ĐẠI HỌC QUỐC GIA THÀNH PHÓ HỎ CHÍ MINH **TRƯỜNG ĐẠI HỌC QUỐC TẾ**

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

CHƯƠNG TRÌNH ĐÀO TẠO KHÓA 2024 – NGÀNH KHOA HỌC MÁY TÍNH

TRÌNH ĐỘ ĐẠI HỌC

(Kèm theo Quyết định số /QĐ-ĐHQT ngày tháng năm 2024 của Hiệu trưởng Trường Đại học Quốc tế)

1. Thông tin chung

- Tên ngành đào tạo: Khoa học Máy tính

+ Tiếng Việt: Khoa học Máy tính

+ Tiếng Anh: Computer Science

- Mã ngành đào tạo: 7480101

- Trình độ đào tạo: Bậc Đại học, trình độ cử nhân

- Loại hình đào tạo: Chính quy

- Thời gian đào tạo: 4 năm

- Tên văn bằng sau khi tốt nghiệp:

+ Tiếng Việt: Cử nhân Khoa học Máy tính

+ Tiếng Anh: Bachelor of Science in Computer Science

- Nơi đào tạo: Trường Đại Học Quốc Tế - Đại Học Quốc Gia TP.HCM

2. Thông tin tuyển sinh và kế hoạch đào tạo

a. Đối tượng tuyển sinh

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

- c. Tổ hợp môn xét tuyển
- d. Dự kiến chỉ tiêu tuyển sinh, quy mô đào tạo

3. Mục tiêu đào tạo

a. Mục tiêu chung: đào tạo cử nhân Khoa học máy tính đạt được (i) nền tảng kiến thức cơ bản vững chắc về khoa học máy tính, (ii) kiến thức chuyên ngành sâu và rộng về khoa học máy tính 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.

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

Mục tiêu đào tạo của CTĐT

- Sinh viên tốt nghiệp chương trình Cử nhân Kỹ thuật CNTT sẽ có:
- 1. Kiến thức và lý luận về ngành
- (i) kiến thức cơ bản vững chắc về máy tính, hệ thống máy tính, mạng máy tính và ứng dụng CNTT, bao gồm các khía cạnh lý thuyết và ứng dụng
- (ii) kiến thức chuyên ngành sâu, rộng về máy tính, hệ thống máy tính, mạng máy tính và ứng dụng công nghệ thông tin. Có kỹ năng phân tích và giải quyết vấn đề; thiết kế, phát triển và tích hợp hệ thống thông tin cho các ứng dụng kỹ thuật liên quan đến máy tính, hệ thống mang máy tính và các ứng dung và hê thống dựa trên mạng máy tính. Khả năng giải quyết các vấn đề kỹ thuật, xã hội, chính trị và kinh tế liên ngành.
- 2. Kỹ năng và phẩm chất cá nhân và nghề nghiệp
- (iii) kiến thức về hội nhập và khởi nghiệp. Có ý thức bảo vệ môi trường, thiết kế và vận

Tầm nhìn

Nhằm mục đích trở thành trường được quốc gia và quốc tế công nhận về phương pháp giảng dạy tiên tiến, nghiên cứu hiện đại và đổi mới.

- Phương pháp giảng dạy tiên tiến:
- ✓ Để cung cấp cho sinh viên các lý thuyết cơ bản và nâng cao và liên kết chúng với ứng dụng kỹ thuật.
- ✓ Tương tác với học sinh cả trong và ngoài lớp học.
- ✓ Để hỗ trợ sinh viên với việc giảng dạy kết hợp.
- ✓ Để truyền cảm hứng cho sinh viên tham gia nghiên cứu và giải quyết các vấn đề kỹ thuật.
- Nghiên cứu hiện đại:
- ✓ Xây dựng các phòng thí nghiệm hiện đại phục vụ cho các lĩnh vực nghiên cứu của trường và

Sứ mạng (tô đậm những nội hàm mà mục tiêu thể hiện hoặc gắn kết)

Phù hợp với sứ mệnh của IU – ĐHQG TP.HCM, SCSE hướng đến:

- Giúp học sinh tận dụng tốt nhất các cơ hội học tập và chuẩn bị cho học sinh những kiến thức cần thiết để có thể thích ứng với sự thay đổi nhanh chóng của công nghệ
- Tiến hành nghiên cứu chất lượng cao mang lại lợi ích cho sinh viên, học giả và cộng đồng
- Chuyển giao công nghệ để giải quyết các vấn đề của cộng đồng và tạo ra sự hợp tác mạnh mẽ với Ngành.

