 (kỹ năng nghe)			xxx			
	EN007IU	Tiếng Anh chuyên ngành 1 (kỹ năng viết)			xxx			
	PT001IU	Giáo dục thể chất 1					x	
	IT149IU	Lập trình cơ bản	x	xx				
II.	MA036IU	Xác suất và thống kê	xx					
	IT154IU	Đại số tuyến tính	xx		x			
	PE021IU	Pháp luật đại cương				xx	x	
	PT002IU	Giáo dục thể chất 2					x	
	PE017IU	Chủ nghĩa xã hội khoa học				xx		
	IT069IU	Lập trình hướng đối tượng	xx	xxx				x
	EN011IU	Tiếng Anh chuyên ngành 2 (kỹ năng viết)			xxx			
	EN012IU	Tiếng Anh chuyên ngành 2 (kỹ năng nói)			xxx			
III.	IT135IU	Nhập môn khoa học dữ liệu	xx			x		x
	IT151IU	Phương pháp thống kê	xx	x				
	IT013IU	Cấu trúc dữ liệu và giải thuật	xx	xxx				x

Học kỳ	Mã môn học	Tên môn học ⁽⁴⁾	Chuẩn đầu ra của CTĐT ⁽⁵⁾					
			PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
	IT079IU	Nguyên tắc của quản trị cơ sở dữ liệu	xx	xxx				x
	IT138IU	Khoa học dữ liệu và trực quan hóa dữ liệu	xx	x	xx			
IV.	IT137IU	Phân tích dữ liệu	xxx	xx				
	IT159IU	Trí tuệ nhân tạo	xx	xxx				x
	IT176IU	Thuật toán thống kê	xxx	x				
	IT136IU	Phân tích hồi qui	xxx	xx				
	IT140IU	Khái niệm cơ bản về bảo mật dữ liệu		xx	x			
V.	PE018IU	Lịch sử Đảng cộng sản Việt Nam				x		
	IT160IU	Khai thác dữ liệu	xxx				x	xx
	IT139IU	Tính toán khả năng mở rộng và phân bố	xx	xxx				x
	IT172IU	Học máy	xx	xx				x
		Tự chọn						
VI.	PE019IU	Tư tưởng Hồ Chí Minh				xx		
	IT173IU	Phân tích dữ liệu lớn	xxx	xx				
	IT157IU	Học sâu	xx	xx				x
		Tự chọn						
		Tự chọn tự do						
	Danh sách môn học tự chọn Nhóm DS (SV chọn tối thiểu 7 tín chỉ trong danh sách sau)							
	IT169IU	Phân tích chuỗi thời gian	xx	xxx				x
	IT150IU	Blockchain	xx	xx				x
	IT076IU	Công nghệ phần mềm	xx	xxx				x
	IT044IU	Thiết kế giao diện và trải nghiệm người dùng	xx	xx				

Học kỳ	Mã môn học	Tên môn học ⁽⁴⁾	Chuẩn đầu ra của CTĐT ⁽⁵⁾					
			PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
	IT144IU	Phân tích quy trình nghiệp vụ	xx	xx		x		
	IT145IU	Hệ thống hỗ trợ quyết định	xx	xx		x		
	IT146IU	Lý thuyết mạng máy tính	x				x	x
	IT094IU	Quản lý hệ thống thông tin	x				xx	x
	IT120IU	Khởi nghiệp	x			x		
	IT170IU	Xử lý ngôn ngữ tự nhiên	x	xx	x			
	IT093IU	Phát triển ứng dụng web	xx	xx				
	IT056IU	Quản trị dự án CNTT	x			x	xx	
	IT163IU	Tối ưu hoá và ứng dụng	xx	xx				x
	IT153IU	Toán rời rạc	x	x				
	IT164IU	Điện toán đám mây	x	xx	x			
Hè năm 3	IT082IU	Thực tập công nghiệp				x		x
VII.	IT083IU	Thực tập tốt nghiệp	xxx	xx				x
VIII.	IT058IU	Luận văn tốt nghiệp	xxx	xxx				x

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

12.1. Philosophy Marxist-Lenin (Triết học Mác-Lênin)

- Mã MH: **PE015IU**
- Số tín chỉ: 3 (3,0)
- Môn học trước: Không
- Mô tả vắn tắt nội dung: Môn học trang bị cho sinh viên những kiến thức cơ bản về triết học Mác-Lênin

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

- Mã MH: **PE016IU**

- Số tín chỉ: 2 (2,0)

- Môn học trước: Triết học Mác-Lênin

- Mô tả vắn tắt nội dung: 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.

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

- Mã MH: **PE017IU**

- Số tín chỉ: 2 (2,0)

- Môn học trước: Triết học Mác - Lênin

- Mô tả vắn tắt nội dung: Môn học trang bị cho sinh viên những kiến thức cơ bản về chủ nghĩa xã hội khoa học.

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

- Mã MH: **PE018IU**

- Số tín chỉ: 2 (2,0)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: Môn học trang bị cho sinh viên những kiến thức cơ bản về lịch sử Đảng Cộng Sản Việt Nam.

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

- Mã MH: **PE019IU**

- Số tín chỉ: 2 (2,0)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: 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 đoàn kết quốc tế; về văn hóa, đạo đức, con người.

12.6. General Law (Pháp luật đại cương)

- Mã MH: **PE021IU**

- Số tín chỉ: 3 (3,0)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: Khóa học sẽ giới thiệu cho sinh viên hệ thống pháp luật Việt Nam. Đặc biệt, sinh viên sẽ hiểu được 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, học sinh sẽ nâng cao nhận thức về trách nhiệm của mình trong việc đảm bảo công lý, bao gồm cả việc chấm dứt tham nhũng trong xã hội.

12.7. Calculus 1 (Toán 1)

- Mã MH: **MA001IU**
- Số tín chỉ: 4 (4,0)
- Môn học trước: Không
- Mô tả vắn tắt nội dung: Nội dung chính: Hàm số, Giới hạn, Tính liên tục, Đạo hàm, Đạo hàm cho các hàm cơ bản, Quy tắc tính đạo hàm, Ứng dụng của đạo hàm, Quy tắc L'hospital, Tối ưu, Phương pháp Newton, Tích phân, Tích phân xác định, Các định lý cơ bản của giải tích, kỹ thuật tính tích phân.

12.8. Linear Algebra (Đại số tuyến tính)

- Mã MH: **MA033IU**
- Số tín chỉ: 3 (3,0)
- Môn học trước: Toán 1, Lập trình cơ bản
- Mô tả vắn tắt nội dung: Đại số tuyến tính cung cấp một khuôn khổ toán học để tổ chức thông tin và sau đó sử dụng thông tin đó để giải quyết các vấn đề, đặc biệt là các vấn đề phân tích dữ liệu. Đại số tuyến tính rất cần thiết để hiểu và tạo ra các thuật toán học máy, đặc biệt là mạng thần kinh và các mô hình học sâu.
- Khóa học này sẽ cung cấp cho sinh viên kiến thức đại số tuyến tính cần thiết cho học máy và mô hình mạng thần kinh. Học sinh sẽ tìm hiểu tổng quan về ma trận cơ bản và đại số vector như được áp dụng cho các hệ thống tuyến tính. Sau đó, họ sẽ học cách thao tác ma trận để có được kiến thức hữu ích từ dữ liệu, định lượng mức độ học tập và tối ưu hóa tốc độ học tập trong không gian vector và chuyển đổi tuyến tính để khám phá dữ liệu. Các bài học và bài tập thực hành sẽ trang bị cho sinh viên nền tảng toán học cần thiết để xây dựng và đào tạo các mạng thần kinh đơn giản trong các ứng dụng khai thác dữ liệu.

12.9. Probability and Statistics (Xác suất và thống kê)

- Mã MH: **MA036IU**
- Số tín chỉ: 3 (3,0)
- Môn học trước: Toán 1
- Mô tả vắn tắt nội dung: Sinh viên sẽ được cung cấp các kỹ năng sử dụng dữ liệu từ nhiều nguồn khác nhau, được làm quen với môi trường cơ sở dữ liệu và điện toán hiện đại, chẳng hạn như R/Python và được tiếp xúc với các nghiên cứu điển hình từ bên ngoài lớp học.

Thông qua học phần này, sinh viên sẽ làm quen với những thách thức của khoa học dữ liệu đương đại và hiểu rõ hơn về các kỹ năng nền tảng cần thiết để biến dữ liệu thành thông tin.

12.10. Statistical Method (Phương pháp thống kê)

- Mã MH: **IT151IU**
- Số tín chỉ: 3 (3,0)
- Môn học trước: Xác suất, thống kê và quy trình ngẫu nhiên
- Mô tả vắn tắt nội dung: Cung cấp cho sinh viên nền tảng về các phương pháp thống kê giúp phân tích dữ liệu, bao gồm tóm tắt và mô tả dữ liệu và kỹ thuật suy luận. Chủ đề bao gồm phân phối xác suất cơ bản (ví dụ như phân phối chuẩn, và phân phối nhị thức), giá trị kỳ vọng, ước lượng (hợp lý cực đại, khoảng tin cậy), kiểm tra giả thuyết và phân tích hồi quy bội.

12.11. Algorithmic Statistics (Thuật toán thống kê)

- Mã MH: **IT176IU**
- Số tín chỉ: 3 (3,0)
- Môn học trước: Phương pháp thống kê
- Mô tả vắn tắt nội dung: Đây là khóa học cấp đại học nâng cao giới thiệu phương pháp Bayesian về suy luận thống kê để phân tích dữ liệu trong nhiều ứng dụng, đặc biệt là trong Khoa học dữ liệu. Khóa học này cung cấp kiến thức về lý thuyết suy luận Bayes và phân tích dữ liệu bằng phần mềm thống kê (chủ yếu bằng Python) cũng sẽ được nhấn mạnh. Các chủ đề bao gồm: so sánh phương pháp Bayesian và phương pháp thường xuyên, đặc tả mô hình Bayes, đặc tả trước, cơ bản về lý thuyết quyết định, chuỗi Markov Monte Carlo, hệ số Bayes, Bayes thực nghiệm, hồi quy tuyến tính Bayes và mô hình tuyến tính tổng quát, mô hình phân cấp

12.12. Academic English 1 - Listening skill (Tiếng Anh chuyên ngành 1- Kỹ năng Nghe)

- Mã MH: **EN008IU**
- Số tín chỉ: 2(2,0)
- Môn học trước: Không
- Mô tả vắn tắt nội dung: Những kỹ năng nghe tiếng Anh học thuật, ghi chú, và thảo luận sẽ giúp sinh viên làm quen với những khó khăn trong việc học tiếng Anh ở đại học. Sinh viên sẽ học các kỹ năng cần thiết cho sinh viên đại học quốc tế, bao gồm: nghe bài giảng chủ động, ghi chú hiệu quả, tham gia thảo luận tự tin. Cùng với các kỹ năng nghe, sinh viên cũng sẽ trau dồi thêm vốn từ vựng học thuật.

12.13. Academic English 1 - Writing skill (Tiếng Anh chuyên ngành 1 - Kỹ năng Viết)

- Mã MH: **EN007IU**

- Số tín chỉ: 2(2,0)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: Môn học nhằm nâng cao kỹ năng viết trình độ tiên nâng cao (pre-advanced). Chương trình tập trung vào việc xây dựng bài luận dựa trên các kỹ năng viết như: làm dàn bài, viết câu luận đề, kết nối và sắp xếp trình tự các đoạn, dung từ và cụm từ nối để tạo sự mạch lạc cho bài văn. Các thể loại bao gồm: miêu tả người, đồ vật, qui trình, trình bày ý kiến, so sánh và đối chiếu, nguyên nhân – kết quả, vấn đề - giải pháp, nghị luận.

12.14. Academic English 2 - Speaking skill (Tiếng Anh chuyên ngành 2 - Kỹ năng Nói)

- Mã MH: **EN012IU**

- Số tín chỉ: 2 (2,0)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: Môn học cung cấp cho sinh viên các chiến lược thiết thực sử dụng trong việc thuyết trình. Ngoài ra sinh viên được giúp đỡ hình thành kỹ năng lắng nghe, nhận xét và nêu ý kiến phản hồi đối với các bài thuyết trình khác trong lớp.

12.15. Academic English 2 - Writing skill (Tiếng Anh chuyên ngành 2 - Kỹ năng Viết)

- Mã MH: **EN011IU**

- Số tín chỉ: 2 (2,0)

- Môn học trước: Tiếng anh chuyên ngành 1 (Kỹ năng Viết)

- Mô tả vắn tắt nội dung: Khóa học nhằm cung cấp một cách tổng quát cấu trúc của một bài viết báo cáo nghiên cứu, từng bước giúp sinh viên hoàn tất một bài viết cụ thể trong lĩnh vực của mình. Nội dung của khóa học bao gồm: các thành phần của bài báo cáo, kỹ năng chọn và giới hạn đề tài, viết câu luận đề, làm dàn bài, tìm và dẫn chứng tài liệu, ghi chú, viết mở bài, nội dung chính và kết luận, viết và sửa chữa bản nháp. Sinh viên sẽ thực hành trên các đề tài liên quan đến môn học của mình.

12.16. Introduction to Data Science (Nhập môn khoa học dữ liệu)

- Mã MH: **IT135IU**

- Số tín chỉ: 3 (3,0)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: Khóa học nhằm giới thiệu chung về bốn khía cạnh chính của khoa học dữ liệu: truy xuất và mô phỏng dữ liệu, trực quan dữ liệu, tính toán thống kê và học máy, và trình bày và giao tiếp. Học sinh sẽ sử dụng dữ liệu từ nhiều nguồn, được giới thiệu về các môi trường máy tính và cơ sở dữ liệu hiện đại như R/Python và SQL, và được tiếp xúc

với các nghiên cứu bên ngoài lớp học. Thông qua khóa học này, sinh viên này sẽ làm quen với những thách thức của khoa học dữ liệu đương đại và đạt được các kỹ năng cơ bản cần thiết để chuyển dữ liệu thành thông tin.

12.17. Fundamentals of Programming (Lập trình cơ bản)

- Mã MH: **IT149IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: Khóa học này bao gồm sự phát triển thuật toán và các nguyên tắc lập trình máy tính sử dụng các ngôn ngữ phổ biến trong phân tích dữ liệu, như là C/C++ hay R/Python. Các chủ đề bao gồm giới thiệu về máy tính và tính toán, phát triển chương trình, cú pháp ngôn ngữ lập trình, và các phương pháp số nguyên tố cho các nhà khoa học dữ liệu. Môi trường lập trình và các tiện ích cũng được giới thiệu.

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

- Mã MH: **IT069IU**

- Số tín chỉ: 4 (3,1)

- Môn học tiên quyết: Lập trình cơ bản

- Mô tả vắn tắt nội dung: Khái niệm cơ bản về lập trình và cấu trúc dữ liệu trong Java. Các kiểu dữ liệu cơ bản: các vòng lặp, các mảng, đệ quy và các con trỏ. Thiết kế hướng đối tượng: các lớp, kế thừa, hàm chồng, và đa hình; Các kiểu dữ liệu trừu tượng: danh sách, danh sách liên kết, ngăn xếp và hàng đợi; Giới thiệu về phân tích thuật toán: ký hiệu O, tìm kiếm và sắp xếp.

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

- Mã MH: **IT013IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Lập trình hướng đối tượng

- Mô tả vắn tắt nội dung: Điều tra các tính chất thiết yếu của cấu trúc dữ liệu và các thuật toán để vận hành chúng; sử dụng các cấu trúc này làm công cụ hỗ trợ thiết kế thuật toán; để mở rộng cho các kỹ thuật tìm kiếm, phân loại và băm.

12.20. Principles of Database Management (Nguyên tắc của quản trị cơ sở dữ liệu)

- Mã MH: **IT079IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Lập trình cơ bản

- Mô tả vắn tắt nội dung: Môn này giới thiệu cho sinh viên các khái niệm cơ bản về thiết kế cơ sở dữ liệu và hiện thực. Sinh viên sẽ học các kỹ thuật thiết kế cơ sở dữ liệu, bao gồm

thiết kế quan hệ và phân tích quan hệ - thực thể (E-R). Các truy vấn cơ sở dữ liệu bằng cách sử dụng SQL được trình bày trong các bài giảng và được hỗ trợ bởi các bài tập thực hành.

12.21. Artificial Intelligence (Trí tuệ nhân tạo)

- Mã MH: **IT159IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Cấu trúc dữ liệu và giải thuật.

- Mô tả vắn tắt nội dung: Khóa học này giới thiệu các khái niệm cơ bản về trí tuệ nhân tạo (AI). Các chủ đề bao gồm: lịch sử AI, các tác nhân, tìm kiếm (không gian tìm kiếm, tìm kiếm không thông tin và thông tin, thỏa mãn ràng buộc, chơi trò chơi), mô tả tri thức (mã hóa logic về tri thức miền, các hệ thống lập luận logic), lập kế hoạch, và ngôn ngữ Lisp. Khóa học phù hợp với những sinh viên muốn đạt được một nền tảng kỹ thuật vững chắc và chuẩn bị cho công việc tiên tiến hơn trong AI.

12.22. Fundamental Concepts of Data Security (Khái niệm cơ bản về bảo mật dữ liệu)

- Mã MH: **IT140IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: Khóa học này giới thiệu cho sinh viên về các nguyên tắc và hệ thống mật mã (đối xứng và mã khóa công khai), và các ứng dụng của chúng trong bảo mật dữ liệu, truyền thông an toàn, chứng thực và ủy quyền. Những nguyên tắc cốt lõi này sẽ được áp dụng cho các khái niệm quản lý rủi ro thông tin, phân tích và xử lý các hệ thống bị xâm nhập. Các đạo đức về tội phạm máy tính, quyền riêng tư và sở hữu trí tuệ được đề cập chi tiết. Cuối cùng, khóa học sẽ bao gồm các tiêu chí và các điều khiển để phân loại thông tin.

12.23. Data Analysis (Phân tích dữ liệu)

- Mã MH: **IT137IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Phương pháp thống kê

- Mô tả vắn tắt nội dung: Khóa học này giới thiệu các nguyên tắc cơ bản của phân tích dữ liệu thông qua các quá trình phân tích dữ liệu cùng với thống kê mô tả và thống kê suy diễn. Sinh viên sẽ học cách thu thập dữ liệu, xử lý và biến chúng thành thông tin hữu ích và tri thức có ý nghĩa quan trọng trong việc ra quyết định. Từ dữ liệu thô đến thông tin hữu ích rồi đến tri thức, sinh viên sẽ kiểm tra một số số liệu và nghiên cứu tình huống từ các góc nhìn khác nhau. Sinh viên có thể phát triển các giải pháp thực tế cho các vấn đề trong kinh doanh và kỹ thuật, và đạt được kinh nghiệm thực tế từ việc sử dụng các công cụ phân tích dữ liệu hiện đại.

12.24. Regression Analysis (Phân tích hồi quy)

- Mã MH: **IT136IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Cấu trúc dữ liệu và giải thuật.

- Mô tả vắn tắt nội dung: Phân tích hồi quy là một trong những phương pháp mạnh mẽ 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 các bài toán mô hình. Các mô hình hồi quy được sử dụng để dự đoán và dự báo kết quả trong tương lai. Sự phổ biến của nó trong tài chính rất cao; nó cũng rất phổ biến trong các lĩnh vực khác như khoa học sinh học, quản lý, và kỹ thuật.

12.25. Data Science and Data Visualization (Khoa học dữ liệu và trực quan hóa dữ liệu)

- Mã MH: **IT138IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: Mục tiêu của khóa học này là giới thiệu cho sinh viên các nguyên tắc, phương pháp và kỹ thuật then chốt để phân tích trực quan dữ liệu hiệu quả. Khóa học bắt đầu với mục đích và các nguyên tắc chính của trực quan hóa dữ liệu. Khóa học tiếp tục với các khía cạnh khác nhau của việc trực quan hóa bao gồm kỹ thuật và phương pháp mô tả các loại dữ liệu khác nhau, để thảo luận và phân tích trực quan hóa. Toàn bộ khóa học, sinh viên sẽ được giới thiệu với nhiều hệ thống trực quan hóa và công cụ trực quan thông qua các bài tập thực hành.

12.26. Scalable and Distributed Computing (Tính toán khả năng mở rộng và phân bố)

- Mã MH: **IT139IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Cấu trúc dữ liệu và giải thuật

- Mô tả vắn tắt nội dung: Khóa học này trình bày lý thuyết, thiết kế, hiện thực, và phân tích các hệ thống phân bố. Thông qua các bài giảng lớp học, phòng thí nghiệm, dự án và bài tập, sinh viên có thể học các nguyên tắc cơ bản của hệ thống phân bố, mô hình hệ thống, gọi thủ tục từ xa, các đối tượng phân bố, hỗ trợ hệ điều hành, bảo mật trong các hệ thống phân bố, các hệ thống tập tin phân bố, đồng thời, giao dịch và đồng bộ hóa, sao chép. Khóa học cũng bao gồm các chủ đề nâng cao liên quan đến công nghệ xử lý dữ liệu phân bố và đám mây: phân vùng dữ liệu, sơ đồ lưu trữ, xử lý luồng, và các thuật toán song song. Các giờ thực hành của khóa học cho phép khai thác Internet và các dịch vụ điện toán đám mây hiện đại chạy trên nhiều trung tâm dữ liệu được phân bố theo địa lý: Google, Yahoo, Facebook, iTunes, Amazon, eBay, Bing, v.v ...

12.27. Data Mining (Khai thác dữ liệu)

- Mã MH: **IT160IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Trí tuệ nhân tạo

- Mô tả vắn tắt nội dung: Môn học này giới thiệu cho sinh viên các nguyên tắc và thuật toán khai thác dữ liệu, và các yêu cầu của quá trình khai thác dữ liệu. Sinh viên sẽ nghiên cứu các khái niệm khai thác dữ liệu và các thuật toán để giải quyết các vấn đề về khám phá tri thức. Sinh viên có thể phát triển kỹ năng sử dụng phần mềm khai thác dữ liệu gần đây để giải quyết các vấn đề thực tiễn, và có được kinh nghiệm làm việc nghiên cứu và nghiên cứu độc lập.

12.28. Deep Learning (Học sâu)

- Mã MH: **IT157IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Trí tuệ nhân tạo

- Mô tả vắn tắt nội dung: 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 sự phát triển của công nghệ AI hàng đầu. Trong khóa học này, sinh viên sẽ xây dựng và đào tạo các kiến trúc mạng thần kinh như Mạng thần kinh phức tạp, Mạng thần kinh tái phát, Máy biến áp và học cách làm cho chúng tốt hơn với các chiến lược như Dropout, BatchNorm, v.v. Sinh viên sẵn sàng để nắm vững các khái niệm lý thuyết và các ứng dụng công nghiệp bằng Python và PyTorch và giải quyết các trường hợp thực tế.

12.29. Machine Learning (Học máy)

- Mã MH: **IT172IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Trí tuệ nhân tạo

- Mô tả vắn tắt nội dung: Mục tiêu của môn học này nhằm trang bị cho sinh viên các kiến thức nền tảng cũng như các kỹ năng thực tế trong việc phát triển giải pháp cho dữ liệu lớn thông qua việc sử dụng các công cụ quản lý dữ liệu lớn, đặc biệt là các hệ sinh thái của Hadoop. Môn học cũng tập trung vào các mô hình lập trình như MapReduce, Hive, Pig, and Apache Spark.

12.30. Big Data Analytics (Phân tích dữ liệu lớn)

- Mã MH: **IT173IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Phân tích dữ liệu

- Mô tả vắn tắt nội dung: Môn học này cung cấp kiến thức tổng quát về công nghệ được sử dụng trong các giải pháp Dữ liệu lớn (Big Data). Nó bao gồm việc phát triển các giải pháp Big Data sử dụng hệ thống Hadoop, bao gồm MapReduce, HDFS, khung lập trình Apache Pig và Hive. Khóa học này giúp sinh viên xây dựng một nền tảng để làm việc với các giải pháp dữ liệu lớn của Apache.

12.31. Time Series Analysis (Phân tích chuỗi thời gian)

- Mã MH: **IT169IU**
- Số tín chỉ: 4 (3,1)
- Môn học trước: Phân tích dữ liệu
- Mô tả vắn tắt nội dung: Khóa học giới thiệu các phương pháp cơ bản về phân tích và dự báo chuỗi thời gian. Các chủ đề bao gồm stationary processes, ARMA models, spectral analysis, forecasting using ARMA models, nonstationary and seasonal time series models, multivariate time series, state-space models, and forecasting techniques.

12.32. Blockchain (Blockchain)

- Mã MH: **IT150IU**
- Số tín chỉ: 4 (3,1)
- Môn học trước: Không
- Mô tả vắn tắt nội dung: Môn học này giới thiệu cho sinh viên kiến thức cơ bản về công nghệ blockchain và các ứng dụng. Sinh viên sẽ được học các khái niệm về blockchain và các nguyên lý hoạt động của blockchain. Môn học này sẽ đề cập tất cả các vấn đề liên quan đến blockchain. Bắt đầu bằng việc cung cấp nền tảng về blockchain, cryptography, và các kiến thức cơ bản về bitcoins. Sau đó, các ứng dụng của công nghệ blockchain trong các lĩnh vực khác nhau như tài chính, y tế, chuỗi cung ứng ... cũng được giới thiệu. Một bức tranh toàn diện về hệ sinh thái xung quanh công nghệ blockchain technology và các xu hướng phát triển cũng được đề cập.

12.33. Software engineering (Công nghệ phần mềm)

- Mã MH: **IT076IU**
- Số tín chỉ: 4 (3,1)
- Môn học trước: Lập trình hướng đối tượng; Nguyên tắc của quản trị cơ sở dữ liệu
- Mô tả vắn tắt nội dung: Khóa học này cung cấp cho sinh viên những kiến thức cơ bản về các khái niệm, phương pháp và quy trình của Kỹ thuật phần mềm. Nó bao gồm các môn học về mô hình quy trình phần mềm, phương pháp phát triển linh hoạt (agile), mô hình kỹ thuật và phân tích yêu cầu, phương pháp thiết kế và phát triển phần mềm, chiến lược kiểm thử và đánh giá phần mềm.

- Sinh viên áp dụng các phương pháp phân tích yêu cầu, lập kế hoạch, thiết kế, triển khai và kiểm thử linh hoạt hiện đại vào công việc của dự án kỹ thuật phần mềm trong các nhóm nhỏ.

12.34. Natural Language Processing (Xử lý ngôn ngữ tự nhiên)

- Mã MH: **IT170IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Cấu trúc dữ liệu và giải thuật.

- Mô tả vắn tắt nội dung: Môn học cung cấp cho học viên kiến thức nền tảng về phương pháp xử lý ngôn ngữ tự nhiên. Đồng thời, các hướng tiếp cận mới theo hướng máy học, học sâu cho xử lý ngôn ngữ tự nhiên cũng được giới thiệu

12.35. Human-Computer Interaction (Thiết kế giao diện và trải nghiệm người dùng)

- Mã MH: **IT044IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: Môn học này nhấn mạnh việc kết hợp lý thuyết về thiết kế trải nghiệm người dùng với các phương pháp thực hành phổ biến trong các ngành công nghiệp và giáo dục để tạo ra những trải nghiệm tương tác hiệu quả. Sinh viên sẽ được học về quy trình thiết kế tập trung vào người dùng (User-Centred Design), với việc đặt sự chú trọng vào việc thiết kế sản phẩm, ứng dụng và phần mềm cho người dùng. Cụ thể, sinh viên sẽ học về các kỹ thuật thu thập và hiểu các yêu cầu của người dùng cuối, tầm quan trọng của thiết kế thông thường và khả năng tiếp cận, và các phương pháp để thực hiện prototyping nhanh chóng. Ngoài ra, sinh viên sẽ tập trung vào việc tích hợp kiến thức vào thực tế qua việc thiết kế và tiến hành các nghiên cứu sử dụng. Họ sẽ áp dụng kiến thức này để thiết kế và đánh giá một thiết kế kỹ thuật số bằng các công cụ tiêu chuẩn trong ngành.

12.36. Web Application Development (Phát triển ứng dụng web)

- Mã MH: **IT093IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Lập trình hướng đối tượng; Nguyên tắc của quản trị cơ sở dữ liệu

- Mô tả vắn tắt nội dung: Khóa học này cung cấp cho sinh viên những kiến thức cơ bản về thiết kế web và lập trình web. Nó cung cấp các khái niệm và mô hình của HTML, Java Server Page, Java Bean, mô hình MVC, các tiện ích Java và môi trường phát triển, các khung công tác Java mở rộng, một số khung công tác mới với các ngôn ngữ lập trình khác nhau. Để phát triển kỹ năng hiểu và đánh giá các hệ thống dựa trên web, cũng như phát triển kỹ năng thiết kế và phát triển các ứng dụng dựa trên web.

12.37. Business Process Analysis (Phân tích quy trình nghiệp vụ)

- Mã MH: **IT144IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: Mỗi tổ chức phát triển mạnh việc thực hiện các quy trình kinh doanh hiệu quả để tăng nhân viên và sự hài lòng của khách hàng, tăng cường hiệu suất kinh doanh, giảm chi phí và tăng năng suất. Tất cả các hoạt động bao gồm thay đổi các quy trình quan trọng, sáp nhập hoặc chia tách đơn vị kinh doanh yêu cầu một khung quản lý thống nhất về những thay đổi. Khóa học nhằm cung cấp kiến thức cơ bản về phân tích quá trình kinh doanh, cải tiến và đánh giá. Nhiều phương pháp, kỹ thuật và công cụ phần mềm được sử dụng để phân tích và quản lý cải tiến quá trình kinh doanh cũng được giới thiệu trong khóa học.

12.38. Decision Support Systems (Hệ thống hỗ trợ quyết định)

- Mã MH: **IT145IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Lập trình hướng đối tượng

- Mô tả vắn tắt nội dung: Hệ thống Hỗ trợ Quyết định (DSS) là một hệ thống dựa trên máy tính tương tác hoặc hệ thống con nhằm giúp các nhà hoạch định chính sách sử dụng công nghệ truyền thông, dữ liệu, tài liệu, kiến thức và / hoặc mô hình để xác định và giải quyết các vấn đề, hoàn thành các tác vụ xử lý quyết định, và làm quyết định. DSS mô phỏng các chức năng quyết định nhận thức của con người dựa trên phương pháp luận trí tuệ nhân tạo (bao gồm hệ thống chuyên gia, khai thác dữ liệu, máy học, kết nối, lý luận logic, vv) để thực hiện các chức năng hỗ trợ quyết định. DSS là một thuật ngữ chung cho bất kỳ ứng dụng máy tính nào để trợ giúp một người hoặc nhóm khả năng đưa ra quyết định. Ngoài ra, DSS đề cập đến một lĩnh vực nghiên cứu bao gồm việc thiết kế và nghiên cứu DSS trong bối cảnh sử dụng.

12.39. Theory of Networks (Lý thuyết Mạng Máy Tính)

- Mã MH: **IT146IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: Khóa học giới thiệu sự kết nối của cuộc sống hiện đại, trả lời câu hỏi làm sao các thể giới xã hội, kinh tế, và công nghệ của chúng ta được kết nối lại với nhau. Sinh viên sẽ nghiên cứu các mô hình mạng hiện đại, chẳng hạn như, lý thuyết trò chơi, cấu trúc của Internet, lan truyền trong xã hội, sự lan truyền của quyền lực xã hội và thông tin phổ biến, và các luồng thông tin.

12.40. IT Project Management (Quản trị dự án CNTT)

- Mã MH: **IT056IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Lập trình hướng đối tượng, Nguyên tắc của quản trị cơ sở dữ liệu

- Mô tả vắn tắt nội dung: Khóa học này cung cấp cho sinh viên kiến thức về quản lý dự án phần mềm cơ bản, đặc biệt chú trọng đến các sản phẩm phần mềm, quản lý dự án và các vấn đề đương đại trong việc cung cấp các giải pháp phần mềm cho doanh nghiệp. Nó xem xét các phương pháp theo kế hoạch (plan-driven) và nhanh (agile), các kỹ thuật ước lượng, quản lý thay đổi, quản lý rủi ro và vai trò của quản lý dự án trong kinh doanh. Và nó xác định các khía cạnh quản lý và báo cáo về quản lý cần thiết từ khi bắt đầu thực hiện dự án phát triển phần mềm.

12.41. Information System Management (Quản lý hệ thống thông tin)

- Mã MH: **IT094IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Nguyên tắc của quản trị cơ sở dữ liệu

- Mô tả vắn tắt nội dung: Tập trung vào cách các doanh nghiệp sử dụng hệ thống thông tin và ảnh hưởng đến hoạt động kinh doanh của doanh nghiệp. Mặc dù công nghệ của các hệ thống thông tin (tức là công nghệ thông tin) được trình bày và thảo luận, vấn đề chính là làm thế nào các công nghệ này được sử dụng để giải quyết các vấn đề kinh doanh và khai thác các cơ hội.

12.42. Cloud Computing (Điện toán đám mây)

- Mã MH: **IT164IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Khái niệm cơ bản về bảo mật dữ liệu

- Mô tả vắn tắt nội dung: Môn học này giới thiệu các khái niệm cơ bản về điện toán đám mây di động bao gồm công nghệ tính toán di động trên điện thoại thông minh, công nghệ điện toán đám mây trên trung tâm dữ liệu, sự kết hợp của điện thoại di động và điện toán đám mây và các ứng dụng, và lập trình trên điện thoại thông minh sử dụng dịch vụ trung tâm dữ liệu. Thông qua bài giảng trên lớp, bài thực hành, bài tập nhỏ và lớn, sinh viên có kiến thức về lập trình trên điện thoại thông minh, các nền tảng điện toán đám mây, công nghệ hỗ trợ cho điện toán đám mây di động và ứng dụng. Các bài thực hành tập trung vào nền tảng Java, Android và khai thác dịch vụ điện toán đám mây và dịch vụ Internet vận hành trên một số trung tâm dữ liệu phân tán toàn cầu như: Google, Yahoo, Facebook, iTunes, Amazon, eBay, Bing, etc.

12.43. Entrepreneurship (Khởi nghiệp)

- Mã MH: **IT120IU**

- Số tín chỉ: 3 (3,0)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: Nội dung môn học bao gồm: Giới thiệu về kinh tế vĩ mô, vi mô; các thách thức và rủi ro của doanh nghiệp mới, đặc biệt là doanh nghiệp công nghệ; cách

thức chọn lựa loại hình doanh nghiệp và tổ chức cấu trúc doanh nghiệp; hoạch định chiến lược và xây dựng phương án vốn; kiểm soát nội bộ và kiểm soát rủi ro; quản lý tài chính và xây dựng hệ thống kế toán; điều hành doanh nghiệp và quan hệ với bên ngoài; xây dựng phương án kinh doanh và cách thức đánh giá hiệu quả hoạt động; kỹ năng làm việc nhóm và hợp tác trong một doanh nghiệp công nghệ.

12.44. Optimization and Applications (Tối ưu hóa và Ứng dụng)

- Mã MH: **IT163IU**

- Số tín chỉ: 4 (3,1)

- Môn học trước: Không

- Mô tả vắn tắt nội dung: Khóa học này là giới thiệu các phương pháp cơ bản được sử dụng trong các hoạt động xác định nghiên cứu và sử dụng phân tích số và đại số tuyến tính để giải quyết công nghiệp vấn đề kỹ thuật. Các chủ đề cần được đề cập bao gồm: công thức vận đề, phương thức simplex trong bảng mẫu, lý thuyết nhị nguyên, giới thiệu về hình học của phương thức simplex, phân tích độ nhạy, vận chuyển và lưu lượng mạng.

12.45. Discrete Mathematics (Toán rời rạc)

- Mã MH: **IT153IU**

- Số tín chỉ: 3 (3,0)

- Môn học trước: Toán 1; Lập trình cơ bản

- Mô tả vắn tắt nội dung: Môn học này cung cấp cho sinh viên những kiến thức cơ bản về toán rời rạc. Nhằm phát triển khả năng lập luận và suy nghĩ theo cách toán học và logic. Đây là môn học có hướng ứng dụng dựa trên việc nghiên cứu các sự kiện xảy ra theo cách rời rạc trong các lĩnh vực kinh doanh, công nghiệp, và các lĩnh vực số. Sinh viên sẽ được giới thiệu với các công cụ toán học như logic và lý thuyết tập hợp, lý thuyết số và lý thuyết đồ thị. Ứng dụng thực tế sẽ được giới thiệu trong suốt khóa học.

12.46. Internship (Thực tập công nghiệp)

- Mã MH: **IT082IU**

- Số tín chỉ: 3 (0,3)

- Điều kiện: Sinh viên làm thực tập vào cuối năm 3

- Mô tả vắn tắt nội dung: Sinh viên năm thứ 3 hoặc 4 đăng ký môn thực tập tốt nghiệp vào các học kỳ hè. Môn học này yêu cầu sinh viên làm việc tại các tổ chức hoặc doanh nghiệp liên quan đến CNTT từ tháng 6 đến tháng 9. Mỗi sinh viên có 1 giảng viên hướng dẫn ở Khoa và 1 người hướng dẫn ở tổ chức hoặc doanh nghiệp để thực hiện một dự án kỹ thuật, đồng thời tham gia học tập các kỹ năng mềm khác. Thời gian thực tập tối thiểu là 8 tuần và 3 buổi/tuần và sinh viên báo cáo tiến độ cho giảng viên hướng dẫn sau 3 tuần nhận dự án. Tùy theo yêu cầu dự án của tổ chức hoặc doanh nghiệp, sinh viên có thể thu xếp làm thời gian dài hơn. Cuối thời gian thực tập, sinh viên nộp báo cáo thực tập và báo cáo đánh giá từ người

hướng dẫn ở tổ chức hoặc doanh nghiệp về cho Khoa. Giảng viên hướng dẫn đọc báo cáo và xác nhận điểm môn thực tập cho sinh viên. Ngoài ra, sinh viên cũng có thể đăng kí môn này trong các học kỳ chính hoặc tham gia thực tập ở doanh nghiệp nước ngoài với thời gian 6 tháng nếu thu xếp được thời gian. Quy trình đăng ký và đánh giá cũng tương tự.

12.47. Special Study of the Field (Thực tập tốt nghiệp)

- Mã MH: **IT083IU**
- Số tín chỉ: 3(0,3)
- Điều kiện: sinh viên tích lũy đủ 79 tín chỉ có thể làm đồ án môn học
- Mô tả vắn tắt nội dung: Nội dung đồ án có thể là một đề tài nghiên cứu hoặc xây dựng một ứng dụng mới làm nền tảng cho luận văn tốt nghiệp. Các chủ đề nghiên cứu bao gồm các lĩnh vực của chương trình học thuật mang tính học thuật hoặc thực tiễn.

12.48. Thesis (Luận văn tốt nghiệp)

- Mã MH: **IT058IU**
- Số tín chỉ: 10(0,10)
- Môn học tiên quyết: Thực tập tốt nghiệp
- Điều kiện: Sinh viên tích lũy đủ tối thiểu 103 tín chỉ để làm luận văn
- Mô tả vắn tắt nội dung: Luận văn là các dự án loại công nghiệp, được thiết kế để đảm bảo sinh viên đã nắm vững các môn học của mình trong chương trình. Tất cả các dự án đều dựa trên các "dự án thực tế" do ngành công nghiệp cung cấp cho sinh viên để làm việc phát triển kỹ năng và áp dụng kiến thức thu được từ tất cả các khóa học trong suốt chương trình. Sinh viên sẽ làm việc độc lập để phát triển các yêu cầu, thiết kế, thực hiện và cung cấp giải pháp cho các vấn đề kinh doanh. Sinh viên có thể theo bất kỳ mô hình quy trình thích hợp nào, phải tự quản lý dự án, theo tất cả các kỹ thuật quản lý dự án phù hợp. Thành công của dự án được xác định phần lớn bởi việc sinh viên có giải quyết được vấn đề của khách hàng một cách đầy đủ hay không.
- Sinh viên sẽ cung cấp các sản phẩm cuối cùng với tất cả các hiện vật phù hợp với mô hình quy trình đang sử dụng (ví dụ: kế hoạch dự án, yêu cầu kỹ thuật, tài liệu kiến trúc hệ thống và phần mềm, tài liệu thiết kế, kế hoạch kiểm thử, mã nguồn và các sản phẩm phần mềm cài đặt).

TRƯỞNG KHOA



Nguyễn Văn Sinh

**KT. HIỆU TRƯỞNG
PHÓ HIỆU TRƯỞNG**



Đinh Đức Anh Vũ

Phụ lục 1
NỘI DUNG ĐIỀU CHỈNH CHƯƠNG TRÌNH ĐÀO TẠO
NGÀNH KHOA HỌC DỮ LIỆU
KHÓA 2025 SO VỚI KHÓA 2024

*(Kèm theo Quyết định số 1196 /QĐ-ĐHQT ngày 04 tháng 9 năm 2025
của Hiệu trưởng Trường Đại học Quốc tế)*

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

- Không có loại môn khỏi CTĐT.

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

- Không bổ sung thêm môn.

3. Các điều chỉnh khác

- Cập nhật kế hoạch học năm thứ nhất: Nhằm đồng bộ chương trình giữa các nhóm ngành Toán - Tin.

- Giảm CTĐT từ 129 tín chỉ xuống còn 124 tín chỉ.

+ Giảm 4 tín chỉ của nhóm tự chọn DS. Giảm số tín chỉ cần đạt của nhóm tự chọn DS từ 11 tín chỉ còn 7 tín chỉ.

+ Giảm 1 tín chỉ của môn Statistical Learning (từ 4 tín chỉ còn 3 tín chỉ) và đổi tên môn học thành Algorithmic Statistics (IT176IU).

- Thay môn IT154IU – Linear Algebra (3TC) bằng môn MA033IU – Linear Algebra (3TC).

- Thay môn MA026IU – Probability, Statistics and Random Process (3TC) bằng môn MA036IU – Probability and Statistics (3TC)

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

- Môn IT171IU Statistical Learning (3TC): Khoa CNTT có kế hoạch mở môn cho khóa cũ 2024 trở về trước.

- Môn IT154IU Linear Algebra (3TC): Sinh viên học môn tương đương là môn MA033IU Linear Algebra (3TC).