- Luật giáo dục (tô đậm những nội hàm mà mục tiêu thể hiện hoặc gắn kết)
- Cung cấp giáo dục sau đại học và đại học chất lượng cao trong đa ngành. Tất cả các chương trình giáo dục đều được kiểm định/đánh giá theo tiêu chuẩn khu vực và quốc tế.
- Cung cấp các nghiên cứu xuất sắc bao gồm nghiên cứu cơ bản và ứng dụng đáp ứng nhu cầu của ngành, địa phương, xã hội và tiêu chuẩn quốc tế.
- Giữ vai trò tiên phong tại Việt Nam bằng cách thực hành quản lý xuất sắc, truyền cảm hứng và hỗ trợ các thành viên khác của ĐHQGHN trong việc thúc đẩy sự phát triển của Đại học Quốc gia TP.HCM nói chung.

hành hệ thống thân thiện với môi trường.

- 3. Kỹ năng làm việc nhóm và giao tiếp
- (iv) các kỹ năng mềm cần thiết và giải quyết vấn đề. Có khả năng làm việc theo nhóm, kỹ năng lãnh đạo và quản lý. Có khả năng giao tiếp và làm việc chuyên nghiệp bằng tiếng Anh (ở mức độ thành thạo).
- (v) Có ý thức rõ ràng về chuyên môn, đạo đức nghề nghiệp và tinh thần trách nhiệm đối với bản thân và xã hội. Có phẩm chất chính trị tốt, sống và làm việc tuân thủ pháp luật của nhà nước Việt Nam.
- 4. Năng lực hành nghề
- (vi) khả năng tự học và nghiên cứu hoặc tham gia các khóa bồi dưỡng để nắm bắt công nghệ mới,
- (vii) có đủ năng lực học tiếp trong và ngoài nước.

khuyến khích sinh viên tham gia.

- ✓ Để chuẩn bị chương trình giảng dạy học thuật liên quan đến nghiên cứu.
- Đổi mới:
- ✓ Hướng dẫn học sinh hiểu về bối cảnh xã hội, kinh tế và kỹ thuật.
- ✓ Hướng học sinh nhìn nhận vấn đề hiện tại và tương lai.
- ✓ Rèn cho học sinh tư duy sáng tạo và phản biện.
- ✓ Rèn luyện cho học sinh làm việc theo nhóm đối với các bài toán tích hợp.

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

Sinh viên tốt nghiệp phải có phẩm chất đạo đức, chính trị và sức khỏe tốt; có kiến thức cơ bản và chuyên sâu về Khoa học máy tính; có khả năng nghiên cứu, phân tích và thiết kế các hệ thống máy tính để giải quyết các vấn đề thực tế; có khả năng làm việc hiệu quả và sáng tạo trong quá trình làm việc; có khả năng tiếp tục học suốt đời để phát triển nghề nghiệp.

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

Kết quả của sinh viên dẫn đến mục tiêu Giáo dục của Chương trình một cách hợp lý. Việc đạt được các mục tiêu giáo dục của chương trình được hỗ trợ bởi các hành động của chương trình, được ánh xạ tới kết quả đầu ra của học sinh như trong Bảng:

Mục tiêu giáo dục của chương trình	1	2	3	4	5	6	7
PLO1	5	5	3	5	3	5	5
PLO 2	5	3	3	3	3	3	5
PLO 3			4	5	4	3	2
PLO 4			3	5	5		·

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

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

Mục tiêu giáo dục của chương trình	PLOs	Kiến thức và sự hiểu biết	Phân tích kỹ thuật	Thiết kế kỹ thuật	Thực hành kỹ thuật và phát triển sản phẩm	Kỹ năng chuyển nhượng
Kiến thức	PLO 1	X	X	X	X	
Kỹ năng	PLO 2				X	X
Tự chủ và	PLO 3				X	X
trách nhiệm	PLO 4					X

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

6. Quy trình đào tạo, điều kiện tốt nghiệp

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

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

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

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

Bảng 3: Thang điểm

Xếp loại	Thang điểm 100	Điểm chữ	Thang điểm 4
Xuất sắc	Từ 90 đến 100	A+	4,0
Giỏi	Từ 80 đến cận 90	A	3,5

Khá	Từ 70 đến cận 80	B+	3,0
Trung bình khá	Từ 60 đến cận 70	В	2,5
Trung bình	Từ 50 đến cận 60	С	2,0
Yếu	Từ 40 đến cận 50	D+	1,5
Vám	Từ 30 đến cận 40	D	1,0
Kém	Dưới 30	F	0,0

8. Khối lượng kiến thức toàn khoá

Tổng số tín chỉ: **130 tín chỉ**, trong đó phân bổ kiến thức như Bảng 4 (không bao gồm giáo dục thể chất và giáo dục quốc phòng):

Bảng 4. Cấu trúc chương trình đào tạo

TT	Các khối kiến thức	Khối lượng	
11	Cac kiloi kien thuc	Số tín chỉ	%
I	Khối kiến thức giáo dục đại cương	45	35%
II	Khối kiến thức cơ sở ngành	31	24%
III	Kiến thức chuyên ngành	20	15%
IV	Kiến thức tự chọn	15	12%
V	Kiến thức bổ trợ	3	2%
VI	Thực tập, khóa luận/luận văn tốt nghiệp	16	12%
	Tổng cộng	130	100%

9. Nội dung chương trình đào tạo

Bảng 5. Các môn học thuộc CTĐT

			Tên môn học	(MH)	Loại	Tín c	hỉ		
					MH			Thực	Phòng
Stt	Tên MH	Mã MH	T: ś., : 24	Tiếng Anh	(bắt	Tổng	Lý	hành/	TN
			Tiếng việt	Tieng Aim	buộc/tự	cộng	thuyết	Thí	(**)
					chọn)			nghiệm	
I		Kiến thức	giáo dục đại	cuong					
1.1	Các môn lý luận chứ	ıh trị							
	Triết học Mác-		Triết học	Philosophy	Bắt				
1	Lênin	PE015IU	Mác-Lênin	Marx -	buôc	3	3	0	
			Mac-Leiiii	Lenin	buọc				
	Kinh tế chính trị		Kinh tế	Marxist –	Bắt				
2	Mác-Lênin	PE016IU	chính trị	Leninist –	buôc	2	2	0	
			Mác-Lênin	Lemmst	Duọc				

				Political Economy					
3	Chủ nghĩa xã hội khoa học	PE017IU	Chủ nghĩa xã hội khoa học	Scientific Socialism	Bắt buộc	2	2	0	
4	Lịch sử Đảng Cộng Sản Việt Nam	PE018IU	Lịch sử Đảng Cộng Sản Việt Nam	History of Vietnamese Communist Party	Bắt buộc	2	2	0	
5	Tư tưởng Hồ Chí Minh	PE019IU	Tư tưởng Hồ Chí Minh	Ho Chi Minh's Thoughts	Bắt buộc	2	2	0	
1.2	Tổng cộng	Va hāi				11	11	0	
1.2	Khoa học tự nhiên –	MA001I			Bắt				
6	Toán 1	U	Toán 1	Calculus 1	buộc	4	4	0	
7	Toán 2	MA003I U	Toán 2	Calculus 2	Bắt buộc	4	4	0	
8	Xác suất, thống kê và quá trình ngẫu nhiên	MA026I U	Xác suất, thống kê và quá trình ngẫu nhiên	Probability, Statistic & Random Process	Bắt buộc	3	3	0	
9	Vật lý 1	PH013I U	Vật lý 1	Physics 1	Bắt buộc	2	2	0	
10	Vật lý 3	PH015I U	Vật lý 3	Physics 3	Bắt buộc	3	3	0	
11	Thực hành Vật lý 3	PH016I U	Thực hành Vật lý 3	Physics 3 Laboratory	Bắt buộc	1	0	1	
12	Đại số tuyến tính	IT154IU	Linear Algebra	Đại số tuyến tính	Bắt buộc	3	3	0	
13	Toán rời rạc	IT153IU	Toán rời rạc	Discrete Mathematics	Bắt buộc	3	3	0	
14	Pháp luật đại cương	PE021IU	Pháp luật đại cương	General Law	Bắt buộc	3	3	0	
	Tổng cộng					26	25	1	
1.3	Ngoại ngữ				T			1	
15	Tiếng Anh chuyên ngành 1 (kỹ năng nghe)	EN008I U	Tiếng Anh chuyên ngành 1 (kỹ năng nghe)	Academic English 1 (listening skill)	Bắt buộc	2	2	0	

16	Tiếng Anh chuyên ngành 1 (kỹ năng viết)	EN007I U	Tiếng Anh chuyên ngành 1 (kỹ năng viết)	Academic English 1 (writing skill)	Bắt buộc	2	2	0	
17	Tiếng Anh chuyên ngành 2 (kỹ năng nói)	EN012I U	Tiếng Anh chuyên ngành 2 (kỹ năng nói)	Academic English 2 (speaking skill)	Bắt buộc	2	2	0	
18	Tiếng Anh chuyên ngành 2 (kỹ năng viết)	EN011I U	Tiếng Anh chuyên ngành 2 (kỹ năng viết)	Academic English 2 (writing skill)	Bắt buộc	2	2	0	
	Tổng cộng					8	8	0	
1.4	Giáo dục thể chất								
19	Giáo dục thể chất 1	PT001IU	Giáo dục thể chất 1	Physical Training 1	Bắt buộc	3	0	3	
20	Giáo dục thể chất 2	PT002IU	Giáo dục thể chất 2	Physical Training 2	Bắt buộc	3	0	3	
	Tổng cộng					6	0	6	
II	Kiến thức cơ sở ngà	nh							
21	Nhập môn Tin học	IT064IU	Nhập môn Tin học	Introduction to Computing	Bắt buộc	3	3	0	
22	Lập trình C/C++	IT116IU	Lập trình C/C++	C/C++ Programmin g	Bắt buộc	4	3	1	
23	Lập trình hướng đối tượng	IT069IU	Lập trình hướng đối tượng	Object- Oriented Programmin g	Bắt buộc	4	3	1	
24	Cấu trúc dữ liệu và giải thuật	IT013IU	Cấu trúc dữ liệu và giải thuật	Algorithms and Data Structures	Bắt buộc	4	3	1	
25	Nguyên lý Quản trị Cơ sở dữ liệu	IT079IU	Nguyên lý Quản trị Cơ sở dữ liệu	Principles of Database Managemen t	Bắt buộc	4	3	1	
26	Kiến trúc máy tính	IT089IU	Kiến trúc máy tính	Computer Architecture	Bắt buộc	4	3	1	Môn học học trước IT067IU (3,0) Digital