- Môn MA026IU Probability, Statistics and Random Process (3TC): Sinh viên học môn tương đương là môn MA036IU – Probability and Statistics (3TC)



Phụ lục 2
MỨC ĐỘ ĐÁP ỨNG KHUNG NĂNG LỰC SỐ CỦA CHƯƠNG TRÌNH ĐÀO TẠO
NGÀNH KHOA HỌC DỮ LIỆU
(Kèm theo Quyết định số 1196/QĐ-ĐHQT ngày 04 tháng 9 năm 2025
của Hiệu trưởng Trường Đại học Quốc tế)

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

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

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

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

STT	Mã MH	Tên MH	Năng lực thành phần (NLTP)		
			NLTP 1.1	NLTP 1.2	NLTP 1.3
1.	IT149IU	Fundamentals of Programming	4		
2.	IT058IU	Thesis	6	6	6

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

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

STT	Mã MH	Tên MH	Năng lực thành phần (NLTP)					
			NLTP 2.1	NLTP 2.2	NLTP 2.3	NLTP 2.4	NLTP 2.5	NLTP 2.6
1.	IT093IU	Web Application Development	5	5				4
2.	IT082IU	Internship			5	4	5	

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

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

STT	Mã MH	Tên MH	Năng lực thành phần (NLTP)			
			NLTP 3.1	NLTP 3.2	NLTP 3.3	NLTP 3.4
1.	IT079IU	Principles of Database Management		4		5
2.	IT138IU	Data Science and Data Visualization	5		5	5

4. Miền năng lực 4: An toàn

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

STT	Mã MH	Tên MH	Năng lực thành phần			
			NLTP 4.1	NLTP 4.2	NLTP 4.3	NLTP 4.4
1.	IT140IU	Fundamental Concepts of Data Security	5	5	4	5

5. Miền năng lực 5: Giải quyết vấn đề

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

STT	Mã MH	Tên MH	Năng lực thành phần			
			NLTP 5.1	NLTP 5.2	NLTP 5.3	NLTP 5.4
1.	IT160IU	Data Mining	5	5	5	
2.	IT013IU	Algorithms and Data Structures	4	4	5	4
3.	IT069IU	Object-Oriented Programming	4	4		

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

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

STT	Mã MH	Tên MH	Năng lực thành phần (NLTP)		
			NLTP 6.1	NLTP 6.2	NLTP 6.3
1.	IT159IU	Artificial Intelligence	5	5	5
2.	IT157IU	Deep Learning		5	6
3.	IT172IU	Machine Learning		5	6
4.	IT058IU	Thesis	6	6	6

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

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
1. Khai thác dữ liệu và thông tin	NLTP 1.1	IT149IU Fundamentals of Programming IT058IU Thesis	Final Report
	NLTP 1.2	IT058IU Thesis	Report
	NLTP 1.3	IT058IU Thesis	Report
2. Giao tiếp và hợp tác trong môi trường số	NLTP 2.1	IT064IU Web Application Development	Project + Report
	NLTP 2.2	IT064IU Web Application Development	Project + Report
	NLTP 2.3	IT082IU Internship	Report
	NLTP 2.4	IT082IU Internship	Report
	NLTP 2.5	IT082IU Internship	Report
	NLTP 2.6	IT064IU Web Application Development	Project + Report

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
3. Sáng tạo nội dung số	NLTP 3.1	IT138IU Data Science and Data Visualization	Project + Report
	NLTP 3.2	IT079IU Principles of Database Management	Project + Report
	NLTP 3.3	IT138IU Data Science and Data Visualization	Project + Report
	NLTP 3.4	IT079IU Principles of Database Management IT138IU Data Science and Data Visualization	Project + Report
4. An toàn	NLTP 4.1	IT140IU Fundamental Concepts of Data Security	Quiz + Final
	NLTP 4.2	IT140IU Fundamental Concepts of Data Security	Quiz + Final
	NLTP 4.3	IT140IU Fundamental Concepts of Data Security	Quiz + Final
	NLTP 4.4	IT140IU Fundamental Concepts of Data Security	Quiz + Final
5. Giải quyết vấn đề	NLTP 5.1	IT013IU Algorithms and Data Structures IT069IU Object-Oriented Programming IT160IU Data Mining	Project + Report
	NLTP 5.2	IT013IU Algorithms and Data Structures IT069IU Object-Oriented Programming IT160IU Data Mining	Project + Report
	NLTP 5.3	IT013IU Algorithms and Data Structures IT160IU Data Mining	Project + Report
	NLTP 5.4	IT013IU Algorithms and Data Structures	Project + Report

Miền năng lực	Năng lực thành phần (NLTP)	Môn học (Mã môn- Tên môn)	Hình thức đánh giá
6. Ứng dụng trí tuệ nhân tạo	NLTP 6.1	IT159IU Artificial Intelligence IT058IU Thesis	Project + Report Report
	NLTP 6.2	IT159IU Artificial Intelligence IT157IU Deep Learning IT172IU Machine Learning IT058IU Thesis	Project + Report Report
	NLTP 6.3	IT159IU Artificial Intelligence IT157IU Deep Learning IT172IU Machine Learning IT058IU Thesis	Project + Report Report

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

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

Phụ lục 3
ĐỀ CƯƠNG CHI TIẾT CÁC MÔN HỌC
*(Kèm theo Quyết định số 1196/QĐ-ĐTĐH ngày 04 tháng 9 năm 2025
của Hiệu trưởng Trường Đại học Quốc tế)*

Các đề cương môn học của chương trình đào tạo: 

Mục lục

<u>Course Name: Philosophy Marx - Lenin</u>	3
<u>Course Name: Marxist - Leninist Political Economy</u>	15
<u>Course name: Chủ nghĩa xã hội khoa học</u>	30
<u>Course name: Lịch sử Đảng Cộng sản Việt Nam</u>	44
<u>Course name: Tư tưởng Hồ Chí Minh</u>	57
<u>Course name: General Law</u>	70
<u>Course Name: Calculus 1</u>	85
<u>Course Name: Linear Algebra</u>	89
<u>Course Name: Probability, Statistic & Random Process</u>	103
<u>Course Name: Statistical Method</u>	107
<u>Course Name: Algorithmic Statistics</u>	120
<u>Course Name: Listening AE1 (Listening & Note-taking)</u>	133
<u>Course Name: Writing AE1 (Academic Writing)</u>	140
<u>Course Name: Speaking AE2 (Effective Presentations)</u>	155
<u>Course Name: Writing AE2 (Research Paper Writing)</u>	168
<u>Course Name: Introduction to Data Science</u>	178
<u>Course Name: Fundamentals of Programming</u>	191
<u>Course Name: Object-Oriented Programming</u>	204
<u>Course Name: Data Structures and Algorithms</u>	217
<u>Course Name: Principles of Database Management</u>	229
<u>Course Name: Artificial Intelligence</u>	240
<u>Course Name: Fundamental Concepts of Data Security</u>	254
<u>Course Name: Data Analysis</u>	267
<u>Course Name: Regression Analysis</u>	278
<u>Course Name: Data Science and Visualization</u>	289
<u>Course Name: Scalable and Distributed Computing</u>	300
<u>Course Name: Data mining</u>	313
<u>Course Name: Deep Learning</u>	324
<u>Course Name: Machine Learning</u>	338
<u>Course Name: Big Data Analytics</u>	352
<u>Course Name: Time Series Analysis</u>	366
<u>Course Name: Blockchain</u>	378

<u>Course Name: Software Engineering</u>	391
<u>Course Name: Natural Processing Languages</u>	402
<u>Course Name: Human-Computer Interaction</u>	414
<u>Course Name: Web Application Development</u>	422
<u>Course Name: Business Process Analysis</u>	431
<u>Course Name: Decision Support Systems</u>	443
<u>Course Name: Theory of Networks</u>	457
<u>Course Name: IT Project Management</u>	468
<u>Course Name: Information System Management</u>	481
<u>Course Name: Cloud Computing</u>	493
<u>Course Name: Entrepreneurship</u>	506
<u>Course Name: Optimization and Applications</u>	518
<u>Course Name: Discrete Mathematics</u>	532
<u>Course Name: Internship</u>	545
<u>Course Name: Special Study of the Field</u>	556
<u>Course Name: Thesis</u>	567

Course Name: Philosophy Marx - Lenin

Course Code: PE015IU

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:	PE015IU
Thuộc khối kiến thức:	Cơ sở
Số tín chỉ:	3 (ECTS: 4.64)
<i>Số tiết lý thuyết:</i>	<i>30 (trên lớp)</i>
<i>Số tiết thực hành:</i>	<i>15 (trên lớp)6</i>
<i>Số tiết tự học:</i>	<i>90 (về nhà)</i>
Giảng viên phụ trách	Khoa Chính trị - Hành chính, ĐHQG-HCM

2. Mục tiêu môn học

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

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

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)
LO.1	TRIẾT HỌC VÀ VAI TRÒ CỦA TRIẾT HỌC TRONG ĐỜI SỐNG XÃ HỘI	LO. 1.1 - Khái lược được triết học, một số khái niệm cơ bản trong triết học	2.1	1.1.3	I3
		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			
		LO. 1.3 - Nắm được chủ nghĩa duy vật biện chứng - hình thức phát triển cao nhất của chủ nghĩa duy vật biện chứng			
		LO. 1.4 - Nắm rõ được sự ra đời, đối tượng, chức năng và vai trò của triết học Mác - Lênin			
LO.2	CHỦ NGHĨA DUY VẬT BIỆN CHỨNG	LO.2.1- Hiểu rõ vật chất theo quan điểm của chủ nghĩa duy vật biện chứng	2.1 2.1 2.1 2.1	1.1.3	T4

		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	2.1 2.2 2.1 2.2		
				LO.2.2 - Hiểu rõ ý thức theo quan điểm của chủ nghĩa duy vật biện chứng	
		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	2.1 2.2	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	

		LO.2.8 - Hiểu rõ được thực tiễn, nhận thức, vai trò của thực tiễn đối với nhận thức và chân lý	2.1	LO.2.4 - Hiểu được phép biện chứng và phép biện chứng duy vật	
LO.3	CHỦ NGHĨA DUY VẬT LỊCH SỬ	LO.3.1 - Hiểu được vai trò của sản xuất vật chất và phương thức sản xuất đối với sự tồn tại và phát triển xã hội	2.1 2.2	1.1.3	T4
		LO.3.2 - Hiểu rõ được mối quan hệ biện chứng giữa lực lượng sản xuất và quan hệ sản xuất			
		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			
		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			
		LO.3.5 - Hiểu rõ được nhà nước và mạng xã hội			
		LO.3.6 - Hiểu rõ được mối quan hệ biện chứng giữa tồn tại xã hội và ý thức xã hội			

		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

5.2. Kỹ năng					
LO. 4	THỂ HIỆN KHẢ NĂNG KHÁI QUÁT HÓA, TƯ DUY, TRANH LUẬN, PHẢN BIỆN, LÀM VIỆC NHÓM	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 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 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	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	LO.5.1. Có ý thức trách nhiệm bảo vệ tính khoa học, cách mạng, nhân văn của CN Mác - Lênin LO.5.2. Có ý thức, trách nhiệm cá nhân đối với tập thể, cộng đồng LO.5.3. Có nhận thức về sự cần thiết học tập, nghiên cứu suốt đời và vận dụng nó trong cuộc sống.	2.1 2.2	3. 1	U3

6. Kế hoạch giảng dạy theo buổi học

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;	Dạy: - Giới thiệu đề cương môn học - Giới thiệu nội dung đề tài thuyết trình nhóm (GHW) Học ở lớp: - Chia nhóm (5 sv/nhóm) - Giới thiệu nhóm học tập Học ngoài lớp: - Chọn đề tài thuyết trình của nhóm (GHW) Đọc trước tài liệu chương 1.	
2 (15 tiết)	Chương 1	LO.1; LO.4	Dạy: 1. TRIẾT HỌC VÀ VẤN ĐỀ CƠ BẢN CỦA TRIẾT HỌC	Thi giữa kỳ (Quiz)

	TRIẾT HỌC VÀ VAI TRÒ CỦA TRIẾT HỌC TRONG ĐỜI SỐNG XÃ HỘI	LO.5	1. Khái lược về triết học 2. Vấn đề cơ bản của triết học 3. Biện chứng và siêu hình II. TRIẾT HỌC MÁC - LÊNIN VÀ VAI TRÒ CỦA TRIẾT HỌC MÁC - LÊNIN TRONG ĐỜI SỐNG XÃ HỘI 1. Sự ra đời và phát triển của triết học Mác - Lênin 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 Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: - Phác thảo nội dung thuyết trình nhóm GHW Đọc trước tài liệu chương 2.	
3 (15 tiết)	Chương 2 CHỦ NGHĨA DUY VẬT BIỆN CHỨNG	LO.2 LO.4 LO.5	Dạy: I. VẬT CHẤT VÀ Ý THỨC 1. Vật chất và các hình thức tồn tại của vật chất 2. Nguồn gốc, bản chất và kết cấu của ý thức 3. Mối quan hệ giữa vật chất và ý thức II. PHÉP BIỆN CHỨNG DUY VẬT 1. Hai loại hình biện chứng và phép biện chứng duy vật Nội dung của phép biện chứng duy vật III. LÝ LUẬN NHẬN THỨC 1. Các nguyên tắc của lý luận nhận thức duy vật biện chứng	Thi giữa kỳ (Quiz) Thi cuối kỳ (FEX)

			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 Chân lý Học ở Lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Đọc trước tài liệu chương 3	
4 (14 tiết)	Chương 3 CHỦ NGHĨA DUY VẬT LỊCH SỬ	L0.3 L0.4 L0.5	Dạy: I. HỌC THUYẾT HÌNH THÁI KINH TẾ - XÃ HỘI 1. Sản xuất vật chất là cơ sở của sự tồn tại và phát triển xã hội 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 II. GIAI CẤP VÀ DÂN TỘC 160 1. Vấn đề giai cấp và đấu tranh giai cấp 2. Dân tộc 3. Mối quan hệ giai cấp - dân tộc - nhân loại III. NHÀ NƯỚC VÀ CÁCH MẠNG XÃ HỘI 1. Nhà nước 2. Cách mạng xã hội IV. Ý THỨC XÃ HỘI 1. Khái niệm tồn tại xã hội và các yếu tố cơ bản của tồn tại xã hội	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)

			2. Ý thức xã hội và kết cấu của ý thức xã hội V. TRIẾT HỌC VỀ CON NGƯỜI 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 Vấn đề con người trong sự nghiệp cách mạng ở Việt Nam Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Hoàn thiện bài thuyết trình	

7. Đánh giá môn học

S T 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	Die	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.

Course Name: Marxist - Leninist Political Economy

Course Code: PE016IU

1. Thông tin chung

Tên môn học (tiếng Việt):	Kinh tế chính trị Mác-Lênin
Tên môn học (tiếng Anh);	Marxist - Leninist Political Economy
Mã số môn học:	PE016IU
Thuộc khối kiến thức:	Cơ sở
Số tín chỉ:	02 (ECTS: 3.09)
<i>Số tiết lý thuyết:</i>	<i>20 (trên lớp)</i>
<i>số tiết thực hành:</i>	<i>10 (trên lớp)</i>
<i>Số tiết tự học:</i>	<i>60 (về nhà)</i>
Môn học trước:	1. Triết học Mác – Lênin
Giảng viên phụ trách:	Khoa Chính trị - Hành chính, ĐHQG-HCM

2. Mục tiêu môn học

2.1. Một là, 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, tính liên thông khắc phục trùng lặp, tăng cường tích hợp và giảm tải, lược bớt những nội dung không còn phù hợp hoặc những nội dung mang tính kinh viện đối với sinh viên các trường Cao đẳng, Đại học không chuyên lý luận.

2.2. Hai là, trên cơ sở đó 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 trong vị trí việc làm và cuộc sống sau khi ra trường.

2.3. Ba là, góp phần xây dựng lập trường, ý thức hệ tư tưởng Mác - Lê nin đối với sinh viên.

3. Mô tả 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 - Lê nin 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.

4. Tài liệu phục vụ học tập

- Tài liệu bắt buộc: Giáo trình kinh tế chính trị Mác - Lê nin dành cho bậc đại học không chuyên kinh tế chính trị.
- Tài liệu đọc thêm:
 - + Robert, JR và Robert F. Hebert (2003), Lịch sử các học thuyết kinh tế, Bản tiếng Việt, Nxb Thống kê.
 - + Viện Kinh tế chính trị học, Học viện Chính trị quốc gia Hồ Chí Minh (2018), Giáo trình Kinh tế chính trị Mác - Lê nin, NXB Lý luận Chính trị.
 - + Các. Mác - Ph. Ăng gen: Toàn tập, tập 20, tập 23, tập 25, Nxb Chính trị quốc gia, 1994.
 - + V.L.Lê nin toàn tập, tập 3, tập 27, NXB Tiến bộ Maxcova, 1976.
 - + Davig Begg, Stanley Fisher, Rudiger Dornbusch, Kinh tế học, Nhà xuất bản Giáo dục Hà Nội 1992.
 - + Đảng Cộng sản Việt Nam (2016), Văn kiện Đại hội Đại biểu toàn quốc lần thứ XII, Nxb Chính trị quốc gia, Hà Nội.
 - + Đảng Cộng sản Việt Nam (2016), Báo cáo tổng kết một số vấn đề lý luận - thực tiễn qua ba mươi năm đổi mới (1986 - 2016), NXB Chính trị quốc gia, Hà Nội.
 - + Đảng Cộng sản Việt Nam (2017), Nghị quyết số 11-NQ/TW ngày 03/6/2017 về: “Hoàn thiện thể chế kinh tế thị trường định hướng xã hội chủ nghĩa”
 - + Chỉ thị số 16/CT-TTg (2017) “về việc tăng cường năng lực tiếp cận cuộc cách mạng công nghiệp lần thứ 4”.
 - + Jeremy Rifkin (2014), Cuộc cách mạng công nghiệp lần thứ ba, bản dịch tiếng Việt, NXB Lao động xã hội.
 - + Manfred B. Steger (2011), Toàn cầu hóa, Nxb Tri thức.
 - + Klaus Schwab (2015): Cách mạng công nghiệp lần thứ tư, Nxb Chính trị quốc gia - Sự thật, 2018.

5. Chuẩn đầu ra môn học

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	ĐỐI TƯỢNG, PHƯƠNG PHÁP NGHIÊN CỨU VÀ CHỨC NĂNG CỦA KINH TẾ CHÍNH TRỊ MÁC - LÊNIN	LO. 1.1 -Nắm được sự hình thành và phát triển của Kinh tế chính trị Mác – Lênin	2.1		I3
		LO. 1.2 - Xác định được đối tượng nghiên cứu của kinh tế chính trị Mác - Lênin.			
		LO. 1.3 - Hiểu rõ được phương pháp nghiên cứu của kinh tế chính trị Mác - Lênin			
		LO. 1.4 - Hiểu rõ các chức năng của môn học kinh tế chính trị Mác - Lênin.			
LO.2	HÀNG HÓA, THỊ TRƯỜNG VÀ VAI TRÒ CỦA CÁC CHỦ THỂ THAM GIA THỊ TRƯỜNG.	LO.2.1- Hiểu rõ sản xuất hàng hóa và điều kiện ra đời của sản xuất hàng hóa	2.1		T4
		LO.2.2 - Hiểu rõ hàng hóa, hai thuộc tính của hàng hóa và mối quan hệ giữa hai thuộc tính			
		LO.2.3 - Hiểu rõ mối quan hệ giữa tính hai mặt của lao động sản xuất hàng hóa với hai thuộc tính của hàng hóa			
		LO.2.4 - Hiểu rõ mặt chất và lượng của giá trị hàng hóa và các nhân tố ảnh hưởng đến lượng giá trị hàng hóa			
		LO.2.5 - Hiểu rõ được nguồn gốc, bản chất và chức năng của tiền tệ.			
		LO.2.6 - Hiểu rõ về thị trường, vai trò của thị trường, cơ chế thị trường và nền kinh tế thị trường.			
		LO.2.7 - Hiểu rõ được một số quy luật kinh tế chủ yếu của kinh tế thị trường.			
		LO.2.8 - Hiểu rõ vai trò của các chủ thể tham gia thị trường.			

LO.3	GIÁ TRỊ THẶNG DU TRONG NỀN KINH TẾ THỊ TRƯỜNG	LO.3.1 - Hiểu rõ được tư bản là gì, công thức chung của tư bản và mâu thuẫn công thức chung của tư bản.	2.1 2.1 2.1		T4
		LO.3.2 - Hiểu rõ được hàng hóa sức lao động là gì, tại sao nghiên cứu hàng hóa sức lao động giải quyết mâu thuẫn công thức chung của tư bản	2.3 2.3		
		LO.3.3 - Hiểu rõ được giá trị thặng dư là gì. Xác định được có mấy phương pháp sản xuất giá trị thặng dư.	2.1		
		LO.3.4 - Hiểu rõ được bản chất của tích lũy tư bản, nhưng nhân tố làm tăng quy mô tích lũy tư bản và hệ quả của tích lũy tư bản.	2.1 2.3		
		LO.3.5 - Hiểu rõ được các khái niệm: chi phí sản xuất, lợi nhuận, tỷ suất lợi nhuận, lợi nhuận bình quân, lợi nhuận thương nghiệp, các nhân tố ảnh hưởng đến tỷ suất lợi nhuận			
		LO.3.6 - Hiểu rõ được lợi tức là gì.			
		LO.3.7 - Hiểu rõ được địa tô tư bản chủ nghĩa. Có mấy loại địa tô tư bản chủ nghĩa và giá cả ruộng đất.			
LO.4	CẠNH TRANH VÀ ĐỘC QUYỀN TRONG NỀN KINH TẾ THỊ TRƯỜNG	LO.4.1 - Hiểu rõ được quan hệ giữa cạnh tranh và độc quyền trong nền kinh tế thị trường.	2.1 2.1		
		LO.4.2 - Hiểu rõ được nguyên nhân hình thành độc quyền trong nền kinh tế thị trường.	2.1 2.1		
		LO.4.3 - Hiểu rõ được những đặc điểm kinh tế cơ bản của độc quyền trong chủ nghĩa tư bản theo quan điểm của V.I. Lênin	2.3		

		LO.4.4 - Hiểu rõ được nguyên nhân hình thành và phát triển của chủ nghĩa tư bản độc quyền nhà nước.	2.1		
		LO.4.5 - Hiểu rõ được bản chất của chủ nghĩa tư bản độc quyền nhà nước và những biểu hiện chủ yếu của độc quyền nhà nước trong chủ nghĩa tư bản.			
		LO.4.6 - Nắm được vai trò lịch sử của chủ nghĩa tư bản.			
LO.5	KINH TẾ THỊ TRƯỜNG ĐỊNH HƯỚNG XÃ HỘI CHỦ NGHĨA VÀ CÁC QUAN HỆ LỢI ÍCH KINH TẾ Ở VIỆT NAM	LO.5.1 - Hiểu rõ được khái niệm kinh tế thị trường định hướng xã hội chủ nghĩa ở Việt Nam	2.1		T4
		LO.5.2 - Hiểu rõ được tính tất yếu khách quan của việc phát triển kinh tế thị trường định hướng xã hội chủ nghĩa ở Việt Nam	2.1		
		LO.5.3 - Nắm được những đặc trưng của kinh tế thị trường định hướng xã hội chủ nghĩa ở Việt Nam.	2.1		
		LO.5.4 - Hiểu rõ thể chế kinh tế thị trường định hướng xã hội chủ nghĩa là gì và sự cần thiết phải hoàn thiện nó.	2.1		
		LO.5.5 - Nắm được những nội dung cơ bản của hoàn thiện thể chế kinh tế thị trường định hướng xã hội chủ nghĩa ở Việt Nam	2.1		
		LO.5.6 - Hiểu rõ được khái niệm lợi ích kinh tế và quan hệ lợi ích kinh tế	2.2		
		LO.5.7 - Hiểu rõ được vai trò của nhà nước trong đảm bảo hài hòa các quan hệ lợi ích	2.1		

LO.6	CÔNG NGHIỆP HÓA, HIỆN ĐẠI HÓA VÀ HỘI NHẬP KINH TẾ QUỐC TẾ CỦA VIỆT NAM	LO.6.1 - Hiểu rõ được cách mạng công nghiệp là gì, khái quát được các cuộc cách mạng đã diễn ra trong lịch sử.	2.1		T4
		LO.6.2 - Hiểu rõ vai trò của cách mạng công nghiệp đối với sự phát triển	2.1		
		LO.6.3 - Hiểu được công nghiệp hóa là gì và các mô hình công nghiệp hóa tiêu biểu trên thế giới.	2.1		
		LO.6.4 - Hiểu rõ tính tất yếu khách quan của công nghiệp hóa, hiện đại hóa ở Việt Nam.	2.1		
		LO.6.5 - Nắm được những nội dung của công nghiệp hóa, hiện đại hóa ở Việt Nam.	2.3		
		LO.6.6 - Nắm được công nghiệp hóa, hiện đại hóa ở Việt Nam trong bối cảnh của cuộc cách mạng công nghiệp lần thứ 4.	2.1		
		LO.6.7 - Hiểu rõ được hội nhập kinh tế quốc tế là gì. Vì sao hội nhập kinh tế quốc tế là sự cần thiết khách quan.			
		LO.6.8 - Nắm được những nội dung và tác động tích cực và tiêu cực của hội nhập kinh tế quốc tế.	2.3		
		LO.6.9 - Nắm được phương hướng nâng cao hiệu quả hội nhập kinh tế quốc tế trong phát triển của Việt Nam	2.3		
5.2. Kỹ năng					
L0.7	THỂ HIỆN KHẢ NĂNG KHÁI QUÁT HÓA, TƯ	LO.7.1. 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	2.1		U4

	DUY, TRANH LUẬN, PHẢN BIỆN, LÀM VIỆC NHÓM	LO.7.2. 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	2.2		
		LO.7.3. 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	2.4		
5.3. Thái độ					
LO.8	THỂ HIỆN Ý THỨC, NHẬN THỨC TRONG VÀ SAU KHI HỌC TẬP	LO.8.1. Có ý thức trách nhiệm bảo vệ tính khoa học, cách mạng, nhân văn của CN Mác - Lênin	2.1		U3
		LO.8.2. Có ý thức, trách nhiệm cá nhân đối với tập thể, cộng đồng	2.2		
		LO.8.3. Có nhận thức về sự cần thiết học tập, nghiên cứu suốt đời và vận dụng nó trong đời sống.	2.3		

6. Kế hoạch giảng dạy theo buổi học

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.7;	Dạy: - Tự giới thiệu về giảng viên - Giới thiệu đề cương và tài liệu môn học - Hướng dẫn cách thức dạy và học và cách đánh giá. - Giới thiệu nội dung đề tài thuyết trình nhóm GHW) Học ở lớp: - Chia nhóm (5 sv/nhóm) - Giới thiệu nhóm học tập Học ngoài lớp: - Chọn đề tài thuyết trình của nhóm (GHW) - Đọc trước tài liệu chương 1.	
2 (2 tiết)	Chương I ĐỐI TƯỢNG, PHƯƠNG PHÁP NGHIÊN CỨU VÀ CHỨC NĂNG CỦA KINH TẾ CHÍNH TRỊ MÁC - LÊNIN	LO.1; LO.7 LO.8	Dạy: I. SỰ HÌNH THÀNH VÀ PHÁT TRIỂN CỦA KTCT MÁC - LENIN 1. Giai đoạn từ cổ đại đến thế kỷ 18 2. Giai đoạn từ sau thế kỷ 18 đến nay II. ĐỐI TƯỢNG, PHƯƠNG PHÁP NGHIÊN CỨU CỦA KINH TẾ CHÍNH TRỊ MÁC - LÊNIN. 1. Đối tượng nghiên cứu 2. Phương pháp nghiên cứu 3. Mục đích nghiên cứu III. CHỨC NĂNG CỦA KINH TẾ CHÍNH TRỊ MÁC - LÊNIN. 1. Chức năng nhận thức 2. Chức năng thực tiễn	Thi giữa kỳ (Quiz)

			3. Chức năng tư tưởng 4. Chức năng phương pháp luận Học ở lớp: Thảo luận và phát biểu trên lớp. Học ngoài lớp: - Phác thảo nội dung thuyết trình nhóm GHW - Đọc trước tài liệu chương 2.	
3 (6 tiết)	Chương 2 HÀNG HÓA, THỊ TRƯỜNG VA VAI TRÒ CỦA CÁC CHỦ THỂ THAM GIA THỊ TRƯỜNG.	LO.2 LO.7 LO.8	Dạy: I. LÝ LUẬN CỦA CÁC MÁC VỀ SẢN XUẤT HÀNG HÓA VÀ HÀNG HÓA. 1. Sản xuất hàng hóa - Khái niệm sản xuất hàng hóa - Điều kiện ra đời của sản xuất hàng hóa. 2. Hàng hóa - Khái niệm hàng hóa - Hai thuộc tính của hàng hóa - Lượng giá trị và các nhân tố ảnh hưởng đến lượng giá trị của hàng hóa - Tính hai mặt của lao động sản xuất hàng hóa. 3. Tiền - Nguồn gốc và bản chất của tiền - Chức năng của tiền 4. Dịch vụ và một số hàng hóa đặc biệt. II. THỊ TRƯỜNG VÀ VAI TRÒ CỦA CÁC CHỦ THỂ THAM GIA THỊ TRƯỜNG. 1. Thị trường - Khái niệm về thị trường - Vai trò của thị trường. - Cơ chế thị trường - Nền kinh tế thị trường. 2. Vai trò của các chủ thể tham gia thị trường.	Thi giữa kỳ (Quiz) Thi cuối kỳ (FEX)

			- Người sản xuất. - Người tiêu dùng. - Các chủ thể trung gian trong thị trường. - Nhà nước. Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Đọc trước tài liệu chương 3.	

4 (6 tiết)	Chương 3 GIÁ TRỊ THẶNG DƯ TRONG NỀN KINH TẾ THỊ TRƯỜNG	LO.3 LO.7 LO.8	Dạy: I.LÝ LUẬN CỦA CÁC MÁC VỀ GIÁ TRỊ THẶNG DƯ 1.Nguồn gốc của giá trị thặng dư 2.Bản chất của giá trị thặng dư 3.Các phương pháp sản xuất giá trị thặng dư trong nền kinh tế thị trường tư bản chủ nghĩa. II.TÍCH LŨY TƯ BẢN -Bản chất của tích lũy -Những nhân tố góp phần làm tăng quy mô tích lũy -Một số hệ quả của tích lũy tư bản III.CÁC HÌNH THỨC BIỂU HIỆN GIÁ TRỊ THẶNG DƯ TRONG NỀN KINH TẾ THỊ TRƯỜNG 1.Lợi nhuận 2.Lợi tức 3.Địa tô tư bản chủ nghĩa Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Hoàn thiện bài thuyết trình Đọc trước tài liệu chương 4	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)
5 (5 tiết)	Chương 4 CẠNH TRANH VÀ ĐỘC QUYỀN TRONG NỀN KINH TẾ THỊ	LO.4 LO.7 LO.8	Dạy: I. QUAN HỆ GIỮA CẠNH TRANH VÀ ĐỘC QUYỀN TRONG NN KINH TẾ THỊ TRƯỜNG. II. ĐỘC QUYỀN VÀ ĐỘC QUYỀN NHÀ NƯỚC TRONG NỀN KINH TẾ THỊ TRƯỜNG. 1. Lý luận của V.I. Lênin về độc quyền trong nền kinh tế thị trường.	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)

	TRƯỜNG		- Nguyên nhân hình thành và tác động của độc quyền. - Những đặc điểm kinh tế cơ bản của độc quyền trong chủ nghĩa tư bản 2. Lý luận của V.I. Lê nin về độc quyền nhà nước trong chủ nghĩa tư bản. - Nguyên nhân ra đời và phát triển của độc quyền nhà nước trong chủ nghĩa tư bản. - Bản chất của độc quyền nhà nước trong chủ nghĩa tư bản. - Những biểu hiện chủ yếu của độc quyền nhà nước trong chủ nghĩa tư bản. - Vai trò lịch sử của chủ nghĩa tư bản. - Học ở lớp: Thảo luận và phát biểu trên lớp - Học ngoài lớp: Đọc trước tài liệu chương 5	
6 (5 tiết)	Chương 5 KINH TẾ THỊ TRƯỜNG ĐỊNH HƯỚNG XÃ HỘI CHỦ NGHĨA VÀ CÁC QUAN HỆ LỢI ÍCH KINH TẾ Ở VIỆT NAM	LO.5 LO.7 LO.8	Dạy: I. KINH TẾ THỊ TRƯỜNG ĐỊNH HƯỚNG XÃ HỘI CHỦ NGHĨA Ở VIỆT NAM 1. Khái niệm kinh tế thị trường định hướng xã hội chủ nghĩa ở Việt Nam 2. Tính tất yếu khách quan của việc phát triển kinh tế thị trường định hướng xã hội chủ nghĩa ở Việt Nam. 3. Đặc trưng của kinh tế thị trường định hướng xã hội chủ nghĩa ở Việt Nam.	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)

6 (5 tiết)	Chương 5 KINH TẾ THỊ TRƯỜNG ĐỊNH HƯỚNG XÃ HỘI CHỦ NGHĨA VÀ CÁC QUAN HỆ LỢI ÍCH KINH TẾ Ở VIỆT NAM	LO.5 LO.7 LO.8	II. HOÀN THIỆN THỂ CHẾ KINH TẾ THỊ TRƯỜNG ĐỊNH HƯỚNG XÃ HỘI CHỦ NGHĨA Ở VIỆT NAM. 1.Sự cần thiết phải hoàn thiện thể chế kinh tế thị trường định hướng xã hội chủ nghĩa ở Việt Nam 2.Hoàn thiện thể chế kinh tế thị trường định hướng xã hội chủ nghĩa ở Việt Nam một số khía cạnh chủ yếu. III. CÁC QUAN HỆ LỢI ÍCH KINH TẾ Ở VIỆT NAM Lợi ích kinh tế và quan hệ lợi ích kinh tế. 1.Vai trò của nhà nước trong đảm bảo hài hòa các quan hệ lợi ích Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Hoàn thiện bài thuyết trình	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)

7. Đánh giá môn học

STT	Mã	Tên	Mô tả	Tỷ trọng	Hình thức	LO
1	GHW	Thuyết trình nhóm	Thuyết trình nhóm về đề tài đã phân công	15%	Thuyết trình và bản báo cáo nhóm	LO.4 LO 5 LO6 LO.7 LO.8
2	Quiz	Bài thi giữa kỳ	Thi theo đề thi chung	20%	Tự luận đề mở	LO.2 LO.3
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.7 LO.8

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 LO.5 LO.6 LO.7 LO.8
			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 vị trí của Kinh tế chính trị Mác - Lênin trong hệ thống lịch sử tư tưởng kinh tế và nắm được đối tượng, phương pháp và chức năng của kinh tế chính trị Mác - Lênin.	Chương 1	Thi giữa kỳ (Quiz)	Ngân hàng đề thi của GV
LO.2 LO.7	Nắm rõ nội dung: sản xuất hàng hóa, điều kiện ra đời của sản xuất hàng hóa, khái niệm hàng hóa và hai thuộc tính của hàng hóa, chất và lượng của giá trị hàng hóa, mối quan hệ giữa tính hai mặt của lao động sản xuất hàng hóa với hai thuộc tính của hàng hóa, các nhân tố ảnh hưởng đến lượng giá trị của hàng hóa, nguồn gốc ra đời, bản chất và chức năng của tiền. Thị trường, cơ chế thị trường, nền kinh tế thị trường và vai trò các chủ thể tham gia thị trường	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.7	Hiểu rõ và nắm được những nội dung: tư bản là gì? Công thức chung và mâu thuẫn công thức chung của tư bản. Hàng hóa sức lao động và tính chất đặc biệt của giá	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

	trị sử dụng hàng hóa sức lao động. Giá trị thặng dư và hai phương pháp sản xuất giá trị thặng dư. Tích lũy tư bản và những nhân tố làm tăng quy mô tích lũy. Các khái niệm về chi phí sản xuất, lợi nhuận, lợi tức và địa tô tư bản chủ nghĩa			của GV
LO.4 LO.7	Hiểu rõ và nắm được những nội dung: quan hệ giữa cạnh tranh và độc quyền trong nền kinh tế thị trường. Tổ chức độc quyền là gì? Nguyên nhân hình thành các tổ chức độc quyền. Những đặc điểm kinh tế cơ bản của độc quyền theo quan điểm của V.I. Lênin. Lý luận về độc quyền nhà nước trong chủ nghĩa tư bản. Vai trò lịch sử của chủ nghĩa tư bản.	Chương 4	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
LO.5 LO.7	Hiểu rõ và nắm được những nội dung: kinh tế thị trường định hướng xã hội chủ nghĩa ở Việt Nam, những đặc trưng của kinh tế thị trường định hướng xã hội chủ nghĩa. Thể chế kinh tế thị trường định hướng xã hội chủ nghĩa và sự cần thiết phải hoàn thiện thể chế kinh tế thị trường định hướng xã hội chủ nghĩa. Lợi ích kinh tế và quan hệ lợi ích kinh tế. Vai trò của nhà nước trong đảm bảo hài hòa các quan hệ lợi ích.	Chương 5	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
LO.6 LO.7	Hiểu rõ và nắm được những nội dung: cách mạng công nghiệp là gì? Vai trò của cách mạng công nghiệp đối với sự phát triển. Công nghiệp hóa là gì? Các mô hình công nghiệp hóa tiêu biểu trên thế giới. Công nghiệp hóa, hiện đại	Chương 6	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

	hóa ở Việt Nam là gì. Tính tất yếu khách quan phải công nghiệp hóa, hiện đại hóa ở Việt Nam. Công nghiệp hóa, hiện đại hóa ở Việt Nam trong bối cảnh cuộc cách mạng công nghiệp lần thứ 4. Hội nhập kinh tế quốc tế là gì, sự cần thiết khách quan phải hội nhập kinh tế quốc tế. Tác động của hội nhập kinh tế quốc tế của Việt Nam. Phương hướng nâng cao hiệu quả hội nhập kinh tế quốc tế.			

9. Một số lưu ý khác

- Khi có các thắc mắc liên quan môn học, sinh viên có thể liên lạc với giảng viên qua email: lethong0804@gmail.com
- 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.

ĐỀ CƯƠNG CHI TIẾT MÔN HỌC

Course name: Chủ nghĩa xã hội khoa học (Scientific socialism)

1. Thông tin chung

Tên môn học (tiếng Việt):	Chủ nghĩa xã hội khoa học
Tên môn học (tiếng Anh):	Scientific socialism
Mã số môn học:	PE017IU
Thuộc khối kiến thức:	Cơ sở
Số tín chỉ:	2 (ECTS: 3.09)
<i>Số tiết lý thuyết:</i>	<i>30 (trên lớp)</i>
<i>Số tiết thực hành:</i>	
<i>Số tiết tự học:</i>	<i>60 (về nhà)</i>
Môn học trước:	1. Triết học Mác - Lênin
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 của chủ nghĩa xã hội khoa học (một trong ba bộ phận cấu thành chủ nghĩa Mác - Lênin).
- 2.2. Giúp cho 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 đang đặt ra.

3. Mô tả môn học (Course Outlines)

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

4. Tài liệu phục vụ học tập:

- Bộ Giáo dục và Đào tạo (2019), *Giáo trình Chủ nghĩa xã hội khoa học*, Nxb. Chính trị quốc gia, Hà Nội.
- Bộ Giáo dục và Đào tạo (2012), *Giáo trình Những Nguyên lý cơ bản của chủ nghĩa Mác-Lênin*, Nxb. Chính trị quốc gia, Hà Nội.
- Hội đồng Trung ương (2008), *Giáo trình Chủ nghĩa xã hội khoa học*, Nxb. Chính trị

quốc gia, Hà Nội.

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	NHẬP MÔN CHỦ NGHĨA XÃ HỘI KHOA HỌC	LO.1.1 – Khái lược sự ra đời Chủ nghĩa xã hội khoa học, hoàn cảnh lịch sử và vai trò của Các Mác và PH.Ăngghen	2.1	1.1.3	13
		LO.1.2 – Nhận biết được các giai đoạn phát triển cơ bản của Chủ nghĩa xã hội khoa học thể hiện qua các tác phẩm			
		LO.1.3 – Nắm rõ được đối tượng, phương pháp và ý nghĩa của việc nghiên cứu Chủ nghĩa xã hội khoa học			
LO.2	SỨ MỆNH LỊCH SỬ CỦA GIAI CẤP CÔNG NHÂN	LO.2.1- Hiểu rõ khái niệm giai cấp công nhân và đặc điểm của giai cấp công nhân	2.1	1.1.3	T4
		LO.2.2 – Nắm rõ nội dung, đặc điểm sứ mệnh lịch sử của giai cấp công nhân	2.1		
		LO.2.3 – Giải thích được những điều kiện quy định sứ mệnh lịch sử của giai cấp công nhân	2.1		
		LO.2.4 – Phân tích được những điểm tương đồng và khác biệt của giai cấp công nhân hiện nay và việc thực hiện sứ mệnh của giai cấp công nhân trên thế giới hiện nay	2.1		
		LO.2.5 – Nắm rõ những đặc điểm cơ bản của giai cấp công nhân Việt Nam và nội dung sứ mệnh	2.1 2.2		

		lịch sử của giai cấp công nhân Việt Nam hiện nay LO.2.6 – Trình bày được phương hướng và một số giải pháp chủ yếu để xây dựng giai cấp công nhân Việt Nam hiện nay	2.1 2.2		
LO.3	CHỦ NGHĨA XÃ HỘI VÀ THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI	LO.3.1 – Hiểu rõ Chủ nghĩa xã hội là giai đoạn đầu của hình thái kinh tế - xã hội công sản chủ nghĩa LO.3.2 – Trình bày được những đặc trưng cơ bản của chủ nghĩa xã hội LO.3.3 – Giải thích được tính tất yếu khách quan của thời kỳ quá độ lên chủ nghĩa xã hội và những đặc điểm cơ bản của thời kỳ quá độ lên chủ nghĩa xã hội LO.3.4 – Hiểu rõ đặc trưng của thời kỳ quá độ và chủ nghĩa xã hội ở Việt Nam, trình bày được những phương hướng xây dựng chủ nghĩa xã hội ở Việt Nam hiện nay	2.1	1.1.3	I3
LO.4	DÂN CHỦ XÃ HỘI CHỦ NGHĨA VÀ NHÀ NƯỚC XÃ HỘI CHỦ NGHĨA	LO.4.1 – Giải thích được quan niệm về dân chủ và sự ra đời và phát triển dân chủ trong lịch sử xã hội loài người LO.4.2 – Nắm rõ quá trình ra đời và bản chất của nền dân chủ xã hội chủ nghĩa LO.4.3 – Hiểu được sự ra đời, bản chất và chức năng của nhà nước xã hội chủ nghĩa cũng như mối quan hệ giữa dân chủ và nhà nước LO.4.4 - hiểu được sự ra đời phát triển và bản chất của nền dân chủ xã hội chủ nghĩa ở Việt Nam	2.1 2.1 2.1 2.1	1.1.3	T4

		LO.4.5 - trình bày được đặc điểm và các giải pháp cơ bản nhằm xây dựng nhà nước pháp quyền xã hội chủ nghĩa ở Việt Nam hiện nay	2.2		
LO.5	CƠ CẤU XÃ HỘI GIAI CẤP VÀ LIÊN MINH GIAI CẤP, TẦNG LỚP TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI	LO.5.1 – Trình bày được khái niệm cơ cấu xã hội – khái quát và sự biến đổi của cơ cấu xã hội giai cấp trong thời kì quá độ lên chủ nghĩa xã hội	2.1	1.1.3	I3
		LO.5.2 – giải thích được tính tất yếu của liên minh giai cấp, tầng trong thời kỳ quá độ lên chủ nghĩa xã hội			
		LO.5.3 – Hiểu rõ cơ cấu xã hội – giai cấp ở Việt Nam trong thời kì quá độ và trình bày những giải pháp cơ bản nhằm xây dựng, phát triển lối liên minh giai cấp, tầng lớp xã hội ở Việt Nam			
LO.6	VẤN ĐỀ DÂN TỘC VÀ TÔN GIÁO TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI	LO.6.1 – Hiểu rõ khái niệm, đặc trưng cơ bản của dân tộc và quan điểm của chủ nghĩa Mác – Lenin về vấn đề dân tộc	2.1	1.1.3	T4
		LO.6.2 – Trình bày được những đặc điểm cơ bản của dân tộc ở Việt Nam và quan điểm chính sách dân tộc của Đảng và Nhà nước Việt Nam	2.1		
		LO.6.3 – Hiểu được bản chất, nguồn gốc, tính chất của tôn giáo và nguyên tắc cơ bản giải quyết vấn đề tôn giáo trong thời kỳ quá độ lên chủ nghĩa xã hội	2.1		
		LO.6.4 – Giải thích được những đặc điểm tôn giáo ở Việt Nam và chính sách của Đảng và Nhà nước	2.1 2.2		

		Việt Nam đối với tín ngưỡng tôn giáo hiện nay			
		LO.6.5 – Hiểu rõ được đặc điểm quan hệ dân tộc và tôn giáo ở Việt Nam và trình bày được các định hướng cơ bản nhằm giải quyết mối quan hệ giữa dân tộc và tôn giáo ở Việt Nam hiện nay	2.1 2.2		
LO.7	VẤN ĐỀ GIA ĐÌNH TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI	LO.7.1 – Khái lược được vị trí, chức năng và vai trò của gia đình trong xã hội	2.1	1.1.3	I3
		LO.7.2 – Nhận biết được các cơ sở xây dựng gia đình trong thời kỳ quá độ lên chủ nghĩa xã hội			
		LO.7.3 – Giải thích được sự biến đổi của gia đình Việt Nam trong thời kỳ quá độ và trình bày được những phương hướng cơ bản xây dựng và phát triển gia đình Việt Nam trong thời kỳ quá độ lên chủ nghĩa xã hội			
5.2. Kỹ năng					
LO.8	THỂ HIỆN KHẢ NĂNG KHÁI QUÁT HÓA, TƯ DUY, TRANG LUẬN, PHẢN BIỆN, LÀM VIỆC NHÓM	LO.8.1 – 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	2.1 2.2	2.1.1 2.3.1 2.4.4 2.5 3.1.5	U4
		LO.8.2 – 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			
		LO.8.3 – 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			

LO.9	THỂ HIỆN Ý THỨC NHẬN THỨC TRONG VÀ SAU KHI HỌC TẬP	LO.9.1 – Có ý thức trách nhiệm bảo vệ tính khoa học, cách mạng trong lý luận của chủ nghĩa Mác – Leenin về CNXH và con đường đi lên CNXH ở Việt Nam	2.1 2.2	3.1	U3
		LO.9.2 – Có ý thức, trách nhiệm cá nhân đối với tập thể, cộng đồng			
		LO.9.3 – Có nhận thức về sự cần thiết học tập, nghiên cứu suốt đời và vận dụng nó trong cuộc sống			