									Logic
									Design
27	Mạng máy tính	IT091IU	Mạng máy	Computer	Bắt	4	3	1	
			tính	Networks	buộc				
28	Phân tích và thiết kế hướng đối tượng	IT090IU	Phân tích và thiết kế hướng đối tượng	Object- Oriented Analysis and Design	Bắt buộc	4	3	1	
	Tổng cộng		1	ı		31	24	7	
III	Kiến thức chuyên nạ	gành				I	l	1	
29	Công nghệ Phần mềm	IT076IU	Công nghệ Phần mềm	Software Engineering	Bắt buộc	4	3	1	
30	Phát triển ứng dụng Web	IT093IU	Phát triển ứng dụng Web	Web Application Developmen t	Bắt buộc	4	3	1	
31	Nguyên lý của Ngôn ngữ lập trình	IT092IU	Nguyên lý của Ngôn ngữ lập trình	Principles of Programmin g Languages	Bắt buộc	4	3	1	
32	Hệ điều hành	IT017IU	Hệ điều hành	Operating Systems	Bắt buộc	4	3	1	
33	Trí thông minh nhân tạo	IT159IU	Trí thông minh nhân tạo	Artificial Intelligence	Bắt buộc	4	3	1	
	Tổng cộng					20	15	5	
IV	Kiến thức tự chọn (s	sinh viên ch	ọn tối thiểu 1:	5 tín chỉ trong	nhóm môr	n học s	au)	•	
34	Khai thác dữ liệu	IT160IU	Data Mining	IT160IU	Tự chọn	4	3	1	
35	Xử lý ảnh Kỹ thuật số	IT130IU	Digital Image Processing	IT130IU	Tự chọn	4	3	1	
36	Kiến trúc phần mềm	IT114IU	Software Architectur e	IT114IU	Tự chọn	4	3	1	
	Lập trình mạng	IT096IU	Net-centric Programmi ng	IT096IU	Tự chọn	4	3	1	
	Quản lý hệ thống thông tin	IT094IU	Information System	IT094IU	Tự chọn	4	3	1	

			Manageme						
			nt						
	Quản lý dự án CNTT	IT056IU	IT Project Manageme nt	IT056IU	Tự chọn	4	3	1	
37	Đồ hoạ Máy tính	IT024IU	Computer Graphics	IT024IU	Tự chọn	4	3	1	
	Học sâu	IT157IU	Deep Learning	IT157IU		4	3	1	
	Internet Vạn vật	IT134IU	Internet of Things	IT134IU		4	3	1	
	Phát triển ứng dụng di động	IT133IU	Mobile Application Developme nt	IT133IU		4	3	1	
	Tương tác người và máy	IT044IU	Human Computer Interaction	IT044IU		4	3	1	
	Điện toán đám mây	IT164IU	Cloud computing			4	3	1	
	Công nghệ và Triển khai bảo mật	IT165IU	Security Technology and Implementa tion			4	3	1	
	Kiểm tra chất lượng phần mềm	IT166IU	Software Quality Verification and Validation			4	3	1	
	Phát triển ứng dụng game	IT167IU	Game Application Developme nt			4	3	1	
	Chuỗi khối	IT150IU	Blockchain	IT150IU		4	3	1	
	Phát triển và vận hành liên tục	IT156IU	Developme nt & Operation (DevOps)	IT156IU		4	3	1	
	Trực quan hóa dữ liệu	IT138IU	Data Science and Visualizatio n	IT138IU		4	3	1	

	Tư Duy Phản Biện	PE008IU	Critical Thinking	PE008IU		3	3	0	
	Tự chọn tự do		Free Elective			3	3	0	
	Tổng cộng					15	12	3	
V	Kiến thức bổ trợ								
39	Khởi nghiệp	IT120IU	Khởi nghiệp	Entrepreneu rship	Bắt buộc	3	3	0	
	Tổng cộng					3	3	0	
V	Nghiên cứu, thực tậ	p và luận v	ăn tốt nghiệp						
40	Thực tập công nghiệp	IT082IU	Thực tập công nghiệp	Internship	Bắt buộc	3	0	3	
41	Thực tập tốt nghiệp	IT083IU	Thực tập tốt nghiệp	Special Study of the Field	Bắt buộc	3	0	3	
	Tổng cộng					6	0	6	
	Tốt nghiệp								
	Luận văn tốt nghiệp	IT058IU	Luận văn tốt nghiệp	Thesis	Bắt buộc	10	0	10	
42	0 0					10	0	10	
	TỔNG SỐ TÍN CHỈ (không bao gồm thể dục, giáo dục								
	quốc phòng)					130	98	32	

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

Tùy vào trình độ tiếng Anh của người học đạt trình độ AE1, IE2, IE1 và IE0, kế hoạch giảng dạy các môn học được cụ thể tương ứng được trình bày trong các Bảng 6, Bảng 7, Bảng 8 và Bảng 9.

10.1. Trình độ AE1

Bảng 6. Kế hoạch giảng dạy đối với người học đạt trình độ AE1

		Tên MH	ig o. He houen glang day		Tín ch			Môn học tiên quyết
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	Loại MH (bắt buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	(TQ)/ Môn học học trước (HT)/ Môn học song hành (SH)
	MA001IU	Toán 1	Calculus 1	Bắt buộc	4	4	0	Không
	IT064IU	Nhập môn Tin học	Introduction to Computing	Bắt buộc	3	3	0	Không
I	EN008IU	Tiếng Anh chuyên ngành 1 (kỹ năng nghe)	Listening AE1	Bắt buộc	2	2	0	Không
(tổng số	PH013IU	Vật lý 1	Physics 1	Bắt buộc	2	2	0	Không
17 tín chỉ)	EN007IU	Tiếng Anh chuyên ngành 1 (kỹ năng viết)	Writing AE1	Bắt buộc	2	2	0	Không
	IT116IU	Lập trình C/C++	C/C++ Programming	Bắt buộc	4	3	1	Không
	Tổng				17	16	1	
II (tể na số	PH015IU	Vật lý 3	Physics 3	Bắt buộc	3	3	0	Môn học trước PH013IU Physics 1 và học song hành môn PH016IU Physics 3 Laboratory
(tổng số 19 tín	PH016IU	Thực hành Vật lý 3	Physics 3 Laboratory	Bắt buộc	1	0	1	Học song hành môn PH015IU Physics 3
chỉ)	EN012IU	Tiếng Anh chuyên ngành 2 (kỹ năng nói)	Speaking AE2	Bắt buộc	2	2	0	Môn học trước EN008IU Listening AE1 và EN007IU Writing AE1

		Tên MH			Tín ch	ııı		Môn học tiên quyết
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	Loại MH (bắt buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	(TQ)/ Môn học học trước (HT)/ Môn học song hành (SH)
	EN011IU	Tiếng Anh chuyên ngành 2 (kỹ năng viết)	Writing AE2	Bắt buộc	2	2	0	Môn học trước EN008IU Listening AE1 và EN007IU Writing AE1
	IT069IU	Lập trình hướng đối tượng	Object-Oriented Programming	Bắt buộc	4	3	1	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming
	IT153IU	Toán rời rạc	Discrete Mathematics	Bắt buộc	3	3	0	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming; IT154IU (3,0) Linear Algebra hoặc MA023IU (4,0) Calculus 3
	IT091IU	Mạng máy tính	Computer Networks	Bắt buộc	4	3	1	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming

		Tên MH			Tín ch	i		Môn học tiên quyết
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	Loại MH (bắt buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	(TQ)/ Môn học học trước (HT)/ Môn học song hành (SH)
	Tổng				19	16	3	
	MA003IU	Toán 2	Calculus 2	Bắt buộc	4	4	0	Môn học học trước MA001IU (4,0) Calculus 1
	IT154IU	Đại số tuyến tính	Linear Algebra	Bắt buộc	3	3	0	Môn học học trước MA003IU (4,0) Calculus 2
ш	IT013IU	Cấu trúc dữ liệu và giải thuật	Algorithms and Data Structures	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object- Oriented Programming
tín chỉ)	IT079IU	Nguyên lý Quản trị Cơ sở dữ liệu	Principles of Database Management	Bắt buộc	4	3	1	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming
	PE015IU	Triết học Mác- Lênin	Philosophy Marx - Lenin	Bắt buộc	3	3	0	Không
	PE016IU	Kinh tế chính trị Mác-Lênin	Marxist – Leninist Political Economy	Bắt buộc	2	2	0	Không
	Tổng					18	2	
IV	PT001IU	Giáo dục thể chất 1	Physical Training 1	Bắt buộc	3	0	3	Không