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 (tiết 1)	Giới thiệu về môn học	LO.1 LO.4	Dạy: - Giới thiệu đề cương môn học - Giới thiệu nội dung đề tài thuyết trình nhóm (GHW) Học ở lớp: - Chia nhóm (5 SV/nhóm) - Giới thiệu nhóm học tập Học ngoài lớp: - Chọn đề tài thuyết trình của nhóm (GHW) - Đọc trước tài liệu chương 1.	
2	Chương 1 NHẬP MÔN CHỦ NGHĨA XÃ HỘI KHOA HỌC		Dạy: 1.SỰ RA ĐỜI CỦA CHỦ NGHĨA XÃ HỘI KHOA HỌC 1.1. Hoàn cảnh lịch sử sự ra đời của chủ nghĩa xã hội khoa học 1.2. Vai trò của C. Mác và Ăngghen 2.CÁC GIAI ĐOẠN PHÁT TRIỂN CƠ BẢN CỦA CHỦ NGHĨA XÃ HỘI KHOA HỌC 2.1. C. Mác và Ph.Ăngghen phát triển chủ nghĩa xã hội khoa học 2.2. V.I.Lênin vận dụng và phát triển sáng tạo chủ nghĩa xã hội khoa học trong điều kiện mới	Thi giữa kì (Quiz)

			2.3. Sự vận dụng và phát triển sáng tạo chủ nghĩa xã hội khoa học từ sau khi lenin qua đời đến nay 3. ĐỐI TƯỢNG, PHƯƠNG PHÁP VÀ Ý NGHĨA CỦA VIỆC NGHIÊN CỨU CHỦ NGHĨA XÃ HỘI KHOA HỌC 3.1. Đối tượng nghiên cứu của chủ nghĩa xã hội khoa học 3.2. Phương pháp nghiên cứu của chủ nghĩa xã hội khoa học Ý nghĩa của việc nghiên cứu chủ nghĩa xã hội khoa học Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: - Phác thảo nội dung thuyết trình nhóm GHW - Đọc trước tài liệu chương 2.	
3	Chương 2 SỨ MỆNH LỊCH SỬ CỦA GIAI CẤP CÔNG NHÂN	LO.2 LO.4 LO.5	Dạy: 1. QUAN ĐIỂM CƠ BẢN CỦA CHỦ NGHĨA MÁC - LENIN VỀ GIAI CẤP CÔNG NHÂN VÀ SỨ MỆNH LỊCH SỬ THẾ GIỚI CỦA GIAI CẤP CÔNG NHÂN 1.1. Khái niệm và đặc điểm của giai cấp công nhân 1.2. Nội dung và đặc điểm sứ mệnh lịch sử của giai cấp công nhân 1.3. Những điều kiện quy định sứ mệnh lịch sử của giai cấp công nhân 2. GIAI CẤP CÔNG NHÂN VÀ VIỆC THỰC HIỆN SỨ MỆNH LỊCH SỬ CỦA GIAI CẤP CÔNG NHÂN HIỆN NAY 2.1. Giai cấp công nhân hiện nay 2.2. Thực hiện sứ mệnh lịch sử của giai cấp công nhân trên thế giới hiện nay 3. SỨ MỆNH LỊCH SỬ CỦA GIAI CẤP CÔNG NHÂN VIỆT NAM 3.1. Đặc điểm của giai cấp công nhân Việt Nam 3.2. Nội dung sứ mệnh lịch sử của giai cấp công nhân Việt Nam hiện nay	Thi giữa kỳ (Quiz)

			3.3. Phương hướng và một số giải pháp chủ yếu để xây dựng giai cấp công nhân Việt Nam hiện nay Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Đọc trước tài liệu chương 3	
4	Chương 3 CHỦ NGHĨA XÃ HỘI VÀ THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI	LO.3 LO.4 LO.5	Dạy: 1. CHỦ NGHĨA XÃ HỘI 1.1. Chủ nghĩa xã hội, giai đoạn đầu của hình thái kinh tế - xã hội công sản chủ nghĩa 1.2. Điều kiện ra đời chủ nghĩa xã hội 1.3. Những đặt trưng cơ bản của chủ nghĩa xã hội 2. THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 2.1. Tính tất yếu khách quan của thời kỳ quá độ lên chủ nghĩa xã hội 2.2. Đặc điểm của thời kỳ quá độ lên chủ nghĩa xã hội 3. QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI Ở VIỆT NAM 3.1. Quá độ lên chủ nghĩa xã hội bỏ qua chế độ tư bản chủ nghĩa 3.2. Những đặc trưng cơ bản của chủ nghĩa xã hội và phương hướng xây dựng chủ nghĩa xã hội ở Việt Nam hiện nay Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Đọc trước tài liệu chương 4	Thuyết trình nhóm (GHW) Thi giữa kỳ (Quiz)

5	Chương 4 DÂN CHỦ XÃ HỘI CHỦ NGHĨA VÀ NHÀ NƯỚC XÃ HỘI CHỦ NGHĨA	LO.2 LO.4 LO.5	Dạy: 1. DÂN CHỦ VÀ DÂN CHỦ XÃ HỘI CHỦ NGHĨA 1.1. Dân chủ và sự ra đời, phát triển của dân chủ 1.2. Dân chủ xã hội chủ nghĩa 2. NHÀ NƯỚC XÃ HỘI CHỦ NGHĨA 2.1. Sự ra đời, bản chất, chức năng của nhà nước xã hội chủ nghĩa 2.2. Mối quan hệ giữa dân chủ xã hội chủ nghĩa và nhà nước xã hội chủ nghĩa 3. DÂN CHỦ XÃ HỘI CHỦ NGHĨA VÀ NHÀ NƯỚC PHÁP QUYỀN XÃ HỘI CHỦ NGHĨA Ở VIỆT NAM 3.1. Dân chủ xã hội chủ nghĩa ở Việt Nam 3.2. Nhà nước pháp quyền xã hội chủ nghĩa ở Việt Nam hiện nay 3.3. Phát huy dân chủ xã hội chủ nghĩa, xây dựng nhà nước pháp quyền xã hội chủ nghĩa ở Việt Nam Học ở lớp: Thảo luận và phát biểu Học ngoài lớp: Đọc trước tài liệu chương 5 trên lớp	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)
6	Chương 5 CƠ CẤU XÃ HỘI – GIAI CẤP VÀ LIÊN MINH GIAI CẤP, TẦNG LỚP TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI	LO.3 LO.4 LO.5	Dạy: 1. CƠ CẤU XÃ HỘI GIAI CẤP TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 1.1. Khái niệm và vị trí của cơ cấu xã hội - giai cấp trong cơ cấu xã hội 1.2. Sự biến đổi có tính quy luật của cơ cấu xã hội - giai cấp trong thời kỳ quá độ lên chủ nghĩa xã hội 2. LIÊN MINH GIAI CẤP, TẦNG LỚP TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 3. CƠ CẤU XÃ HỘI - GIAI CẤP VÀ LIÊN MINH GIAI CẤP, TẦNG LỚP TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI Ở VIỆT NAM 3.1. Cơ cấu xã hội - giai cấp trong thời kỳ quá độ lên chủ nghĩa xã hội ở Việt Nam	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)

			3.2. Liên minh giai cấp, tầng lớp trong thời kỳ quá độ lên chủ nghĩa xã hội ở Việt Nam Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Đọc trước tài liệu chương 6	
7	Chương 6 VẤN ĐỀ DÂN TỘC VÀ TÔN GIÁO TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI	LO.2 LO.4 LO.5	Dạy: 1. DÂN TỘC TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 1.1. Chủ nghĩa Mác - Lênin về dân tộc 1.2. Dân tộc và quan hệ dân tộc ở Việt Nam 2. TÔN GIÁO TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 2.1. Chủ nghĩa Mác - Lênin về tôn giáo 2.2. Tôn giáo ở Việt Nam và chính sách tôn giáo của Đảng, Nhà nước ta hiện nay 3. QUAN HỆ DÂN TỘC VÀ TÔN GIÁO Ở VIỆT NAM 3.1. Đặc điểm quan hệ dân tộc và tôn giáo ở Việt Nam 3.2. Định hướng giải quyết mối quan hệ dân tộc và tôn giáo ở Việt Nam hiện nay 3.3. Phương hướng và một số giải pháp chủ yếu để xây dựng giai cấp công nhân Việt Nam hiện nay Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Đọc trước tài liệu chương 7	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)
8	Chương 7 VẤN ĐỀ GIA ĐÌNH TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI		Dạy: 1. KHÁI NIỆM, VỊ TRÍ VÀ CHỨC NĂNG CỦA GIA ĐÌNH 1.1. Khái niệm gia đình 1.2. Vị trí của gia đình trong xã hội 1.3. Chức năng cơ bản của gia đình 2. CƠ SỞ XÂY DỰNG GIA ĐÌNH TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 2.1. Cơ sở kinh tế - xã hội 2.2. Cơ sở chính trị - xã hội 2.3. Cơ sở văn hóa	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)

			3.XÂY DỰNG GIA ĐÌNH VIỆT NAM TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 3.1. Sự biến đổi gia đình Việt Nam trong thời kỳ quá độ lên chủ nghĩa xã hội 3.2. Phương hướng cơ bản xây dựng và phát triển gia đình Việt Nam trong thời kỳ quá độ lên chủ nghĩa xã hội Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Hoàn thiện bài thuyết trình	

7. Đánh giá môn học

STT	Mã	Tên	Mô tả	Tỷ trọng	Hình thức	LO
1	GHW	Thuyết trình nhóm	Thuyết trình nhóm về đề tài đã phân công	15%	Thuyết trình và bản báo cáo nhóm	LO.3 LO.4 LO.5 LO.6 LO.7
2	Quiz	Bài thi giữa kì	Thi theo đề thi của GV	20%	Tự luận đề mở	LO.1 LO.2 LO.3
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.3 LO.4 LO.5 LO.6 LO.7

4	FEX	Thi cuối kỳ	Đề thi bao quát toàn bộ nội dung môn học	50%	Tự luận đề đóng	LO.3 LO.4 LO.5 LO.6 LO.7
			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 quá trình ra đời của Chủ nghĩa xã hội khoa học và các giai đoạn phát triển cơ bản	Chương 1	Thi giữa kỳ (Quiz)	Ngân hàng đề thi của GV
LO.2 LO.4	Nắm rõ nội dung: quan điểm cơ bản của chủ nghĩa Mác - Lênin về giai cấp công nhân, nội dung, biểu hiện và ý nghĩa của sứ mệnh đó trong bối cảnh hiện nay	Chương 2	Thi giữa kỳ (Quiz)	Ngân hàng đề thi của GV
LO.3 LO.4	Nhận biết và nắm được những quan điểm cơ bản của chủ nghĩa Mác - Lênin về chủ nghĩa xã hội, thời kỳ quá độ lên chủ nghĩa xã hội và sự vận dụng sáng tạo của Đảng Cộng sản Việt Nam vào điều kiện cụ thể của Việt Nam	Chương 3	Thảo luận tại lớp (Discussion in Class) Thi giữa kỳ (Quiz)	Tiêu chí đánh giá thuyết trình nhóm, thảo luận tại lớp Ngân hàng đề thi của GV
LO.3 LO.4	Nhận biết và nắm được bản chất của nền dân chủ xã hội chủ nghĩa và nhà nước xã hội chủ nghĩa nói chung và ở Việt Nam nói riêng	Chương 4	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 Khoa

LO.3 LO.4	Nhận biết và nắm được những kiến thức nền tảng về cơ cấu xã hội - giai cấp và liên minh giai cấp, tầng lớp trong thời kỳ quá độ lên chủ nghĩa xã hội	Chương 5	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 Khoa
LO.3 LO.4	Nhận biết và nắm được những quan điểm cơ bản của chủ nghĩa Mác - Lênin về dân tộc, tôn giáo, mối quan hệ giữa dân tộc và tôn giáo, tầm quan trọng của vấn đề dân tộc, tôn giáo và nội dung chính sách dân tộc, tôn giáo của Đảng và Nhà nước Việt Nam	Chương 6	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 Khoa
LO.3 LO.4	Nhận biết và nắm được những quan điểm cơ bản của chủ nghĩa Mác - Lênin, tư tưởng Hồ Chí Minh và Đảng Cộng sản Việt Nam về gia đình, xây dựng gia đình trong thời kỳ quá độ lên chủ nghĩa xã hội hiện nay.	Chương 7	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 Khoa

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.

+ Giảng dạy kết thúc chương 3, các nhóm 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 và nhiệt tình

thảo luận, phát biểu xây dựng bài, nghiêm túc trong giờ học.

TP. Hồ Chí Minh, ngày 24 tháng 04 năm 2025

KT. TRƯỞNG KHOA

PHÓ TRƯỞNG KHOA

TS. Nguyễn Đình Quốc Cường

ĐỀ CƯƠNG CHI TIẾT MÔN HỌC
Course name: Lịch sử Đảng Cộng sản Việt Nam
(History of Vietnamese communist party)

1. Thông tin chung

Tên môn học (tiếng Việt); Tên môn học (tiếng Anh):	Lịch sử Đảng Cộng sản Việt Nam History of Vietnamese communist party
Mã số môn học:	PE018IU
Thuộc khối kiến thức: Số tín chỉ:	CƠ SỞ 2 (ECTS: 3.09)
<i>Số tiết lý thuyết:</i>	<i>20 (trên lớp)</i>
<i>Số tiết thực hành:</i> <i>Số tiết tự học:</i>	<i>10 (trên lớp)</i> <i>90 (về nhà)</i>
Môn học trước:	
Giảng viên phụ trách	Khoa Chính trị - Hành chính, ĐHQG-HCM

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

2.1 Về nội dung: 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).

2.2 Về tư tưởng: Thông qua các sự kiện lịch sử và các kinh nghiệm về sự lãnh đạo của Đảng để xây dựng ý thức tôn trọng sự thật khách quan, nâng cao lòng tự hào, niềm tin đối với sự nghiệp lãnh đạo của Đảng.

2.3 Về kỹ năng: Trang bị phương pháp tư duy khoa học về lịch sử, kỹ năng lựa chọn tài liệu nghiên cứu, học tập môn học và khả năng vận dụng nhận thức lịch sử vào công tác thực tiễn, phê phán quan niệm sai trái về lịch sử của Đảng.

3. Mô tả môn học (Course Outlines)

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

4. Tài liệu phục vụ học tập:

- 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 (tái bản có sửa chữa, bổ sung)*, 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	NHẬP MÔN ĐỐI TƯỢNG, CHỨC NĂNG, NHIỆM VỤ, NỘI DUNG VÀ PHƯƠNG PHÁP NGHIÊN CỨU, HỌC TẬP LỊCH SỬ ĐẢNG CỘNG SẢN VIỆT NAM	LO. 1.1 - Nắm rõ được đối tượng, mục đích học tập, nghiên cứu và một số yêu cầu cơ bản về phương pháp học tập, nghiên cứu Lịch sử Đảng Cộng sản Việt Nam	2.1	1.1.3	13
LO.2	ĐẢNG CỘNG SẢN VIỆT NAM RA ĐỜI VÀ LÃNH ĐẠO ĐẤU TRANH GIÀNH CHÍNH QUYỀN (1930-1945)	LO.2.1 - Nắm được bối cảnh lịch sử tác động đến sự ra đời của Đảng Cộng sản Việt Nam	2.1	1.1.3	T4
		LO.2.2 - Nắm được quá trình chuẩn bị các điều kiện để thành lập Đảng của Nguyễn Ái Quốc	2.1		
		LO.2.3- Nắm được nội dung hội nghị thành lập Đảng và Cương lĩnh chính trị đầu tiên của Đảng	2.1		

		LO.2.4 - Hiểu được ý nghĩa lịch sử của việc thành lập Đảng Cộng sản Việt Nam	2.1		
		LO.2.5 - Nắm rõ các phong trào cách mạng 1930-1935 và các chủ trương khôi phục phong trào năm 1932-1935	2.1		
		LO.2.6 - Nắm rõ phong trào dân chủ năm 1936-1939	2.1		
		LO.2.7 - Nắm rõ phong trào giải phóng dân tộc 1939-1945			
		LO.2.8 - Hiểu rõ tính chất, ý nghĩa và kinh nghiệm của Cách mạng Tháng Tám năm 1945			

LO.3	ĐẢNG LÃNH ĐẠO HAI CUỘC KHÁNG CHIẾN, HOÀN THÀNH GIẢI PHÓNG DÂN TỘC, THỐNG NHẤT ĐẤT NƯỚC (1945-1975)	LO.3.1 - Hiểu được chủ trương xây dựng và bảo vệ chính quyền cách mạng 1945-1946	2.1	1.1.3	T4
		LO.3.2 - Hiểu rõ Đường lối kháng chiến toàn quốc chống thực dân Pháp xâm lược và quá trình tổ chức thực hiện từ năm 1946-1950			
		LO.3.3 - Hiểu rõ chủ trương Đẩy mạnh cuộc kháng chiến chống thực dân Pháp xâm lược và quá trình tổ chức thực hiện từ năm 1946 đến năm 1950	2.1	1.1.3	T4
		LO.3.4 - Hiểu rõ được Ý nghĩa lịch sử và kinh nghiệm của Đảng trong lãnh đạo kháng chiến chống thực dân Pháp và can thiệp Mỹ			

		LO.3.5 - Nắm được quá trình lãnh đạo cách mạng hai miền giai đoạn 1954-1965 của Đảng			
		LO.3.6 - Nắm vững sự lãnh đạo cách mạng cả nước giai đoạn 1965-1975 của Đảng			
		LO.3.7 - Hiểu rõ Ý nghĩa và kinh nghiệm lãnh đạo của Đảng trong cuộc kháng chiến chống Mỹ, cứu nước 1954-1975			
LO.4	ĐẢNG LÃNH ĐẠO CẢ NƯỚC QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI VÀ TIẾN HÀNH CÔNG CUỘC ĐỔI MỚI (1975-2018)	LO.4.1 - Hiểu rõ chủ trương xây dựng chủ nghĩa xã hội và bảo vệ Tổ quốc 1975-1981	2.1 2.2	1.1.3	T4
		LO.4.2 - Nắm rõ nội dung Đại hội đại biểu toàn quốc lần thứ V của Đảng và các bước đột phá tiếp tục đổi mới kinh tế 1982-1986			
		LO.4.3 – Nắm rõ quan điểm Đổi mới toàn diện, đưa đất nước ra khỏi khủng hoảng kinh tế - xã hội 1986-1996 của Đảng			
		LO.4.4 - Nắm rõ thành tựu, kinh nghiệm của công cuộc đổi mới	2.1 2.2		
		LO.4.5 - Hiểu rõ những thắng lợi vĩ đại của cách mạng Việt Nam dưới sự lãnh đạo của Đảng từ năm 1930 đến 2018			
		LO.4.6 - Hiểu rõ những bài học lớn về sự lãnh đạo của Đảng từ năm 1930 đến 2018			

5.2. Kỹ năng

LO.5	THỂ HIỆN KHẢ NĂNG KHÁI QUÁT HÓA, TƯ DUY, TRANH LUẬN, PHẢN BIỆN, LÀM VIỆC NHÓM	LO.5.1. Rèn luyện năng lực tư duy độc lập trong nghiên cứu đường lối, chiến lược, sách lược cách mạng của Đảng. LO.5.2. Có tư duy phê phán, kỹ năng phân tích, tổng hợp và đánh giá những vấn đề liên quan đến môn học. Từ đó, vận dụng kiến thức đã học để chủ động, tích cực nhận thức những vấn đề chính trị, kinh tế, văn hoá, xã hội theo đường lối, chính sách, pháp luật của Đảng và Nhà nước. LO.5.3 Có kỹ năng viết, kỹ năng làm việc cá nhân, làm việc nhóm và trình bày kết quả nghiên cứu.	2.1 2.2 2.3	2.1.1 2.3.1 2.4.4 2.5 3.1.5	U4
5.3. Thái độ					
LO.6	THỂ HIỆN Ý THỨC, NHẬN THỨC TRONG VÀ SAU KHI HỌC TẬP	LO.6.1. Tin tưởng vào sự lãnh đạo của Đảng đối với cách mạng Việt Nam. LO.6.2. Quyết tâm phấn đấu thực hiện đường lối cách mạng của Đảng. LO.6.3. Có thái độ nghiêm túc trong học tập, nghiên cứu khoa học, trong nhận thức về cuộc sống, xã hội, tự rèn luyện bản thân trở thành người có phẩm chất, bản lĩnh chính trị vững vàng, có đạo đức, trình độ chuyên môn tốt; hình thành tình cảm, niềm tin vào con đường cách mạng mà dân tộc ta đã lựa chọn.	2.1 2.2 2.3	3.1	U3

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

Buổi (3 tiết)	Nội dung giảng dạy	LO	Hoạt động dạy và học	Đánh giá
1	Giới thiệu về môn học	LO.1, LO.5;	Dạy: - Giới thiệu đề cương môn học - Giới thiệu nội dung đề tài thuyết trình nhóm GHW) Học ở lớp: - Chia nhóm (5 SV/nhóm) - Giới thiệu nhóm học tập Học ngoài lớp: - Chọn đề tài thuyết trình của nhóm (GHW)	
2	Chương nhập môn ĐỐI TƯỢNG, CHỨC NĂNG, NHIỆM VỤ, NỘI DUNG VÀ PHƯƠNG PHÁP NGHIÊN CỨU, HỌC TẬP LỊCH SỬ ĐẢNG CỘNG SẢN VIỆT NAM	LO.1;	Dạy: I. ĐỐI TƯỢNG NGHIÊN CỨU CỦA MÔN HỌC LỊCH SỬ ĐẢNG CỘNG SẢN VIỆT NAM 1. Đối tượng nghiên cứu 2. Phạm vi nghiên cứu II.CHỨC NĂNG, NHIỆM VỤ CỦA MÔN HỌC LỊCH SỬ ĐẢNG CỘNG SẢN VIỆT NAM 1. Chức năng của khoa học Lịch sử Đảng 2. Nhiệm vụ của môn học II.PHƯƠNG PHÁP NGHIÊN CỨU, HỌC TẬP MÔN LỊCH SỬ ĐẢNG CỘNG SẢN VIỆT NAM 1. Phương pháp luận 2. Các phương pháp cụ thể Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: - Phác thảo nội dung thuyết trình nhóm GHW - Đọc trước tài liệu chương 1.	Thi giữa kỳ (Quiz)

3	Chương 1 ĐẢNG CỘNG SẢN VIỆT NAM RA ĐỜI VÀ LÃNH ĐẠO ĐẤU TRANH GIÀNH CHÍNH QUYỀN (1930-1945)	LO.2	Dạy: I. ĐẢNG CỘNG SẢN VIỆT NAM RA ĐỜI VÀ CƯƠNG LĨNH CHÍNH TRỊ ĐẦU TIÊN CỦA ĐẢNG (THÁNG 2-1930) - Bối cảnh lịch sử - Nguyễn Ái Quốc chuẩn bị các điều kiện để thành lập Đảng - Thành lập Đảng Cộng sản Việt Nam và Cương lĩnh chính trị đầu tiên của Đảng - Ý nghĩa lịch sử của việc thành lập Đảng Cộng sản Việt Nam II. ĐẢNG LÃNH ĐẠO ĐẤU TRANH GIÀNH CHÍNH QUYỀN (1930-1945) - Phong trào cách mạng 1930- 1935 và khôi phục phong trào 1932-1935 - Phong trào dân chủ 1936-1939 - Phong trào giải phóng dân tộc 1939-1945 - Tính chất, ý nghĩa và kinh nghiệm của Cách mạng Tháng Tám năm 1945 Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Đọc trước tài liệu chương 2	Thi giữa kỳ (Quiz) Thi cuối kỳ (FEX)

4	Chương 2 ĐẢNG LÃNH ĐẠO HAI CUỘC KHÁNG CHIẾN, HOÀN THÀNH GIẢI PHÓNG DÂN TỘC, THỐNG NHẤT ĐẤT NƯỚC (1945-1975)	LO.3 LO.5	Dạy: I. ĐẢNG LÃNH ĐẠO XÂY DỰNG, BẢO VỆ CHÍNH QUYỀN CÁCH MẠNG VÀ KHÁNG CHIẾN CHỐNG THỰC DÂN PHÁP XÂM LƯỢC (1945-1954) - Xây dựng và bảo vệ chính quyền cách mạng 1945-1946 - Đường lối kháng chiến toàn quốc chống thực dân Pháp xâm	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)	

			lược và quá trình tổ chức thực hiện từ năm 1946-1950 3.Đẩy mạnh cuộc kháng chiến chống thực dân Pháp xâm lược và quá trình tổ chức thực hiện từ năm 1946 đến năm 1950 4.Ý nghĩa lịch sử và kinh nghiệm của Đảng trong lãnh đạo kháng chiến chống thực dân Pháp và can thiệp Mỹ Dạy: Chấm thuyết trình & phản biện Học ở lớp: Các nhóm thuyết trình tại lớp II. LÃNH ĐẠO XÂY DỰNG CHỦ NGHĨA XÃ HỘI Ở MIỀN BẮC VÀ KHÁNG CHIẾN CHỐNG ĐẾ QUỐC MỸ XÂM LƯỢC GIẢI PHÓNG MIỀN NAM, THỐNG NHẤT ĐẤT NƯỚC (1954-1975) 1. Lãnh đạo cách mạng hai miền giai đoạn 1954-1965 2. Lãnh đạo cách mạng cả nước giai đoạn 1965-1975 3. Ý nghĩa và kinh nghiệm lãnh đạo của Đảng trong cuộc kháng chiến chống Mỹ, cứu nước 1954-1975 Học ngoài lớp: Đọc trước tài liệu chương 2		

5	Chương 3 ĐẢNG LÃNH ĐẠO CẢ NƯỚC QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI VÀ TIẾN HÀNH CÔNG CUỘC ĐỔI MỚI (1975- 2018)	LO.4 LO.5	Dạy I.ĐẢNG LÃNH ĐẠO CẢ NƯỚC XÂY DỰNG CHỦ NGHĨA XÃ HỘI VÀ BẢO VỆ TỔ QUỐC (1975-1986) 1.Xây dựng chủ nghĩa xã hội và bảo vệ Tổ quốc 1975-1981 2.Đại hội đại biểu toàn quốc lần thứ V của Đảng và các bước đột phá tiếp tục đổi mới kinh tế 1982-1986 Dạy: Chấm thuyết trình & phản biện Học ở lớp: Thảo luận tại lớp II.LÃNH ĐẠO CÔNG CUỘC ĐỔI MỚI, ĐẨY MẠNH CÔNG NGHIỆP HÓA, HIỆN ĐẠI HÓA VÀ HỘI NHẬP QUỐC TẾ (1986-2018) 1. Đổi mới toàn diện, đưa đất nước ra khỏi khủng hoảng kinh tế - xã hội 1986-1996 2. Tiếp tục công cuộc đổi mới, đẩy mạnh công nghiệp hóa, hiện đại hóa và hội nhập quốc tế 1996-2018 3. Thành tựu, kinh nghiệm của công cuộc đổi mới TỔNG LUẬN 1.Những thắng lợi vĩ đại của cách mạng Việt Nam 2.Những bài học lớn về sự lãnh đạo của Đảng Học ngoài lớp: Hoàn thiện bài thuyết trình	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)	

7. Đánh giá môn học

STT	Mã	Tên	Mô tả	Tỷ trọng	Hình thức	LO
1	GHW	Thuyết trình nhóm	Thuyết trình nhóm về đề tài đã phân công	20%	Thuyết trình và báo cáo nhóm	LO.3 LO.4 LO.5
2	Quiz	Bài thi giữa kỳ	Thi theo đề thi chung	30%	Tự luận	LO.1 LO.2;
3	DIC	Thảo luận 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.	Cộng tối đa 1 điểm vào bài thi cuối kỳ	Phát biểu/đặt câu hỏi trên lớp hoặc phiếu trả lời trong các nghiên cứu tình huống tại lớp	
4	FEX	Thi cuối kỳ	Đề thi bao quát toàn bộ nội dung môn học	50%	Trắc nghiệm	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	Nắm được đối tượng, mục đích học tập, nghiên cứu và một số yêu cầu cơ bản về phương pháp học tập, nghiên cứu	Chương nhập môn	Thi giữa kỳ (Quiz)	Ngân hàng đề thi của GV
LO.2	Hiểu rõ quá trình ra đời của Đảng Cộng sản Việt Nam (1920-1930), nội dung cơ bản, giá trị lịch sử của Cương lĩnh chính trị đầu tiên của Đảng và quá trình Đảng lãnh đạo cuộc đấu tranh giành độc lập, giành chính quyền (1930-1945)	Chương 1	Thi giữa kỳ (Quiz)	Ngân hàng đề thi của GV

LO.3 LO.5	Nắm rõ quá trình lãnh đạo của Đảng đối với hai cuộc kháng chiến chống thực dân Pháp và đế quốc Mỹ xâm lược, hoàn thành giải phóng dân tộc, thống nhất đất nước thời kỳ 1945-1975	Chương 2	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)	Tiêu chí đánh giá thuyết trình nhóm Ngân hàng đề thi của GV
LO.4 LO.5	Hiểu được quá trình phát triển đường lối và sự lãnh đạo của Đảng đưa cả nước quá độ lên chủ nghĩa xã hội và tiến hành công cuộc đổi mới từ sau ngày thống nhất đất nước năm 1975 đến nay. Từ đó rút ra được những thắng lợi và những bài học kinh nghiệm trong quá trình lãnh đạo cách mạng của Đảng.	Chương 3	Thảo luận tại lớp (Discussion in Class) Thi cuối kỳ (FEX)	Ngân hàng đề 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 GH
- Thành lập nhóm: 5 sinh viên/nhóm. Hạn chót đăng ký đề tài nhóm Quản lý trên forum là Buổi 2.

Tuần 4 thuyết trình theo thứ tự. Lưu ý các nhóm cần có mặt đủ và mang theo tất cả các tài liệu liên quan đến 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**

(Đã kí)

TS. Nguyễn Đình Quốc Cường

ĐỀ CƯƠNG CHI TIẾT MÔN HỌC
Course name: Tư tưởng Hồ Chí Minh
(Ho Chi Minh's Thoughts)

1. Thông tin chung	
Tên môn học (tiếng Việt):	Tư tưởng Hồ Chí Minh
Tên môn học (tiếng Anh):	Ho Chi Minh's Thoughts
Mã số môn học:	PE019IU
Thuộc khối kiến thức:	Cơ sở
Số tín chỉ:	2 (ECTS: 3.09)
<i>Số tiết lý thuyết:</i>	<i>20 (trên lớp)</i>
<i>Số tiết thực hành:</i>	<i>10 (trên lớp)</i>
<i>Số tiết tự học:</i>	<i>90 (về nhà)</i>
Môn học trước:	

Giảng viên phụ trách Khoa Chính trị - Hành chính, ĐHQG-HCM

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

2.1. Về kiến thức: 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.

2.2. Về kỹ năng: Giúp cho sinh viên khả năng tư duy, phân tích, đánh giá, vận dụng sáng tạo tư tưởng Hồ Chí Minh vào giải quyết các vấn đề trong thực tiễn đời sống, học tập và công tác.

2.3. Về thái độ: Giúp sinh viên nâng cao về bản lĩnh chính trị, yêu nước, trung thành với mục tiêu, lý tưởng độc lập dân tộc gắn liền với chủ nghĩa xã hội; nhận thức được vai trò, giá trị của tư tưởng Hồ Chí Minh đối với Đảng và dân tộc Việt Nam; thấy được trách nhiệm của bản thân trong việc học tập, rèn luyện để góp phần vào xây dựng và bảo vệ Tổ quốc.

3. Mô tả môn học (Course Outlines)

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.

4. Tài liệu phục vụ học tập:

- Bộ Giáo dục và Đào tạo (2019), *Giáo trình Tư tưởng Hồ Chí Minh*, Nxb. Chính trị quốc gia, Hà Nội.
- Khoa Chính trị - Hành chính, ĐHQG-HCM, *Tài liệu hướng dẫn học tập Tư tưởng Hồ Chí Minh*
- Hồ Chí Minh (2011), *Toàn tập*, Nxb. Chính trị quốc gia Sự thật, Hà Nội.
- Hồ Chí Minh (2016), *Biên niên tiểu sử*, Nxb. Chính trị quốc gia Sự thật, 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	KHÁI NIỆM ĐỐI TƯỢNG PHƯƠNG PHÁP NGHIÊN CỨU VÀ Ý NGHĨA HỌC TẬP MÔN TƯ TƯỞNG HỒ CHÍ MINH	LO.1.1 - Nắm được khái niệm tư tưởng Hồ Chí Minh LO.1.2 - Nắm rõ được đối tượng nghiên cứu LO.1.3 - Nắm được một số yêu cầu cơ bản về phương pháp học tập, nghiên cứu môn học tư tưởng Hồ Chí Minh LO.1.4 - Nắm được ý nghĩa học tập, nghiên cứu môn học tư tưởng đối với sinh viên	2.1 2.1 2.1 2.1	1.1.3	I3
LO.2	CƠ SỞ QUÁ TRÌNH HÌNH THÀNH VÀ PHÁT TRIỂN TƯ TƯỞNG HỒ CHÍ MINH	LO.2.1 - Hiểu rõ được cơ sở thực tiễn, tiền đề lý luận và nhân tố chủ quan hình thành tư tưởng Hồ Chí Minh LO.2.2 - Hiểu rõ được quá trình hình thành và phát triển tư tưởng Hồ Chí Minh LO.2.3 - Nắm được giá trị tư tưởng Hồ Chí Minh đối với cách mạng Việt Nam và sự phát triển tiến bộ của nhân loại	2.1 2.1 2.1	1.1.3	I4

LO.3	TƯ TƯỞNG HỒ CHÍ MINH VỀ ĐỘC LẬP DÂN TỘC VÀ CHỦ NGHĨA XÃ HỘI	LO.3.1 - Nhận thức được bản chất khoa học, cách mạng và những sáng tạo tư tưởng Hồ Chí Minh về độc lập dân tộc và cách mạng giải phóng dân tộc. LO.3.2 - Nắm được quan điểm của Hồ Chí Minh về tính tất yếu đi lên chủ nghĩa xã hội, xây dựng chủ nghĩa xã hội và thời kỳ quá độ lên chủ nghĩa xã hội ở Việt Nam. LO.3.3 - Nắm được quan điểm Hồ Chí Minh về mối quan hệ giữa độc lập dân tộc và chủ nghĩa xã hội. LO.3.4 - Vận dụng tư tưởng Hồ Chí Minh về độc lập dân tộc gắn liền với chủ nghĩa xã hội trong sự nghiệp cách mạng hiện nay.	2.1 2.1 2.1 2.1	1.1.3	T4
LO.4	TƯ TƯỞNG HỒ CHÍ MINH VỀ ĐẢNG CỘNG SẢN VIỆT NAM VÀ NHÀ NƯỚC CỦA NHÂN DÂN, DO NHÂN DÂN, VÌ NHÂN DÂN	LO.4.1 - Nắm được nội dung cơ bản tư tưởng Hồ Chí Minh về Đảng Cộng sản Việt Nam. LO.4.2 - Nắm được nội dung cơ bản tư tưởng Hồ Chí Minh về nhà nước của nhân dân, do nhân dân, vì nhân dân. LO.4.3 - Vận dụng tư tưởng Hồ Chí Minh vào công tác xây dựng Đảng và xây dựng Nhà nước.	2.1 2.1 2.1	1.1.3	I4 I4 T4

LO.5	TƯ TƯỞNG HỒ CHÍ MINH VỀ ĐẠI ĐOÀN KẾT TOÀN DÂN TỘC VÀ ĐẠI ĐOÀN KẾT QUỐC TẾ	LO.5.1 - Hiểu được những quan điểm cơ bản của tư tưởng Hồ Chí Minh về đại đoàn kết toàn dân tộc. LO.5.2 - Hiểu được những quan điểm cơ bản của tư tưởng Hồ Chí Minh về đoàn kết quốc tế LO.5.3 - Vận dụng tư tưởng Hồ Chí Minh về đại đoàn kết dân tộc và đoàn kết quốc tế trong giai đoạn hiện nay	2.1 2.1 2.1	1.1.3	I4 T4
LO.6	TƯ TƯỞNG HỒ CHÍ MINH VỀ VĂN HÓA, ĐẠO ĐỨC, CON NGƯỜI	LO.6.1 - Nắm được kiến thức cơ bản tư tưởng Hồ Chí Minh về văn hóa. LO.6.2 - Nắm được kiến thức cơ bản tư tưởng Hồ Chí Minh về đạo đức mới (đạo đức cách mạng). LO.6.3 - Nắm được kiến thức cơ bản tư tưởng Hồ Chí Minh về văn hóa. LO.6.4 - Vận dụng tư tưởng Hồ Chí Minh về văn hóa, đạo đức, con người trong việc xây dựng văn hóa, đạo đức, con người Việt Nam hiện nay.	2.1 2.1 2.1 2.1	1.1.3	I4 I4 T4
5.2. Kỹ năng					
LO.7	THỂ HIỆN KHẢ NĂNG TƯ DUY, PHÂN TÍCH, ĐÁNH GIÁ, TRANH LUẬN, PHẢN BIỆN, LÀM VIỆC NHÓM	LO.7.1 Có kỹ năng tư duy, phân tích, đánh giá tư tưởng Hồ Chí Minh. LO.7.2. 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	2.2 2.2 2.2	2.1.1 2.3.1	U4

		LO.7.3. Có kỹ năng vận dụng sáng tạo tư tưởng Hồ Chí Minh vào giải quyết các vấn đề trong thực tiễn đời sống, học tập và công tác.		2.4.4 2.5	
5.3. Thái độ					
LO.8	THỂ HIỆN Ý THỨC, NHẬN THỨC TRONG VÀ SAU KHI HỌC TẬP	LO.6.1. Nhận thức được vai trò, giá trị của tư tưởng Hồ Chí Minh đối với Đảng và dân tộc Việt Nam. LO.6.2. Có bản lĩnh chính trị, yêu nước, trung thành với mục tiêu, lý tưởng độc lập dân tộc gắn liền với chủ nghĩa xã hội LO.6.3. Thấy được trách nhiệm của bản thân trong việc học tập, nghiên cứu, vận dụng trong cuộc sống, góp phần vào sự nghiệp xây dựng và bảo vệ Tổ quốc	2.3 2.3 2.3	3.1	U3

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

Buổi (3 tiết)	Nội dung giảng dạy	LO	Hoạt động dạy và học	Đánh giá
1		LO. 1,	Dạy:	
1 (tiết)	Giới thiệu về môn học	LO. 5,	- Giới thiệu đề cương môn - Giới thiệu nội dung đề tài thuyết trình nhóm GHW). Học ở lớp: - Chia nhóm (5 sv/nhóm) - Giới thiệu nhóm học tập Học ngoài lớp: - Chọn đề tài thuyết trình của nhóm (GHW), - Đọc trước tài liệu chương 1.	