		Tên MH			Tín ch	i		Môn học tiên quyết
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	Loại MH (bắt buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	(TQ)/ Môn học học trước (HT)/ Môn học song hành (SH)
(tổng số 19 tín chỉ,	IT089IU	Kiến trúc máy tính	Computer Architecture	Bắt buộc	4	3	1	Môn học học trước IT067IU (3,0) Digital Logic Design
trong đó sinh viên	IT090IU	Phân tích và thiết kế hướng đối tượng	Object-Oriented Analysis and Design	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object- Oriented Programming
chọn 1 môn tự chọn 4 tín chỉ)	IT093IU	Phát triển ứng dụng Web	Web Application Development	Bắt buộc	4	3	1	Môn học học trước IT079IU (3,1) Principles of Database Management và IT069IU (3,1) Object- Oriented Programming
	IT094IU	Quản lý hệ thống thông tin	Information System Management	Tự chọn	4	3	1	Môn học học trước IT079IU (3,1) Principles of Database Management
	IT056IU	Quản lý dự án CNTT	IT Project Management	Tự chọn	4	3	1	Môn học học trước IT069IU (3,1) Object- Oriented Programming
	IT024IU	Đồ hoạ Máy tính	Computer Graphics	Tự chọn	4	3	1	Môn học học trước IT069IU (3,1) Object- Oriented Programming
	IT157IU	Học sâu	Deep Learning	Tự chọn	4	3	1	

		Tên MH			Tín ch	î		Môn học tiên quyết
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	Loại MH (bắt buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	(TQ)/ Môn học học trước (HT)/ Môn học song hành (SH)
	IT134IU	Internet Vạn vật	Internet of Things	Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks
	IT133IU	Phát triển ứng dụng di động	Mobile Application Development	Tự chọn	4	3	1	Môn học học trước IT090IU (3,1) Object- Oriented Analysis and Design
	IT044IU	Tương tác người và máy	Human Computer Interaction	Tự chọn	4	3	1	
	IT164IU	Điện toán đám mây	Cloud computing	Tự chọn	4	3	1	
	IT165IU	Công nghệ và Triển khai bảo mật	Security Technology and Implementation	Tự chọn	4	3	1	
	IT166IU	Kiểm tra chất lượng phần mềm	Software Quality Verification and Validation	Tự chọn	4	3	1	
	IT167IU	Phát triển ứng dụng game	Game Application Development	Tự chọn	4	3	1	
	IT150IU	Chuỗi khối	Blockchain	Tự chọn	4	3	1	
	IT156IU	Phát triển và vận hành liên tục	Development & Operation (DevOps)	Tự chọn	4	3	1	
	IT138IU	Trực quan hóa dữ liệu	Data Science and Visualization	Tự chọn	4	3	1	
	PE008IU	Tư Duy Phản Biện	Critical Thinking	Tự chọn	3	3	0	

		Tên MH			Tín ch	i		Môn học tiên quyết
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	Loại MH (bắt buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	(TQ)/ Môn học học trước (HT)/ Môn học song hành (SH)
	Tổng			19	12	7		
	PT002IU	Giáo dục thể chất 2	Physical Training 2	Bắt buộc	3	0	3	Không
	MA026IU	Xác suất, thống kê và quá trình ngẫu nhiên	Probability, Statistic & Random Process	Bắt buộc	3	3	0	Môn học trước MA001IUCalculus 1 and MA003IU Calculus 2
V (tổng số 20	PE017IU	Chủ nghĩa xã hội khoa học	Scientific Socialism	Bắt buộc	2	2	0	Môn học trước PE016IU (2,0) Marxist – Leninist Political Economy
tín chỉ, trong đó sinh	IT092IU	Nguyên lý của Ngôn ngữ lập trình	Principles of Programming Languages	Bắt buộc	4	3	1	
viên chọn 2 môn tự	IT160IU	Khai thác dữ liệu	Data Mining	Tự chọn	4	3	1	Môn học trước IT069IU (3,1) Object-Oriented Programming
chọn 8 tín chỉ)	IT130IU	Xử lý ảnh Kỹ thuật số	Digital Image Processing	Tự chọn	4	3	1	
	IT114IU	Kiến trúc phần mềm	Software Architecture	Tự chọn	4	3	1	
	IT096IU	Lập trình mạng	Net-centric Programming	Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks

		Tên MH			Tín ch	i		Môn học tiên quyết
Нос ку̀	Mã MH	Tiếng việt	Tiếng Anh	Loại MH (bắt buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	(TQ)/ Môn học học trước (HT)/ Môn học song hành (SH)
	Tổng			20	14	6		
	IT076IU	Công nghệ Phần mềm	Software Engineering	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object- Oriented Programming
VI (tổng số 19 tín chỉ, trong	IT159IU	Trí thông minh nhân tạo	Artificial Intelligence	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object- Oriented Programming và IT153IU (3,0) Discrete Mathematics
đó sinh viên	PE021IU	Pháp luật đại cương	General law	Bắt buộc	3	3	0	Không
chọn 1 môn tự chọn tự	PE018IU	Lịch sử Đảng Cộng Sản Việt Nam	History of Vietnamese Communist Party	Bắt buộc	2	2	0	Môn học trước PE017IU (2,0) Scientific Socialism
do 3 tín chỉ)		Tự chọn tự do	Free elective	Tự chọn	3	3	0	Không
	IT120IU	Khởi nghiệp	Entrepreneurship	Bắt buộc	3	3	0	Không
	Tổng	•			19	17	2	
VII- học kỳ	IT082IU	Thực tập công nghiệp	Internship	Bắt buộc	3	0	3	
hè (3 tín chỉ)	Tổng				3	0	3	3