2	Chương 1 KHÁI NIỆM, ĐỐI TƯỢNG, PHƯƠNG PHÁP NGHIÊN CỨU VÀ Ý NGHĨA HỌC TẬP MÔN TƯ TƯỞNG HỒ CHÍ MINH	LO. 1;	Dạy: I. KHÁI NIỆM TƯ TƯỞNG HỒ CHÍ MINH II. ĐỐI TƯỢNG NGHIÊN CỨU MÔN HỌC TƯ TƯỞNG HỒ CHÍ MINH III. PHƯƠNG PHÁP NGHIÊN CỨU 3. Phương pháp luận của việc nghiên cứu tư tưởng Hồ Chí Minh 4. Một số phương pháp cụ thể IV. Ý NGHĨA CỦA VIỆC HỌC TẬP MÔN HỌC TƯ TƯỞNG HỒ CHÍ MINH 1. Góp phần nâng cao năng lực tư duy lý luận 2. Giáo dục và thực hành đạo đức cách mạng, củng cố niềm tin khoa học gắn liền với trau dồi tình cảm cách mạng, bồi dưỡng lòng yêu nước 3. Xây dựng, rèn luyện phương pháp và phong cách công tác. Học ở lớp: Trao đổi, phát biểu trên lớp Học ngoài lớp: - Phác thảo nội dung thuyết trình nhóm GHW - Đọc trước tài liệu chương 2	
3	Chương 2 CƠ SỞ, QUÁ TRÌNH HÌNH THÀNH VÀ PHÁT TRIỂN TƯ TƯỞNG HỒ CHÍ MINH	LO. 2	Dạy: I. CƠ SỞ HÌNH THÀNH TƯ TƯỞNG HỒ CHÍ MINH 1. Cơ sở thực tiễn 2. Cơ sở lý luận 3. Nhân tố chủ quan II. QUÁ TRÌNH HÌNH THÀNH VÀ PHÁT TRIỂN TƯ TƯỞNG HỒ CHÍ MINH 1. Thời kỳ trước ngày 5-6-1911: Hình thành tư tưởng yêu nước và có chí hướng tìm con đường mới 2. Thời kỳ từ năm 1911 đến cuối năm 1920: Dần dần hình thành tư tưởng cứu nước, giải phóng dân tộc Việt Nam theo con đường cách mạng vô sản 3; Thời kỳ từ cuối năm 1920 đến đầu năm 1930: Hình thành những nội dung cơ bản tư tưởng về cách mạng Việt Nam	Thi giữa kì (Quiz) Thi cuối kì (FEX)

			4. Thời kỳ đầu năm 1930 đến đầu năm 1941: Vượt qua thử thách, giữ vững đường lối, phương pháp cách mạng Việt Nam đúng đắn, sáng tạo 5. Thời kỳ từ đầu năm 1941 đến tháng 9 - 1969: Tư tưởng Hồ Chí Minh tiếp tục phát triển, hoàn thiện, soi đường cho sự nghiệp cách mạng của Đảng và nhân dân ta III. GIÁ TRỊ TƯ TƯỞNG HỒ CHÍ MINH 1. Đối với cách mạng Việt Nam 2. Đối với sự phát triển tiến bộ của nhân loại Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Đọc trước tài liệu chương 3	
4	Chương 3 TƯ TƯỞNG HỒ CHÍ MINH VỀ ĐỘC LẬP DÂN TỘC GẮN LIỀN VỚI CHỦ NGHĨA XÃ HỘI	L0.3 L0.5	Dạy: 1. TƯ TƯỞNG HỒ CHÍ MINH VỀ ĐỘC LẬP DÂN TỘC 1. Vấn đề độc lập dân tộc 2. Về cách mạng giải phóng dân tộc Dạy: Chấm thuyết trình & phản biện Học ở lớp: Các nhóm thuyết trình tại lớp II. TƯ TƯỞNG HỒ CHÍ MINH VỀ CHỦ NGHĨA XÃ HỘI VÀ XÂY DỰNG CHỦ NGHĨA XÃ HỘI Ở VIỆT NAM 1. Tư tưởng Hồ Chí Minh về chủ nghĩa xã hội 2. Tư tưởng Hồ Chí Minh về xây dựng chủ nghĩa xã hội ở Việt Nam 3. Tư tưởng Hồ Chí Minh về thời kỳ quá độ lên chủ nghĩa xã hội ở Việt Nam III. TƯ TƯỞNG HỒ CHÍ MINH VỀ MỐI QUAN HỆ GIỮA ĐỘC LẬP DÂN TỘC VÀ CHỦ NGHĨA XÃ HỘI 1. Độc lập dân tộc là cơ sở, tiền đề để tiến lên chủ nghĩa xã hội 2. Chủ nghĩa xã hội là điều kiện để đảm bảo nền độc lập dân tộc vững chắc IV. VẬN DỤNG TƯ TƯỞNG HỒ CHÍ MINH VỀ ĐỘC LẬP DÂN TỘC GẮN LIỀN VỚI CHỦ NGHĨA XÃ HỘI TRONG SỰ NGHIỆP CÁCH MẠNG VIỆT NAM GIAI ĐOẠN HIỆN NAY 1. Kiên định mục tiêu và con đường cách mạng mà Hồ Chí Minh đã xác định 2. Phát huy sức mạnh dân chủ xã hội chủ nghĩa	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)

			3.Củng cố, kiện toàn, phát huy sức mạnh và hiệu quả hoạt động của toàn hệ thống chính trị 4.Đấu tranh chống những biểu hiện suy thoái về tư tưởng chính trị, đạo đức, lối sống và,”tự diễn biến”, “tự chuyển hóa” trong nội bộ Học ngoài lớp: Đọc trước tài liệu chương 4	
5	Chương 4 TƯ TƯỞNG HỒ CHÍ MINH VỀ ĐẢNG CỘNG SẢN VIỆT NAM VÀ NHÀ NƯỚC CỦA NHÂN DÂN, DO NHÂN DÂN VÀ VÌ NHÂN DÂN	LO. 4 LO. 5	Dạy: I. TƯ TƯỞNG HỒ CHÍ MINH VỀ ĐẢNG CỘNG SẢN VIỆT NAM 1.Tính tất yếu và vai trò lãnh đạo của Đảng Cộng sản Việt Nam 2.Đảng phải trong sạch, vững mạnh Dạy: Chấm thuyết trình & phản biện Học ở lớp: Thảo luận tại lớp II.TƯ TƯỞNG HỒ CHÍ MINH VỀ NHÀ NƯỚC CỦA NHÂN DÂN, DO NHÂN DÂN, VÌ NHÂN DÂN 1.Nhà nước dân chủ 2.Nhà nước pháp quyền 3.Nhà nước trong sạch, vững mạnh III.VẬN DỤNG TƯ TƯỞNG HỒ CHÍ MINH VÀO CÔNG TÁC XÂY DỰNG ĐẢNG VÀ XÂY DỰNG NHÀ NƯỚC 1.Xây dựng Đảng thật sự trong sạch, vững mạnh 2.Xây dựng Nhà nước Học ngoài lớp: Hoàn thiện bài thuyết trình	Thảo luận nhóm (DIC) Thi cuối kỳ (FEX)
6	Chương 5 TƯ TƯỞNG HỒ CHÍ MINH VỀ ĐẠI ĐOÀN KẾT DÂN		Dạy: 1. TƯ TƯỞNG HỒ CHÍ MINH VỀ ĐẠI ĐOÀN KẾT DÂN TỘC 1.Vai trò của đại đoàn kết dân tộc 2.Lực lượng của khối đại đoàn kết dân tộc 3.Điều kiện để xây dựng khối đại đoàn kết toàn dân tộc 4.Hình thức, nguyên tắc tổ chức của khối đại đoàn kết dân tộc - Mặt trận dân tộc thống nhất 5. Phương thức xây dựng khối đại đoàn kết dân tộc Dạy: Chấm thuyết trình & phản biện	

	TỘC VÀ ĐOÀN KẾT QUỐC TẾ		Học ở lớp: Thảo luận tại lớp II. TƯ TƯỞNG HỒ CHÍ MINH VỀ ĐOÀN KẾT QUỐC TẾ 1. Sự cần thiết phải đoàn kết quốc tế 2. Lực lượng đoàn kết quốc tế và hình thức tổ chức 3. Nguyên tắc đoàn kết quốc tế III. VẬN DỤNG TƯ TƯỞNG HỒ CHÍ MINH VỀ ĐẠI ĐOÀN KẾT DÂN TỘC VÀ ĐOÀN KẾT QUỐC TẾ TRONG GIAI ĐOẠN HIỆN NAY 1. Quán triệt tư tưởng Hồ Chí Minh về đại đoàn kết dân tộc và đoàn kết quốc tế trong hoạch định chủ trương, đường lối của Đảng 2. xây dựng khối đại đoàn kết toàn dân tộc trên nền tảng liên minh công - nông - trí thức dưới sự lãnh đạo của Đảng 3. Đại đoàn kết dân tộc phải kết hợp với đoàn kết quốc tế	
7	Chương 6 TƯ TƯỞNG HỒ CHÍ MINH VỀ VĂN HÓA, ĐẠO ĐỨC, CON NGƯỜI		Dạy: I. TƯ TƯỞNG HỒ CHÍ MINH VỀ VĂN HÓA 1. Một số nhận thức chung về văn hóa và quan niệm giữa văn hóa với các lĩnh vực khác 2. Quan điểm của Hồ Chí Minh về vai trò của văn hóa 3. Quan điểm của Hồ Chí Minh về xây dựng nền văn hóa mới Dạy: Chấm thuyết trình & phản biện Học ở lớp: Thảo luận tại lớp II. TƯ TƯỞNG HỒ CHÍ MINH VỀ ĐẠO ĐỨC 1. Quan điểm về vai trò và sức mạnh của đạo đức cách mạng	

			2.Quan điểm về những chuẩn mực đạo đức cách mạng 3.Quan điểm về những nguyên tắc xây dựng đạo đức cách mạng III.TƯ TƯỞNG HỒ CHÍ MINH VỀ CON NGƯỜI 1.Quan niệm Hồ Chí Minh về con người 2.Quan niệm của Hồ Chí Minh về vai trò của con người 3.Quan niệm Hồ Chí Minh về xây dựng con người IV.XÂY DỰNG VĂN HÓA, ĐẠO ĐỨC, CON NGƯỜI VIỆT NAM HIỆN NAY THEO TƯ TƯỞNG HỒ CHÍ MINH 1.Xây dựng và phát triển văn hóa, con người 2.Về xây dựng đạo đức cách mạng	

7. Đánh giá môn học

ST T	Mã	Tên	Mô tả	Tỷ Trọng	Hình thức	LO
1	GHW	Thuyết trình nhóm	Thuyết trình nhóm về đề tài đã phân công	150%	Thuyết trình và báo cáo nhóm	LO.2, LO.3, LO.4, LO.5, LO.6.
2	Quiz	Bài thi giữa kỳ	Giảng viên cho thi	20%	Trắc nghiệm (đề đóng) hoặc tự luận (đề mở)	LO.2, LO.3.
3	DIC	Thảo luận 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.3, LO.4, LO.5, LO.6.
4	FEX	Thi cuối kỳ	Thi đề chung Đề thi bao quát toàn bộ nội dung môn học	50%	Tự luận (đề mở)	LO.2, LO.3, LO.4, LO.5,

						LO.6.
			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	- Hiểu được khái niệm tư tưởng Hồ Chí Minh. Nắm được đối tượng; phương pháp nghiên cứu tư tưởng Hồ Chí Minh và ý nghĩa học tập môn tư tưởng Hồ Chí Minh.	Chương 1	Hỏi - Đáp	Cộng điểm
LO.2	- Hiểu rõ cơ sở, quá trình hình thành và phát triển tư tưởng Hồ Chí Minh. Nắm được giá trị tư tưởng Hồ Chí Minh đối với cách mạng Việt Nam và thế giới.	Chương 2	Thi giữa kỳ (Quiz)	Đề thi của GV
LO.3	- Nắm rõ nội dung tư tưởng Hồ Chí Minh về độc lập dân tộc và chủ nghĩa xã hội; mối quan hệ giữa độc lập dân tộc và chủ nghĩa xã hội. Hiểu được sự vận dụng tư tưởng Hồ về độc lập dân tộc và chủ nghĩa xã hội của Đảng Cộng sản Việt Nam và Nhà nước ta.	Chương 3	Thuyết trình nhóm (GHW) Thi giữa kỳ (Quiz) Thi cuối kỳ (FEX)	Tiêu chí đánh giá thuyết trình nhóm Đề thi của GV Ngân hàng đề thi của khoa Chính trị - Hành chính
LO.4	- Nắm rõ nội dung tư tưởng Hồ Chí Minh về Đảng Cộng sản Việt nam và Nhà nước của dân, do dân, vì dân. Hiểu được sự vận dụng của Đảng và Nhà nước ta vào công tác xây dựng Đảng và xây dựng Nhà nước.	Chương 4	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)	Tiêu chí đánh giá thuyết trình nhóm Ngân hàng đề thi của khoa Chính trị - Hành chính
LO.5	- Nắm được nội dung tư tưởng Hồ Chí Minh về đại đoàn kết toàn dân tộc và đoàn kết quốc tế. - Hiểu được sự vận dụng của Đảng và Nhà nước ta trong việc hoạch định chủ trương, đường lối, chính sách về đại đoàn kết dân tộc và đối ngoại.	Chương 5	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)	Tiêu chí đánh giá thuyết trình nhóm Ngân hàng đề thi của khoa Chính trị - Hành chính
LO.6	- Nắm được nội dung tư tưởng Hồ Chí Minh về văn hóa, đạo đức, con	Chương 6	Thuyết trình nhóm	Tiêu chí đánh giá thuyết trình nhóm

người. - Vận dụng tư tưởng Hồ Chí Minh về văn hóa, đạo đức và con người trong việc rèn luyện, tu dưỡng bản thân.		(GHW) Thi cuối kỳ (FEX	Ngân hàng đề thi của khoa Chính trị - Hành chính

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.
 - + Tuần 4 thuyết trình theo thứ tự. Lưu ý các nhóm cần có mặt đủ và mang theo tất cả các tài liệu liên quan đến GHW khi đi thuyết trình.
 - + Hình thức nộp bài: Nộp file và biên bản làm việc nhóm qua mail cho GV
- Quy định về đánh giá môn học: theo Quy định về việc giảng dạy và học tập các môn Lý luận chính trị của khoa Chính trị - Hành chính.

TP. Hồ Chí Minh, ngày 24 tháng 04 năm 2025

PHÓ TRƯỞNG KHOA

(Đã kí)

TS. Nguyễn Đình Quốc Cường



VIETNAM NATIONAL UNIVERSITY HCMC INTERNATIONAL UNIVERSITY

COURSE SYLLABUS

Course name: General Law

PE021IU

1. General information

Course name	- (in English): General Law - (in Vietnamese): Pháp luật đại cương
Course classification	Foundation course
Course designation	Face to face
Course type	☒ <i>General knowledge</i> ☐ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:.....</i>
Semester(s) in which the course is taught	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 credits (Theory: 3 + Practice: 0) 4.64 ECTS	
Number of periods	Theory: 45 Practice: 0	
Required and recommended prerequisites for joining the course	N/A	
Course objectives	The overarching aims of this course are to: • Provide essential knowledge of Vietnamese legal system through integrated technology and real cases for social and cultural sustainability. • Raise awareness of responsibility toward others and how to stand for ending all types of legal violations, especially corruption in various social contexts. • Practice necessary skills to act as an ambassador to ensure social fairness and global equitable rights. • Use integrated online legal resources and communication tools to help the community to identify issues and develop countermeasures.	
Course learning outcomes	Upon the successful completion of this course, students will be able to:	
	Competency level	Course learning outcome (CLO)

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.

	Knowledge	CLO1. Apply appropriate legal knowledge in the Vietnamese legal system to solve legal issues in various social contexts for a fair sustainable lifelong being. CLO1.1. Apply general knowledge on state and law to solve legal issues in various social contexts for a fair sustainable lifelong being. CLO1.2. Apply principle legal norms in some law branches such as constitution, civil, criminal, labor and administrative law to solve legal issues in various social contexts for a fair sustainable lifelong being.
	Skill	CLO2. Communicate knowledge in the Vietnamese legal system to encourage people to raise their legal rights aiming for fair social/cultural moves. CLO3. Integrate ICTs to solve legal issues in various social contexts.
	Attitude	CLO4. Detect the responsibility to ensure social and cultural fairness, including ending corruption, in various social contexts through understanding importance of law in social contexts. CLO5. Respond to the base for coexistence in various social contexts.
Content	The course will introduce students to Vietnamese legal systems. In particular, students will understand their rights and obligations in the Constitution, Criminal law, administrative law, civil law, labor law and enterprise law of Vietnam. From this, students will raise awareness towards their responsibility to ensure justice, including ending corruption, in society.	
Examination forms	Multiple choice questions Case-based exams Essay exams Oral exams	
Study and examination requirements	To pass this course, the students must: • Achieve a composite mark of at least 50; and • Make a satisfactory attempt at all assessment tasks (see below).	

GRADING POLICY

Grades can be based on the following:

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

COURSE POLICIES**Attendance**

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

Workload

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

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

General Conduct and Behaviour

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

Keeping informed

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

Academic honesty and plagiarism

Plagiarism is the presentation of the thoughts or work of another as one's own. Students are also reminded that careful time management is an important part of the study and one of the identified causes of

	plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items. The university regards plagiarism as a form of academic misconduct and has very strict rules regarding plagiarism. Special consideration Requests for special consideration (for final examination only) must be made to the Office of Academic Affairs within one week after the examination. General policy and information on special consideration can be found at the Office of Academic Affairs. Absence on the Mid-term is not allowed, or in special cases approved by Lecturer can be replaced with relevant Assignment. Meeting up with the lecturers after classes Students must make an appointment via emails if they want to meet up with the lecturer after classes and be on time. If there are any changes to the scheduled time, students must inform the lecturer immediately.
Reading list	Please note that it is very important to gain familiarity with the subject matter in the readings and cases available on Blackboard and the internet <i>before</i> attendance in classes. Required Course Texts and Materials <u>Legal Texts:</u> 1. Constitution of Vietnam - 2013 2. Civil Code of Vietnam - 2015 3. Criminal Code of Vietnam – 2015 (amended in 2017) 4. Law on Law on Handling of Administrative Violations 2012 5. Law on Enterprises – 2020 6. Labour Code 2019 7. Law on anti-corruption 2018 Available at https://luatvietnam.vn/ or Blackboard <u>Books:</u> • PGS.TS. Phan Trung Hien, <i>Giáo trình Pháp Luật Đại cương</i>, NXB Chính Trị Quốc Gia Sự Thật 2022. • Mai Hong Quy (Chief Editor) (2nd 2017), <i>Introduction to Vietnamese Law</i>, Hong Duc Publishing House. <u>Additional materials provided in Blackboard</u>

The lecturer will attempt to make lecture notes and additional reading available on Blackboard. However, this is not an automatic entitlement for students doing this subject. Note that this is not a distance learning course, and you are expected to attend lectures and take notes. This way, you will get the added benefit of class interaction and demonstration.

Optional Course Texts and Materials

Recommended Internet sites

[UNCTAD](#) (United Nations Conference on Trade and Development)

[WTO](#) (World Trade Organization)

[MOIT - Vietnam](#) (Official website of Ministry of Industry and Trade)

[MPI - Vietnam](#) (Official website of Ministry of Planning and Investment)

Other Resources, Support and Information

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

Books:

- Nguyen Phu Trong, *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*, NXB Chính Trị Quốc Gia Sự Thật 2023.
- University of Law Ho Chi Minh City, *Giáo trình luật Hiến pháp Việt nam*, NXB Hồng Đức 2023.
- University of Law Ho Chi Minh City, *Giáo trình Luật hành chính*, NXB Hồng Đức 2022.
- University of Law Ho Chi Minh City, *Giáo trình Luật hình sự Việt Nam*, NXB Hồng Đức 2022.
- University of Law Ho Chi Minh City, *Giáo trình Luật dân sự Việt Nam*, NXB Hồng Đức 2022.
- University of Law Ho Chi Minh City, *Giáo trình Luật lao động Việt Nam*, NXB Hồng Đức 2022.
- University of Law Ho Chi Minh City, *Giáo trình pháp luật về chủ thể kinh doanh*, NXB Hồng Đức 2022.

2. Learning Outcomes Matrix (optional)

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

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

R: Reinforced

M: Mastery

3. Planned learning activities and teaching methods

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

	• Breach of law and liabilities for breach of law • Introduction to structure of Vietnamese legal system				
3	Constitutional Law • General introduction on Vietnamese Constitution and its nature and basic principles. • Political, economic and other regimes of Vietnam • Basic rights and responsibilities of citizens. Relationship between citizens and the State. • Structure, functions and duties of Vietnamese state, especially in prevention of corruption	1-5 (Level R - reinforced)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPTs – Constitutional law available on Blackboard Constitution 2013 available on Blackboard
4	Constitutional Law (Cont) • Structure and functions and duties of Vietnamese state • Duties of the state in prevention of corruption	1-5 (Level R - reinforced)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPTs – Constitutional law available on Blackboard Constitution 2013 available on Blackboard
5	Administrative Law Definition and nature of administrative law Administrative law violations	1-5 (Level R - reinforced)	Tests Peer evaluations	Discussions Case studies and law on	PPT– Administrative law available on Blackboard

	Liabilities for breach of administrative law, exemption from the liability	reinforced)	Class-performance evaluations	anti-corruption	Law on handling administrative violations 2012, and Law on anti-corruption 2018 available on Blackboard
6	Criminal Law • Definition and nature of criminal law • Crimes • Punishments	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
7	Criminal Law (Cont) • Crimes related to corruption • Punishments for corruption	1-5 (Level R - reinforced)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies, especially cases related to corruption	PPT– Criminal law available on Blackboard Criminal code 2015 available on Blackboard
8	Revision for mid-term exam		Quizzes Projects		
9	Civil Law (Part I) • Definition and nature Civil	1-5	Tests Peer evaluations	Discussions Case studies	PPT– Civil law

	law relationship • Subject of civil law • Property and ownership • Civil transactions	(Level R - reinforced)	Class-performance evaluations		available on Blackboard Civil code 2015 available on Blackboard
10	Civil Law (Part II) • Contracts - Definitions - Formation of contracts - Validity of contracts - Liability for breach of contracts	1-5 (Level M - Mastery)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPT– Civil law available on Blackboard Civil code 2015 available on Blackboard
11	Civil Law (Part III) • Inheritance - Testamentary inheritance - Intestacy	1-5 (Level M - Mastery)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPT– Civil law available on Blackboard Civil code 2015 available on Blackboard
12	Law on Enterprises • Introduction to law on enterprises • Introduction to forms, features, establishment, reorganization and dissolution of an enterprise	1-5 (Level I - Introduced)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPT– Law on enterprises available on Blackboard Law on enterprises 2020 available on Blackboard

13	Labor Law • Definition, and nature of labour law • Employees and employers • Working time, and resting time • Salary (including salary for overtime working hours)	1-5 (Level M - Master y)	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.) • Employment contracts • Labor disciplines • Dispute settlements	1-5 (Level M - Master y)	Tests Peer evaluations Class-performance evaluations	Discussions Case studies	PPT– Labor law available on 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 have 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	Shows little information from sources.	Shows moderate amount of source information incorporated.	Draws upon sources to support most points.	Draws upon primary and secondary source

			from primary and secondary sources	Poor handling of sources	Some key points supported by sources. Quotations may be poorly integrated into paragraphs. Some possible problems with source citations	Some evidence may not support arguments or may appear where inappropriate. Quotations integrated well into paragraphs. Sources cited correctly	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 problems in correspondence to theoretical frameworks	Shows limited ability to structure problems in correspondence to theoretical frameworks	Shows effort to link problems with the theoretical frameworks. There are still some mistakes	Shows ability to structure problems in correspondence to theoretical frameworks correctly. Minor mistakes in resolving problems	Shows ability to structure problems in correspondence to theoretical frameworks correctly. The problems are well resolved
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, April 2025
Head of Office of Academic Affairs

Huỳnh Khả Tú

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

COURSE SYLLABUS

Course Name: Linear Algebra

Course Code: MA033IU

1. General information

Course name	- (in English): Linear Algebra - (in Vietnamese): Đại số tuyến tính
Course designation	Linear algebra provides a mathematical framework for organizing information and then using that information to solve problems, especially data analytics problems. Linear algebra is essential for understanding and creating machine learning algorithms, especially neural network and deep learning models.
Course type	☒ <i>General knowledge</i> ☐ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	2, 3
Person responsible for the course	Mai Hoang Bao An, PhD.
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, demo.

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 hours (lecture) Private study including examination preparation, specified in hours: 90
Credit points	3 credits (Theory: 3 + Practice: 0) 4.64 ECTS
Number of periods	Theory: 45 Practice: 0
Required and recommended prerequisites for joining the course	Recommended : Calculus 1, Fundamentals of programming
Course objectives	This course will provide students with the foundations of linear algebra knowledge necessary for machine learning and neural network modelling. Students will learn the overview of basic matrices and vector algebra as applied to linear systems. Then they will learn how to manipulate matrices to derive useful knowledge from data, quantify the degree of learning, and optimizing the speed of learning in vector spaces and linear transformations for data discovery. The hands-on lessons and assignments will equip students with the mathematical background required to build and train simple neural networks in data mining applications.
Course learning outcomes	CLO 1. Understand concepts of vector space, matrices, tensor, linear system and their application in other fields of study. Get familiar with the fundamental concepts of linear spaces. CLO 2. Know how to use Python to handle with matrices and linear systems. Get to know and understand the fundamental concepts of abstract vector spaces and their relationships with matrix algebra. CLO 3. Understand the concepts and applications of linear dependence/independence, spans and linear transformation. Apply principles of matrix algebra to linear transformation. Understand the Isomorphic Vector Spaces and applications. CLO 4. Determine eigenvalues and eigenvectors and solve eigenvalue problems. Introduction to determinant and its properties

	and applications. The use case of carrying out matrix operations in machine learning. <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO 1, CLO 2, CLO 3, CLO 4</td></tr><tr><td>Skill</td><td>CLO 2, CLO 4</td></tr><tr><td>Attitude</td><td>CLO 1, CLO 2, CLO 3, CLO 4</td></tr></table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO 1, CLO 2, CLO 3, CLO 4	Skill	CLO 2, CLO 4	Attitude	CLO 1, CLO 2, CLO 3, CLO 4													
Competency level	Course learning outcome (CLO)																					
Knowledge	CLO 1, CLO 2, CLO 3, CLO 4																					
Skill	CLO 2, CLO 4																					
Attitude	CLO 1, CLO 2, CLO 3, CLO 4																					
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction to python, colab What is linear structures</td><td>1</td><td>I, U</td></tr><tr><td>Fundamentals and geometry of $\mathbb{R}^n$ space Matrix algebra: vectors, matrices. Linear systems, parametric equations and systems of linear equations</td><td>2</td><td>T, U</td></tr><tr><td>Solving systems of linear equations Subspace of $\mathbb{R}^n$, linear independence, base and dimension in $\mathbb{R}^n$ Python in linear algebra</td><td>2</td><td>T, U</td></tr><tr><td>Solving linear system with numpy Norm in $\mathbb{R}^n$ with Python</td><td>1</td><td>T, U</td></tr><tr><td>Abstract vector spaces, base and dimension for abstract vector spaces. Special kinds of matrices and vectors.</td><td>1</td><td>T, U</td></tr><tr><td>Span in abstract vector spaces. Fundamentals of linear transformations.</td><td>2</td><td>T, U</td></tr></table>	Topic	Weight	Level	Introduction to python, colab What is linear structures	1	I, U	Fundamentals and geometry of $\mathbb{R}^n$ space Matrix algebra: vectors, matrices. Linear systems, parametric equations and systems of linear equations	2	T, U	Solving systems of linear equations Subspace of $\mathbb{R}^n$, linear independence, base and dimension in $\mathbb{R}^n$ Python in linear algebra	2	T, U	Solving linear system with numpy Norm in $\mathbb{R}^n$ with Python	1	T, U	Abstract vector spaces, base and dimension for abstract vector spaces. Special kinds of matrices and vectors.	1	T, U	Span in abstract vector spaces. Fundamentals of linear transformations.	2	T, U
Topic	Weight	Level																				
Introduction to python, colab What is linear structures	1	I, U																				
Fundamentals and geometry of $\mathbb{R}^n$ space Matrix algebra: vectors, matrices. Linear systems, parametric equations and systems of linear equations	2	T, U																				
Solving systems of linear equations Subspace of $\mathbb{R}^n$, linear independence, base and dimension in $\mathbb{R}^n$ Python in linear algebra	2	T, U																				
Solving linear system with numpy Norm in $\mathbb{R}^n$ with Python	1	T, U																				
Abstract vector spaces, base and dimension for abstract vector spaces. Special kinds of matrices and vectors.	1	T, U																				
Span in abstract vector spaces. Fundamentals of linear transformations.	2	T, U																				

	Demo of linear transformations in Python.		
	Linear Transformation in abstract vector space Linear Transformation and Inverses	1	T, U
	Geometric Transformation of Plane, Image and Kernel, Isomorphism and linear map Isomorphic Vector Spaces	1	I, T, U
	Introduction to determinant Determinant expansions. Properties of determinant.	1	I, T
	Elementary Row Operations and the Determinant Eigenvectors and Eigenvalues, Eigen-decompositions Introduction to some application of linear algebra: PCA, OLS, ...	2	I, T, U
Examination forms	Short-answer questions, Long-answer questions, programming questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	1. R.O. Hill, Elementary Linear Algebra and Its applications, 3rd edition 2. B. Kolman and David R. Hill, Introductory Linear Algebra: An Applied First Course (8th edition, 9th edition) 3. Jim Hefferon, Linear Algebra, 4th edition. 4. github: Python in linear algebra, matrix computing.		

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:

	SL O					
CL O	1	2	3	4	5	6
1	x					
2		x				
3		x	x			
4			x			

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to python, colab What is linear structures Introduction to matrix	1		Lecture, Discussion	[1, 2, 3]. Chapter 1
2-3	Fundamentals and geometry of $\mathbb{R}^n$ space Matrix algebra: vectors, matrices. Linear systems, parametric equations and systems of linear equations	1	Exercises	Lecture, In-class exercises	[1, 2, 3]. Chapter 2, 3, 4
4-5	Solving systems of linear equations Subspace of $\mathbb{R}^n$, linear independence, base and dimension in $\mathbb{R}^n$ Python in linear algebra	1, 2	Exercises	Lecture, In-class exercises	[1, 2, 3]. Chapter 4, 5, 6 [4] Chapter 1,2,3
6	Solving linear system with numpy Norm in $\mathbb{R}^n$ with Python	1, 2		Lecture, In-class Discussion	[4]. Chapter 3, 4, 5

7	Abstract vector spaces, base and dimension for abstract vector spaces. Special kinds of matrices and vectors.	1, 2	Exercises	Lecture, In-class exercises	[1, 2, 3]. Chapter 6, 7, 8
8	Midterm				
9-10	Span in abstract vector spaces. Fundamentals of linear transformations. Demo of linear transformations in Python.	3, 4	Exercises	Lecture, In-class exercises	[1, 2, 3]. Chapter 8, 9, 10 [4] Chapter 6, 7
11	Linear Transformation in abstract vector space Linear Transformation and Inverses	3	Exercises	Lecture, In-class exercises	[1, 2, 3]. Chapter 10, 11, 12
12	Geometric Transformation of Plane, Image and Kernel, Isomorphism and linear map Isomorphic Vector Spaces	3	Exercises	Lecture, In-class exercises	[1, 2, 3]. Chapter 11, 12, 13
13	Introduction to determinant Determinant expansions. Properties of determinant	3, 4	Quiz	Lecture, In-class Quiz	[1, 2]. Chapter 13. 14, 15
14-15	Elementary Row Operations and the Determinant Eigenvectors and Eigenvalues, Eigen-decompositions Introduction to some application of linear algebra: PCA, OLS, ...	3, 4	Exercises	Lecture, In-class exercises	[2, 3]. Chapter 14, 15, 16 [4] Chapter 8, 9, 10
16	Revision			Review-test	
17	Final exam				

4. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4
Labs (20%)	25%	25%	25%	25%
Midterm examination (30%)	50%	50%		
Projects/Presentations/ Report (10%)			50%	50%
Final examination (40%)		25%	25%	50%

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%)			
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	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).

	presenting a position.		assumptions than one's own (or vice versa).	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	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness)	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the

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

Source: Association of American Colleges and Universities

Date revised: April 24, 2025

Ho Chi Minh City, 24/04/2025

Dean of the School of Computer Science and Engineering

(Signature)

A handwritten signature in blue ink, appearing to read 'N Sinh', with a long horizontal stroke extending to the right and a small flourish at the end.

Nguyen Van Sinh

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

COURSE SYLLABUS

Course Name: Statistical Method

Course Code: IT151

5. General information

Course name	- (in English): Statistic method - (in Vietnamese): Phương pháp thống kê
Course designation	This subject introduces the students to the fundamentals of probability and statistics and several related algorithms popularly used in data analytics and signal processing. It is designed for practical aspect.
Course type	☒ <i>General knowledge</i> ☐ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	2,4
Person responsible for the course	Mai Hoang Bao An, PhD.
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, seminar.

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Lecture: 37.5 hours Private study including examination preparation, specified in hours: 90 hours					
Credit points	3 credits (Theory: 3 + Practice: 0) 4.64 ECTS					
Number of periods	Theory: 45 Practice: 0					
Required and recommended prerequisites for joining the course	Recommended: ‘Probability, Statistic & Random Process’					
Course objectives	Provides students with a background in the statistical methods that assist in the analysis of data, including summarizing and describing data and techniques for inference and estimation. Topics include basic probability distributions (e.g. normal, binomial), expected value, estimation (maximum likelihood, confidence intervals), hypothesis testing, OLS regression, maximum likelihood estimation, and expectation maximization algorithm.					
Course learning outcomes	CLO 1. Analyze data collection techniques, including random sampling, experiments, and probability models. Emphasize data integrity. CLO 2. Compute expected values, variances, and probabilities for common distributions. Learn probability sampling and Python for statistics. CLO 3. Grasp central measures, law of large numbers, and hypothesis testing. Apply inference methods confidently. CLO 4. Estimate population parameters with maximum likelihood or confidence intervals. Master regression modeling with least squares. <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO 1, CLO 2, CLO 3, CLO 4</td></tr></table>		Competency level	Course learning outcome (CLO)	Knowledge	CLO 1, CLO 2, CLO 3, CLO 4
Competency level	Course learning outcome (CLO)					
Knowledge	CLO 1, CLO 2, CLO 3, CLO 4					

		Skill	CLO 1, CLO 2, CLO3		
		Attitude	CLO 1, CLO2		
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>				
	Weight: lecture session (3 hours)				
	Teaching levels: I (Introduce); T (Teach); U (Utilize)				
	Topic		Weight	Level	
	Data concepts, collection Introduction colab, python Data integrity and quality		1	I, U	
	Basic of probability sampling and generating distribution via algorithms and implementation from scratch. Get familiar with Python for probability and statistics.		2	T, U	
	Distribution, including discrete vs. continuous random variables, expectation, variance, Binomial, Poisson, Normal, joint distributions, sampling distribution of the mean		2	T, U	
	Introduction to advanced python and related libraries in probability and statistics		1	T, U	
	Central dispersion measure, Law of large number and Central limit theorem		1	T, U	
	Estimation via maximum likelihood		2	T, U	
	Confidence intervals for means		1	T, U	
	Hypothesis tests for means		1	T, U	
	Expectation maximization algorithm		1	I, T	
	Introduction to regression with ordinary least square. Model fitting and diagnostics		2	T, U	
Examination forms	Short-answer questions, Long-answer questions, programming 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	5. Ronald E. Walpole, Probability & Statistics for Engineers & Scientists 9th, 2016 6. José Unpingco – Python for Probability, Statistics, and Machine Learning – 2022 7. github: Python for Probability Statistics and Machine Learning 2E. 8. R. Lyman Ott and Michael T. Longnecker, An Introduction to Statistical Methods and Data Analysis 7th, 2015

6. *Learning Outcomes Matrix*

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

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

7. *Planned learning activities and teaching methods*

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Data concepts, collection Introduction colab, python Data integrity and quality What is Probability/Statistics	1		Lecture, Discussion	[1, 2]. Chapter 1

2-3	Basic of probability sampling and generating distribution via algorithms and implementation from scratch. Get familiar with Python for probability and statistics.	1, 2	Exercises	Lecture, In-class exercises	[2]. Chapter 2 [1]. Chapter 2, 3, 4
4-5	Distribution, including discrete vs. continuous random variables, expectation, variance, Binomial, Poisson, Normal, joint distributions, sampling distribution of the mean	1, 2	Exercises	Lecture, In-class exercises	[1, 2, 3]. Chapter 3, 4, 5
6	Introduction to advanced python and related libraries in probability and statistics	1, 2		Lecture, In-class Discussion	[2]. Chapter 2, 3, 4, 5
7	Central dispersion measure, Law of large number and Central limit theorem	2, 3	Exercises	Lecture, In-class exercises	[1, 2, 3]. Chapter 5, 6, 7
8	Midterm				
9-10	Estimation via maximum likelihood	2, 3, 4	Exercises	Lecture, In-class exercises	[1, 2]. Chapter 8, 9
11	Confidence intervals for means	3	Exercises	Lecture, In-class exercises	[1, 2]. Chapter 8, 9
12	Hypothesis tests for means	3	Exercises	Lecture, In-class exercises	[1, 2]. Chapter 8, 9, 10
13	Expectation maximization algorithm	2, 3, 4	Quiz	Lecture, In-class Quiz	[2]. Chapter 10. 11

14-15	Introduction to regression with ordinary least square. Model fitting and diagnostics	3, 4	Exercises	Lecture, In-class exercises	[1, 2]. Chapter 11, 12, 13
16	Revision			Review-test	
17	Final exam				

8. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4
Labs (20%)	25%	25%	25%	25%
Midterm examination (30%)	50%	50%		
Projects/Presentations/ Report (10%)			50%	50%
Final examination (40%)		25%	25%	50%

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)

5.4. 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		

5.5. 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.

5.6. 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	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	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and

	discussed in priority order.	are identified clearly.	(consequences and implications) are identified clearly.	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	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	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.

	appropriate to audience.		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/	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.

	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 School of Computer Science and Engineering

COURSE SYLLABUS

Course Name: Algorithmic Statistics

Course Code: IT176IU

1. General information

Course name	- (In English): Algorithmic Statistics - (In Vietnamese): Thống kê học
Course designation	Fundamental concepts in Bayesian statistics and its applications
Course type	☐ <i>General knowledge</i> ☒ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:.....</i>
Semester(s) in which the course is taught	3,5
Person responsible for the course	
Language	English
Relation to curriculum	Compulsory (CS, DS)
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours

	Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Lecture: 37.5 hours Private study including examination preparation, specified in hours: 90 hours								
Credit points	3 credits (Theory: 3) 4.64 ECTS								
Number of periods	Theory: 45								
Required and recommended prerequisites for joining the course	Recommended : Statistical Methods								
Course objectives	This is an advanced undergraduate level course that introduces the Bayesian approach to statistical inference for data analysis in a variety of applications, especially in Data Science. This course provides knowledges of the theory of Bayesian inference and algorithm, as well as data analysis using statistical software (mostly in Python). Topics include: comparison of Bayesian and frequentist methods, Bayesian model specification, prior specification, basics of decision theory, Markov chain Monte Carlo, Bayes factor, empirical Bayes, Bayesian linear regression and generalized linear models, hierarchical models.								
Course learning outcomes	CLO 1. Understand the concept and techniques used in Bayesian statistics CLO 2. Emphasize the roles of Bayesian statistics in practice CLO 3. Link Bayesian statistics to some well-known applications in Data Science. CLO 4. Apply Bayesian statistics in practice using Python <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 2, 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 2, 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 2, CLO 3, CLO 4								

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction, Comparison of frequentist and Bayesian statistics</td><td>1</td><td>I, T</td></tr><tr><td>One-parameter models and Simulation</td><td>1</td><td>I, T</td></tr><tr><td>Prior specification: Conjugate prior</td><td>1</td><td>I, T</td></tr><tr><td>Empirical Bayes, brute-force posterior simulation</td><td>1</td><td>T, U</td></tr><tr><td>Multivariate models</td><td>1</td><td>T, U</td></tr><tr><td>Linear regression, asymptotic approximation to posterior distributions</td><td>1</td><td>T, U</td></tr><tr><td>Hierarchical model</td><td>1</td><td>T, U</td></tr><tr><td>Metropolis-Hastings algorithm, Gibbs sampling</td><td>1</td><td>T, U</td></tr><tr><td>MCMC algorithms</td><td>1</td><td>T, U</td></tr><tr><td>The bootstrap</td><td>1</td><td>T, U</td></tr><tr><td>Nonparametric statistics: kernel density estimation, regression</td><td>1</td><td>T, U</td></tr><tr><td>Gaussian Processes.</td><td>1</td><td>I</td></tr><tr><td>Introduction to Variational Bayesian Methods.</td><td>1</td><td>I</td></tr></table>	Topic	Weight	Level	Introduction, Comparison of frequentist and Bayesian statistics	1	I, T	One-parameter models and Simulation	1	I, T	Prior specification: Conjugate prior	1	I, T	Empirical Bayes, brute-force posterior simulation	1	T, U	Multivariate models	1	T, U	Linear regression, asymptotic approximation to posterior distributions	1	T, U	Hierarchical model	1	T, U	Metropolis-Hastings algorithm, Gibbs sampling	1	T, U	MCMC algorithms	1	T, U	The bootstrap	1	T, U	Nonparametric statistics: kernel density estimation, regression	1	T, U	Gaussian Processes.	1	I	Introduction to Variational Bayesian Methods.	1	I
Topic	Weight	Level																																									
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Gaussian Processes.	1	I																																									
Introduction to Variational Bayesian Methods.	1	I																																									
Examination forms	Multiple-choice questions, short-answer questions, long answer questions																																										
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																																										

Reading list	1. Andrew Gelman, John B. Carlin, Hal S. Stern, David B. Dunson, Aki Vehtari, and Donald B. Rubin., Bayesian Data Analysis., CRC Press/Taylor & Francis, 2013, 3rd Edition. ISBN: 9781439840955 2. Kostas Triantafyllopoulos., Bayesian Inference of State Space Models: Kalman Filtering and Beyond (Springer Texts in Statistics) 1st ed. 2021 Edition

2. *Learning Outcomes Matrix*

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

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

3. *Planned learning activities and teaching methods*

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction, Comparison of frequentist and Bayesian statistics	1		Lecture, Discussion	[1,2,3] Chapter 1
2	Discussion on One-parameter models and related Simulation	1	Exercises	Lecture, In-class exercises	[1,3] Chapter 2
3	The concept of Prior specification: Conjugate prior	1	Exercises	Lecture, In-class exercises	[1,3] Chapter 3
4	Discussion on Empirical Bayes, brute-force posterior simulation	1,2	Exercises	Lecture, In-class exercises	[1,3] Chapter 3,4

5	Introduction to Multivariate models	1,2	Exercises	Lecture, In-class exercises	[1,3] Chapter 5,6
6	Midterm				
7	Discussion on Linear regression, asymptotic approximation to posterior distributions	2,3	Exercises	Lecture, In-class exercises	[1,3] Chapter 6,7
8	Introduction to Hierarchical model	2,3	Exercises	Lecture, In-class exercises	[2] Chapter 5
9	Some well-known algorithms: Metropolis-Hastings algorithm, Gibbs sampling	2,3	Exercises	Lecture, In-class exercises	[2] Chapter 6,7
10	MCMC algorithms	2,3	Exercises	Lecture, In-class exercises	Outside resources
11	Introduction to The bootstrap method	2,3	Exercises	Lecture, In-class exercises	Outside resources
12	Discussion on Nonparametric statistics: kernel density estimation, regression	3,4	Exercises	Lecture, In-class exercises	[1,3] Chapter 9,10,11
13	Gaussian Processes.	4	Exercises	Discussion	Outside resources
14	Introduction to Variational Bayesian Methods.	4		Discussion	Outside resources
15	Revision			Review-test	
16	Final exam				

4. *Assessment plan*

Assessment Type	CLO 1	CLO 2	CLO 3

Labs (20%)		50%	50%
Midterm examination (30%)	50%	50%	
Final examination (40%)	20%	50%	30%
Exercises/ Quiz (10%)	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 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
	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,	Issue/ problem to be considered critically is stated without clarification or description.

			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 presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the	Specific position (perspective, thesis/hypothesis) takes into account the	Specific position (perspective, thesis/ hypothesis)	Specific position (perspective, thesis/ hypothesis) is

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not

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

	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.	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.	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.	analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

Date revised: April 24, 2025

Ho Chi Minh City, 24/05/2025

Dean of the School of Computer Science and Engineering

(Signature)

Nguyen Van Sinh



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**

Department of English

COURSE SYLLABUS

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

Course Code: EN008IU

6. General information

Course designation	<i>The course is designed to prepare students for effective listening and note-taking skills, so that they can pursue the courses in their majors without considerable difficulty. The course is therefore lecture-based in that the teaching and learning procedure is built up on lectures on a variety of topics such as business, science, and humanities.</i>
Semester(s) in which the course is taught	1, 2, 3
Person responsible for the course	Lecturers of Department of English
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson

Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 85 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 25 hours Private study including examination preparation, specified in hours: 60 hours
Credit points	2 (ECTS: 3.09)
Required and recommended prerequisites for joining the course	Students must fulfil ONE of the following requirements to attend this course: ● hold TOEFL iBT certificate with score ≥ 61 ● hold IELTS certificate with score ≥ 5.5 ● complete IE2 course
Course objectives	There are a number of objectives embedded in various teaching activities in Listening AE1 course: Pre-listening activities: aim to activate students' current knowledge of the topic, and to provide them with lecture language and effective strategies in listening and note-taking to prepare themselves for the coming lecture. These activities include reading (this can be done before class meetings), discussing and reviewing what they have learned from the reading. While-listening and post-listening activities: aim to enable students to put their newly activated knowledge and acquired strategies into work by taking notes on the lecture, using the outline given by the teacher or prepared by themselves. They are later on asked to assess their understanding based on their notes and discuss them with their classmates. Finally, as an optional activity, depending on time and students' needs, students are asked to summarize the lecture. Follow-up activities: students are required to discuss the lecture topic and to prepare arguments for or against the topic in the debate. The purpose is to enhance students' comprehension of the lecture, and to allow them to put their acquired academic language into practice, and to experience the atmosphere of a university lecture class.

Course learning outcomes	Upon the successful completion of this course, students will be able to:		
	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1. Remember different strategies and techniques in listening to academic lectures and taking notes. CLO2. Improve their specialized knowledge of academic lectures	
	Skill	CLO3. Respond to academic lectures with appropriate strategies CLO4. Communicate effectively with their classmates and professors.	
	Attitude	CLO5. Respond to academic lectures with confidence	
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (2 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Orientation & Introduction of strategies and techniques in note-taking	2	I, T, U
	Chapter 1: New Trends in Marketing Research	3	T, U
	Chapter 2: Business Ethics	3	T, U
	Chapter 3: Trends in Children’s Media Use	2	T, U
	Chapter 4: The Changing Music Industry	2	T, U
	Chapter 5: The Placebo Effect	2	T, U
	Midterm Sample Test & Review	2	T, U
	Chapter 6: Intelligent Machines	3	T, U
	Chapter 7: Sibling Relationships	3	T, U
	Chapter 8: Multiple Intelligences	3	T, U
	Chapter 9: The Art of Graffiti	3	T, U
Final Sample Test & Review	2	T, U	
Examination forms	Paper and pen tests: Correct the mistakes, Fill in the blanks, Write short answers, Write a summary paragraph.		

Study and examination requirements	<i>Attendance</i> Regular on-time attendance in this course is expected. It is compulsory that students attend at least 80% of the course to be eligible for the final examination. <i>Missed tests</i> Students are not allowed to miss any of the tests (both on-going assessment and final test). There are very few exceptions. (Only with extremely reasonable excuses, e.g. certified paper from doctors, may students re-take the tests.) <i>Class behavior</i> Students are supposed to: prepare thoroughly for each class in accordance with the syllabus and complete all assignments upon the instructor's request participate fully and constructively in all class activities (and discussions if any)
	display appropriate courtesy to all involved in the class provide constructive feedback to faculty members regarding their performance
Reading list	[1] Frazie, L., & Leeming, S. (2013). <i>Lecture ready 3</i>. Oxford: Oxford University Press. References: [2] Frazie, L., & Leeming, S. (2013). <i>Lecture ready 1, 2</i>. Oxford: Oxford University Press.

7. Learning Outcomes Matrix (optional)

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

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

8. 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 lecture plan 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 and asking for opinions during a discussion
WEEK 6	2	<u>Chapter 4</u> The Changing Music Industry	Recognizing expressions for clarification or emphasis Organizing notes by using a split-page format	Expressing interest and asking for elaboration during a discussion
WEEK 7	2	<u>Chapter 5</u> The Placebo Effect	Recognizing cause and effect expressions Noting causes and effects	Agreeing and disagreeing during a discussion
WEEK 8	2	Sample test correction WRAP-UP AND REVIEW		
MID-TERM EXAMINATION				
WEEK 9	2	<u>Chapter 6</u> Intelligent Machines	Recognizing expressions used to predict causes and effects Using arrows to show the relationship between causes and effects	Learning to compromise and reach a consensus during a discussion
WEEK 10	2	REVIEW		
WEEK 11	2	<u>Chapter 7</u> Sibling Relationships	Recognizing expressions of comparison and contrast. Noting comparison and contrast	Expanding on ideas during a discussion

WEEK 12	2	<u>Chapter 8</u> Multiple Intelligences	Recognizing non-verbal signals indicating important information Representing information in list form	Keeping the discussion on topic
WEEK 13	2	REVIEW		
WEEK 14	2	<u>Chapter 9</u> The Art of Graffiti	Recognizing expressions of definition Reviewing and practicing all note taking strategies	Indicating to other when preparing to speak or pausing to collect thoughts
WEEK 15	2	WRAP-UP AND REVIEW		
FINAL EXAMINATION				

9. Assessment plan

Assessment Type	CLO1	CLO2	CLO 3	CLO 4	CLO 5
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 have scores greater than 50 out of 100.

10. Rubrics (optional)

Date revised: 24 April, 2025

Ho Chi Minh City, 24 April 2025

Head of Department

(Signature)



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**

Department of English

COURSE SYLLABUS

Course Name: Writing AE1 (Academic Writing)

Course Code: EN007IU

11. 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: 85 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 25 hours Private study including examination preparation, specified in hours: 60 hours

Credit points	2 (ECTS: 3.09)									
Required and recommended prerequisites for joining the course	Students must fulfil ONE of the following requirements to attend this course: ● hold TOEFL iBT certificate with score ≥ 61 ● hold IELTS certificate with score ≥ 5.5 ● 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.									
Course learning outcomes	Upon the successful completion of this course, students will be able to: <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO1. Understand 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></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
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									

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (2 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>The process of Academic Writing</td><td>1</td><td>I, T, U</td></tr><tr><td>Using Outside Sources</td><td>3</td><td>T, U</td></tr><tr><td>From Paragraph to Essay</td><td>4</td><td>T, U</td></tr><tr><td>Process Essays</td><td>4</td><td>T, U</td></tr><tr><td>Cause/Effect Essays</td><td>4</td><td>T, U</td></tr><tr><td>Comparison/ Contrast Essays</td><td>4</td><td>T, U</td></tr><tr><td>Argumentative Essays</td><td>6</td><td>T, U</td></tr><tr><td>Summarizing</td><td>2</td><td>U</td></tr><tr><td>Review & Correction</td><td>2</td><td>U</td></tr></table>	Topic	Weight	Level	The process of Academic Writing	1	I, T, U	Using Outside Sources	3	T, U	From Paragraph to Essay	4	T, U	Process Essays	4	T, U	Cause/Effect Essays	4	T, U	Comparison/ Contrast Essays	4	T, U	Argumentative Essays	6	T, U	Summarizing	2	U	Review & Correction	2	U
Topic	Weight	Level																													
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Using Outside Sources	3	T, U																													
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Process Essays	4	T, U																													
Cause/Effect Essays	4	T, U																													
Comparison/ Contrast Essays	4	T, U																													
Argumentative Essays	6	T, U																													
Summarizing	2	U																													
Review & Correction	2	U																													
Examination forms	Essay writing																														
Study and examination requirements	<i>Attendance</i> Regular on-time attendance in this course is expected. A student will be allowed no more than three absences. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination. <i>Missed Tests</i> Students are not allowed to miss any of the tests (both Mid-term and Final). There are very few exceptions. Only with extremely reasonable excuses (eg. certified paper from doctors), students may re-take the examination. <i>Class Behaviors</i> Students are required to treat their studying in college as a full-time job and spend an adequate amount of time for this Writing AE1 course with approximately 8-10 hours per week (both in class and self-study). Accordingly, students are supposed to follow the obligations below: - Prepare thoroughly for each class in accordance with the course syllabus and complete home assignments as the instructor's request. - Participate fully and constructively in all course activities and discussions (if any). - Display appropriate courtesy to all involved in the class.																														

	- Provide constructive feedback to faculty members regarding their performance. <i>Plagiarism</i> Students are warned not to copy from other books or from their peers for all assessment tasks. Committing plagiarism will result in 0 point for the task. Students who plagiarize twice will be prohibited from sitting the final examination. <i>Writing Center (Room 509)</i> Students are encouraged to visit the Writing Center to schedule an appointment for additional help with essay writing.
Reading list	[1] Oshima, A., & Hogue, A. (2017). <i>Longman Academic Writing Series, Level 4: Essays</i> (5th ed.). New Jersey, NJ: Pearson Longman. [2] Oshima, A., & Hogue, A. (2006). <i>Longman Academic Writing Series, Level 4: Essays</i> (4th ed.). New Jersey, NJ: Pearson Longman.

12. Learning Outcomes Matrix (optional)

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

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

13. Planned learning activities and teaching methods

Week	Coursebook		Homework
	Chapter	Pages	
1	The process of Academic Writing Step 1: Creating (Prewriting) Step 2: Planning (Outlining) Step 3: Writing Step 4: Polishing <i>Using Outside Sources</i> Paraphrasing Plagiarism and how to avoid plagiarism	[2] pp. 265-279 [1] pp. 58-65	• Do revising & editing exercises • Read pp. [1] pp. 66-72
2	<i>Using Outside Sources (Cont'd)</i> Strategies for writing a successful summary	[1] pp. 58 - 72	• Do paraphrasing exercises • Read [1] pp.74-100. Read, take notes and write the summary of ONE of the following articles: ○ 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	Review/ Correction: Lecturer gives feedback to one or two students' writings in class. From Paragraph to Essay The introductory paragraph: ● General statements & Introductory techniques ● Thesis statements & Logical division of ideas Body paragraphs: ● Topic sentences The concluding paragraph: ● Restatement ● Final thoughts Outlines of essays	[1] pp. 74 – 100	● Read pp. 101-15 ● Do exercises on: ○ Writing thesis statements ○ Writing topic sentences from the thesis statement provided ○ Writing restatements
5	Process Essays Introduction Analyzing the models Thesis statements for process essays Transitional signals Write together: Writing from a diagram (p.115)	[1] pp. 101 - 115	● Write a short essay (150-200 words) describing how hydroelectric power is generated (or a topic of the lecturer's choice)
6	Process Essays (Cont'd) Review/ Correction: Lecturer gives feedback to one or two students' writings in class. In-class Assignment: Write a process essay about one of these topics or a topic of the lecturer's choice: ● How to cook a favorite food ● How to do a favorite hobby ● How to succeed in your major area or professional field ● How to accomplish an academic task (register for classes, apply for a scholarship, pass an exam, etc.)	[1] pp. 101 - 115	● Read [1] pp. 116-132

7	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: ● 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	● 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: ○ 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	Cause/ Effect Essays (Cont'd) Review/ Correction: Lecturer gives feedback to one or two students' writings in class. In-class Writing: Write the introduction, ONE body paragraph and the conclusion on one of the two topics left (except for the ones that has been worked on in class and assigned as homework) or a topic of the lecturer's choice: ● The cause of obesity ● The effects of involvement in sports on young children ● The causes of stress in college students The effects of regular reading on students' lives		● Give peer-feedback using the rubric provided
MID-TERM EXAMINATION			

9	Comparison/ Contrast Essays Introduction Analyzing the models Organization: ● Points of comparison ● Point-by-point organization ● Block organization Comparison and Contrast signal words 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: ● 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.	[1] pp. 133 - 151	● 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: ○ 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.
10	Comparison/ Contrast Essays (Cont'd) Review/ Correction: Lecturer gives feedback to one or two students' writings in class. In-class Assignment: Write a compare and contrast essay on the topic left or a topic of the lecturer's choice: ● Compare and contrast the relationship between parents and children in two different cultures ● Compare and contrast the university cultures in two different countries ● Compare and contrast the cultures of a small town and a big city	[1] pp. 133 - 151	● Read [1] pp. 152-168

11 & 12	Argumentative Essays Introduction Analyzing the model Organization: Block vs. Point-by- point pattern The elements of an argumentative essay: ● An explanation of the issue ● A clear thesis statement ● A summary of the opposing arguments ● Rebuttals to the opposing arguments ● Your own arguments The introductory paragraph: Thesis Statement Statistics as support 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: ● 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?	[1] pp. 152-168	● Write an argumentative essay (300 – 350 words) on ONE of the following topics or a topic of the lecturer's choice: ○ Can same-sex parenting negatively influence a child's mentality? ○ Do famous artists have an innate talent, or do they put in great effort to improve their skills? ○ Is homework helpful?

13	Argumentative Essays (Cont'd) Review/Correction: Lecturer gives feedback to one or two students' writings in class. In-class Writing: Write an argumentative essay on the topic left or a topic of the lecturer's choice: • Can same-sex parenting negatively influence a child's mentality? • Do famous artists have an innate talent, or do they put in great effort to improve their skills? • Is homework helpful?		• Give peer-feedback using the rubric provided
14	Review & Practice: Summarizing		Sample final test
15	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.		
FINAL EXAMINATION			

14. 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.

15. Rubrics (optional)

15.1). 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
Content The essay fulfills the requirements of the assignment & the topic is fully addressed. (15) The essay is interesting to read and originally written by the student. (5)	20	CLO 1,4,5

Organization Introduction: The introduction ends with a thesis statement. (10) Body: Each paragraph discusses a particular point and begins with a clear topic sentence. (5) Each paragraph has specific supporting details (fact, examples, etc.) (5) Each paragraph has cohesion and coherence. (5) Conclusion: The conclusion summarizes the main points/paraphrases the thesis statement, begins with a conclusion signal, and leaves the readers with the writer's thoughts on the topic. (5)	30	CLO 1,4
Total	60	

15.2). 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
Language use and mechanics (20) A wide variety of sentence patterns and vocabulary are presented correctly. Language control is good, and meaning is clear. Spelling, capitalization and punctuation are correct.	20	16	12	CLO 1,4
Content: (20) The essay fulfills the task requirements, and the topic is fully addressed. The content is originally created by the students.	20	16	12	CLO 1,4,5
Organization: (60) Introduction: The introduction has a thesis statement. (10) Body: At least one paragraph discusses the counter-arguments. (10)	10 10	8 8	6 6	CLO 1,4

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: 24 April, 2025

Ho Chi Minh City, 24 April 2025

Head of Department

(Signature)



**VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY**

Department of English

COURSE SYLLABUS

Course Name: Speaking AE2 (Effective Presentations)

Course Code: EN012IU

16. General information

Course designation	<i>Giving presentations today becomes a vital skill for students to succeed not only in university but also at work in the future. Speaking AE2, therefore, provides students with the knowledge and skills needed to deliver effective presentations (informative and persuasive presentations).</i>
Semester(s) in which the course is taught	1, 2, 3
Person responsible for the course	Lecturers of Department of English
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, mini presentations
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 85 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 25 hours Private study including examination preparation, specified in hours: 60 hours

Credit points	2 (ECTS: 3.09)																																			
Required and recommended prerequisites for joining the course																																				
Course objectives	Speaking AE2 aims at introducing an training students many aspects of giving a presentation: building up confidence, preparing and planning, using the appropriate language, applying effective visual aids, applying delivery techniques, dealing with questions and responding, performing body language, and so on.																																			
Course learning outcomes	Upon the successful completion of this course, students will be able to: <table><tr><th>Competency level</th><th colspan="2">Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td colspan="2">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 colspan="2">CLO2. Prepare and deliver effective, formal, structured presentations that are appropriate to the specific environment and audience.</td></tr><tr><td>Attitude</td><td colspan="2">CLO3. Deliver both informative and persuasive speech with confidence</td></tr></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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Content	Weight: lecture session (2 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Orientation & Introduction</td><td>2</td><td>I, T, U</td></tr><tr><td>Needs analysis</td><td></td><td></td></tr><tr><td>Building up confidence</td><td>2</td><td>T, U</td></tr><tr><td>The first few minutes</td><td>2</td><td>T, U</td></tr><tr><td>Organizing what you want to say</td><td>2</td><td>T, U</td></tr><tr><td>Summarizing and concluding</td><td>2</td><td>T, U</td></tr><tr><td>Using equipment</td><td>2</td><td>T, U</td></tr><tr><td>Delivery techniques: Putting it all together</td><td>2</td><td>T, U</td></tr><tr><td>Group presentations for the instructor’s evaluation and advice</td><td>2</td><td>U</td></tr><tr><td>Introduction to persuasive speeches</td><td>2</td><td>T, U</td></tr></table>			Topic	Weight	Level	Orientation & Introduction	2	I, T, U	Needs analysis			Building up confidence	2	T, U	The first few minutes	2	T, U	Organizing what you want to say	2	T, U	Summarizing and concluding	2	T, U	Using equipment	2	T, U	Delivery techniques: Putting it all together	2	T, U	Group presentations for the instructor’s evaluation and advice	2	U	Introduction to persuasive speeches	2	T, U
Topic	Weight	Level																																		
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Delivery techniques: Putting it all together	2	T, U																																		
Group presentations for the instructor’s evaluation and advice	2	U																																		
Introduction to persuasive speeches	2	T, U																																		

	Methods of persuasion	2	T, U
	Maintaining interest	2	T, U
	Dealing with problems and questions	2	T, U
	Body language	2	T, U
	Individual presentations for the instructor's evaluation and advice	4	U
Examination forms	Oral Presentations		
Study and examination requirements	<i>Attendance</i> Regular on-time attendance in this course is expected. A student will be allowed no more than three absences. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination. <i>Missed Tests</i> Students are not allowed to miss any of the tests (both Mid-term and Final). There are very few exceptions. Only with extremely reasonable excuses (e.g. certified paper from doctors), students may re-take the examination. <i>Class Behaviors</i> Students are required to treat their studying in college as a full-time job and spend an adequate amount of time for this Speaking AE2 course with approximately 8-10 hours per week (both in class and self-study). Accordingly, students are supposed to follow the obligations below: ● Prepare thoroughly for each class in accordance with the course syllabus and complete home assignments as the instructor's request. ● Participate fully and constructively in all course activities and discussions (if any). ● Display appropriate courtesy to all involved in the class. ● Provide constructive feedback to faculty members regarding their performance. <i>Plagiarism</i> Students are warned not to copy from other books or from their peers for all assessment tasks. Committing plagiarism will result in 0 point for the task. Students who plagiarize twice will be prohibited from sitting the final examination.		

Reading list	[1] Lowe, S, & Pile, L. (2010). <i>Presenting</i>. Singapore: Cengage Learning [2] Comfort, J. (1997). <i>Effective presentations</i>. Oxford: Oxford University Press [3] Lucas, S. (2014). <i>The art of public speaking</i> (12th edition). New York: McGraw-Hill Education. [4] Harrington, D., & Lebeau, C. (2009). <i>Speaking of speech</i>. Macmillan

17. Learning Outcomes Matrix (optional)

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

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

18. Planned learning activities and teaching methods

WEEK	Content	MATERIAL(S) COVERED	ACTIVITIES
WEEK 1	Orientation & Introduction Needs analysis	[1] <i>Presenting</i> , p. 5	Students will: ● receive an introduction to effective presentation ● think about their strength and weaknesses in presenting in English ● identify and prioritize their immediate and future needs for presenting ● share tips on improving weaknesses
WEEK 2	Building up confidence		Student will: - give a short speech about themselves to help them overcome initial shyness of standing up and speaking in public

WEEK 3	Unit 1: The first few minutes	● <i>Presenting</i>, pp. 8-13 ● <i>Effective Presentations</i>: p.7 + video clip; p.13+ video clip	Students will: ● learn the importance of making a good first impression ● learn useful phrases for greeting the audience, introducing themselves and others, and giving the purpose of their presentation
WEEK 4	Unit 3: Organizing what you want to say	<i>Presenting</i>, pp. 22- 27) <i>Effective Presentation</i> s: p.19 + video clip	Students will: ● look at the importance of structuring their presentation ● learn the useful phrases for outlining their presentation, organizing ideas and moving between different sections of their presentation
WEEK 5	Unit 6: Summarizing and concluding	● <i>Presenting</i>, pp. 40- 45 ● <i>Effective Presentation</i> s: p.41 + video clip	Students will: look at ways of finishing a presentation effectively learn useful phrases for ending their presentation, summarizing, handing over and thanking
WEEK 6	Unit 2: Using equipment	● <i>Presenting</i>, pp. 14- 21) ● <i>Effective Presentation</i> s: p.31 + video clip	Students will: ● use equipment and visuals to support their presentation ● learn useful phrases for referring to visuals, ensuring their audience can see and expanding on notes
WEEK 7	Delivery techniques: Putting it all together	[2] <i>Effective Presentations</i> : p.50 + video clip Assignment: Topic(s) for group presentation)	Students will: ● watch a model presentation and discuss do's and don'ts for effective delivery ● pick group members and plan their presentations for Week 8

WEEK 8	Group presentations for the instructor's evaluation and advice		Students will: ● take turn to deliver a presentation on the topic(s) assigned by the instructor ● consult the instructor for advice on the mid-term exam preparation
MIDTERM EXAMINATION Students will give a five-to-six minute informative presentation on a topic to be determined.			
WEEK 9	Introduction to persuasive speeches	[3] <i>The art of public speaking</i> , Chapter 15 (Handout given by the instructor)	Students will: ● know types of persuasive speeches ● know typical organizations of a persuasive speech
WEEK 10	Methods of persuasion	[3] <i>The art of public speaking</i> , Chapter 16 (Handout given by the instructor)	Students will learn to persuade the audience by: ● building credibility ● using evidence ● reasoning ● appealing to emotions
WEEK 11	Unit 4: Maintaining interest	● <i>Presenting</i> : pp. 28- 33) ● <i>Effective Presentations</i>: p.25 + video clip)	Students will: look at maintaining interest through effective delivery learn useful phrases for clarifying what you mean, checking if the audience is following and involving the audience
WEEK 12	Unit 5: Dealing with problems and questions	○ <i>Presenting</i> : pp. 34- 39) ○ <i>Effective Presentations</i>: p.44 (Question time)	Students will: ● learn strategies for coping in unexpected situations ● learn useful phrases for dealing with problems and questions

WEEK 13	Unit 6: Body language	[2] <i>Effective Presentations</i> : pp.36-39	Students will: ● practise using language and body language to communicate the message clearly and persuasively ● watch video clips about body language ● learn how to control posture, eye contact, gestures and voice inflection
WEEK 14	Practice	(to be determined by the instructor)	Students will: - deliver individual or group presentations (assigned by the instructor)
WEEK 15	Wrap-up and advice	(to be determined by the instructor)	Students will: ● consult the instructor for advice on the final exam preparation ● continue to deliver individual or group presentations (if any)
FINAL EXAMINATION Students will deliver a seven-to-eight-minute persuasive presentation on a topic to be determined			

19. 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

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

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

20. Rubrics & Marksheets

5.1.Midterm exam rubrics and marksheets



ACADEMIC YEAR 2021 - 2022

DATE: _____

 Student name : _____
 Topic : _____

Student ID : _____

Wtg.	Criteria	Very poor	Poor	Average	Good	Excellent	Comments
15	Pronunciation & Voice Techniques (Pause, Volume, Speed Change, Stress, Tone, etc.)	(1-3)	(4-6)	(7-9)	(10-12)	(13-15)	
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: -1.5pts 3m - 3m29: -10pts 3m30 - 3m59: -5pts 4m - 6m: OK >6m: -5pts

Organization:

A. Introduction

- a. Greeting, name, position (Good morning ladies and gentlemen. My name is ___. I'm a ___) ☐ Yes ☐ No
- b. Purpose/ Objective (The purpose of this talk is to ___) ☐ Yes ☐ No
- c. Connect with the audience (I can see that all of you love to ___) ☐ Yes ☐ No
- d. Outline/ Main part (I've divided my presentation into __ parts) ☐ Yes ☐ No
- e. Questions (Should you have any questions, please save them until the end of my presentation) ☐ Yes ☐ No

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) ☐ Yes ☐ No
- b. Summary (Let me just run over the key points again) ☐ Yes ☐ No
- c. Closing (Thank you very much for your attention) ☐ Yes ☐ No
- d. Inviting questions (I'd be glad to answer any questions you might have) ☐ Yes ☐ No

Examiner :

5.2.Final exam rubrics and marksheets

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



ACADEMIC YEAR 2021 - 2022

DATE: _____

Student name :

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: -1.5pts 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: 24 April, 2025

Ho Chi Minh City, 24 April, 2025

Head of Department

(Signature)



**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: 85 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 25 hours Private study including examination preparation, specified in hours: 60 hours									
Credit points	2 (ECTS: 3.09)									
Required and recommended prerequisites for joining the course	Students must complete Writing AE1 course									
Course objectives	Students are required to work on the tasks selected to maximize their exposure to written communication and are expected to become competent writers in the particular genre: the research paper. As writing is part of an integrated skill of reading and writing where reading serves as input to trigger writing, this course is designed to familiarize non-native students with academic literature in their major study by having them read and critically respond to texts of a variety of topics ranging from natural sciences such as biology to social sciences and humanities like education, linguistics and psychology.									
Course learning outcomes	Upon the successful completion of this course, students will be able to: <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><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></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
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									

Content	Weight: lecture session (2 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Unit 1: The Academic Writing Process Introduction	4	I, T, U
	Unit 2: Researching and Writing	2	T, U
	Unit 3: Fundamentals & Feedback	2	T, U
	Unit 4: Definitions, Vocabulary & Clarity	2	T, U
	Unit 6: Seeing Ideas and Sharing Texts	2	T, U
	Unit 7: Description, Methods & Reality	2	T, U
	Unit 8: Results, Discussion & Relevance	2	T, U
	Unit 9: The Whole Academic Text	2	T, U
	Unit 10: Creating the Whole Text	4	T, U
	Course Review	2	U
Examination forms	Essay writing		
Study and examination requirements	<i>Attendance</i> Regular on-time attendance in this course is expected. A student will be allowed no more than three absences. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination. <i>Assignment (Literature review)</i> Purpose: Students will use the knowledge of paraphrasing, summarising, developing arguments, and APA styles to write a 1,000-word literature review on a research scope of their choice. Task: - Follow guidelines on how to write a literature review. - Use relevant academic writing skills such as paraphrasing, summarising, developing arguments, and APA 7th Style Guidelines – see https://www.apastyle.org/ - Develop arguments in relation to the research scope and identify the research gap		

	Notes: All papers should be typed, double-spaced, in 13-pt font, and with 1-inch margins. All papers must be original for this class. Criterion-referenced grading is used in this course. <i>Missed Tests</i> Students are not allowed to miss any of the tests (both Mid-term and Final). There are very few exceptions. Only with extremely reasonable excuses (eg. certified paper from doctors), students may re- take the examination. <i>Class Behaviors</i> Students are required to treat their studying in college as a full-time job and spend an adequate amount of time for this Writing AE2 course with approximately 8-10 hours per week (both in class and self- study). Accordingly, students are supposed to follow the obligations below: - Prepare thoroughly for each class in accordance with the course syllabus and complete home assignments as the instructor's request.

- Participate fully and constructively in all course activities and discussions (if any).
- Display appropriate courtesy to all involved in the class.
- Provide constructive feedback to faculty members regarding their performance.

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

The rater will review the paper to check if citations or references are provided properly. Penalties due to improper citations or references include:

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 .

Notes: Part of the test is marked as it is if no plagiarism is detected. Students who plagiarize over 40% twice will be prohibited from sitting the final examination.

Writing Center (Room 509)

Students are encouraged to visit the Writing Center or to schedule an appointment for additional help.

Reading list	[1] Hamp-Lyons, L., & Heasley, B. (2006). <i>Study Writing</i>. Cambridge, UK: Cambridge University Press [2] Articles and Essays taken from <i>The Allyn and Bacon Guide to Writing</i> by Ramage et al (2009), Pearson Longman. [3] Cormack, J. & Slaught, J. (2009). <i>English for academic study: Extended writing and research skills</i>. Cambridge: Cambridge University Press. Garnet Education [4] Folse, K. S. & Pugh, T. (2010). <i>Great writing 5: Greater essays</i>. Boston: Heinle, Cengage Learning. [5] Keezer, S. (Ed.) (2003). <i>Write your research report: A real-time guide</i>. New Jersey: Pearson Learning Group. [6] Kumar, R. (2019). <i>Research methodology: A step-by-step guide for beginners</i>. Sage Publications

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

WEEK	CONTENT—SUGGESTED TASKS	ASSIGNMENT/ HOMEWORK
1	Orientation of the Course <u>Unit 1:</u> The Academic Writing Process Introduction	
2	<u>Unit 1:</u> 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	<u>Unit 2:</u> Researching and Writing Recognizing categories and classification The language of classification The structure of a research paper	HW: Task 17
4	<u>Unit 3:</u> Fundamentals & Feedback Exploring comparison and contrast structures The language of comparison and	HW: Task 12

	contrast Using comparisons and contrasts to evaluate and recommend	
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 have scores greater than 50 out of 100.

5. Rubrics

5.3. 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	

5.4.Final exam rubrics: 100 points

CATEGORIES	CRITERIA	POINTS	CLO
Content	Presenting his/her view on the question clearly and persuasively	20	CLO 1,3,4
Structure of ideas	- 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: 24 April, 2025

Ho Chi Minh City, 24 April, 2025

Head of Department

(Signature)



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

COURSE SYLLABUS

Course Name: Introduction to Data Science

Course Code: IT135IU

1. General information

Course name	- (in English): Introduction to Data Science - (in Vietnamese): Nhập môn khoa học dữ liệu
Course designation	<i>This subject will provide a broad introduction to four key aspects of data science: data retrieval and manipulation, data visualization, statistical computation and machine learning, and presentation and communication.</i>
Course type	☐ <i>General knowledge</i> ☒ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Dr. Nguyen, Thi Thanh Sang
Language	English

Relation to curriculum	Compulsory	
Teaching methods	Lecture, lesson, project, seminar.	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Lecture: 37.5 hours Private study including examination preparation, specified in hours: 90 hours	
Credit points	3 credits (Theory: 3 + Practice: 0) 4.64 ECTS	
Number of periods	Theory: 45 Practice: 0	
Required and recommended prerequisites for joining the course	None	
Course objectives	Students will be provided with skills of using data from a variety of sources, be introduced to contemporary computing and database environments, such as R/Python, and be exposed to case studies from outside the classroom. Through this unit, students will become acquainted with the challenges of contemporary data science and gain an appreciation of the foundational skills necessary to turn data into information.	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Describe what Data Science is and the skill sets needed to be a data scientist. CLO2. Explain the role of a Data Science Process in data analytics.
	Skill	CLO3. Carry out basic statistical modeling and analysis using open-source data analysis tools.
	Attitude	CLO4. Reason around ethical and privacy issues in data science conduct and apply ethical practices.

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>																																	
	Weight: lecture session (3 hours)																																	
	Teaching levels: I (Introduce); T (Teach); U (Utilize)																																	
	<table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction to Data Science</td><td>1</td><td>I</td></tr><tr><td>Introduction to Descriptive Statistics</td><td>2</td><td>T, U</td></tr><tr><td>Hypothesis Testing and Statistical Inference</td><td>1</td><td>T</td></tr><tr><td>Exploratory Data Analysis and the Data Science Process</td><td>2</td><td>T, U</td></tr><tr><td>Classification 1: Linear & Logistic Regression and K-Nearest Neighbors</td><td>2</td><td>T, U</td></tr><tr><td>Classification 2: Decision trees and Support Vector Machine</td><td>2</td><td>T, U</td></tr><tr><td>Clustering and Dimensionality Reduction</td><td>1</td><td>T, U</td></tr><tr><td>Recommendation Systems</td><td>1</td><td>T, U</td></tr><tr><td>Data Visualization</td><td>0.5</td><td>I</td></tr><tr><td>Data Science and Ethical Issues</td><td>0.5</td><td>I</td></tr></table>	Topic	Weight	Level	Introduction to Data Science	1	I	Introduction to Descriptive Statistics	2	T, U	Hypothesis Testing and Statistical Inference	1	T	Exploratory Data Analysis and the Data Science Process	2	T, U	Classification 1: Linear & Logistic Regression and K-Nearest Neighbors	2	T, U	Classification 2: Decision trees and Support Vector Machine	2	T, U	Clustering and Dimensionality Reduction	1	T, U	Recommendation Systems	1	T, U	Data Visualization	0.5	I	Data Science and Ethical Issues	0.5	I
	Topic	Weight	Level																															
	Introduction to Data Science	1	I																															
	Introduction to Descriptive Statistics	2	T, U																															
	Hypothesis Testing and Statistical Inference	1	T																															
	Exploratory Data Analysis and the Data Science Process	2	T, U																															
	Classification 1: Linear & Logistic Regression and K-Nearest Neighbors	2	T, U																															
	Classification 2: Decision trees and Support Vector Machine	2	T, U																															
	Clustering and Dimensionality Reduction	1	T, U																															
	Recommendation Systems	1	T, U																															
Data Visualization	0.5	I																																
Data Science and Ethical Issues	0.5	I																																
Examination forms	Multiple-choice questions, short-answer questions																																	
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																																	

Reading list	[1] Jeffrey S. Saltz & Jeffrey M. Stanton – An Introduction to Data Science – 1st edition – 2017. [2] Cathy O’Neil, Rachel Schutt, <i>Doing Data Science: Straight Talk from the Frontline</i>, O’Reilly Media, 2013. [3] Joel Grus – Data Science from Scratch: First Principles with Python – 2nd edition – 2019. [4] Jiawei Han & Micheline Kamber – Data Mining: Concepts and Techniques – 4th edition – 2022. [5] Matt Harrison, <i>Learning the Pandas Library: Python Tools for Data Munging, Analysis, and Visualization</i>, CreateSpace Independent Publishing Platform, 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	x					
2	xx					
3						x
4				x		

3. Planned learning activities and teaching methods

Wee k	Topic	CL O	Assessments	Learning activities	Resource s
1	Introduction to Data Science	1, 4	Quiz1	Lecture, Discussion, Inclass-Quiz	[1].0. [2].1.
2-3	Introduction to Descriptive Statistics	3	HW1	Lecture, Inclass-Quiz, HW	[1].9.
4	Hypothesis Testing and Statistical Inference	3	Quiz4	Lecture, Group work	[2].2.

5-6	Exploratory Data Analysis and the Data Science Process	2	HW2, Quiz6	Lecture, Group work, HW	[1]. 2, 4 [2]. 2
7			HW2 presentation	Presentation	
8,10	Classification 1: Linear & Logistic Regression and K-Nearest Neighbors	3		Lecture, Group work	[2]. 3
9	Midterm				
11-12	Classification 2: Decision trees and Support Vector Machine	3	HW3	Lecture, Group work, HW	[2]. 4. [1]. 18.
13	Clustering and Dimensionality Reduction	3		Lecture, Group work	[3]. 10
14	Recommendation Systems	3	HW4	Lecture, Discussion, HW	[2]. 8
15	Data Visualization Data Science and Ethical Issues	3,4	Quiz15	Lecture, Inclass-Quiz	[1]. 12, 13 [2]. 9, 16
16	Revision			Review-Test	
17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class exercises/quizzes (10%)	Qz1 60%Pass	Qz6 60%Pass		Qz15 60%Pass
Homework exercises (20%)	HW2 50%Pass		HW1, HW3, HW4 50%Pass	

Midterm exam (30%)		Q3 50%Pass	Q1, Q2 50%Pass	
Final exam (40%)	Part I 50%Pass		Part II.1,2 50%Pass	Part II.3 50%Pass

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

5. Rubrics (optional)

5.1. Grading checklist

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

5.2. Holistic rubric

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

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

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

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

	questioned thoroughly.	subject to questioning.	experts are taken as mostly fact, with little questioning.	
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective,	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.

	thesis/ hypothesis).			
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

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

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

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

Source: Association of American Colleges and Universities

Date revised: April 24, 2025

Ho Chi Minh City, 24/04/2025

Dean of the School of Computer Science and Engineering

(Signature)

A handwritten signature in blue ink, appearing to read 'N Sinh', with a long horizontal stroke extending to the right and a small flourish at the end.

Nguyen Van Sinh

	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	☐ <i>General knowledge</i> ☒ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	2
Person responsible for the course	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	CLO 1. Understand programming languages and applications, how applications work CLO 2. Able to write applications using Python CLO 3. Understand basic data structure of Python programming <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
Competency level	Course learning outcome (CLO)								
Knowledge	CLO1								
Skill	CLO2, CLO3								
Attitude	CLO3								
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)								

		Topic	Weight	Level
		Introduction to 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
		Functions	3	T, U
		Modules	3	T, U
		File Handling	3	T, U
		Exception Handling	3	T, U
		Object and Classes in Python	3	T, U
		Inheritance and Polymorphism	3	T, U
Examination forms	Multiple-choice questions, short-answer questions			
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.			
Reading list	Eric Matthes – Python Crash Course: A Hands-On, Project-Based Introduction to Programming – 3rd edition – 2023.			

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 T	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, In-class Exercise	1
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.

-
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.↩

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	Issue/ problem to be considered critically is stated, described, and clarified so that	Issue/ problem to be considered critically is stated but description leaves some	Issue/ problem to be considered critically is stated without

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

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1

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

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

Source: Association of American Colleges and Universities

Date revised: April 24, 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: 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	☐ <i>General knowledge</i> ☒ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	3
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	CLO 1. Explain and use concepts in object-oriented programming including classes, objects, abstraction, encapsulation, inheritance, and polymorphism. CLO 2. Implement an object-oriented solution in JAVA programming language. CLO 3. Analyze design principles and design patterns in object-oriented programming <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	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>								

	Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction to 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><tr><td>Classes and Objects</td><td>3</td><td>T</td></tr><tr><td>Inheritance and composition</td><td>3</td><td>T</td></tr><tr><td>Polymorphism</td><td>3</td><td>T</td></tr><tr><td>Design with interfaces and abstract classes</td><td>3</td><td>T</td></tr><tr><td>Building Objects</td><td>3</td><td>T</td></tr><tr><td>Exception handling</td><td>3</td><td>T</td></tr><tr><td>Generic classes and methods</td><td>3</td><td>T</td></tr><tr><td>Introduction to SOLID principles</td><td>3</td><td>T, U</td></tr><tr><td>Single responsibility principle</td><td></td><td></td></tr><tr><td>Open/closed principle</td><td>1.5</td><td>T, U</td></tr><tr><td>Liskov substitution principle</td><td>1.5</td><td>T, U</td></tr><tr><td>Interface segregation principle</td><td>1.5</td><td>T, U</td></tr><tr><td>Dependency inversion principle</td><td>1.5</td><td>T, U</td></tr><tr><td>Reusing Designs Through Design Patterns</td><td>6</td><td>T, U</td></tr></table>	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	3	T, U	Single responsibility principle			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
Topic	Weight	Level																																																		
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Dependency inversion principle	1.5	T, U																																																		
Reusing Designs Through Design Patterns	6	T, U																																																		
Examination forms	Short-answer questions																																																			
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																																																			

Reading list	1. Paul J. Deitel & Harvey M. Deitel – Java How To Program: An Objects-Natural Approach – 12th edition – 2026 2. Matt Weisfeld – The Object-Oriented Thought Process – 4th edition – 2013 3. Erich Gamma, Richard Helm, Ralph Johnson & John Vlissides – Design Patterns: Elements of Reusable Object-Oriented Software – 10th Anniversary Edition – 2014 4. Eric Freeman & Elisabeth Robson – Head First Design Patterns: Building Extensible and Maintainable Object-Oriented Software – 2nd edition – 2020

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:

	SL O					
CL O	1	2	3	4	5	6
1	xx					
2		xx				x
3		xxx				x

3. *Planned learning activities and teaching methods*

Week	Topic	CL O	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	CLO 1	CLO 2	CLO 3
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.

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	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	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and

	discussed in priority order.	are identified clearly.	(consequences and implications) are identified clearly.	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	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	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.

	appropriate to audience.		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/	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.

	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 School of Computer Science and Engineering

COURSE SYLLABUS

Course Name: Data Structures and Algorithms

Course Code: IT013

General information

Course name	- (in English): Data Structures and Algorithms (in Vietnamese): Cấu trúc dữ liệu và giải thuật
Course designation	This subject introduces students to basic data structures and algorithms
Semester(s) in which the course is taught	4,6
Course type	☐ <i>General knowledge</i> ☒ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
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 : 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. <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><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></table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1	Skill	CLO2, CLO3	Attitude	CLO3	
Competency level	Course learning outcome (CLO)									
Knowledge	CLO1									
Skill	CLO2, CLO3									
Attitude	CLO3									
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Review OOP & Java</td><td>3</td><td>I</td></tr><tr><td>Arrays</td><td>3</td><td>T</td></tr></table>	Topic	Weight	Level	Review OOP & Java	3	I	Arrays	3	T
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	
Examination forms	Short-answer questions				
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.				
Reading list	1. Michael T. Goodrich & Roberto Tamassia – Data Structures & Algorithms in Java – 7th edition – 2017 2. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest & Clifford Stein – Introduction to Algorithms – 4th edition – 2022. 3. Lafore, Robert. Data structures and algorithms in Java. Sams publishing, 2017.				

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		XXX				
3						X

Planned learning activities and teaching methods

Week	Topic	CL O	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,	[2,3]

				In class exercises	
15	Algorithms on graphs	2,3	Lab, Quiz, Final	Lecture, Discussion	[2,3]
16	Final exam				

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 have 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%)	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	Identifies own and others' assumptions and several relevant contexts when	Questions some assumptions. Identifies several relevant contexts when presenting a	Shows an emerging awareness of present assumptions (sometimes

	evaluates the relevance of contexts when presenting a position.	presenting a position.	position. May be more aware of others' assumptions than one's own (or vice versa).	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	Delivery techniques (posture, gesture, eye	Delivery techniques (posture, gesture, eye contact, and	Delivery techniques (posture, gesture, eye contact, and

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

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: Principles of Database Management

Course Code: IT079

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	☐ <i>General knowledge</i> ☒ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	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	CLO 1. Produce an (Extended) Entity-Relationship (E-R) model from specifications. CLO 2. Apply data normalization principles to transforming an ER model into a database schema. CLO 3. Construct efficient SQL queries, RA, and tree to retrieve and manipulate data as required. <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><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></table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1, CLO3	Skill	CLO2, CLO3	Attitude	CLO3																			
Competency level	Course learning outcome (CLO)																											
Knowledge	CLO1, CLO3																											
Skill	CLO2, CLO3																											
Attitude	CLO3																											
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction to 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></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
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																										

Examination forms	Multiple-choice questions, short-answer questions
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	1. Abraham Silberschatz, Henry F. Korth, S. Sudarshan, Database System Concept 7th, 2020 2. Jeffrey A. Hoffer, Ramesh Venkataraman & Heikki Topi – Modern Database Management – 14th edition – 2025. 3. Ramez Elmasri, Shamkant Navathe, Fundamentals of Database Systems 7th, 2016

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	

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				

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
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	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are	Specific position (perspective, thesis/hypothesis) acknowledges	Specific position (perspective, thesis/hypothesis) is stated, but is

	an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	acknowledged within position (perspective, thesis/ hypothesis).	different sides of an issue.	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	Delivery techniques (posture, gesture, eye contact, and	Delivery techniques (posture, gesture, eye contact, and	Delivery techniques (posture, gesture, eye contact, and

	vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	vocal expressiveness) make the presentation understandable , and speaker appears tentative.	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,	Central message is clear and consistent with	Central message is basically understandable but is not often	Central message can be deduced but is not explicitly stated

	appropriately repeated, memorable, and strongly supported.)	the supporting material.	repeated and is not memorable.	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 School of Computer Science and Engineering

COURSE SYLLABUS

Course Name: Artificial Intelligence

Course Code: IT159

1. General information

Course name	- (in English): Artificial Intelligence - (in Vietnamese): Trí tuệ nhân tạo
Course designation	This subject introduces the students to the principles and fundamental algorithms of Artificial Intelligence, the use cases and the related processes in Artificial Intelligence.
Course type	☐ <i>General knowledge</i> ☒ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	6,8
Person responsible for the course	Nguyen Trung Ky, Dr.
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, lesson, project, laboratory.
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 : Data Structures and Algorithms					
Course objectives	This course introduces students to the basic knowledge on Artificial Intelligence. Artificial intelligence (AI) is a research field that studies how to realize the intelligent human behaviors on a computer. The ultimate goal of AI is to make a computer that can learn, plan, and solve problems autonomously. In this course, student will learn the foundational principles and practice implementing some of these applications including representation, problem solving, and learning methods of artificial intelligence. Accordingly, students should be able to develop intelligent systems by assembling solutions to concrete computational problems; understand the role of knowledge representation, problem solving, and learning in intelligent-system engineering; and appreciate the role of problem solving, vision, and language in understanding human intelligence from a computational perspective.					
Course learning outcomes	<table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO 1. Apply knowledge of AI techniques and synthesize solutions to the discipline and ability to develop a range of typical applications using artificial intelligence methods</td></tr></table>		Competency level	Course learning outcome (CLO)	Knowledge	CLO 1. Apply knowledge of AI techniques and synthesize solutions to the discipline and ability to develop a range of typical applications using artificial intelligence methods
Competency level	Course learning outcome (CLO)					
Knowledge	CLO 1. Apply knowledge of AI techniques and synthesize solutions to the discipline and ability to develop a range of typical applications using artificial intelligence methods					

			CLO 2. Represent knowledge corresponding to practical problems, design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs by properly using classical search algorithms, including breadth-first, depth-first, A*, and heuristic search
		Skill	CLO 3. Produce intelligent applications of machine learning with statistical learning methods (Naive Bayes), supervised and unsupervised learning models: decision tree, neural networks, single-layer (perceptron) and multilayer networks CLO 4. Communicate effectively with a range of audiences, ability to use current techniques, skills, and tools necessary for computing practice, ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the trade-offs involved in design choices and ability to apply design and development principles in the construction of software systems of varying complexity
		Attitude	
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours)		

Teaching levels: I (Introduce); T (Teach); U (Utilize)		
Topic	Weight	Level
Introduction and Intelligent Agents	1	I
States and Searching: Uninformed Search	1	T, U
States and Searching: Informed and More Sophisticated Search	1	T, U
Features and Constraints: Constraint Satisfaction Problems	1	T, U
Features and Constraints: Constraint Satisfaction Problems (continue)	1	T, U
Reasoning Under Uncertainty: ▪ Random Variables and Events ▪ Joint and Marginal Distributions ▪ Conditional Distribution ▪ Product Rule, Chain Rule, Bayes' Rule ▪ Inference	1	T, U
Reasoning Under Uncertainty: Naïve Bayes Classifier (continue)	1	T, U
Supervised Learning: Neural Networks	1	T, U
Supervised Learning: Neural Networks (continue)	1	T, U
Supervised Learning: Support Vector Machine	1	T, U
Supervised Learning: Support Vector Machine in Mathematics	1	T, U
Beyond Supervised Learning: Kernels and Clustering	1	T, U
Beyond Supervised Learning: Kernels and Clustering (continue)	1	T, U
Gaussian Mixture Model and Expectation-Maximization Algorithm	1	T, U
Revision	1	

Examination forms	Multiple-choice questions, short-answer questions
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	[1] Stuart Russell and Peter Norvig, “ <i>Artificial Intelligence: A Modern Approach</i> ”, Fourth Edition, 2020. [2] David L. Poole & Alan K. Mackworth – <i>Artificial Intelligence Foundations of Computational Agents</i> – 3rd edition – 2023.