		Tên MH			Tín ch	ııı		Môn học tiên quyết
Học kỳ	Мã МН	Tiếng việt	Tiếng Anh	Loại MH (bắt buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	(TQ)/ Môn học học trước (HT)/ Môn học song hành (SH)
	IT017IU	Hệ điều hành	Operating Systems	Bắt buộc	4	3	1	Môn học học trước IT089IU (3,1) Computer Architecture và IT013IU (3,1) Algorithms and Data Structure
VIII (tổng số 13	PE019IU	Tư tưởng Hồ Chí Minh	Ho Chi Minh's Thoughts	Bắt buộc	2	2	0	Môn học trước PE018IU (2,0) History of Vietnamese Communist Party
tín chỉ)	IT083IU	Thực tập tốt nghiệp	Special Study of the Field	Bắt buộc	3	0	3	Không
	Tổng				9	5	4	
	IT058IU	Luận văn tốt nghiệp	Thesis	Bắt buộc	10	0	10	
	Tổng cộng				10	0	10	
	Tổng				136	98	38	

10.1. Trình độ IE2Bảng 7. Kế hoạch giảng dạy đối với người học đạt trình độ IE2

Нос	M~ MH	Tên MH		Loại MH (bắt buộc/tự chọn)	Tín ch	í		Môn học tiên quyết (TQ)/
kỳ	Mã MH	Tiếng việt	Tiếng Anh		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	- Môn học học trước (HT)/ Môn học song hành (SH)
I (17 tín	ENTP02	Tiếng Anh Tăng Cường 2	Intensive English 2	Bắt buộc	17	17	0	Không
chỉ)	Tổng				17	17	0	
	MA001IU	Toán 1	Calculus 1	Bắt buộc	4	4	0	Không
	IT064IU	Nhập môn Tin học	Introduction to Computing	Bắt buộc	3	3	0	Không
II (tổng	EN008IU	Tiếng Anh chuyên ngành 1 (kỹ năng nghe)	Listening AE1	Bắt buộc	2	2	0	Không
số	PH013IU	Vật lý 1	Physics 1	Bắt buộc	2	2	0	Không
17 tín chỉ)	EN007IU	Tiếng Anh chuyên ngành 1 (kỹ năng viết)	Writing AE1	Bắt buộc	2	2	0	Không
	IT116IU	Lập trình C/C++	C/C++ Programming	Bắt buộc	4	3	1	Không
	Tổng	Tổng					1	

Нос	Mã MH	Tên MH		Loại MH (bắt buộc/tự chọn)	Tín ch	í		Môn học tiên quyết (TQ)/ - Môn học học trước (HT)/
kỳ	IVIA IVIII	Tiếng việt	Tiếng Anh		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	Môn học song hành (SH)
	PH015IU	Vật lý 3	Physics 3	Bắt buộc	3	3	0	Môn học trước PH013IU Physics 1 và học song hành môn PH016IU Physics 3 Laboratory
	PH016IU	Thực hành Vật lý 3	Physics 3 Laboratory	Bắt buộc	1	0	1	Học song hành môn PH015IU Physics 3
III	EN012IU	Tiếng Anh chuyên ngành 2 (kỹ năng nói)	Speaking AE2	Bắt buộc	2	2	0	Không
(tổng số 19 tín	EN011IU	Tiếng Anh chuyên ngành 2 (kỹ năng viết)	Writing AE2	Bắt buộc	2	2	0	Không
chỉ)	IT069IU	Lập trình hướng đối tượng	Object-Oriented Programming	Bắt buộc	4	3	1	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming
	IT153IU	Toán rời rạc	Discrete Mathematics	Bắt buộc	3	3	0	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming; IT154IU (3,0)

Нос	Mã MH	Tên MH		Loại MH (bắt buộc/tự chọn)	Tín ch	í		Môn học tiên quyết (TQ)/ Môn học học trước (HT)/ Môn học song hành (SH) Linear Algebra hoặc MA023IU (4,0) Calculus 3 Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming Môn học học trước MA001IU (4,0) Calculus 1 Không Môn học học trước IT069IU (3,1) Object-Oriented Programming Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of
kỳ	Wa WH	Tiếng việt Tiếng Anh			Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	
								•
	IT091IU	Mạng máy tính	Computer Networks	Bắt buộc	4	3	1	C/C++ Programming hoặc IT149IU (3,1) Fundamentals of
	Tổng					16	3	
	MA003IU	Toán 2	Calculus 2	Bắt buộc	4	4	0	
	IT154IU	Đại số tuyến tính	Linear Algebra	Bắt buộc	3	3	0	Không
IV (tổng	IT013IU	Cấu trúc dữ liệu và giải thuật	Algorithms and Data Structures	Bắt buộc	4	3	1	
số 20 tín chỉ)	IT079IU	Nguyên lý Quản trị Cơ sở dữ liệu	Principles of Database Management	Bắt buộc	4	3	1	C/C++ Programming hoặc
	PE015IU	Triết học Mác- Lênin	Philosophy Marx - Lenin	Bắt buộc	3	3	0	Không