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:

	SL O					
CL O	1	2	3	4	5	6
1	x	x				
2		x				x
3		x				x
4	x	x				x

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction and Intelligent Agents	1, 2	Quiz	Lecture, Discussion	[1]. Chapter 1, 2 [2]. Chapter 1
2	States and Searching: Graph Searching Techniques	1, 2	Quiz	Lecture, In-class quiz	[1]. Chapter 3

3	States and Searching: Heuristic Search and More Sophisticated Search	1, 2	Quiz	Lecture, In-class quiz	[1]. Chapter 3
4	Features and Constraints: Constraint Satisfaction Problems	1, 2	Quiz	Lecture, In-class quiz	[1]. Chapter 6
5	Features and Constraints: Constraint Satisfaction Problems (continue)	1, 2	Quiz	Lecture, In-class quiz	[1]. Chapter 6
6	Reasoning Under Uncertainty	3, 4	Quiz	Lecture, In-class quiz	[1]. Chapter 12
7	Reasoning Under Uncertainty (continue)	3, 4	Quiz	Lecture, In-class quiz	[1]. Chapter 12
8	Midterm				
9	Supervised Learning: Neural Networks	3, 4	Quiz	Lecture, In-class quiz	[1]. Chapter 19 [2]. Chapter 20
10	Supervised Learning: Neural Networks (continue)	3, 4	Quiz	Lecture, In-class quiz	[1]. Chapter 19 [2]. Chapter 20
11	Supervised Learning: Support Vector Machine	3, 4	Quiz	Lecture, In-class quiz	[1]. Chapter 19 [2]. Chapter 15
12	Supervised Learning: Support Vector Machine in Mathematics (continue)	3, 4	Quiz	Lecture, In-class quiz	[1]. Chapter 19 [2]. Chapter 15
13	Beyond Supervised Learning: Kernels and Clustering	3, 4	Quiz	Lecture, In-class quiz	[1]. Chapter 21 [2]. Chapter 16, 22
14	Beyond Supervised Learning: Kernels and Clustering (continue)	3, 4	Quiz	Lecture, In-class quiz	[1]. Chapter 21 [2]. Chapter 16, 22

15	Gaussian Mixture Model and Expectation-Maximization Algorithm	3, 4	Quiz	Lecture, Discussion	[1]. Chapter 20 [2]. Chapter 24
16	Revision			Review-test	
17	Final exam				

4. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3
Labs (20%)		50%	50%
Midterm examination (30%)	50%	50%	
Final examination (40%)		100%	
Exercises/ Quiz (10%)	50%	50%	

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 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	Identifies own and others' assumptions and several relevant contexts when	Questions some assumptions. Identifies several relevant contexts when presenting a	Shows an emerging awareness of present assumptions (sometimes

	evaluates the relevance of contexts when presenting a position.	presenting a position.	position. May be more aware of others' assumptions than one's own (or vice versa).	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	Delivery techniques (posture, gesture, eye	Delivery techniques (posture, gesture, eye contact, and	Delivery techniques (posture, gesture, eye contact, and

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

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: Fundamental Concepts of Data Security

Course Code: IT140

1. General information

Course name	- (in English): Fundamental Concepts of Data Security - (in Vietnamese): Khái niệm cơ bản về bảo mật dữ liệu
Course designation	Fundamental concept of data security: This course focuses on information security, integrity and privacy techniques.
Course type	☐ <i>General knowledge</i> ☒ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:.....</i>
Semester(s) in which the course is taught	5,7
Person responsible for the course	Le Thanh Son, MSc.
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 introduces students to cryptographic principals and systems (symmetric and public key encryptions), and their applications in data security, secure communications, authentication and authorization. These core principles will be applied to the concepts of information risk management, and the analysis and handling of compromised systems. The ethics around computer crime, privacy, and intellectual property are covered in detail. Finally, the unit will cover the criteria and controls for information classification.
Course learning outcomes	CLO 1. Gain understanding of the cryptography concepts including symmetric key encryption, hash function, message authentication code, public key encryption, digital signature and digital envelope; CLO 2. Apply the concepts of authentication and authorization in implementing secure systems and networks; CLO 3. Understand and categorize the malicious software and their attacking mechanisms; CLO 4. Explore the buffer overflow attacks and fuzzing to find software vulnerabilities, and obtain the knowledge of software and operating system security; CLO 5. Understand and practice Internet security protocols and authentication applications;

	<table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO1, CLO2, CLO3, CLO5</td></tr><tr><td>Skill</td><td>CLO4</td></tr><tr><td>Attitude</td><td></td></tr></table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1, CLO2, CLO3, CLO5	Skill	CLO4	Attitude																													
Competency level	Course learning outcome (CLO)																																				
Knowledge	CLO1, CLO2, CLO3, CLO5																																				
Skill	CLO4																																				
Attitude																																					
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Symmetric-key encipherment (AES, DES)</td><td>2</td><td>T,U</td></tr><tr><td>Asymmetric-key encipherment (RSA, Diffie-Hellman,...);</td><td>2</td><td>T,U</td></tr><tr><td>Message integrity and message authentication;</td><td>2</td><td>T,U</td></tr><tr><td>Cryptographic hash function;</td><td>1</td><td>T,U</td></tr><tr><td>Digital signature;</td><td>1</td><td>T,U</td></tr><tr><td>Entity authentication;</td><td>1</td><td>T,U</td></tr><tr><td>Security at the application layer: PGP and S/MIME;</td><td>1</td><td>T</td></tr><tr><td>Security at the transport layer: SSL and TLS;</td><td>1</td><td>T</td></tr><tr><td>Security at network layer: IPSec;</td><td>1</td><td>T</td></tr><tr><td>Malicious software;</td><td>2</td><td>T</td></tr><tr><td>Database and cloud security;</td><td>1</td><td>T,U</td></tr></table>	Topic	Weight	Level	Symmetric-key encipherment (AES, DES)	2	T,U	Asymmetric-key encipherment (RSA, Diffie-Hellman,...);	2	T,U	Message integrity and message authentication;	2	T,U	Cryptographic hash function;	1	T,U	Digital signature;	1	T,U	Entity authentication;	1	T,U	Security at the application layer: PGP and S/MIME;	1	T	Security at the transport layer: SSL and TLS;	1	T	Security at network layer: IPSec;	1	T	Malicious software;	2	T	Database and cloud security;	1	T,U
Topic	Weight	Level																																			
Symmetric-key encipherment (AES, DES)	2	T,U																																			
Asymmetric-key encipherment (RSA, Diffie-Hellman,...);	2	T,U																																			
Message integrity and message authentication;	2	T,U																																			
Cryptographic hash function;	1	T,U																																			
Digital signature;	1	T,U																																			
Entity authentication;	1	T,U																																			
Security at the application layer: PGP and S/MIME;	1	T																																			
Security at the transport layer: SSL and TLS;	1	T																																			
Security at network layer: IPSec;	1	T																																			
Malicious software;	2	T																																			
Database and cloud security;	1	T,U																																			
Examination forms	Multiple-choice questions, short-answer questions																																				
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.																																				

	Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	1. William Stallings – Cryptography and Network Security: Principles and Practice – 8th edition – 2020

2. *Learning Outcomes Matrix*

The relationship between Course Learning Outcomes (CLO) (1-5) and Program/Student Learning Outcomes (SLO) (1-6) is shown in the following table:

	SLO					
CL O	1	2	3	4	5	6
1	X		X	X		
2		X				
3	X					
4	X					
5	X					

3. *Planned learning activities and teaching methods*

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Symmetric-key encipherment (AES, DES)	1	Quiz, exam	Lecture, exercises, lab	[1]
2	Asymmetric-key encipherment (RSA, Diffie-Hellman,...);	1	Quiz, exam	Lecture, exercises, lab	[1]
3	Message integrity and message authentication;	1,2	Quiz, exam	Lecture, exercises, lab	[1]
4	Cryptographic hash function;	1	Quiz, exam	Lecture, exercises, lab	[1]

5	Digital signature;	1	Quiz, exam	Lecture, exercises, lab	[1]
6	Midterm				
7	Entity authentication;	2	Quiz, exam	Lecture, exercises, lab	[1]
8	Security at the application layer: PGP and S/MIME;	5	Quiz, exam	Lecture, exercises	[1]
9	Security at the transport layer: SSL and TLS;	5	Quiz, exam	Lecture, exercises	[1]
10	Security at network layer: IPSec;	5	Quiz, exam	Lecture, exercises	[1]
11	Malicious software;	3,4	Quiz, exam	Lecture, exercises, lab	[1]
12	Database and cloud security;	3,4	Quiz, exam	Lecture, exercises, lab	[1]
13	Final exam				

4. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5
Midterm examination (30%)	68%	70%	55%		
Final examination (40%)				74%	67%
Exercises/ Quiz (30%)	32%	30%	45%	26%	33%

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

	acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	(perspective, thesis/hypothesis).		
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

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

	skillful and makes the content of the presentation cohesive.	within the presentation.	within the presentation.	
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears 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	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities)	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities)	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant

	relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

Date revised: April 24, 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: Data Analysis
Course Code: IT137IU

General information

Course name	- (In English): Data Analysis - (In Vietnamese): Phân tích dữ liệu
Course designation	Data analysis is a process of inspecting, cleansing, transforming, and modelling data with the goal of discovering useful information, informing conclusions, and supporting decision-making.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	3,5
Person responsible for the course	Nguyen Thi Thanh Sang, 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	Recommended : IT151IU- Statistical Methods									
Course objectives	This course introduces fundamentals of data analysis by learning data analysis process together with descriptive statistics and inferential statistics. Students will study how to collect data, process and turn them into useful information and knowledge which are important to decision making. From raw data to useful information then to knowledge, students will examine a number of datasets and case studies from different perspectives. Students are able to develop practical solutions to problems in business and engineering, and gain hands-on experience of using contemporary data analysis tools.									
Course learning outcomes	CLO 1. Understand fundamental concepts of data analysis. CLO 2. Explain how to perform data analysis with descriptive statistics and inferential statistics. CLO 3. Apply data analysis techniques and tools to some practical cases in business/engineering. <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><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></table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1	Skill	CLO2, CLO3	Attitude	CLO3	
Competency level	Course learning outcome (CLO)									
Knowledge	CLO1									
Skill	CLO2, CLO3									
Attitude	CLO3									
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Data, data analysis process and business decisions</td><td>1</td><td>T, U</td></tr><tr><td>Data analysis roles</td><td>1</td><td>T, U</td></tr></table>	Topic	Weight	Level	Data, data analysis process and business decisions	1	T, U	Data analysis roles	1	T, U
Topic	Weight	Level								
Data, data analysis process and business decisions	1	T, U								
Data analysis roles	1	T, U								

	Data Ecosystem and Languages for Data Professionals	2	T, U
	Data Repositories and Big data Platforms	2	T, U, I
	Gathering Data	1	T, U, I
	Wrangling Data	1	T, U
	Analyzing and Data Mining	1	T, U
	Communication Data Analysis Finding	1	I
	Exploratory Data Analysis	1	T, U, I
	Customer relationship management	2	T, U, I
	Personalization	1	
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	1. Anil Maheshwari – Data Analytics – 2nd edition – 2023 2. Migrant & Seasonal Head Start Technical Assistance Center. Introduction to Data Analysis Handbook, non-commercial uses only.		

Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (CLO) (1-3) 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	X				X	
3						X

Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Data, data analysis process and business decisions	1	Quiz	Lecture	[1,2]
2	Data analysis roles	2	Quiz, Midterm, Project	Lecture, Discussion, In-class, exercise	[1,2]

Week	Topic	CLO	Assessments	Learning activities	Resources
3	Data Ecosystem and Languages for Data Professionals	2	Quiz, Midterm, Project	Lecture, Discussion, In-class, exercise	[1,2]
4	Data Repositories and Big data Platforms	2	Quiz, Midterm, Project	Lecture, Discussion, In-class, exercise	[1,2]
5	Gathering Data	2,3	Project, Final, Quiz, Lab	Lecture, Discussion, In-class, exercise	[1]
6	Midterm				
7	Wrangling Data	2	Project, Final, Quiz, Lab	Lecture, Discussion, In-class, exercise	[1]
8	Analyzing and Data Mining	2,3	Project, Final, Quiz, Lab	Lecture, Discussion, In-class, exercise	[1,2]
9	Communication Data Analysis Finding	3	Project, Final, Quiz, Lab	Lecture, Discussion, In-class, exercise	[1,2]
10	Exploratory Data Analysis	2,3	Project, Final, Quiz, Lab	Lecture, Discussion, In-class, exercise	[1,2]
11	Customer relationship management	2,3	Project, Final, Quiz, Lab	Lecture, Discussion, In-class, exercise	[1]
12	Personalization	2,3	Project, Final, Quiz, Lab	Lecture, Discussion, In-class, exercise	[1]
13	Final exam				

Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Labs (10%)			100%
Midterm examination (25%)	50%	50%	
Final examination (40%)		50%	50%
Exercises/ Quiz (5%)	100%		
Projects/Presentations/ Report (20%)	30%	30%	40%

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		

5.2. Holistic rubric

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

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

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.

Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.

Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable , and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that

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

Source: Association of American Colleges and Universities

Date revised: April 24, 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: Regression Analysis

Course Code: IT136

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	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	2,4
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	CLO 1. Determine the models representing the relationships between variables and use the models to forecast future observations. CLO 2. Perform inference and diagnostic of the models; select the best model. CLO 3. Apply knowledge to various practical datasets. <table><tr><th>Competency level</th><th colspan="2">Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td colspan="2">CLO1</td></tr><tr><td>Skill</td><td colspan="2">CLO2, CLO3</td></tr><tr><td>Attitude</td><td colspan="2">CLO2</td></tr></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	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight (Theory + Lab.)</th><th>Level</th></tr><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><tr><td>Matrix approach for Simple regression model</td><td>3+4</td><td>T, U</td></tr></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	Matrix approach for Simple regression model	3+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	1. Michael T. Kutner, Christopher J. Nachtsheim & John Neter – Applied Linear Regression Models – 5th edition – 2005 2. Douglas C. Montgomery, Elizabeth A. Peck & G. Geoffrey Vining – Introduction to Linear Regression Analysis – 6th edition – 2021		

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

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 exercise, laboratory	1,2
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				

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.

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		

5.2. Holistic rubric

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

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

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.

Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.

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

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

Source: Association of American Colleges and Universities

Date revised: April 24, 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: Data Science and Visualization

Course Code: IT138

General information

Course name	- (In English): Data Science and Visualization - (In Vietnamese): Khoa học dữ liệu và Trực quan hóa dữ liệu
Course designation	Introduction to Data Visualization
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	4,6
Person responsible for the course	Tran Thanh Tung, Dr.
Language	English
Relation to curriculum	Compulsory / elective / specialisation Names of other study programmes with which the module is shared
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	The goal of this course is to introduce students to the key principles, methods, and techniques for effective visual analysis of data. The course begins with aims and key principles of data visualization. The course continues with different aspects of visualization including techniques and method for presenting different data types, and for discussing and analyzing visualizations. Thorough the course, students will be introduced to many visualization systems and visual tools via hand-on exercises.																																				
Course learning outcomes	CLO 1. Understand the principles of data and graphic design. CLO 2. Create well-designed data visualizations with appropriate tools. CLO 3. Evaluate a visualization design. <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><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></table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1	Skill	CLO2, CLO3	Attitude	CLO3																												
Competency level	Course learning outcome (CLO)																																				
Knowledge	CLO1																																				
Skill	CLO2, CLO3																																				
Attitude	CLO3																																				
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Visualization design principles</td><td>3</td><td>I, T</td></tr><tr><td>Perception, Cognition, Color</td><td>3</td><td>T</td></tr><tr><td>Data abstraction, data types</td><td>3</td><td>I, T</td></tr><tr><td>Visual encoding with marks and channels</td><td>3</td><td>T, U</td></tr><tr><td>Tasks and Interactivity</td><td>3</td><td>T</td></tr><tr><td>Validation and visualization</td><td>3</td><td>T</td></tr><tr><td>Arrange text and sets</td><td>3</td><td>T</td></tr><tr><td>Arrange spatial data</td><td>3</td><td>T</td></tr><tr><td>Arrange tree and graphs/networks</td><td>3</td><td>T</td></tr><tr><td>Facets and views</td><td>3</td><td>T</td></tr><tr><td>Focus+Context</td><td>3</td><td>T</td></tr></table>	Topic	Weight	Level	Visualization design principles	3	I, T	Perception, Cognition, Color	3	T	Data abstraction, data types	3	I, T	Visual encoding with marks and channels	3	T, U	Tasks and Interactivity	3	T	Validation and visualization	3	T	Arrange text and sets	3	T	Arrange spatial data	3	T	Arrange tree and graphs/networks	3	T	Facets and views	3	T	Focus+Context	3	T
Topic	Weight	Level																																			
Visualization design principles	3	I, T																																			
Perception, Cognition, Color	3	T																																			
Data abstraction, data types	3	I, T																																			
Visual encoding with marks and channels	3	T, U																																			
Tasks and Interactivity	3	T																																			
Validation and visualization	3	T																																			
Arrange text and sets	3	T																																			
Arrange spatial data	3	T																																			
Arrange tree and graphs/networks	3	T																																			
Facets and views	3	T																																			
Focus+Context	3	T																																			

	Filtering and Aggregation	3	T	
Examination forms	Multiple-choice questions, short-answer questions			
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.			
Reading list	[1] Claus O. Wilke, Fundamentals of Data Visualization, 1st edition, 2019 [2] Tamara Munzner, Visualization Analysis and Design 1st, 2014 [3] Colin Ware – Visual Thinking for Information Design – 2nd edition – 2021 [4] Scott Murray – Interactive Data Visualization for the Web – 2nd edition – 2017 [5] Alberto Cairo, The Functional Art: An introduction to information graphics and visualization 1st, 2012 [6] Cole Nussbaumer Knafllic, Storytelling with Data: A Data Visualization Guide for Business Professionals 1st, 2015			

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	X				
2		X	X			
3		X				

Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Visualization design principles	1	Quiz	Teaching, presentation	
2	Perception, Cognition, Color	1,2	Quiz, Project	Teaching, presentation	
3	Data abstraction, data types	2,3	Quiz, Project	Teaching, presentation	
4	Visual encoding with marks and channels	2,3	Quiz, Project	Teaching, presentation	

Week	Topic	CLO	Assessments	Learning activities	Resources
5	Tasks and Interactivity	2,3	Quiz, Project	Teaching, presentation	
6	Midterm				
7	Validation and visualization	1,3	Quiz, in-class exercises, Project	Teaching, Discussion	
8	Arrange text and sets	2,3	Quiz, in-class exercises, Project	Teaching, Discussion	
9	Arrange spatial data	2,3	Quiz, in-class exercises, Project	Teaching, Discussion	
10	Arrange tree and graphs/networks	2,3	Quiz, in-class exercises, Project	Teaching, Discussion	
11	Facets and views	2,3	Quiz, in-class exercises, Project	Teaching, Discussion	
12	Focus+Context	2,3	Quiz, in-class exercises, Project	Teaching, Discussion	
13	Filtering and Aggregation	2,3	Quiz, in-class exercises, Project	Teaching, Discussion	
14	Final exam				

Assessment plan

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

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

	necessary for full understanding.	impeded by omissions.	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 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	Delivery techniques (posture, gesture, eye	Delivery techniques (posture, gesture, eye	Delivery techniques (posture, gesture, eye

	contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	contact, and vocal expressiveness) make the presentation understandable , and speaker appears tentative.	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,	Central message is clear and consistent with	Central message is basically understandable but is not often	Central message can be deduced but is not explicitly stated

	appropriately repeated, memorable, and strongly supported.)	the supporting material.	repeated and is not memorable.	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 School of Computer Science and Engineering

COURSE SYLLABUS

Course Name: Scalable and Distributed Computing

Course Code: IT139IU

1. General information

Course name	- (In English): Scalable and Distributed Computing - (In Vietnamese): Tính toán khả năng mở rộng và phân bố
Course designation	Fundamental concepts in distributed computing and discuss system designs enabling distributed applications
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	5,7
Person responsible for the course	Assoc. Prof. Vo Thi Luu Phuong
Language	English
Relation to curriculum	Compulsory (NE, DS)
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 : Algorithms and Data Structure, Principles of Database Management						
Course objectives	This course presents the theory, design, implementation, and analysis of distributed systems. Through classroom lectures, labs, projects and exercises, students learn the fundamentals of distributed systems, system models, remote procedure call, distributed objects, operating system support, security in distributed systems, distributed file systems, concurrency, transaction and synchronization, replication. The course also covers advanced topics related to cloud and distributed data processing technologies: data partitioning, storage schemes, stream processing, and parallel algorithms. Course introduces some modern Internet and cloud computing services running on multiple geographically distributed data centers: Google, Yahoo, Facebook, iTunes, Amazon, eBay, Bing, etc.						
Course learning outcomes	CLO 1. Understand the concept and design of distributed systems CLO 2. Apply distributed data processing models and technologies CLO 3. Communicate to the team to design the data pipeline that can be integrated with distributed system, CLO 4. Design and implement components of a scalable and distributed system (millions of users and petabytes of data) <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 2, CLO 4</td></tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO 1, CLO 2, CLO 3, CLO 4	Skill	CLO 2, CLO 4
Competency level	Course learning outcome (CLO)						
Knowledge	CLO 1, CLO 2, CLO 3, CLO 4						
Skill	CLO 2, CLO 4						

	Attitude	CLO 3																																														
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction to Distributed Systems, System Models</td><td>1</td><td>I, T</td></tr><tr><td>Remote Procedure Call, Distributed Objects</td><td>1</td><td>I, T</td></tr><tr><td>Operating System Support, Distributed File Systems</td><td>1</td><td>I, T</td></tr><tr><td>Transaction and Synchronization</td><td>1</td><td>T, U</td></tr><tr><td>Concurrency Control</td><td>1</td><td>T, U</td></tr><tr><td>Security</td><td>1</td><td>T, U</td></tr><tr><td>Fault and Failure</td><td>1</td><td>T, U</td></tr><tr><td>Introduction to MapReduce</td><td>1</td><td>T, U</td></tr><tr><td>Scalable K-means algorithms</td><td>1</td><td>T, U</td></tr><tr><td>Graph and Random-walk algorithms</td><td>1</td><td>T, U</td></tr><tr><td>Web services, XML, JSON, Node.js</td><td>1</td><td>T, U</td></tr><tr><td>Peer-to-Peer</td><td>1</td><td>I, T</td></tr><tr><td>Selected seminar 1: Introduce some distributed pipeline in Industry.</td><td>1</td><td>I</td></tr><tr><td>Selected seminar 2: Introduce some scalable and distributed products used in Industry.</td><td>1</td><td>I</td></tr></table>			Topic	Weight	Level	Introduction to Distributed Systems, System Models	1	I, T	Remote Procedure Call, Distributed Objects	1	I, T	Operating System Support, Distributed File Systems	1	I, T	Transaction and Synchronization	1	T, U	Concurrency Control	1	T, U	Security	1	T, U	Fault and Failure	1	T, U	Introduction to MapReduce	1	T, U	Scalable K-means algorithms	1	T, U	Graph and Random-walk algorithms	1	T, U	Web services, XML, JSON, Node.js	1	T, U	Peer-to-Peer	1	I, T	Selected seminar 1: Introduce some distributed pipeline in Industry.	1	I	Selected seminar 2: Introduce some scalable and distributed products used in Industry.	1	I
Topic	Weight	Level																																														
Introduction to Distributed Systems, System Models	1	I, T																																														
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Selected seminar 1: Introduce some distributed pipeline in Industry.	1	I																																														
Selected seminar 2: Introduce some scalable and distributed products used in Industry.	1	I																																														
Examination forms	Multiple-choice questions, short-answer questions																																															
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.																																															

	Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	1. G. Coulouris, J. Dollimore, T. Kindberg, G. Blair, Distributed Systems: Concepts and Design 5th, 2011 2. T. White, Hadoop: The Definitive Guide 4th, 2015 3. Andrew S. Tanenbaum & Maarten van Steen – Distributed Systems: Principles and Paradigms – 3rd edition – 2017

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

3. *Planned learning activities and teaching methods*

Week	Topic	CL O	Assessments	Learning activities	Resources
1	Introduction to Distributed Systems, System Models	1		Lecture, Discussion	[1,2,3] Chapter 1
2	Remote Procedure Call, Distributed Objects	1	Exercises	Lecture, In-class exercises	[1,3] Chapter 2
3	Operating System Support, Distributed File Systems	1	Exercises	Lecture, In-class exercises	[1,3] Chapter 3
4	Transaction and Synchronization	1,2	Labs	Lecture, In-class exercises	[1,3] Chapter 3,4

5	Concurrency Control	1,2	Labs	Lecture, In-class exercises	[1,3] Chapter 5,6
6	Midterm				
7	Security	2,3	Exercises	Lecture, In-class exercises	[1,3] Chapter 6,7
8	Fault and Failure	2,3	Labs	Lecture, In-class exercises	[2] Chapter 5
9	Introduction to MapReduce	2,3	Exercises	Lecture, In-class exercises	[2] Chapter 6,7
10	Scalable K-means algorithms	2,3	Labs	Lecture, In-class exercises	Outside resources
11	Graph and Random-walk algorithms	2,3	Exercises	Lecture, In-class exercises	Outside resources
12	Web services, XML, JSON, Node.js	3,4	Labs	Lecture, In-class exercises	[1,3] Chapter 9,10,11
13	Peer-to-Peer	3,4	Labs	Lecture, In-class exercises	[1,3] Chapter 12
14	Selected seminar 1: Introduce some distributed pipeline in Industry.	4		Discussion	Outside resources
15	Selected seminar 2: Introduce some scalable and distributed products used in Industry.	4		Discussion	Outside resources

16	Revision			Review-test	
17	Final exam				

4. *Assessment plan*

Assessment Type	CLO 1	CLO 2	CLO 3
Labs (20%)		50%	50%
Midterm examination (30%)	50%	50%	
Final examination (40%)	20%	50%	30%
Exercises/ Quiz (10%)	50%	50%	

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

-
2. 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)

5.4. 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		

5.5. 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.

5.6. 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	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).

	presenting a position.		assumptions than one's own (or vice versa).	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	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness)	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the

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

Source: Association of American Colleges and Universities

Date revised: April 24, 2025

Ho Chi Minh City, 24/04/2025

Dean of the School of Computer Science and Engineering

(Signature)

A handwritten signature in blue ink, appearing to read 'N Sinh', with a long horizontal stroke extending to the right and a small flourish at the end.

Nguyen Van Sinh

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

COURSE SYLLABUS

Course Name: Data mining

Course Code: IT160IU

1. General information

Course name	- (In English): Data mining - (In Vietnamese): Khai thác dữ liệu
Course designation	This subject introduces the students to the principles and algorithms of data mining, and the requirements of a data mining process.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	6,8
Person responsible for the course	Nguyen Thi Thanh Sang, Dr.
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, lesson, project, laboratory.

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	Students will study data mining concepts and algorithms to solve problems of knowledge discovery. They will be equipped with skills of using recent data mining software for solving practical problems and gain experience of doing independent study and research.									
Course learning outcomes	<table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO 1. Understand basic contents of data warehousing and data mining. CLO 2. Explain modern algorithms in the area of data mining and knowledge discovery.</td></tr><tr><td>Skill</td><td>CLO 3. Apply data mining techniques to some case studies using existing datasets.</td></tr><tr><td>Attitude</td><td>CLO 4. Work in a team to build a data mining process.</td></tr></table>		Competency level	Course learning outcome (CLO)	Knowledge	CLO 1. Understand basic contents of data warehousing and data mining. CLO 2. Explain modern algorithms in the area of data mining and knowledge discovery.	Skill	CLO 3. Apply data mining techniques to some case studies using existing datasets.	Attitude	CLO 4. Work in a team to build a data mining process.
Competency level	Course learning outcome (CLO)									
Knowledge	CLO 1. Understand basic contents of data warehousing and data mining. CLO 2. Explain modern algorithms in the area of data mining and knowledge discovery.									
Skill	CLO 3. Apply data mining techniques to some case studies using existing datasets.									
Attitude	CLO 4. Work in a team to build a data mining process.									
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)									

	Topic	Weight	Level
	Introduction	1	I
	Know your data	1	T, U
	Data preprocessing	1	T, U
	Data mining knowledge representation	1	T, U
	Evaluating what's been learned	1	T
	Data mining algorithms: Classification	2	T, U
	Mining Frequent Patterns, Association and Correlations: Basic Concept and Methods	2	T
	Data mining algorithms: Clustering	2	T
	Classification: Advanced Methods	1	T, I
	Semantic data mining	1	I
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	[1] Jiawei Han & Micheline Kamber – Data Mining: Concepts and Techniques – 4th edition – 2022. [2] Ian H. Witten, Eibe Frank, Mark A. Hall, Christopher J. Pal & James Foulds – Data Mining: Practical Machine Learning Tools and Techniques – 5th edition – 2025. [3] A. Lawrynowicz, <i>Semantic Data Mining: An Ontology-based Approach (Studies on the Semantic Web)</i>, IOS Press (April 15, 2017), ISBN-10 1614997454.		

2. Learning Outcomes Matrix

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

	SLO

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

3. *Planned learning activities and teaching methods*

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction	1		Lecture, Discussion	[1, 2]. Chapter 1
2	Know your data	1	Quiz.s2	Lecture, In-class quiz	[1]. Chapter 2
3	Data preprocessing	1,4		Lecture, Discussion	[1]. Chapter 3
4	Data mining knowledge representation	1	Quiz.s4	Lecture, In-class quiz	[2]. Chapter 3; Reading [1]. Chapter 4 – Data Warehousing
5	Evaluating what's been learned	1	Quiz.s5	Lecture, In-class quiz	[2]. Chapter 5
6-7	Data mining algorithms: Classification	2,3	Quiz.s6-7	Lecture, In-class quiz	[1]. Chapter 8; [2]. Chapter 4.3
8	Data mining to code	3		Lecture, Discussion	
9	Midterm				
10-11	Mining Frequent Patterns, Association and	2,3,4	Quiz.s10-11	Lecture,	[1]. Chapter 6; [2]. Chapter 4.5

	Correlations: Basic Concept and Methods			In-class quiz	
12-13	Data mining algorithms: Clustering	2,3,4	Quiz.s12-13	Lecture, In-class quiz	[1]. Chapter 10; [2]. Chapter 4.8
14	Classification: Advanced Methods	2	Quiz.s14	Lecture, In-class quiz	[1]. Chapter 9
15	Semantic data mining	2		Lecture, Discussion	[3]
16	Revision			Review-test	
17	Final exam				

Laboratory

Week	Lab
5	Introduction to Weka
6	Evaluation
7	Simple classifiers
8	Programming - Pre-processing data
9	More classifiers
10	Putting it all together
11	Programming - Clustering
12	Programming - Sequential pattern discovery

4. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4
Labs (10%)			100%	
Programming (20%)			70%	30%
Midterm examination (30%)	50%	50%		

Final examination (40%)		40%	60%	

5. Rubrics (optional)

5.1. Grading checklist

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

5.2. Holistic rubric

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

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

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

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

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

	(perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	within position (perspective, thesis/ hypothesis).		
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

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: Deep Learning

Course Code: IT157IU

6. General information

Course name	- (In English): Deep Learning - (In Vietnamese): Học sâu
Course designation	This course helps students understand the capabilities, challenges, and consequences of deep learning and prepare students to participate in the development of leading-edge AI technology
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	7
Person responsible for the course	Dr. Mai Hoang Bao An
Language	English
Relation to curriculum	Elective (CS, DS)
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	This course helps students understand the capabilities, challenges, and consequences of deep learning and prepare students to participate in the development of leading-edge AI technology. In this course, students will build and train neural network architectures such as Convolutional Neural Networks, Recurrent Neural Networks, Transformers, and learn how to make them better with strategies such as Dropout, BatchNorm, and more. Get ready to master theoretical concepts and their industry applications using Python and PyTorch and tackle real-world cases.
Course learning outcomes	CLO 1. Understand fundamental concepts of Deep Learning. Get familiar with some popular algorithms used in deep learning models. Understand and be able to use of popular libraries such as NumPy, PyTorch. CLO 2. Neural Networks for regression and classification. The concept of Multilayer Perceptrons. The essential networks: Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN). CLO 3. Build, train, and deploy different types of Deep Architectures from traditional to modern Architectures. CLO 4. Understand and be able to apply deep learning techniques to real-world scenarios: Computer Vision, Natural Language Processing.

	<table><tr><td>Competency level</td><td>Course learning outcome (CLO)</td></tr><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></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	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><td>Topic</td><td>Weight</td><td>Level</td></tr><tr><td>Introduction to Deep Learning Some demos on the applications of Deep Learning</td><td>1</td><td>I, U</td></tr><tr><td>Linear Classifiers, Optimization and Gradient Descent Backpropagation Algorithm Introduction to PyTorch library</td><td>1</td><td>I, T</td></tr><tr><td>Linear Neural Networks for Regression Linear Neural Networks for Classification</td><td>1</td><td>T, U</td></tr><tr><td>Multilayer Perceptrons</td><td>1</td><td>T, U</td></tr><tr><td>Advances in PyTorch library</td><td>1</td><td>T, U</td></tr><tr><td>Convolutional Neural Networks (CNN)</td><td>1</td><td>T, U</td></tr><tr><td>Recurrent Neural Networks (RNN)</td><td>1</td><td>T, U</td></tr><tr><td>Modern CNN:</td><td>2</td><td>T, U</td></tr></table>	Topic	Weight	Level	Introduction to Deep Learning Some demos on the applications of Deep Learning	1	I, U	Linear Classifiers, Optimization and Gradient Descent Backpropagation Algorithm Introduction to PyTorch library	1	I, T	Linear Neural Networks for Regression Linear Neural Networks for Classification	1	T, U	Multilayer Perceptrons	1	T, U	Advances in PyTorch library	1	T, U	Convolutional Neural Networks (CNN)	1	T, U	Recurrent Neural Networks (RNN)	1	T, U	Modern CNN:	2	T, U
Topic	Weight	Level																										
Introduction to Deep Learning Some demos on the applications of Deep Learning	1	I, U																										
Linear Classifiers, Optimization and Gradient Descent Backpropagation Algorithm Introduction to PyTorch library	1	I, T																										
Linear Neural Networks for Regression Linear Neural Networks for Classification	1	T, U																										
Multilayer Perceptrons	1	T, U																										
Advances in PyTorch library	1	T, U																										
Convolutional Neural Networks (CNN)	1	T, U																										
Recurrent Neural Networks (RNN)	1	T, U																										
Modern CNN:	2	T, U																										

	- Networks Using Blocks (VGG) - Multi-Branch Networks (GoogLeNet) - Residual Neural Network (Resnet) - MobileNet			
	Modern RNN: - Gated Recurrent Units (GRU) - Long Short-Term Memory (LSTM) - Bidirectional RNN - Encoder-Decoder Architecture	2	T, U	
	Optimization Algorithms used in Deep Learning	1	I, T	
	Generative Adversarial Network (GAN) & Deep Convolution GAN	1	T, U	
	Deep Learning in Computer Vision	1	T, U	
	Deep Learning in Natural Language Processing	1	T, U	
Examination forms	Short-answer questions, Long-answer questions, programming questions			
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.			
Reading list	[1] Ian Goodfellow, Yoshua Bengio and Aaron Courville, Deep Learning, The MIT Press 2021, ISBN: 978-0262035613. [2] Aston Zhang, Zachary C. Lipton, Mu Li, and Alexander J. Smola., Dive Into Deep Learning.			

7. 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:

	1	2	3	4	5	6

1	x					
2		x	x			
3			x	x		x
4				x		x

8. *Planned learning activities and teaching methods*

Wee k	Topic	CL O	Assessments	Learning activities	Resource s
1	Introduction to Deep Learning Some demos on the applications of Deep Learning	1		Lecture, Discussion	[1, 2] Chapter 1
2	Linear Classifiers, Optimization and Gradient Descent Backpropagation Algorithm Introduction to PyTorch library	1	Exercises	Lecture, In-class exercises	[1, 2] Chapter 2
3	Linear Neural Networks for Regression Linear Neural Networks for Classification	1, 2	Exercises	Lecture, In-class exercises	[2] Chapter 3, 4
4	Multilayer Perceptrons	2	Exercises	Lecture, In-class exercises	[2] Chapter 5
5	Advances in PyTorch library	1, 2	Exercises	Lecture, In-class exercises	[2] Chapter 6
6	Convolutional Neural Networks (CNN)	2	Exercises	Lecture, In-class exercises	[2] Chapter 7

7	Recurrent Neural Networks (RNN)	2	Quiz	Lecture, In-class quiz	[2] Chapter 9
8-9	Modern CNN: - Networks Using Blocks (VGG) - Multi-Branch Networks (GoogLeNet) - Residual Neural Network (Resnet) - MobileNet	2, 3	Exercises	Lecture, In-class exercises	[2] Chapter 8
10	Midterm				
11-12	Modern RNN: - Gated Recurrent Units (GRU) - Long Short-Term Memory (LSTM) - Bidirectional RNN - Encoder-Decoder Architecture	2, 3	Exercises	Lecture, In-class exercises	[2] Chapter 10
13	Optimization Algorithms used in Deep Learning	1, 4	Seminar	Lecture, Discussion	[2] Chapter 12
14	Generative Adversarial Network (GAN) & Deep Convolution GAN	3, 4	Seminar	Lecture, Discussion	[2] Chapter 18
15	Deep Learning in Computer Vision	4	Seminar	Lecture, Student presentaion	[2] Chapter 14
16	Deep Learning in Natural Language Processing	4	Seminar	Lecture, Student presentaion	[2] Chapter 15
17	Final exam				

9. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4
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%

10. Rubrics (optional)

5.4. 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		

5.5. 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.

5.6. 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	Issue/ problem to be considered critically is stated, described, and clarified so that	Issue/ problem to be considered critically is stated but description leaves some	Issue/ problem to be considered critically is stated without

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

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1

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

	polished and confident.	speaker appears comfortable.	appears tentative.	speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that 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

Ho Chi Minh City, 24/04/2025

Dean of the School of Computer Science and Engineering

(Signature)

A handwritten signature in blue ink, appearing to read 'N Sinh', with a long horizontal stroke extending to the right and a small mark below the start of the signature.

Nguyen Van Sinh

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

COURSE SYLLABUS

Course Name: Machine Learning

Course Code: IT172IU

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	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	6, 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	CLO 1. gain understanding of machine learning in general and its applications. CLO 2. can practice with some popular machine learning algorithms at a basic level. CLO 3. can understand and reproduce different machine learning use cases based on popular platforms. CLO 4. learn how to select and use machine learning algorithms with a bunch of application.

	<table><tr><td>Competency level</td><td>Course learning outcome (CLO)</td></tr><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></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																									
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Knowledge	CLO 1, CLO 2, CLO 3, CLO 4																																	
Skill	CLO 3, CLO 4																																	
Attitude	CLO 3, CLO 4																																	
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><td>Topic</td><td>Weight</td><td>Level</td></tr><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></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
Topic	Weight	Level																																
Why is Machine Learning important? History of Machine Learning	1	I																																
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		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	
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.				

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				

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
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				

Week	Topic	CLO	Assessments	Learning activities	Resources
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				

Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4
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		

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

	acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	(perspective, thesis/hypothesis).		
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

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

	skillful and makes the content of the presentation cohesive.	within the presentation.	within the presentation.	
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears 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	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities)	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities)	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant

	relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

Date revised: April 24, 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: Big Data Analytics

Course Code: IT173IU

General information

Course name	- (In English): Big Data Analytics - (In Vietnamese): Phân tích dữ liệu lớn
Course designation	The aim of this course is first to provide the students revision on the critical concepts and knowledges of big data, the goals of big data. Secondly, it gives the students the overview on the popular techniques and latest technologies used to deal with big data analytics.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	7
Person responsible for the course	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 : Data Analysis				
Course objectives	Big Data Analytics provides baseline general knowledge of the techniques and technologies used in Data era of both small-to-medium tabular data to Big Data solutions. It covers the development of solutions using the Hadoop ecosystem, including MapReduce, HDFS, Apache Spark programming frameworks. This course helps students build a foundation for working with Apache Big Data solutions.				
Course learning outcomes	CLO 1. Revise the knowledge of data pipeline, small-to-medium data, types of data and related use cases. Revision on the programming used to handle with data pipeline. CLO 2. Get knowledge of selecting data solutions. Identify common tools and technologies that can be used to create Big Data solutions. CLO 3. Get knowledges on popular models of Big Data Analytics with Spark. Design the MapReduce programming framework, including the map, shuffle and sort, and reduce components. CLO 4. Get to know how to do the learning pipelines with Big Data. Implement Big Data solutions using different big data programming frameworks. <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> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO 1, CLO 2, CLO 3, CLO 4
Competency level	Course learning outcome (CLO)				
Knowledge	CLO 1, CLO 2, CLO 3, CLO 4				

			Data preparation with pySpark - Data manipulation - Data preparation - Miscellaneous	2	I, T		
			Machine Learning with Spark - Regression - Classification	3	T, U		
			Basic Text Mining with Spark A case study Some advanced topics: Apache Kafka	1	T, U		
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] Viktor Mayer-Schönberger, Kenneth Cukier., Big Data: A Revolution That Will Transform How We Live, Work, and Think., Harper Business; Reprint edition. [2] Sumit Pal., SQL on Big Data: Technology, Architecture, and Innovation., Apress; 1st edition. [3] Nandhini Abirami R, Seifedine Kadry, Amir H. Gandomi, Balamurugan Balusamy., Big Data: Concepts, Technology, and Architecture., Wiley; 1st edition. [4] Bill Chambers, Matei Zaharia., Spark: The Definitive Guide: Big Data Processing Made Simple., O'Reilly Media; 1st edition.						

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

	SLO					
1	X					
2	X	X	X			
3		X		X	X	X
4					X	X

Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Revision on data pipeline concepts Introduction to some successful data solutions.	1		Lecture, Discussion	[1] Chapter 1, 2
2	Introduction to Big Data Introduction to necessary tools	1, 2	Exercises	Lecture, In-class exercises	[1,2] Chapter 2, 3
3	Remind on EDA Remind on Python and some related libraries.	1, 2	Exercises	Lecture, In-class exercises	[1,2,3] Chapter 4, 5
4	Advanced on programming used to deal with data pipeline, Big Data. Applications in Text Analytics Support Visual Analytics in data pipeline	1, 2	Exercises, labs	Lecture, In-class exercises	[2,3] Chapter 5, 6
5	Summary on data preparation Databases for common data and related contents	2, 3	Exercises, labs	Lecture, In-class exercises	[2,3] Chapter 7
6	Introduction to Dask for handling with Big data.	2, 3	Exercises, labs	Lecture, In-class exercises	[2,3] Chapter 8, 9

Week	Topic	CLO	Assessments	Learning activities	Resources
7-8	Practice with Dask	2, 3, 4	Exercises, labs	Lecture, In-class exercises	[2,3] Chapter 10, 11
9	Midterm				
10	Remind to Hadoop/MapReduce Some examples with the concepts of MapReduce in python.	2, 3, 4	Exercises, labs	Lecture, In-class exercises	[4] Chapter 3, 4, 5
11-12	Data preparation with pySpark - Data manipulation - Data preparation - Miscellaneous	2, 3, 4	Exercises, labs	Lecture, In-class exercises	[4] Chapter 6, 7, 8
13-15	Machine Learning with Spark - Regression - Classification	2, 3, 4	Projects, labs	Lecture, In-class exercises	[4] Chapter 8, 9, 10, 11
16	Basic Text Mining with Spark A case study Some advanced topics: Apache Kafka	3, 4	Seminar	Lecture, Discussion	[4] Chapter 12
17	Final exam				

Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4
Quiz (15%)	20%		20%	20%
Midterm examination (30%)	50%	50%		
Projects/Presentations/ Report (15%)	30%		30%	30%
Final examination (40%)		50%	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		

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

	acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	(perspective, thesis/hypothesis).		
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

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

	skillful and makes the content of the presentation cohesive.	within the presentation.	within the presentation.	
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears 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	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities)	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities)	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant

	relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

Date revised: April 24, 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: Time Series Analysis

Course Code: IT169IU

6. General information

Course name	- (in English): Time Series Analysis - (in Vietnamese): Phân tích chuỗi thời gian
Course designation	The course will provide a basic introduction to modern time series analysis. We will cover time series regression and exploratory data analysis, ARMA/ARIMA models, model estimation, Fourier analysis, spectral estimation, and state space models
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	6,8
Person responsible for the course	Nguyen Thi Thuy Loan
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, lesson, project, laboratory.

Workload (incl. contact hours, self-study hours)	Total workload: 182.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 (lecture) + 25 (laboratory) 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 : Data Analysis									
Course objectives	This course introduces the basic time series analysis and forecasting methods. Topics include stationary processes, ARMA models, spectral analysis, model and forecasting using ARMA models, nonstationary and seasonal time series models, multivariate time series, state-space models, and forecasting techniques.									
Course learning outcomes	<table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO 1. Understand basic contents of time series analysis. CLO 2. Explain modern algorithms in the area of time series analysis.</td></tr><tr><td>Skill</td><td>CLO 3. Apply time series analysis techniques to some case studies using existing datasets.</td></tr><tr><td>Attitude</td><td>CLO 4. Work in a team to build a time series analysis process.</td></tr></table>		Competency level	Course learning outcome (CLO)	Knowledge	CLO 1. Understand basic contents of time series analysis. CLO 2. Explain modern algorithms in the area of time series analysis.	Skill	CLO 3. Apply time series analysis techniques to some case studies using existing datasets.	Attitude	CLO 4. Work in a team to build a time series analysis process.
Competency level	Course learning outcome (CLO)									
Knowledge	CLO 1. Understand basic contents of time series analysis. CLO 2. Explain modern algorithms in the area of time series analysis.									
Skill	CLO 3. Apply time series analysis techniques to some case studies using existing datasets.									
Attitude	CLO 4. Work in a team to build a time series analysis process.									
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)									

		<table> <tr> <th>Topic</th><th>Weight</th><th>Level</th></tr> <tr> <td>Introduction</td><td>1</td><td>I</td></tr> <tr> <td>Overview of forecasting</td><td>1</td><td>T, U</td></tr> <tr> <td>Stationary Process and ARMA Models</td><td>2</td><td>T, U</td></tr> <tr> <td>Spectral Analysis</td><td>1</td><td>T, U</td></tr> <tr> <td>Modeling and Forecasting with ARMA Processes</td><td>2</td><td>T, U</td></tr> <tr> <td>Nonstationary and Seasonal Time Series Models</td><td>2</td><td>T, U</td></tr> <tr> <td>Multivariate Time Series</td><td>1</td><td>T, U</td></tr> <tr> <td>State-Space Model</td><td>1</td><td>T, U</td></tr> <tr> <td>Forecasting Techniques</td><td>1</td><td>T, I</td></tr> <tr> <td>Estimation of time series models</td><td>1</td><td>T, I</td></tr> </table>	Topic	Weight	Level	Introduction	1	I	Overview of forecasting	1	T, U	Stationary Process and ARMA Models	2	T, U	Spectral Analysis	1	T, U	Modeling and Forecasting with ARMA Processes	2	T, U	Nonstationary and Seasonal Time Series Models	2	T, U	Multivariate Time Series	1	T, U	State-Space Model	1	T, U	Forecasting Techniques	1	T, I	Estimation of time series models	1	T, I
Topic	Weight	Level																																	
Introduction	1	I																																	
Overview of forecasting	1	T, U																																	
Stationary Process and ARMA Models	2	T, U																																	
Spectral Analysis	1	T, U																																	
Modeling and Forecasting with ARMA Processes	2	T, U																																	
Nonstationary and Seasonal Time Series Models	2	T, U																																	
Multivariate Time Series	1	T, U																																	
State-Space Model	1	T, U																																	
Forecasting Techniques	1	T, I																																	
Estimation of time series models	1	T, I																																	
Examination forms	Multiple-choice questions, short-answer questions																																		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																																		
Reading list	1. George E. P. Box, Gwilym M. Jenkins, Gregory C. Reinsel & Greta M. Ljung – Time Series Analysis: Forecasting and Control – 5th edition – 2015. 2. Rob J Hyndman and George Athanasopoulos, Forecasting: Principles and Practice – 3rd edition – 2021. 3. Robert H. Shumway & David S. Stoffer – Time Series Analysis and Its Applications (with R examples) – 4th edition – 2017 4. James D. Hamilton (1994). Time Series Analysis, 1st Edition, Princeton University Press, 5. Galit Shmueli and Kenneth C. Lichtendahl Jr (2016). Practical Time Series Forecasting with R: A Hands-On Guide, 2nd Edition, Axelrod Schnell Publishers.																																		

7. 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:

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

8. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction	1		Lecture, Discussion	[1, 2]. Chapter 1
2	Overview of forecasting	1	Quiz.s2	Lecture, In-class quiz	[3]. Chapter 2
3-4	Stationary Process and ARMA Models	1, 3	Quiz.s3-4	Lecture, Discussion	[1]. Chapter 3
5	Spectral Analysis	1, 3	Quiz.s5	Lecture, In-class quiz	[3]. Chapter 4
6-7	Modeling and Forecasting with ARMA Processes	1, 3	Quiz.s6-7	Lecture, In-class quiz	[1]. Chapter 5
8	Mid-term Exam				
9-10	Nonstationary and Seasonal Time Series Models	1, 3	Quiz.s9-10	Lecture, In-class quiz	[1]. Chapter 4

11	Multivariate Time Series	1, 3, 4	Quiz.s11	Lecture, In-class quiz	[1]. Chapter 14 [1]. Chapter 12
12	State-Space Model	1, 2, 4	Quiz.s12	Lecture, In-class quiz	[2]. Chapter 10 [3]. Chapter 6
13	Forecasting Techniques	1, 2, 4	Quiz.s13	Lecture, In-class quiz	[2]. Chapter 5
14	Estimation of time series models	1, 4	Quiz.s14	Lecture, In-class quiz	[2]. Chapter 13

Laboratory

Week	Lab
3	Introduction to Python
4	Overview of forecasting
7	Stationary Process and ARMA Models
9	Spectral Analysis
10	Modeling and Forecasting with ARMA Processes
11	Nonstationary and Seasonal Time Series Models
12	Multivariate Time Series
13	State-Space Model

9. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4
Labs (10%)			100%	
Programming (20%)			70%	30%

Midterm examination (30%)	50%	50%		
Final examination (40%)		40%	60%	

10. Rubrics (optional)

5.4. 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		

5.5. 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.

5.6. 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.
Students' 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	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not

	appropriate to audience.	appropriate to audience.	presentation is appropriate to audience.	appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/authority on the topic.	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/authority on the topic.

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

Source: Association of American Colleges and Universities

Date revised: April 24, 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: Blockchain

Course Code: IT150

1. General information

Course name	- (in English): Blockchain - (in Vietnamese): Chuỗi Khối
Course designation	Introduction to Blockchain technology
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	6,7
Person responsible for the course	Tran Thanh Tung, Dr.
Language	English
Relation to curriculum	Elective
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	None								
Course objectives	This subject introduces the students the foundation of blockchain technology and its applications. Students will study blockchain concepts and principles how it works. This course covers relevant topics blockchain space. The course starts with the basics of blockchain, cryptography, fundamental understanding of bitcoins. Then, the applications of blockchain technology is introduced in different areas of finance, healthcare, supply chain, etc. A complete picture of the ecosystem surrounding blockchain technology and development trends are also discussed.								
Course learning outcomes	CLO 1. Understand basic contents of blockchain technology. CLO 2. Explain different types of blockchain development: Ethereum, smart contract security, bitcoin CLO 3. Apply blockchain techniques to setup the development environment to writing and deploying smart contracts, the workhorse of blockchain applications, integrating cryptocurrency micropayments into web apps CLO 4. Work in a team to build a blockchain application project. <table border="1"> <thead> <tr> <th>Competency level</th><th>Course learning outcome (CLO)</th></tr> </thead> <tbody> <tr> <td>Knowledge</td><td>CLO1, CLO1</td></tr> <tr> <td>Skill</td><td>CLO3, CLO4</td></tr> <tr> <td>Attitude</td><td>CLO2</td></tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1, CLO1	Skill	CLO3, CLO4	Attitude	CLO2
Competency level	Course learning outcome (CLO)								
Knowledge	CLO1, CLO1								
Skill	CLO3, CLO4								
Attitude	CLO2								

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction</td><td>3</td><td>I</td></tr><tr><td>Cryptography & cryptocurrencies</td><td>3</td><td>T</td></tr><tr><td>How Bitcoin achieve decentralization</td><td>3</td><td>I, T</td></tr><tr><td>Mechanics of Bitcoin</td><td>3</td><td>T, U</td></tr><tr><td>How to store and use Bitcoin</td><td>3</td><td>T, U</td></tr><tr><td>Bitcoin mining</td><td>3</td><td>T</td></tr><tr><td>Bitcoin and Anonymity</td><td>3</td><td>T</td></tr><tr><td>Ethereum</td><td>3</td><td>I, T</td></tr><tr><td>Solidity</td><td>3</td><td>T, U</td></tr><tr><td>Token</td><td>3</td><td>I, T</td></tr><tr><td>Oracle</td><td>3</td><td>I, T</td></tr><tr><td>Decentralized Applications (Dapps)</td><td>3</td><td>T, U</td></tr><tr><td>Design pattern for blockchain applications</td><td>3</td><td>T</td></tr><tr><td>Real-world applications</td><td>3</td><td>I, T</td></tr></table>	Topic	Weight	Level	Introduction	3	I	Cryptography & cryptocurrencies	3	T	How Bitcoin achieve decentralization	3	I, T	Mechanics of Bitcoin	3	T, U	How to store and use Bitcoin	3	T, U	Bitcoin mining	3	T	Bitcoin and Anonymity	3	T	Ethereum	3	I, T	Solidity	3	T, U	Token	3	I, T	Oracle	3	I, T	Decentralized Applications (Dapps)	3	T, U	Design pattern for blockchain applications	3	T	Real-world applications	3	I, T
Topic	Weight	Level																																												
Introduction	3	I																																												
Cryptography & cryptocurrencies	3	T																																												
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Oracle	3	I, T																																												
Decentralized Applications (Dapps)	3	T, U																																												
Design pattern for blockchain applications	3	T																																												
Real-world applications	3	I, T																																												
Examination forms	Multiple-choice questions, short-answer questions																																													
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																																													
Reading list	[1] Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, and Steven Goldfeder. Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction. Princeton, 2016																																													

	[2] Andreas M. Antonopoulos, and Gavin Wood Ph. D. Mastering Ethereum: Building Smart Contracts and DApps. O'Reilly Media, 2018 [3] Xiwei Xu, Ingo Weber, and Mark Staples. Architecture for Blockchain Applications. Springer, 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:

	SL O					
CL O	1	2	3	4	5	6
1	X					
2	X	X				
3		X				X
4						X

3. *Planned learning activities and teaching methods*

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction	1	Quiz	Teaching, Presentation	
2	Cryptography & cryptocurrencies	1	Quiz, In-class exercises	Teaching, Presentation	
3	How Bitcoin achieve decentralization	1, 2	Quiz, In-class exercises	Teaching, Presentation	
4	Mechanics of Bitcoin	1, 2	Quiz, In-class exercises	Teaching, Presentation	
5	How to store and use Bitcoin	1, 2	Quiz, In-class exercises	Teaching, Presentation	
6	Bitcoin mining	1, 2	Quiz, In-class exercises	Teaching, Presentation	
7	Bitcoin and Anonymity	2	Quiz, In-class exercises	Teaching, Presentation	

Wee k	Topic	CL O	Assessments	Learning activities	Resource s
8	Midterm				
9	Ethereum	2,3	Project	Teaching, Presentation	
10	Solidity	2,3	Project	Teaching, Presentation	
11	Token	3,4	Quiz, In-class exercises	Teaching, Presentation	
12	Oracle	2,3	Quiz, In-class exercises	Teaching, Presentation Group discussion	
13	Decentralized Applications (Dapps)	3,4	Quiz, In-class exercises	Teaching, Presentation	
14	Design pattern for blockchain applications	3,4	Quiz, In-class exercises	Teaching, Presentation, In-class reading	
15	Real-world applications	3,4	Presentation	Teaching, Presentation Group discussion	
16	Final exam				

4. *Assessment plan*

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4
Labs (20%)			x	x
Midterm examination (30%)	x	x		
Final examination (40%)		x	x	
Exercises/ Quiz (10%)	x			

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. ↩

5. Rubrics (optional)

5.1. Grading checklist

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

5.2. Holistic rubric

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

Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

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

5.3.Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

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

	acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	(perspective, thesis/hypothesis).		
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

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	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.

	content of the presentation cohesive.	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	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make

	authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

Date revised: April 24, 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: Software Engineering

Course Code: IT076

1. General information

Course name	- (in English): Software Engineering - (in Vietnamese): Công Nghệ Phần Mềm
Course designation	This course focuses on the design of software by implementing significant projects in teams
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	5, 7
Person responsible for the course	Assoc. Prof. Dr. Nguyen Thi Thuy Loan
Language	English
Relation to curriculum	Compulsory (CS, CE) Elective (NE)
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	Total workload: 182.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 (lecture) + 25 (laboratory) 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 : IT069IU (Object-Oriented Programming), IT079(Principles of Database Management)																					
Course objectives	This course provides students the fundamentals of software engineering concepts, methodologies, and processes. It covers the subjects on software process models, agile development methodologies, requirements engineering and analysis models, software design and implementation methods, test strategies, and software evolution. Students apply contemporary agile requirements analysis, planning, architecture, design, implementation and testing practices to software engineering project work in small teams.																					
Course learning outcomes	CLO1. Describe the implement of software development process. CLO2. Apply the principles and methods of software engineering in practice. CLO3. Practice teamwork skills in a software engineering project. <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><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></table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1	Skill	CLO2, CLO3	Attitude	CLO3													
Competency level	Course learning outcome (CLO)																					
Knowledge	CLO1																					
Skill	CLO2, CLO3																					
Attitude	CLO3																					
Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Software development in practice</td><td>3</td><td>I</td></tr><tr><td>Beginning a project</td><td>3</td><td>T, U</td></tr><tr><td>Requirements</td><td>7.5</td><td>T, U</td></tr><tr><td>The user experience</td><td>4.5</td><td>T, U</td></tr><tr><td>System design</td><td>6</td><td>T, U</td></tr><tr><td>Program development</td><td>7.5</td><td>T, U</td></tr></table>	Topic	Weight	Level	Software development in practice	3	I	Beginning a project	3	T, U	Requirements	7.5	T, U	The user experience	4.5	T, U	System design	6	T, U	Program development	7.5	T, U
Topic	Weight	Level																				
Software development in practice	3	I																				
Beginning a project	3	T, U																				
Requirements	7.5	T, U																				
The user experience	4.5	T, U																				
System design	6	T, U																				
Program development	7.5	T, U																				

		Reliability and testing	6	T, U	
		The business of software development	4.5	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	1. Ian Sommerville, Software Engineering 10th, 2019. 2. Hyrum Wright, Titus Winters, and Tom Manshreck. Software Engineering at Google, 2020 3. Roger S. Pressman, Software Engineering: A Practitioner’s Approach – 9th edition – 2020				

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						xxx
2			xx			xxx
3			xx		xxx	

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Software development in practice	1	Quiz	Lecture	[1]
2	Beginning a project	1,3	Quiz, Midterm, Project	Lecture, Discussion, In-class, exercise	[1,3]
3	Requirements	2,3	Quiz, Midterm, Project	Lecture, Discussion, In-class, exercise	[1,2]
4	The user experience	2,3	Quiz, Midterm, Project	Lecture, Discussion, In-class, exercise	[1,2]
5	System design	2,3	Quiz, Midterm, Project	Lecture, Discussion, In-class, exercise	[1,2,3]
6	Midterm				
7	Program development	2,3	Quiz, Final, Project	Lecture, Discussion, In-class, exercise	[1,2,3]
8	Reliability and testing	2,3	Quiz, Final, Project	Lecture, Discussion, In-class, exercise	[1,2,3]

9	The business of software development	2,3	Quiz, Project	Lecture, Discussion, In-class, exercise	[1,2,3]
10	Review	1,3	Quiz	Discussion, In-class, exercise	[1,2]
11	Final exam				

4. Assessment plan

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

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

5. Rubrics (optional)

5.1. Grading checklist

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

5.2. Holistic rubric

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

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

Note: this Tubric 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.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a coherent analysis or	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are taken as fact,

	Viewpoints of experts are questioned thoroughly.	experts are subject to questioning.	synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	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	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.

	(perspective, thesis/hypothesis).			
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

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	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.

		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	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities)	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities)	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant

	analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

Date revised: April 24, 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: Natural Language Processing

Course Code: IT170IU

1. General information

Course name	- (in English): Natural Languages Processing - (in Vietnamese): Xử Lý Ngôn Ngữ Tự Nhiên
Course designation	This course provides an introduction to the field of Natural Language Processing (NLP), covering fundamental concepts, techniques, and applications for understanding and processing human language by computers. Students will learn about text preprocessing, language modeling, sentiment analysis, and machine translation. The course includes hands-on programming assignments and projects to reinforce theoretical concepts and practical skills.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	6,8
Person responsible for the course	Assoc. Prof. Nguyen Thi Thuy Loan, PhD.
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, lesson, project, laboratory.

Workload (incl. contact hours, self-study hours)	Total workload: 182.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 37.5 (lecture) + 25 (laboratory) 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 : Data structures and algorithms;									
Course objectives	- Understand fundamental concepts and techniques in Natural Language Processing (NLP). - Develop practical skills in implementing NLP algorithms and models. - Apply NLP techniques to analyze and process textual data for various applications. - Gain insight into the ethical considerations and challenges in NLP.									
Course learning outcomes	<table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO1. Apply core NLP concepts to analyze and preprocess textual data effectively</td></tr><tr><td>Skill</td><td>CLO2. Implement NLP models and algorithms to solve language-related tasks. CLO3: Evaluate the performance of NLP techniques and models using appropriate metrics</td></tr><tr><td>Attitude</td><td>CLO 4. Examine ethical considerations and challenges in NLP applications.</td></tr></table>		Competency level	Course learning outcome (CLO)	Knowledge	CLO1. Apply core NLP concepts to analyze and preprocess textual data effectively	Skill	CLO2. Implement NLP models and algorithms to solve language-related tasks. CLO3: Evaluate the performance of NLP techniques and models using appropriate metrics	Attitude	CLO 4. Examine ethical considerations and challenges in NLP applications.
Competency level	Course learning outcome (CLO)									
Knowledge	CLO1. Apply core NLP concepts to analyze and preprocess textual data effectively									
Skill	CLO2. Implement NLP models and algorithms to solve language-related tasks. CLO3: Evaluate the performance of NLP techniques and models using appropriate metrics									
Attitude	CLO 4. Examine ethical considerations and challenges in NLP applications.									

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction</td><td>2</td><td>I, T</td></tr><tr><td>Text Preprocessing</td><td>2</td><td>T, U</td></tr><tr><td>Language Modeling</td><td>2</td><td>T, U</td></tr><tr><td>Sentiment classification</td><td>2</td><td>T, U</td></tr><tr><td>Logistic Regression</td><td>2</td><td>T, U</td></tr><tr><td>Vector Semantics and Embedding</td><td>2</td><td>T, U</td></tr><tr><td>Neural Networks and Neural Language Models</td><td>2</td><td>T, U</td></tr><tr><td>Machine Translation (optional)</td><td>1</td><td>T,U</td></tr></table>	Topic	Weight	Level	Introduction	2	I, T	Text Preprocessing	2	T, U	Language Modeling	2	T, U	Sentiment classification	2	T, U	Logistic Regression	2	T, U	Vector Semantics and Embedding	2	T, U	Neural Networks and Neural Language Models	2	T, U	Machine Translation (optional)	1	T,U
Topic	Weight	Level																										
Introduction	2	I, T																										
Text Preprocessing	2	T, U																										
Language Modeling	2	T, U																										
Sentiment classification	2	T, U																										
Logistic Regression	2	T, U																										
Vector Semantics and Embedding	2	T, U																										
Neural Networks and Neural Language Models	2	T, U																										
Machine Translation (optional)	1	T,U																										
Examination forms	Multiple-choice questions, short-answer questions																											
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																											
Reading list	1. Daniel Jurafsky, James H. Martin. (2018). Speech and Language Processing, 2nd Edition. Prentice Hall. 2. Daniel Jurafsky, James H. Martin. (2023 ed. draft). Speech and Language Processing, 3rd Edition. 3. Additional research papers and online resources provided during the course																											

2. Learning Outcomes Matrix

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

	SLO

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1-2	Introduction	1	Quiz	Lecture, Discussion	[1, 2]. Chapter 1
3-4	Text Preprocessing	1	Quiz/ exercise	Lecture, In-class quiz	[1,2]. Chapter 2; [3]
5-6	Language Modeling	2, 3	Quiz/ exercise	Lecture, Discussion	[1,2]. Chapter 3; [3]
7-8	Sentiment classification	2, 3	Quiz/ exercise	Lecture, In-class quiz	[1,2]. Chapter 4; [3]
	Mid-term Exam				
9-10	Logistic Regression	2, 3	Quiz/ exercise	Lecture, In-class quiz	[1,2]. Chapter 5; [3]
11-12	Vector Semantics and Embedding	1, 3	Quiz/ exercise	Lecture, In-class quiz	[1,2]. Chapter 6; [3]
13-14	Neural Networks and Neural Language Models	1, 3, 4	Quiz/ exercise	Lecture, In-class quiz	[1,2]. Chapter 7; [3]
15	Machine Translation (optional)	1, 3, 4	Discuss	Group	[1,2]. Chapter 13; [3]

Laboratory

Week	Lab
1-2	Text Preprocessing
3	Language Modeling
4	Sentiment classification

5	Vector Semantics and Embedding
6-7	Neural Networks and Neural Language Models
8	Test Final

4. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4
Labs (10%)	30%		70%	
Assignment (20%)		20%	50%	30%
Midterm examination (30%)	50%	50%		
Final examination (40%)		40%	60%	

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	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	Specific position (perspective, thesis/hypothesis) takes into account the	Specific position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/hypothesis) is

	complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	acknowledges different sides of an issue.	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
Organiz ation	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable

	consistently observable and is skillful and makes the content of the presentation cohesive.	clearly and consistently observable within the presentation.	intermittently observable within the presentation.	within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears 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	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make	Insufficient 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.	appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

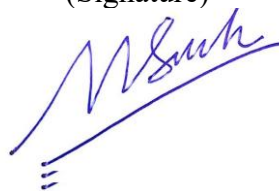
Source: Association of American Colleges and Universities

Date revised: April 24, 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: Human-Computer Interaction

Course Code: IT044IU

1. General information

Course name	- (In English): Human-Computer Interaction - (In Vietnamese): Tương tác người máy
Course designation	This course provides students with fundamental interaction principles between human and computers.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	7,8
Person responsible for the course	Dr. Vi Chi Thanh
Language	English
Relation to curriculum	Elective (CS)
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	None																								
Course objectives	This course provides students with fundamental interaction principles between human and computers.																								
Course learning outcomes	CLO 1. Know how to gather requirements. CLO 2 Apply human-computer interaction principles in user interface design process CLO 3 Choose the appropriate interface evaluation method CLO 4. Understand different design principles for mobile applications, the Web, and emerging technologies. <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>2, 3, 4</td></tr><tr><td>Skill</td><td>1</td></tr><tr><td>Attitude</td><td>1</td></tr></table>	Competency level	Course learning outcome (CLO)	Knowledge	2, 3, 4	Skill	1	Attitude	1																
Competency level	Course learning outcome (CLO)																								
Knowledge	2, 3, 4																								
Skill	1																								
Attitude	1																								
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Human factors</td><td>1</td><td>I</td></tr><tr><td>Human perception and cognition principles</td><td>2</td><td>T</td></tr><tr><td>User-centered design</td><td>2</td><td>T,U</td></tr><tr><td>Requirements gathering techniques</td><td>1</td><td>T,U</td></tr><tr><td>Interface design process</td><td>2</td><td>T,U</td></tr><tr><td>Prototyping techniques</td><td>2</td><td>T,U</td></tr><tr><td>Interface evaluation methodology</td><td>1</td><td>T,U</td></tr></table>	Topic	Weight	Level	Human factors	1	I	Human perception and cognition principles	2	T	User-centered design	2	T,U	Requirements gathering techniques	1	T,U	Interface design process	2	T,U	Prototyping techniques	2	T,U	Interface evaluation methodology	1	T,U
Topic	Weight	Level																							
Human factors	1	I																							
Human perception and cognition principles	2	T																							
User-centered design	2	T,U																							
Requirements gathering techniques	1	T,U																							
Interface design process	2	T,U																							
Prototyping techniques	2	T,U																							
Interface evaluation methodology	1	T,U																							

		Interaction styles and techniques	1	T	
		HCI for mobile applications, the Web, and emerging technologies	2	T,U	
		User evaluation and Data analysis	1	T,U	
Examination forms	Short-answer questions				
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.				
Reading list	[1] Helen Sharp, Jenny Preece & Yvonne Rogers – Interaction Design: Beyond Human-Computer Interaction – 6th edition – 2023. [2] Dix, A. (2003). Human-computer Interaction. Germany: Pearson/Prentice-Hall. [3] I. Scott MacKenzie – Human-Computer Interaction: An Empirical Research Perspective – 2nd edition – 2024.				

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:

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Human factors	1	Midterm exam	In-class activities	
2,3	Human perception and cognition principles	2	Midterm exam	In-class activities	

4,5	User-centered design	2	Midterm exam, Project, Lab quiz	In-class activities	
6	Requirements gathering techniques	1	Midterm exam, Project	In-class activities	
7,8	Interface design process	2	Midterm exam, Project	In-class activities	
Midterm exam					
9,10	Prototyping techniques	2	Project	In-class activities	
11	Interface evaluation methodology	3	Final exam, Project	In-class activities	
12	Interaction styles and techniques	3	Final exam	In-class activities	
13,14	HCI for mobile applications, the Web, and emerging technologies	4	Lab quiz	In-class activities	
15	User evaluation and Data analysis	2, 4	Final exam, Project	In-class activities	
Final exam					

4. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4
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%

5. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports

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

5.2. Holistic rubric

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

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

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2025

Ho Chi Minh City, 15/02/2025

Dean of School of Computer Science and Engineering



Assoc.Prof. Nguyen Van Sinh

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

COURSE SYLLABUS

Course Name: Web Application Development

Course Code: IT093IU

1. General information

Course name	- (In English): Web Application Development - (In Vietnamese): Lập trình web
Course designation	This subject introduces to students the development of web application. How to design and program a web-app in practice based on the tools, techniques and web frameworks
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	6
Person responsible for the course	Assoc. Prof. Nguyen Van Sinh
Language	English
Relation to curriculum	Compulsory (NE, CE, CS, DS)
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 Principles of Database Management																					
Course objectives	This course provides students the fundamentals of web design and web programming. It provide the concepts and models of HTML, Java Server Page, Java Bean, MVC model, Java utilities and development environments, extended Java frameworks, several new frameworks with different programming languages. To develop skills in understanding and evaluating web-based systems, as well as to develop skills in designing and developing web-based applications.																					
Course learning outcomes	CLO 1. Understand web design, web programming concepts and models. CLO 2. Apply to design and develop static/dynamic web application with HTML, Java Server Pages, Java Bean, extended Java and other frameworks based on the MVC model. CLO 3. Apply knowledge and ability to manage and use Java, XML utilities and IDE for developing web applications with DBMS. CLO 4: work in group, communication, interaction and responsible within a team. <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO1</td></tr><tr><td>Skill</td><td>CLO2, CLO3</td></tr><tr><td>Attitude</td><td>CLO4</td></tr></table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1	Skill	CLO2, CLO3	Attitude	CLO4													
Competency level	Course learning outcome (CLO)																					
Knowledge	CLO1																					
Skill	CLO2, CLO3																					
Attitude	CLO4																					
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 teaching hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Week 1: Introduction to the course and HTML</td><td>3</td><td>I,T</td></tr><tr><td>Week 2: Advanced HTML and CSS</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 3: Introduction to J2EE and new frameworks in web application</td><td>3</td><td>I,T</td></tr><tr><td>Week 4 : Servlet</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 5: Java server page and JDBC</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 6: Java Bean and MVC</td><td>3</td><td>I,T,U</td></tr></table>	Topic	Weight	Level	Week 1: Introduction to the course and HTML	3	I,T	Week 2: Advanced HTML and CSS	3	I,T,U	Week 3: Introduction to J2EE and new frameworks in web application	3	I,T	Week 4 : Servlet	3	I,T,U	Week 5: Java server page and JDBC	3	I,T,U	Week 6: Java Bean and MVC	3	I,T,U
Topic	Weight	Level																				
Week 1: Introduction to the course and HTML	3	I,T																				
Week 2: Advanced HTML and CSS	3	I,T,U																				
Week 3: Introduction to J2EE and new frameworks in web application	3	I,T																				
Week 4 : Servlet	3	I,T,U																				
Week 5: Java server page and JDBC	3	I,T,U																				
Week 6: Java Bean and MVC	3	I,T,U																				

	Week 7: Web state, session, cookies & midterm review	3	I,T,U
	Week 8: Java Script, APIs and Libraries	3	I,T,U
	Week 9&10: Node JS Framework	3	I,T,U
	Week 11: Graphical models on the webpage, web multimedia and web 360	3	I,T,U
	Week 12&13: XML & XSLT	3	I,T,U
	Week 14: Ajax framework	3	I,T,U
	Week 15: the existing web frameworks & final review	3	I,T,U
Examination forms	Multiple-choice questions, short-answer questions and 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	1. Dave Wolf and A.J. Henley. "Java EE Web Application Primer Building Bullhorn: A Messaging App with JSP, Servlets, JavaScript, Bootstrap and Oracle", 2017. 2. Prem Kumar Karunakaran. "Java Web Application Development", second edition, 2020. 3. Laura Ubelhor and Christian Hur. "Developing Business Application for the Web With HTML, CSS, JSP, PHP, ASP.NET and JavaScript", 2017. 4. Refer VN book: N.V.Sinh, N.T.T.Sang, T.M.Hà "Xây dựng ứng dụng Web cho Thương mại điện tử trên Netbeans", Nhà xuất bản Xây dựng 2017		

2. Learning Outcomes Matrix

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

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

3. *Planned learning activities and teaching methods*

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to the course and HTML	1	Quiz	Lecture,	[1,2]
2	Advanced HTML and CSS	2,3,4	Quiz, Lab, Midterm exam	Lecture, Discussion, In-class exercises	[1,2,3]
3	Introduction to J2EE and new frameworks in web application	1	Quiz, Midterm	Lecture, Discussion	[1,2]
4	Servlet	2,3,4	Quiz, Lab, Midterm exam	Lecture, Discussion, In-class exercises	[1,2,3,4]
5	Java server page and JDBC	2,3,4	Quiz, Lab, Midterm exam	Lecture, Discussion, In-class exercises	[1,2,3,4]
6	Java Bean and MVC	2,3,4	Quiz, Lab, Midterm exam	Lecture, Discussion, In-class exercises	[1,2,3,4]
7	Web state, session, cookies & midterm review	2,3,4	Quiz, Lab, Midterm exam	Lecture, Discussion, In-class exercises	[1,2,3,4]
8	Java Script, APIs and Libraries & midterm review	2,3,4	Quiz, Lab, Midterm exam	Lecture, Discussion, In-class exercises	[1,2,3,4]
9	Node JS Framework	2,3	Quiz, Lab	Lecture, Discussion, In-class exercises	[1,2,3,4]
10	Node JS Framework (continue)	2,3	Quiz, Lab	Lecture, Discussion, In-class exercises	[1,2,3,4]
11	Graphical models on the webpage, web multimedia and web 360	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion,	[1,2,3,4]

				In-class exercises	
12	XML & XSLT	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1,2,3,4]
13	XML & XSLT (continue)	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1,2,3,4]
14	Ajax framework	2,3	Quiz, Lab	Lecture, Discussion, In-class exercises	[1,2,3,4]
15	Existing web frameworks & final review	2,3	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1,2,3,4]
16	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Labs (20%)		30%	40%	30%
Midterm examination (30%)	40%	60%		
Exercises/Quiz (10%)	30%	40%	30%	
Final examination (40%)		50%	50%	

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

5. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports			
Student:		HW/Assignment:	
Date:		Evaluator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		

Introduction demonstrates thorough knowledge of relevant background and prior work	15		
Analysis and discussion demonstrate good subject mastery	30		
Summary and conclusions appropriate and complete	5		
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good transitions	5		
Presentation (20%)			
Correct spelling, grammar, and syntax	10		
Clear and easy to read	10		
Quality of Layout and Graphics (10%)	10		
TOTAL SCORE	100		

5.2. Holistic rubric

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

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

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2025

Ho Chi Minh City, 15/02/2025

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

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

COURSE SYLLABUS

Course Name: Business Process Analysis

Course Code: IT144IU

General information

Course name	- (In English): Business Process Analysis - (In Vietnamese): Phân tích quy trình nghiệp vụ
Course designation	The course aims to provide fundamental knowledge of business process analysis, improvement and evaluation.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is	7
Person responsible for the course	Assof. Pror.Dr. Vo Thi Luu Phuong
Language	English
Relation to curriculum	Elective
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	None								
Course objectives	Every organization thrives to implement effective business processes to increase employee and customer satisfaction, enhance business performance, reduce costs and boost productivity. All activities including altering critical processes, merging or splitting business units require a consistent framework to manage the changes. The course aims to provide fundamental knowledge of business process analysis, improvement and evaluation. Various approaches, techniques and software tools used to analyze and manage business process improvement are also introduced in the course.								
Course learning outcomes	CLO 1. Practice the Framework for Process Improvement CLO 2. Identify and analyze an organization's business process using different techniques such as ANSI, Swim Lane, Business Process Diagrams, UML, SIPOC, and Value Stream Maps CLO 3. Evaluate process improvement effectiveness <table border="1"> <thead> <tr> <th>Competency level</th><th>Course learning outcome (CLO)</th></tr> </thead> <tbody> <tr> <td>Knowledge</td><td>1, 2, 3</td></tr> <tr> <td>Skill</td><td>1, 3</td></tr> <tr> <td>Attitude</td><td></td></tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	1, 2, 3	Skill	1, 3	Attitude	
Competency level	Course learning outcome (CLO)								
Knowledge	1, 2, 3								
Skill	1, 3								
Attitude									

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Data Science in Action</td><td>1</td><td>I</td></tr><tr><td>Process Models and Process Discovery</td><td>3</td><td>T, U</td></tr><tr><td>Different Types of Process Models</td><td>4</td><td>T,U</td></tr><tr><td>Process Discovery Techniques and Conformance Checking</td><td>3</td><td>T,U</td></tr><tr><td>Enrichment of Process Models</td><td>3</td><td>T,U</td></tr><tr><td>Operational Support and Conclusions</td><td>1</td><td>I</td></tr></table>	Topic	Weight	Level	Data Science in Action	1	I	Process Models and Process Discovery	3	T, U	Different Types of Process Models	4	T,U	Process Discovery Techniques and Conformance Checking	3	T,U	Enrichment of Process Models	3	T,U	Operational Support and Conclusions	1	I
Topic	Weight	Level																				
Data Science in Action	1	I																				
Process Models and Process Discovery	3	T, U																				
Different Types of Process Models	4	T,U																				
Process Discovery Techniques and Conformance Checking	3	T,U																				
Enrichment of Process Models	3	T,U																				
Operational Support and Conclusions	1	I																				
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																						

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

	SLO					
1		X			X	
2		X				
3		X	X			

Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Data Science in Action	2	Midterm	In-class activities	
2	Process Models and Process Discovery	2, 5	Midterm, Quiz, Project, Lab	In-class activities, quiz	
3	Midterm				
4	Different Types of Process Models	2	Final, Project, Lab	In-class activities	
5	Process Discovery Techniques and Conformance Checking	2, 3	Final, Project, Quiz, Lab	In-class activities, Quiz	
6	Enrichment of Process Models	2	Final, Project, Lab	In-class activities	
7	Operational Support and Conclusions	2	Final, Project, Lab	In-class activities	
8	Final exam				

Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Labs (20%)	20%	20%	
Midterm examination (30%)	50%	40%	

Assessment Type	CLO1	CLO2	CLO3
Final examination (40%)		20%	60%
Exercises/ Quiz/ Project (10%)	30%	20%	40%

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		

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	Issue/ problem to be considered critically is stated, described, and clarified so that understanding is	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.

	necessary for full understanding.	not seriously 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 presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone		Benchmark
	4	3	2	1

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

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

Source: Association of American Colleges and Universities

Date revised: April 24, 2025

Ho Chi Minh City, 24/04/2025

Dean of the School of Computer Science and Engineering

(Signature)

A handwritten signature in blue ink, appearing to read 'N. Sinh', with a long horizontal stroke extending to the right and a small flourish at the end.

Nguyen Van Sinh

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

COURSE SYLLABUS

Course Name: Decision Support Systems

Course Code: IT145IU

General information

Course name	- (In English): Decision support systems - (In Vietnamese): Hệ thống hỗ trợ quyết định
Course designation	Introduction to the decision support system (DSS), an interactive computer-based system (or subsystem) intended to help decision makers. DSS simulate cognitive decision-making functions of humans based on AI methods including the area of knowledge: Expert systems, Data mining, Machine learning, Connectionism, Logical reasoning.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	__ semester __
Person responsible for the course	Nguyen Van Sinh, Assoc.Prof.
Language	English
Relation to curriculum	Compulsory / elective / specialisation Names of other study programmes with which the module is shared

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 : Principles of Database Management
Course objectives	A Decision Support System (DSS) is an interactive computer-based system or subsystem intended to help decision makers use communications technologies, data, documents, knowledge and/or models to identify and solve problems, complete decision process tasks, and make decisions. DSS simulate cognitive decision-making functions of humans based on artificial intelligence methodologies (including expert systems, data mining, machine learning, connectionism, logistical reasoning, etc.) in order to perform decision support functions. DSS is a general term for any computer application that enhances a person or group's ability to make decisions. Also, DSS refers to an academic field of research that involves designing and studying DSS in their context of use.
Course learning outcomes	CLO 1. Understand the goals and different forms of decision support, and gain knowledge of the practical issues of implementation CLO 2. Examine systems based on statistical and logical approaches to decision making that include statistical prediction, rule-based systems, case-based reasoning, neural networks, fuzzy logic, etc.

	CLO 3. Obtain an overview of the various computerized decision support techniques together with a detailed assessment of successful and unsuccessful applications developed CLO 4. Examine the actual and potential impact of the technology together with the challenges associated with this kind of application <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td></td></tr><tr><td>Skill</td><td></td></tr><tr><td>Attitude</td><td></td></tr></table>	Competency level	Course learning outcome (CLO)	Knowledge		Skill		Attitude																	
Competency level	Course learning outcome (CLO)																								
Knowledge																									
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Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction to Decision Making and Decision Support</td><td>3</td><td>I, U</td></tr><tr><td>Models, Cognitive Tools and Decision Making</td><td>3</td><td>I, T, U</td></tr><tr><td>Decision support systems</td><td>3</td><td>I, T, U</td></tr><tr><td>Modeling and analysis</td><td>3</td><td>I, T, U</td></tr><tr><td>Data warehousing, Data Acquisition, Data Mining, Business analysis, and visualization</td><td>3</td><td>I, T, U</td></tr><tr><td>Decision support system development</td><td>3</td><td>I, T, U</td></tr><tr><td>Collaborative computing technologies: Group support systems</td><td>3</td><td>I, T, U</td></tr></table>	Topic	Weight	Level	Introduction to Decision Making and Decision Support	3	I, U	Models, Cognitive Tools and Decision Making	3	I, T, U	Decision support systems	3	I, T, U	Modeling and analysis	3	I, T, U	Data warehousing, Data Acquisition, Data Mining, Business analysis, and visualization	3	I, T, U	Decision support system development	3	I, T, U	Collaborative computing technologies: Group support systems	3	I, T, U
Topic	Weight	Level																							
Introduction to Decision Making and Decision Support	3	I, U																							
Models, Cognitive Tools and Decision Making	3	I, T, U																							
Decision support systems	3	I, T, U																							
Modeling and analysis	3	I, T, U																							
Data warehousing, Data Acquisition, Data Mining, Business analysis, and visualization	3	I, T, U																							
Decision support system development	3	I, T, U																							
Collaborative computing technologies: Group support systems	3	I, T, U																							

	Review for Midterm Exam	3	U
	Enterprise Information Systems	3	I, T, U
	Knowledge management	3	I, T, U
	Artificial intelligent & Expert systems: Knowledge-Based systems	3	I, T, U
	Knowledge Acquisition, Representation and Reasoning	3	I, T, U
	Advanced Intelligent Systems	3	I, T, U
	Ecommerce applications	3	I, T, U
	Review for final exam	3	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			

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				
3		x				
4				x		

Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Decision Making and Decision Support	1			
2	Models, Cognitive Tools and Decision Making	2,3			
3	Decision support systems	2,3			
4	Modeling and analysis	2,3,4			
5	Data warehousing, Data Acquisition, Data Mining, Business analysis, and visualization	2,3,4			
6	Midterm				
7	Decision support system development	2,3,4			
8	Collaborative computing technologies: Group support systems	2,3,4			
9	Enterprise Information Systems	2,3,4			

Week	Topic	CLO	Assessments	Learning activities	Resources
10	Knowledge management	2,3,4			
11	Artificial intelligent & Expert systems: Knowledge-Based systems	2,3,4			
12	Knowledge Acquisition, Representation and Reasoning	2,3,4			
13	Advanced Intelligent Systems	2,3,4			
14	Ecommerce applications	2,3,4			
15	Final exam				

Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Labs (25%)	x	x	x	x
Midterm examination (30%)	x	x		
Final examination (40%)		x	x	x
Exercises/ Quiz (10%)	x	x	x	x

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		

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	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.

	position (perspective, thesis/ hypothesis).			
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

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	Language choices are mundane and commonplace	Language choices are unclear and minimally support the

	enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	support the effectiveness of the presentation. Language in presentation is appropriate to audience.	and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	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	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	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/

		credibility/ authority on the topic.	credibility/ authority on the topic.	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
 School of Computer Science and Engineering

COURSE SYLLABUS

Course Name: Theory of Networks

Course Code: IT146

General information

Course name	- (in English): Theory of Networks - (in Vietnamese): Lý Thuyết Mạng
Course designation	The course introduces the interconnectedness of modern life, answers the fundamental questions about how our social, economic, and technological worlds are connected.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	6 or 7
Person responsible for the course	Vo Thi Luu Phuong, Assof.Prof.Dr.
Language	English
Relation to curriculum	Elective
Teaching methods	Lecture, lesson, laboratory.
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	The course introduces the interconnectedness of modern life, answers the fundamental questions about how our social, economic, and technological worlds are connected. Students will study the modern network models, such as, game theory, the structure of the Internet, social contagion, the spread of social power and popularity, and information cascades.																					
Course learning outcomes	CLO 1. Use the tools of graph theory as a basis for studying the Internet social networks, and the process of Web search. CLO 2. Apply game theory to analyze strategic behavior in a variety of settings including auction design, Web advertising, network routing, and social marketing. CLO 3. Analyze the processes by which ideas, beliefs, opinions, products, technologies, and social conventions spread through social networks. <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO1, 2</td></tr><tr><td>Skill</td><td>CLO1, 2</td></tr><tr><td>Attitude</td><td>CLO3</td></tr></table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1, 2	Skill	CLO1, 2	Attitude	CLO3													
Competency level	Course learning outcome (CLO)																					
Knowledge	CLO1, 2																					
Skill	CLO1, 2																					
Attitude	CLO3																					
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Network graphs;</td><td>9</td><td>T, U</td></tr><tr><td>Network games, auctions</td><td>12</td><td>T, U</td></tr><tr><td>The Structure of the Web</td><td>6</td><td>T, U</td></tr><tr><td>Sponsored Search Markets</td><td>1</td><td>T, U</td></tr><tr><td>Network Effects</td><td>6</td><td>T, U</td></tr><tr><td>Markets and Information</td><td>9</td><td>T, U</td></tr></table>	Topic	Weight	Level	Network graphs;	9	T, U	Network games, auctions	12	T, U	The Structure of the Web	6	T, U	Sponsored Search Markets	1	T, U	Network Effects	6	T, U	Markets and Information	9	T, U
Topic	Weight	Level																				
Network graphs;	9	T, U																				
Network games, auctions	12	T, U																				
The Structure of the Web	6	T, U																				
Sponsored Search Markets	1	T, U																				
Network Effects	6	T, U																				
Markets and Information	9	T, U																				

Examination forms	Multiple-choice questions, short-answer questions
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	1. David Easley and Jon Kleinberg, <i>Networks, Crowds, and Markets: Reasoning about a Highly Connected World</i> 1st, 2010 2. Thomas W. Miller, <i>Web and Network Data Science: Modeling Techniques in Predictive Analytics</i> 1st, 2014 3. James F. Kurose & Keith W. Ross – <i>Computer Networking: A Top-Down Approach</i> – 8th edition – 2020

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	XX					
2	XX					X
3					X	

Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1-3	Network graphs	1,2	Quiz, Midterm, Homework	Lecture, discussion, in-class exercise, laboratory	[1, 2, 3]
4-7	Network games, auctions	1,2,3	Quiz, Midterm, Homework	Lecture, discussion, in-class exercise, homework, laboratory	[1, 2, 3]
	Midterm				
9-10	The Structure of the Web	1,2,3	Quiz, Final, Homework	Lecture, discussion, in-class exercise, homework, laboratory	[1, 2, 3]
11-12	Sponsored Search Markets	2,3	Quiz, Final, Homework	Lecture, discussion, in-class exercise, homework, laboratory	[1, 2, 3]
13	Network Effects	1,2	Quiz, Final, Homework	Lecture, discussion, in-class exercise, homework, laboratory	[1, 2, 3]

14-15	Markets and Information	1,2,3	Quiz, Final, Homework	Lecture, discussion, in-class exercise, homework, laboratory	[1, 2, 3]
	Final exam				

Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Labs (25%)		33.3%	50%
Midterm examination (30%)	33.3%	33.3%	
Homework (10%)	33.3%		50%
Final examination (35%)	33.3%	33.3%	

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 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	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis	Information is taken from source(s) with some interpretation/ evaluation, but not enough to develop a	Information is taken from source(s) without any interpretation/ evaluation. Viewpoints of experts are

	analysis or synthesis. Viewpoints of experts are questioned thoroughly.	or synthesis. Viewpoints of experts are subject to questioning.	coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	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	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.

	synthesized within position (perspective, thesis/ hypothesis).			
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

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

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

	make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

Date revised: 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: IT Project Management

Course Code: IT056

1. General information

Course name	- (in English): IT Project Management - (in Vietnamese): Quản Lý Dự Án CNTT
Course designation	This subject introduces to students the process of IT project management; the area of knowledge required and techniques appropriate for successful IT project management.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	7
Person responsible for the course	Assoc. Prof. Nguyen Van Sinh
Language	English
Relation to curriculum	All programs: Elective course
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 : Object-Oriented Programming, Principles of Database Management						
Course objectives	This course provides students the fundamental IT project management knowledge, with particular emphasis on software products, project management and contemporary issues in the delivery of software solutions to business. It considers plan-driven and agile methodologies, estimating techniques, change management, risk management, and the role of project management in business. And it identifies the managerial control and reporting aspects necessary from inception to implementation of a software development project.						
Course learning outcomes	CLO 1. Explain the IT project management process; CLO 2. Identify the areas of knowledge required for successful IT project management; CLO 3. Apply techniques appropriate for successful software project management; CLO 4. Communicate effectively to the team and stakeholders; construct project related documentation. <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> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1	Skill	CLO2, CLO3
Competency level	Course learning outcome (CLO)						
Knowledge	CLO1						
Skill	CLO2, CLO3						

		Attitude	CLO4																																																	
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 teaching hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Week 1: Orientation & Introduction to the course</td><td>3</td><td>I,T</td></tr><tr><td>Week 2: Introduction to IT project management</td><td>3</td><td>I,T</td></tr><tr><td>Week 3: Software project planning</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 4: Estimation (cost, time, scope)</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 5: Project Schedules</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 6: Review process</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 7: Software Requirement</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 8: Design & Programming</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 9: Review for midterm examination</td><td>3</td><td>U</td></tr><tr><td>Week 10: Design and Programming</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 11: Software Testing</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 12: Understanding Change</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 13: Management and Leadership</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 14: Managing an Outsourced Project</td><td>3</td><td>I,T,U</td></tr><tr><td>Week 15: Process Improvement.</td><td>3</td><td>I,T,U</td></tr></table>				Topic	Weight	Level	Week 1: Orientation & Introduction to the course	3	I,T	Week 2: Introduction to IT project management	3	I,T	Week 3: Software project planning	3	I,T,U	Week 4: Estimation (cost, time, scope)	3	I,T,U	Week 5: Project Schedules	3	I,T,U	Week 6: Review process	3	I,T,U	Week 7: Software Requirement	3	I,T,U	Week 8: Design & Programming	3	I,T,U	Week 9: Review for midterm examination	3	U	Week 10: Design and Programming	3	I,T,U	Week 11: Software Testing	3	I,T,U	Week 12: Understanding Change	3	I,T,U	Week 13: Management and Leadership	3	I,T,U	Week 14: Managing an Outsourced Project	3	I,T,U	Week 15: Process Improvement.	3	I,T,U
Topic	Weight	Level																																																		
Week 1: Orientation & Introduction to the course	3	I,T																																																		
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Week 14: Managing an Outsourced Project	3	I,T,U																																																		
Week 15: Process Improvement.	3	I,T,U																																																		
Examination forms	Multiple-choice questions, short-answer questions and essay writing																																																			
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. Kathy Schwalbe, IT Project Management - 9th Edition, 2019																																																			

	2. Stellman and Greene, <i>Applied Software Project Management</i>, O'Reilly Media, 2006. 3. Marchewka, J.T., <i>Information Technology Project Management Providing Measureable Organizational Value</i> 5th, 2016

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:

	SL O					
CL O	1	2	3	4	5	6
1		X				
2		X	X			
3		X				X
4			X		X	

3. Planned learning activities and teaching methods

Week	Topic	CL O	Assessment s	Learning activities	Resource s
1	Orientation & Introduction to the course	1	Question and answer	Lecture,	[1, 2, 3]
2	Introduction to IT project management	1	Question and answer	Lecture, Discussion , In-class exercises	[1, 2, 3]
3	Software project planning	2,3	Quiz, Lab, Midterm exam	Lecture, Discussion , In-class exercises	[1, 2, 3]

4	Estimation (cost, time, scope)	2,3	Quiz, Lab, Midterm exam	Lecture, Discussion , In-class exercises	[1, 2, 3]
5	Project Schedules	2,3	Quiz, Lab, Midterm exam	Lecture, Discussion , In-class exercises	[1, 2, 3]
6	Review process	2,3	Quiz, Lab, Midterm exam	Lecture, Discussion , In-class exercises	[1, 2, 3]
7	Software Requirement	2,3,4	Quiz, Lab, Midterm exam	Lecture, Discussion , In-class exercises	[1, 2, 3]
8	Design & Programming	2,3,4	Quiz, Lab, Midterm exam	Lecture, Discussion , In-class exercises	[1, 2, 3]
9	Review for midterm examination	1,2,3		Discussion , In-class exercises	
10	Design and Programming	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion ,	[1, 2, 3]

				In-class exercises	
11	Software Testing	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
12	Understanding Change	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
13	Management and Leadership	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
14	Managing an Outsourced Project	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
15	Process Improvement.	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
16	Final examination	2,3,4			

4. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4

Midterm examination (30%)	40%	50%		
Projects/Presentations/ Report (20%)		40%	30%	30%
Final examination (40%)			70%	30%
Exercises/ Quiz (10%)	25%	25%	25%	25%

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

5. Rubrics (optional)

5.1. Grading checklist

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

5.2. Holistic rubric

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

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

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

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

	(perspective, thesis/hypothesis).			
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

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	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the

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

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: Information System Management

Course Code: IT094

1. General information

Course name	- (in English): Information System Management - (in Vietnamese): Quản Lý Hệ Thống Thông Tin
Course designation	This course covers the concepts of information systems and their applications to business processes
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	6
Person responsible for the course	Dr. Tran Thanh Tung
Language	English
Relation to curriculum	Elective course (CS, DS) Specialization (required) (NE)
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 : Principles of Database Management								
Course objectives	This course will aim to provide students with: The concepts of information systems and their applications to business processes. Use of computer-based information systems in functional areas of business. Understanding of computer and information technology, resources, management and end-user decision making, and system development.								
Course learning outcomes	CLO 1. understand basic information system concepts as applied to business operations and management. CLO 2. identify the major components of a computer system, including hardware, software, operating systems and operating environments as they apply to information systems. CLO 3. develop basic MIS applications such as spreadsheet, database, and web development. <table border="1"> <thead> <tr> <th>Competency level</th><th>Course learning outcome (CLO)</th></tr> </thead> <tbody> <tr> <td>Knowledge</td><td>1, 2</td></tr> <tr> <td>Skill</td><td>3</td></tr> <tr> <td>Attitude</td><td></td></tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	1, 2	Skill	3	Attitude	
Competency level	Course learning outcome (CLO)								
Knowledge	1, 2								
Skill	3								
Attitude									

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (3 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Information Systems in Global Business;	1	I
	Global E-Business and Collaboration;	1	I
	Information Systems, Organizations and Strategy	2	T
	Ethical and Social Issues in Information Systems;	1	T
	Telecommunications, the Internet, and Wireless Technology;	1	T
	Foundations of Business Intelligence: Databases and Information Management	1	T,U
	E-Commerce: Digital Markets, Digital Goods;	2	T,U
	Achieving Operational Excellence and Customer Intimacy: Enterprise Applications;	2	T,U
	Building Information Systems;	2	T,U
	Managing Knowledge;	1	T
Enhancing Decision Making.	1	T	
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		
Reading list	1. Kenneth C. Laudon & Jane P. Laudon – Management Information Systems: Managing the Digital Firm – 15th edition – 2018		

	2. Kenneth C. Laudon, Jane P. Laudon & Carol Guercio Traver – Essentials of MIS – 15th edition – 2023

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:

	SL O					
CL O	1	2	3	4	5	6
1		x		x		
2		x		x		
3		x				

3. *Planned learning activities and teaching methods*

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Information Systems in Global Business;	1	Midterm exam	In-class activities	
2	Global E-Business and Collaboration;	1	Midterm exam	In-class activities	
3	Information Systems, Organizations and Strategy	1,2	Midterm exam, Quiz	In-class activities, Lab	
4	Ethical and Social Issues in Information Systems;	1	Midterm exam		
5	Telecommunications, the Internet, and Wireless Technology;	2	Midterm exam	In-class activities, Lab	
6	Midterm				
7	Foundations of Business Intelligence: Databases and Information Management	2,3	Final exam	In-class activities, Lab	

8	E-Commerce: Digital Markets, Digital Goods;	1	Final exam	In-class activities, Lab	
9	Achieving Operational Excellence and Customer Intimacy: Enterprise Applications;	1	Final exam	In-class activities, Lab	
10	Building Information Systems;	2,3	Final exam	In-class activities, Lab	
11	Managing Knowledge;	1	Final exam		
12	Enhancing Decision Making.	1	Final exam		
13	Final exam				

4. Assessment plan

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

Assessment Type	CLO 1	CLO 2	CLO 3
Midterm examination (30%)	40%	30%	20%
Projects/Presentations/ Report (20%)		40%	60%
Final examination (40%)	30%	20%	20%
Exercises/ Quiz (20%)	30%	10%	

Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports	
Student:	HW/Assignment:
Date:	Evaluator:

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

5.2. Holistic rubric

Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW	
Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.

0	No response/task not attempted

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

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

	others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	when presenting a position.	when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	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	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the

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

Source: Association of American Colleges and Universities

Ho Chi Minh City, 24/04/2025

Dean of the School of Computer Science and Engineering

(Signature)

A handwritten signature in blue ink, appearing to read 'N Sinh', with a long horizontal stroke extending to the right and a small mark below the start of the signature.

Nguyen Van Sinh

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

COURSE SYLLABUS

Course Name: Cloud Computing

Course Code: IT164IU

1. General information

Course name	- (in English): Cloud Computing - (in Vietnamese): Điện Toán Đám Mây
Course designation	The course presents a top-down view of cloud computing, from applications and administration to programming and infrastructure.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	7
Person responsible for the course	Dr. Le Duy Tan
Language	English
Relation to curriculum	Elective (CS, NE, CE)
Teaching methods	Lecture
Workload (incl. contact hours, self-study hours)	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 : Fundamental Concepts of Data Security								
Course objectives	This course concentrates on parallel programming techniques for cloud computing and large-scale distributed systems which form the cloud infrastructure. The topics include overview of cloud computing, cloud systems, parallel processing in the cloud, distributed storage systems, virtualization, security in the cloud, and multicore operating systems. Students will study state-of-the-art solutions for cloud computing developed by Google, Amazon, Microsoft, Yahoo, VMWare, etc. Students will also apply what they learn in one programming assignment and one project executed over Amazon Web Services.								
Course learning outcomes	CLO 1. Analyze the trade-offs between deploying applications in the cloud and over the local infrastructure. CLO 2. Able to deploy applications over commercial cloud computing infrastructures such as Amazon Web Services, Windows Azure, and Google AppEngine. CLO 3. Solve a real-world problem using cloud computing through group collaboration. <table border="1"> <thead> <tr> <th>Competency level</th><th>Course learning outcome (CLO)</th></tr> </thead> <tbody> <tr> <td>Knowledge</td><td>1</td></tr> <tr> <td>Skill</td><td>2, 3</td></tr> <tr> <td>Attitude</td><td>3</td></tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	1	Skill	2, 3	Attitude	3
Competency level	Course learning outcome (CLO)								
Knowledge	1								
Skill	2, 3								
Attitude	3								

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Introduction to Cloud Computing</td><td>1</td><td>I</td></tr><tr><td>Cloud Computing Platforms</td><td>3</td><td>T</td></tr><tr><td>Parallel Programming in the Cloud</td><td>3</td><td>T, U</td></tr><tr><td>Distributed Storage Systems</td><td>3</td><td>T, U</td></tr><tr><td>Virtualization</td><td>2</td><td>T, U</td></tr><tr><td>Cloud Security</td><td>2</td><td>T</td></tr><tr><td>Multicore Operating Systems</td><td>1</td><td>T</td></tr></table>	Topic	Weight	Level	Introduction to Cloud Computing	1	I	Cloud Computing Platforms	3	T	Parallel Programming in the Cloud	3	T, U	Distributed Storage Systems	3	T, U	Virtualization	2	T, U	Cloud Security	2	T	Multicore Operating Systems	1	T
Topic	Weight	Level																							
Introduction to Cloud Computing	1	I																							
Cloud Computing Platforms	3	T																							
Parallel Programming in the Cloud	3	T, U																							
Distributed Storage Systems	3	T, U																							
Virtualization	2	T, U																							
Cloud Security	2	T																							
Multicore Operating Systems	1	T																							
Examination forms	Short-answer questions, Programming exercises																								
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																								
Reading list	1. Rountree, Derrick, and Ileana Castrillo. <i>The basics of cloud computing: Understanding the fundamentals of cloud computing in theory and practice</i>. Newnes, 2013. 2. Patterson, Scott. <i>Learn AWS Serverless Computing: A Beginner's Guide to Using AWS Lambda, Amazon API Gateway, and Services from Amazon Web Services</i>. Packt Publishing Ltd, 2019.																								

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:

CLO\SLO	1	2	3	4	5	6
T						
1	X					
2		XX				

3						X

3. *Planned learning activities and teaching methods*

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Cloud Computing	1	Quiz	Lecture	1
2	Cloud Computing Platforms – Part 1	1	Quiz	Lecture	1
3	Cloud Computing Platforms – Part 2	1	Quiz	Lecture, Discussion, In-class Exercise	2
4	Cloud Computing Platforms – Part 3	2, 3	Quiz, Lab, Midterm	Lecture, Discussion, In-class Exercise	1
5	Parallel Programming in the Cloud – Part 1	2, 3	Quiz, Lab, Midterm	Lecture, Discussion, In-class Exercise	1
6	Parallel Programming in the Cloud – Part 2	2, 3	Quiz, Lab, Midterm	Lecture, Discussion, In-class Exercise	2
7	Parallel Programming in the Cloud – Part 3	2, 3	Quiz, Lab, Midterm	Lecture, Discussion, In-class Exercise	1
8	Distributed Storage Systems – Part 1	2, 3	Quiz, Lab, Midterm	Lecture, Discussion, In-class Exercise	1
Midterm					
9	Distributed Storage Systems – Part 2	2, 3	Quiz, Lab, Final	Lecture, Discussion,	1

				In-class Exercise	
10	Distributed Storage Systems – Part 3	2, 3	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
11	Virtualization – Part 1	2, 3	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
12	Virtualization – Part 2	2, 3	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
13	Cloud Security – Part 1	2, 3	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1, 2
14	Cloud Security – Part 2	2, 3	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
15	Multicore Operating Systems	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.

Rubrics (optional)

5.1. Grading checklist

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

5.2. Holistic rubric

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

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

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

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

	acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	(perspective, thesis/hypothesis).		
Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

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

	skillful and makes the content of the presentation cohesive.	within the presentation.	within the presentation.	
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears 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	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities)	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities)	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant

	relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

Date revised: April 24, 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: Entrepreneurship

Course Code: IT120

1. General information

Course name	- (in English): Entrepreneurship - (in Vietnamese): Khởi Nghiệp
Course designation	An introduction to the creative and innovative managerial practices of successful entrepreneurship.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	7
Person responsible for the course	MSc. Dao Tran Hoang Chau
Language	English
Relation to curriculum	Compulsory (CS, NE, CE) Elective (DS)
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Lecture: 37.5 hours

	Private study including examination preparation, specified in hours: 90 hours
Credit points	3 credits (Theory: 3 + Practice: 0) 4.64 ECTS
Number of periods	Theory: 45 Practice: 0
Required and recommended prerequisites for joining the course	
Course objectives	This course reviews the significant economic and social contributions entrepreneurs provide to society, the intense lifestyle commitment, and the skills necessary for entrepreneurial success. It explores how to identify and develop solutions to the most common leadership and personal challenges faced by entrepreneurs when starting new ventures or launching new products. It also promotes a deeper understanding of what is required to be a successful entrepreneur, highlights the skills and tools necessary to start a new business and explores alternatives to common pitfalls. This course applies entrepreneurial marketing approaches used by successful entrepreneurs. These include utilizing industry sector trends, identifying emerging customer niches, developing new products/services, using guerilla marketing strategies, and Internet and social marketing strategies. It emphasizes the importance of managing cash flows, ratio analysis, pro forma development, and the basics of deal structure and harvesting a business venture. Students will identify and interpret sources of information from company financial reports, financial publications, industry benchmarks, the media, and web sites. An introduction to the process of researching, writing, and presenting a business plan. Students identify and screen ideas using a business feasibility study that describes the product features, market opportunity, customer profile, sales forecast, competitive advantage, and profit potential. Following a successful feasibility study, students may use business plan software as each develops their own complete business plan.
Course learning outcomes	CLO 1. Understand entrepreneurial processes; CLO 2. Apply new technology to boost business performance;

	CLO 3. Manage marketing strategy and financial statements in a enterprise; <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>1, 2, 3</td></tr><tr><td>Skill</td><td>1, 3</td></tr><tr><td>Attitude</td><td>3</td></tr></table>	Competency level	Course learning outcome (CLO)	Knowledge	1, 2, 3	Skill	1, 3	Attitude	3										
Competency level	Course learning outcome (CLO)																		
Knowledge	1, 2, 3																		
Skill	1, 3																		
Attitude	3																		
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Entrepreneurship, Creativity and Innovation;</td><td>3</td><td>I, T</td></tr><tr><td>Creative Problem Solving Model;</td><td>3</td><td>T, U</td></tr><tr><td>Develop a Product. Generate Ideas and Protect Inventions;</td><td>2</td><td>T</td></tr><tr><td>Marketing Strategies;</td><td>3</td><td>T, U</td></tr><tr><td>Finance and Accounting</td><td>4</td><td>T, U</td></tr></table>	Topic	Weight	Level	Entrepreneurship, Creativity and Innovation;	3	I, T	Creative Problem Solving Model;	3	T, U	Develop a Product. Generate Ideas and Protect Inventions;	2	T	Marketing Strategies;	3	T, U	Finance and Accounting	4	T, U
Topic	Weight	Level																	
Entrepreneurship, Creativity and Innovation;	3	I, T																	
Creative Problem Solving Model;	3	T, U																	
Develop a Product. Generate Ideas and Protect Inventions;	2	T																	
Marketing Strategies;	3	T, U																	
Finance and Accounting	4	T, U																	
Examination forms	Multiple-choice questions, short-answer questions																		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.																		
Reading list	1. Thomas N. Duening, Robert A. Hisrich & Michael A. Lechter – Technology Entrepreneurship: Taking Innovation to the Marketplace – 3rd edition – 2020																		

2. Learning Outcomes Matrix

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

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

3. *Planned learning activities and teaching methods*

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Entrepreneurship, Creativity and Innovation;	1	Midterm exam	Lecture, In-class activities, Quiz	
2	Creative Problem Solving Model;	1	Midterm exam	Lecture, In-class activities, Quiz	
3	Develop a Product. Generate Ideas and Protect Inventions;	2	Midterm exam, Assignment	Lecture, In-class activities, Project	
4	Midterm				
5	Marketing Strategies;	3	Final exam, Assignment	Lecture, Project	
6	Finance and Accounting	3	Final exam, Assignment	Lecture, Project	
7	Final exam				

4. *Assessment plan*

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

Assessment Type	CLO 1	CLO 2	CLO 3
Midterm examination (25%)	50%	50%	

Projects/Presentations/ Report (25%)			60%
Final examination (40%)			40%
Exercises/ Quiz (10%)	50%	50%	

Rubrics (optional)

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	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	Specific position (perspective, thesis/hypothesis) takes into account the	Specific position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/hypothesis) is

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

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

	reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/ authority on the topic.	authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

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: Optimization and Applications

Course Code: IT163IU

1. General information

Course name	- (in English): Optimization and Applications - (in Vietnamese): Tối Ưu Hóa và Ứng Dụng
Course designation	This subject covers linear programming, convex optimization theory, and applications.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	6 or 7
Person responsible for the course	Assoc. Prof. Vo Thi Luu Phuong, Ph.D.
Language	English
Relation to curriculum	Elective
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	Optimization, particularly convex optimization, is applied in many fields such as data science, computer science, economics, engineering, logistics, etc. Optimization models of various applications in machine learning, resource allocations, etc. are introduced. Background theory of iterative algorithms solving problems such as gradient descent, mini-batch stochastic gradient descent, subgradient method, proximal gradient descent, etc. are taught. The course also covers linear programming (LP) which is a subfield of convex optimization. Some LP applications such as max flow – min cut, transportation, shortest path,... problems are mentioned.								
Course learning outcomes	CLO 1. Formulate a practical problem as an optimization model and solve it using optimization solvers. CLO 2. Understand the background theory of convex problem, duality, and iterative algorithms solving the problems. CLO 3. Be able to develop computer programs that applied iterative algorithms such as gradient descent, stochastic gradient descent, proximal gradient descent, subgradient method, ... to solve optimization problems in various applications. <table border="1"> <thead> <tr> <th>Competency level</th><th>Course learning outcome (CLO)</th></tr> </thead> <tbody> <tr> <td>Knowledge</td><td>CLO1, CLO2</td></tr> <tr> <td>Skill</td><td>CLO3</td></tr> <tr> <td>Attitude</td><td></td></tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1, CLO2	Skill	CLO3	Attitude	
Competency level	Course learning outcome (CLO)								
Knowledge	CLO1, CLO2								
Skill	CLO3								
Attitude									
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>								

Weight: lecture session (hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)		
Topic	Weight	Level
Course introduction	1	I, T
Mathematical background (linear algebra and calculus)		
Linear program and applications	2	I, T, U
Integer linear program and its applications	1	I, T
Convex sets and convex functions	1	I, T
Convex problems.	1	I, T, U
Some applications: - Linear regression - Classification - Regularization: Ridge regression, Lasso regression	1	I, T, U
First-order methods: - gradient descent - subgradient - stochastic gradient - proximal gradient	2	I, T, U
Duality - Lagrange, duality gap - KKT condition - Dual problem	2	I, T
Dual-based methods: - Dual decomposition	1	I, U, T

	- Dual of support vector machine problem		
	Second-order methods: - Newton method - Log-barrier method	1	I, U, T
	Advanced topic in optimization	1	I, U
	Final review	1	U
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	1. Sébastien Bubeck – Convex Optimization: Algorithms and Complexity – 1st edition – 2015. 2. Robert J. Vanderbei. Linear programming: foundations and extensions, 5th edition. Springer Nature, 2020.		

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					
3						X

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Course introduction	2		lecture	1, 2

2	Mathematical background (linear algebra and calculus)	2		lecture	1
3-4	Linear program and applications	1, 2	Midterm, homework, lab	lecture, exercises, lab	2
5	Integer linear program and its applications	1, 2	Midterm, homework	lecture, exercises	2
6	Convex sets and convex functions	1, 2	Midterm, homework	lecture, exercises	1
7	Some applications: - Linear regression - Classification - Regularization: Ridge regression, Lasso regression	1	Midterm, homework, lab	lecture, exercises, lab	1, 2
	Midterm				
8-10	First-order methods: - gradient descent - subgradient - stochastic gradient - proximal gradient	2, 3	Final, homework, lab	lecture, exercises, lab	1
11	Duality - Lagrange, duality gap - KKT condition - Dual problem	2	Final, homework	lecture, exercises	1
12	Dual-based methods: - Dual decomposition - Dual of support vector machine problem	2, 3	Final, homework, lab	lecture, exercises, lab	1
13	Second-order methods: - Newton method - Log-barrier method	2, 3	Final, homework, lab	lecture, exercises, lab	1

14	Advanced topic in optimization	2	Final, homework	lecture, exercises	Literature
15	Final review	1		lecture	
14	Final exam				

4. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3
Labs (25%)	25%		50%
Midterm examination (30%)	25%	40%	
Final examination (35%)	25%	40%	25%
Homeworks (10%)	25%	20%	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 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	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	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and

	discussed in priority order.	are identified clearly.	(consequences and implications) are identified clearly.	implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

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

	memorable, and strongly supported.)	supporting material.	repeated and is not memorable.	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
 School of Computer Science and Engineering

COURSE SYLLABUS

Course Name: Discrete Mathematics

Course Code: IT153

1. General information

Course name	- (in English): Discrete Mathematics - (in Vietnamese): Toán Rời Rạc
Course designation	The course provides students the ability to reason and think mathematically and logically; and apply this ability to analyze and solve discrete practical problems in Computer Science and IT.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☒ <i>Specialized knowledge</i> ☐ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	4
Person responsible for the course	Assoc. Prof. Nguyen Van Sinh
Language	English
Relation to curriculum	Compulsory (NE, CE, CS)
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 hours Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Lecture: 37.5 hours

	Private study including examination preparation, specified in hours: 90 hours				
Credit points	3 credits (Theory: 3 + Practice: 0) 4.64 ECTS				
Number of periods	Theory: 45 Practice: 0				
Required and recommended prerequisites for joining the course	Recommended : Fundamental of Programming, Calculus 1				
Course objectives	This course provides students the based knowledge of discrete mathematics. To develop the ability to reason and think mathematically and logically; and to apply this ability to analyzing and solving discrete practical problems in computer science. This is an application-oriented course based upon the study of events that occur in small, or discrete in computer science, segments in business, industry, government and the digital areas. Students will be introduced to the mathematical tools of logic and set theory, counting, number theory, and graph theory. Practical applications will be introduced throughout the course				
Course learning outcomes	CLO 1. Understand and apply count/enumerate objects in a systematic way. CLO 2. Understand mathematical reasoning in order to read, comprehend and construct mathematical arguments; Understand to work with discrete structures and practical problems in computer science and IT CLO 3. Apply algorithm thinking and modeling; Apply knowledge in computer science for problems solving CLO 4. Have a sense of preparation of good mathematical knowledges to approach and solve problems in computer science and information technology. <table border="1"> <tr> <th>Competency level</th><th>Course learning outcome (CLO)</th></tr> <tr> <td>Knowledge</td><td>CLO1, CLO2</td></tr> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1, CLO2
Competency level	Course learning outcome (CLO)				
Knowledge	CLO1, CLO2				

		Skill	CLO2, CLO3	
		Attitude	CLO4	
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>			
	Weight: lecture session (3 teaching hours)			
	Teaching levels: I (Introduce); T (Teach); U (Utilize)			
	Topic	Weight	Level	
	Week 1: Course syllabus and introduction; Logic and propositions	3	I,T	
	Week 2: Logic and propositions (continue)	3	I,T,U	
	Week 3: Propositional Equivalences; predicates and quantifiers	3	I,T,U	
	Week 4: Nested Quantifiers and Methods of Proof	3	I,T,U	
	Week 5: Induction and recursion	3	I,T,U	
	Week 6&7: Number of theory	3	I,T,U	
	Week 8: Counting: part 1, 2; midterm review	3	I,T,U	
	Week 9: Counting: part 3	3	I,T,U	
	Week 10: Advanced counting	3	I,T,U	
	Week 11: Boolean algebras	3	I,T,U	
	Week 12: Graph theory	3	I,T,U	
	Week 13: Optimal problem solving on graphs	3	I,T,U	
Week 14: Introduction and application of tree	3	I,T,U		
Week 15: Search on tree; review for final exam	3	I,T,U		
Examination forms	Multiple-choice questions, short-answer questions			
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.			
	Assignments/Examination: Students must have more than 50/100 points overall to pass this course.			

Reading list	1. Kenneth H. Rosen, Discrete Mathematics and Its Applications 8th edition, 2019. 2. Oscar Levin – Discrete Mathematics: An Open Introduction – 4th edition – 2025. 3. Vietnamese book: N.V.Sinh, T.M.Hà, N.T.T.Sang, N.M.Quân, “Nền tảng Toán học trong Công nghệ Thông tin”, NXB - Đại học Quốc gia TP HCM, ISBN: 978-604-73-6518-0, 2018.

2. Learning Outcomes Matrix

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

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Course syllabus and introduction; Logic and propositions	1,2	Questions and answers	Lecture, Discussion , In-class exercises	[1, 2]
2	Logic and propositions (continue)	2,3,4	Quiz, Homework, Midterm exam	Lecture, Discussion , In-class exercises	[1, 2]

3	Propositional Equivalences; predicates and quantifiers	2,3,4	Quiz, Homework, Midterm exam	Lecture, Discussion , In-class exercises	[1, 2]
4	Nested Quantifiers and Methods of Proof	2,3,4	Quiz, Homework, Midterm exam	Lecture, Discussion , In-class exercises	[1, 2]
5	Induction and recursion	2,3,4	Quiz, Homework, Midterm exam	Lecture, Discussion , In-class exercises	[1, 2]
6	Number of theory	2,3,4	Quiz, Homework, Midterm exam	Lecture, Discussion , In-class exercises	[1, 2]
7	Number of theory (continue)	2,3,4	Quiz, Homework, Midterm exam	Lecture, Discussion , In-class exercises	[1, 2]
8	Counting: part 1, 2; midterm review	2,3,4	Quiz, Homework, Midterm exam	Lecture, Discussion , In-class exercises	[1, 2, 3]
	Midterm examination				
9	Counting: part 3	2,3,4	Quiz, Homework, Final exam	Lecture, Discussion ,	[1, 2]

				In-class exercises	
10	Advanced counting	2,3,4	Quiz, Homework, Final exam	Lecture, Discussion , In-class exercises	[1, 2]
11	Boolean algebras	2,3,4	Quiz, Homework, Final exam	Lecture, Discussion , In-class exercises	[1, 2, 3]
12	Graph theory	2,3,4	Quiz, Homework, Final exam	Lecture, Discussion , In-class exercises	[1, 2, 3]
13	Optimal problem solving on graphs	2,3,4	Quiz, Homework, Final exam	Lecture, Discussion , In-class exercises	[1, 2, 3]
14	Introduction and application of tree	2,3,4	Quiz, Homework, Final exam	Lecture, Discussion , In-class exercises	[1, 2, 3]
15	Search on tree; review for final exam	2,3,4	Quiz, Homework, Final exam	Lecture, Discussion , In-class exercises	[1, 2, 3]
1	Final examination				

4. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4
Quiz/Homework/Assignment (25%)	20%	30%	30%	20%
Midterm examination (30%)	25%	25%	25%	25%
Final examination (45%)		30%	40%	30%

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

5. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports			
Student: HW/Assignment:			
Date: Evaluator:			
	Max.	Score	Comments
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/	Issue/ problem to be considered critically is stated without clarification or description.

			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 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	Specific position (perspective, thesis/hypothesis) takes into account the	Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/hypothesis) is stated, but is

	issue. Limits of position (perspective, thesis/ hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/ hypothesis).	complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis).		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	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable

	observable and is skillful and makes the content of the presentation cohesive.	consistently observable within the presentation.	observable within the presentation.	within the presentation.
Language	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears 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	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate	Insufficient 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.	reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/ authority on the topic.	reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/ authority on the topic.	reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/ authority on the topic.
Central Message	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)	Central message is clear and consistent with the supporting material.	Central message is basically understandable but is not often repeated and is not memorable.	Central message can be deduced but is not explicitly stated in the presentation.

Source: Association of American Colleges and Universities

Date revised: April 24, 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: Internship
Course Code: IT082IU

1. General information

Course name	- (in English): Internship - (in Vietnamese): Thực Tập Công Nghiệp
Course designation	This course helps students to do an internship in industry and prepare a topic for a pre-thesis and thesis
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☒ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	7
Person responsible for the course	Lecturer of School of Computer Science and Engineering; Advisor of the Company/Organization (in Industry)
Language	English
Relation to curriculum	Compulsory
Teaching methods	Project, seminar, self-study
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 135 hours

Credit points	3 credits (Theory: 0 + Practice: 3) 4.91 ECTS								
Number of periods	Theory: 0 Practice: 0								
Required and recommended prerequisites for joining the course	Follows requirements of the academic program								
Course objectives	This course requires students to work in IT-related organizations or businesses from June to September. Each student has supervised by a faculty member at the SCSE and an instructor at the organization. The student will join/run a technical project, and/or participate in soft skills courses. The internship lasts a minimum of 8 weeks and 3 sessions per week. Students have to report progress to instructors after 3 weeks of receiving the project. Depending on the project requirements of the organization or business, students may arrange for a longer time. At the end of the internship, students will submit internship reports and assessment reports from the instructor at the organization or business to the School. Instructors read the reports and confirm the internship marks for the students. Students can also register this course in main semesters or take part in internships abroad for a period of 6 months. The registration and evaluation process are similar.								
Course learning outcomes	CLO 1. Recognize the roles of an engineer in practical environment. CLO 2. Develop practical products or run product development projects in industry CLO 3. Follow requirements/regulations and laws <table border="1"> <thead> <tr> <th>Competency level</th><th>Course learning outcome (CLO)</th></tr> </thead> <tbody> <tr> <td>Knowledge</td><td>CLO1, CLO2</td></tr> <tr> <td>Skill</td><td>CLO1, CLO2</td></tr> <tr> <td>Attitude</td><td>CLO3</td></tr> </tbody> </table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1, CLO2	Skill	CLO1, CLO2	Attitude	CLO3
Competency level	Course learning outcome (CLO)								
Knowledge	CLO1, CLO2								
Skill	CLO1, CLO2								
Attitude	CLO3								
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: within 3 months								

	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Introduction of the internship place	9	U
	Review the existing issues of an assigned project	9	U
	Study and solve some issues in product development	9	U
	Implement some new functions or features for the project product	9	U
	Presentation	9	U
Examination forms	Presentation		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the requirement of the company or business. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Students must have more than 50/100 points overall to pass this course.		
Reading list	By on the suggestion of the company or business		

2. Learning Outcomes Matrix

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

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction of the internship place	1,2	Check and Evaluate	Research and working	At company or organization

3	Review the existing issues of an assigned project	1,2	Check and Evaluate	Research and working	At company or organization
4	Study and solve some issues in product development	1,2	Check and Evaluate	Research and working	At company or organization
5	Implement some new functions or features for the project product	1,2	Check and Evaluate	Research and working	At company or organization
6	Presentation	1,2,3	Check and Evaluate	Research and working	At company or organization
7	Final grade				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Final grade (100%)	30%	40%	30%

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

5. Rubrics (optional)

5.1. Grading checklist

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

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

5.2. Holistic rubric

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

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

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1

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

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

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

Source: Association of American Colleges and Universities

Ho Chi Minh City, 24/04/2025

Dean of the School of Computer Science and Engineering

(Signature)

A handwritten signature in blue ink, appearing to read 'N. Sinh', with a long horizontal stroke extending to the right and a small flourish at the end.

Nguyen Van Sinh



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

COURSE SYLLABUS

Course Name: Special Study of the Field

Course Code: IT083IU

1. General information

Course name	- (in English): Special Study of the Field - (in Vietnamese): Đồ Án
Course designation	This course helps students to do a research topic and prepare for a thesis
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☒ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	7
Person responsible for the course	Lecturers (thesis advisor)
Language	English
Relation to curriculum	Compulsory
Teaching methods	Project, seminar, self-study
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 135 hours
Credit points	3 credits (Theory: 0 + Practice: 3)

	4.91 ECTS												
Number of periods	Theory: 0 Practice: 0												
Required and recommended prerequisites for joining the course	Required number of credits, Internship												
Course objectives	Students are advised to select a subject under the guidance of a faculty member. Project content might be a research topic or building a new application that underlies the graduation thesis. Research topics include fields of academic program that are academic or practical.												
Course learning outcomes	CLO 1. Research a specific topic in the field. CLO 2. Design the model or system architecture of the application product CLO 3. Have a good preparation to develop and improve the product in the thesis. <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO1</td></tr><tr><td>Skill</td><td>CLO1, CLO2</td></tr><tr><td>Attitude</td><td>CLO3</td></tr></table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1	Skill	CLO1, CLO2	Attitude	CLO3				
Competency level	Course learning outcome (CLO)												
Knowledge	CLO1												
Skill	CLO1, CLO2												
Attitude	CLO3												
Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i> Weight: in the whole semester. Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Find out/define a topic of the subject</td><td>3</td><td>U</td></tr><tr><td>Review and evaluate existing issues/problems</td><td>8</td><td>U</td></tr><tr><td>Research and propose some solutions</td><td>8</td><td>U</td></tr></table>	Topic	Weight	Level	Find out/define a topic of the subject	3	U	Review and evaluate existing issues/problems	8	U	Research and propose some solutions	8	U
Topic	Weight	Level											
Find out/define a topic of the subject	3	U											
Review and evaluate existing issues/problems	8	U											
Research and propose some solutions	8	U											

	Deploy some main functions or new features for the product project	8	U
	Testing and evaluating solutions or products	8	U
	Write a report	10	U
Examination forms	Presentation		
Study and examination requirements	A minimum attendance of 80 percent is compulsory for the appointments with supervisor. Students will be assessed based on their contribution. Questions and comments are strongly encouraged. Students must have more than 50/100 points overall to pass this course.		
Reading list	Related works and books		

2. *Learning Outcomes Matrix*

The relationship between Course Learning Outcomes (CLO) (1-3) 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				xx
3			xx			

3. *Planned learning activities and teaching methods*

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Find out the topic of the subject	1,2	Check and Evaluate	Discuss and Research	Related work, books and research papers
2	Review and evaluate existing issues	1,2	Check and Evaluate	Discuss and Research	Related work, books and research papers
3	Research and propose some solutions	1,2	Check and Evaluate	Discuss and Research	Related work, books and research papers

4	Deploy some main functions or new features for the product project	1,2	Check and Evaluate	Discuss and Research	Related work, books and research papers
5	Testing and evaluating solutions or products	1,2	Check and Evaluate	Discuss and Research	Related work, books and research papers
6	Write a report	1,2	Check and Evaluate	Discuss and Research	Related work, books and research papers
7	Final grade				

4. *Assessment plan*

Assessment Type	CLO1	CLO2	CLO3
Final grade (100%)	30%	40%	30%

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

5. *Rubrics (optional)*

5.1. Grading checklist

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

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

5.2. Holistic rubric

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

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

5.3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
Explanation of issues	Issue/ problem to be considered critically is stated clearly and described comprehensively,	Issue/ problem to be considered critically is stated, described, and clarified so	Issue/ problem to be considered critically is stated but description	Issue/ problem to be considered critically is stated without

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

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

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

Source: Association of American Colleges and Universities

Ho Chi Minh City, 24/04/2025

Dean of the School of Computer Science and Engineering

(Signature)

A handwritten signature in blue ink, appearing to read 'N. Sinh', with a long horizontal stroke extending to the right and a small flourish at the end.

Nguyen Van Sinh



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

COURSE SYLLABUS

Course Name: Thesis

Course Code: IT058IU

1. General information

Course name	- (in English): Thesis - (in Vietnamese): Luận Văn
Course designation	This course evaluates students obtained knowledges to complete the academic program.
Course type	☐ <i>General knowledge</i> ☐ <i>Fundamental</i> ☐ <i>Specialized knowledge</i> ☒ <i>Internship/Project/Thesis</i> ☐ <i>Others:</i>
Semester(s) in which the course is taught	8
Person responsible for the course	Lecturers (thesis advisor)
Language	English
Relation to curriculum	Compulsory
Teaching methods	Project, seminar, self-study
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 450 hours
Credit points	10 credits (Theory: 0 + Practice: 10) 16.37 ECTS
Number of periods	Theory: 0 Practice: 0
Required and recommended	Required number of credits Prerequisites: Special Study of the Field

prerequisites for joining the course																						
Course objectives	Dissertations are industrial projects designed to ensure that students have mastered their subjects in the program. All projects are based on "real projects" provided by the industry to students to develop skills and apply knowledge gained from all courses throughout the program. Students will work independently to develop requirements, design, implement and provide solutions to business problems. Students can follow any appropriate process model, must self-manage the project, follow all appropriate project management techniques. The success of the project is largely determined by whether the student adequately solves the client's problem. Students will provide the final product with all artifacts that match the process model being used (e.g. project plan, technical requirements, system architecture, design documentation, test plan, source code and installed software products). Or students can choose the basic research to do the thesis.																					
Course learning outcomes	CLO 1. Research a specific topic in the field. CLO 2. Design the model or system architecture of the application product CLO 3. Hard work to develop and finish the product of the thesis. <table><tr><th>Competency level</th><th>Course learning outcome (CLO)</th></tr><tr><td>Knowledge</td><td>CLO1</td></tr><tr><td>Skill</td><td>CLO1, CLO2</td></tr><tr><td>Attitude</td><td>CLO3</td></tr></table>	Competency level	Course learning outcome (CLO)	Knowledge	CLO1	Skill	CLO1, CLO2	Attitude	CLO3													
Competency level	Course learning outcome (CLO)																					
Knowledge	CLO1																					
Skill	CLO1, CLO2																					
Attitude	CLO3																					
Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: in the whole last semester Teaching levels: I (Introduce); T (Teach); U (Utilize) <table><tr><th>Topic</th><th>Weight</th><th>Level</th></tr><tr><td>Find out the thesis topic</td><td>4</td><td>U</td></tr><tr><td>Review and evaluate existing issues</td><td>20</td><td>U</td></tr><tr><td>Research and propose some solutions</td><td>30</td><td>U</td></tr><tr><td>Deploy the thesis product</td><td>40</td><td>U</td></tr><tr><td>Testing and evaluating solutions or products</td><td>40</td><td>U</td></tr><tr><td>Thesis defense</td><td>1</td><td>U</td></tr></table>	Topic	Weight	Level	Find out the thesis topic	4	U	Review and evaluate existing issues	20	U	Research and propose some solutions	30	U	Deploy the thesis product	40	U	Testing and evaluating solutions or products	40	U	Thesis defense	1	U
Topic	Weight	Level																				
Find out the thesis topic	4	U																				
Review and evaluate existing issues	20	U																				
Research and propose some solutions	30	U																				
Deploy the thesis product	40	U																				
Testing and evaluating solutions or products	40	U																				
Thesis defense	1	U																				
Examination forms	Defense																					

Study and examination requirements	A minimum attendance of 80 percent is compulsory for the requirement. Students will be assessed on their contribution. Questions and comments are strongly encouraged. Students must have more than 50/100 points overall to pass this course.
Reading list	Books and papers.

2. *Learning Outcomes Matrix*

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

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

3. *Planned learning activities and teaching methods*

Week	Topic	CL O	Assessments	Learning activities	Resources
1	Find out the thesis topic	1,2	Check and evaluate	Discuss and Research	Related work, books and research papers
2	Review and evaluate existing issues	1,2	Check and evaluate	Discuss and Research	Related work, books and research papers
3	Research and propose some solutions	1,2	Check and evaluate	Discuss and Research	Related work, books and research papers
4	Deploy the thesis product	1,2	Check and evaluate	Discuss and Research	Related work, books and research papers
5	Testing and evaluating solutions or products	1,2	Check and evaluate	Discuss and Research	Related work, books and research papers
6	Thesis defense	1,2,3	By committee	presentation	

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Final grade (100%)	30%	40%	30%

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

5. Rubrics (optional)

5.1. Grading checklist

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

5.2. Holistic rubric

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

Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included.
3	Demonstrates partial understanding of the problem. Most requirements of task are included.
2	Demonstrates little understanding of the problem. Many requirements of task are missing.
1	Demonstrates no understanding of the problem.
0	No response/task not attempted

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

5.3.Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

<i>point of view or conclusion</i>	comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	analysis or synthesis. Viewpoints of experts are subject to questioning.	synthesis. Viewpoints of experts are taken as mostly fact, with little questioning.	Viewpoints of experts are taken as fact, without question.
Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.

Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

	enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.	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 supports the presentation or	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/	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	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/

	establishes the presenter's credibility/ authority on the topic.	authority on the topic.	credibility/ authority on the topic.	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**
Department of Mathematics

COURSE SYLLABUS
Course Name: Calculus 1

Course Code: **MA001IU**

1. General information

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

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

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

Content	<i>The description of the contents should clearly indicate the weighting of the content and the level.</i>		
	Weight: lecture session (4 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Review: Set theory and mapping.	1	I, T
	Functions and Graphs, Inverse Functions, Exponential and Logarithmic Functions		
	Parametric Curves, Limit. One-sided Limits, Laws of Limits	1	I, T
	Evaluating Limits. The Squeeze Theorem. Continuity. The Intermediate Value Theorem	1	T, U
	Tangent Lines and Velocity Problems. Rates of Change, Derivative.	1	T, U
	Higher-Order Derivatives, Rules of Differentiation. Rates of Change in the Natural and Social Sciences	1	T, U
	Implicit Differentiation, Differentiation of Inverse Functions,	1	T, U
	Logarithmic Differentiation, Linear Approximations. Differentials.	1	T, U
	Related Rates, Maxima and Minima. Critical Point, The Mean Value Theorem.	1	T, U
	The First and Second Derivative Test, Concavity. Shapes of Curves, Curve Sketching	1	T, U
	Indeterminate Forms and l'Hôpital's Rules, Maxima and Minima Problems, Newton's Method	1	T, U
	Anti-derivatives and Indefinite Integrals, The Definite Integral	1	I, T
	Properties of the Definite Integral. The Fundamental Theorem of Calculus, Integration by Substitution	1	I, T, U
Integration by Parts, Partial Fractions, Numerical Integration,	1	T, U	
Improper Integrals, Areas between Curves Areas Enclosed by Parametric Curves	1	T, U	
Volumes, Arc Length, Applications to Engineering, Economics and Science	1	T, U	
Examination forms	Written examination		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.		

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

2. Learning Outcomes Matrix

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

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

3. Planned learning activities and teaching methods

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

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

4. Assessment plan

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

Final exam (50%)		Q1, Q2 80%Pass		Q3, Q4 70%Pass	Q5 50%

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

5. Date revised: May 2025

Ho Chi Minh City, 03/06/2025

Department of Mathematics



Nguyễn Minh Quân



VIETNAM NATIONAL UNIVERSITY HCMC
INTERNATIONAL UNIVERSITY
Department of 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 ☒ General ☐ Specialization (required) ☐ Project/ Internship/ Thesis	☒ Fundamental ☐ Specialization (elective) ☐ 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

	PLO						
CLO	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

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

Nguyen Minh Quan