Нос		Tên MH (bắt buộc/tự chọn)		(bắt buộc/tự	Tín ch	ĺ		Môn học tiên quyết (TQ)/
kỳ	Mã MH	Tiếng việt	Tiếng Anh		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
	PE016IU	Marxist – Leninist Mác-Lênin Marxist – Leninist Political Economy		2	2	0	Không	
	Tổng					18	2	
V (tổng	PT001IU	Giáo dục thể chất 1	Physical Training 1	Bắt buộc	3	0	3	Không
số 19 tín chỉ,	IT089IU	Kiến trúc máy tính	Computer Architecture	Bắt buộc	4	3	1	Không
trong đó sinh	IT090IU	Phân tích và thiết kế hướng đối tượng	Object-Oriented Analysis and Design	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
viên chọn 1 môn tự chọn 4	IT093IU	Phát triển ứng dụng Web	Web Application Development	Bắt buộc	4	3	1	Môn học học trước IT079IU (3,1) Principles of Database Management và IT069IU (3,1) Object-Oriented Programming

Học	Mã MH	Tên MH		Loại MH (bắt buộc/tự chọn)	Tín chỉ			Môn học tiên quyết (TQ)/ - Môn học học trước (HT)/
kỳ		Tiếng việt	Tiếng Anh		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	Môn học song hành (SH)
tín chỉ)	IT094IU	Quản lý hệ thống thông tin	Information System Management	Tự chọn	4	3	1	Môn học học trước IT079IU (3,1) Principles of Database Management
	IT056IU	Quản lý dự án CNTT	IT Project Management	Tự chọn	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
	IT024IU	Đồ hoạ Máy tính	Computer Graphics	Tự chọn	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
	IT157IU	Học sâu	Deep Learning	Tự chọn	4	3	1	
	IT134IU	Internet Vạn vật	Internet of Things	Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks
	IT133IU	Phát triển ứng dụng di động	Mobile Application Development	Tự chọn	4	3	1	Môn học học trước IT090IU (3,1) Object-Oriented Analysis and Design
	IT044IU	Tương tác người và máy	Human Computer Interaction	Tự chọn	4	3	1	
	IT164IU	Điện toán đám mây	Cloud computing	Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks

Нос	Мã МН	Tên MH		Loại MH (bắt buộc/tự chọn)	bắt puộc/tự			Môn học tiên quyết (TQ)/
kỳ	Ma MH	Tiếng việt	Tiếng Anh		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
	IT165IU	Công nghệ và Triển khai bảo mật	Security Technology and Implementation	Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks
	IT166IU	Kiểm tra chất lượng phần mềm	Software Quality Verification and Validation	Tự chọn	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
	IT167IU	Phát triển ứng dụng game	Game Application Development	Tự chọn	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
	IT150IU	Chuỗi khối	Blockchain	Tự chọn	4	3	1	
	IT156IU	Phát triển và vận hành liên tục	Development & Operation (DevOps)	Tự chọn	4	3	1	
	IT138IU	Trực quan hóa dữ liệu	Data Science and Visualization	Tự chọn	4	3	1	
	PE008IU	Tư Duy Phản Biện	Critical Thinking	Tự chọn	3	3	0	

Нос	Mã MH	Tên MH		Loại MH (bắt buộc/tự chọn)	Tín ch	í		Môn học tiên quyết (TQ)/ - Môn học học trước (HT)/
kỳ		Tiếng việt	Tiếng Anh		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	Môn học song hành (SH)
	Tổng					12	7	
X / X	PT002IU	Giáo dục thể chất 2	Physical Training 2	Bắt buộc	3	0	3	Không
VI (tổng số 20 tín chỉ,	MA026IU	Xác suất, thống kê và quá trình ngẫu nhiên	Probability, Statistic & Random Process	Bắt buộc	3	3	0	Môn học trước MA001IUCalculus 1 and MA003IU Calculus 2
trong đó sinh viên	PE017IU	Chủ nghĩa xã hội khoa học	Scientific Socialism	Bắt buộc	2	2	0	Môn học trước PE016IU (2,0) Marxist – Leninist Political Economy
chọn 2 môn tự	IT092IU	Nguyên lý của Ngôn ngữ lập trình	Principles of Programming Languages	Bắt buộc	4	3	1	
chọn 8 tín	IT160IU	Khai thác dữ liệu	Data Mining	Tự chọn	4	3	1	Môn học trước IT069IU (3,1) Object-Oriented Programming
chỉ)	IT130IU	Xử lý ảnh Kỹ thuật số	Digital Image Processing	Tự chọn	4	3	1	

Нос	Mã MH	Tên MH		Loại MH (bắt buộc/tự chọn)	Tín ch	í		Môn học tiên quyết (TQ)/
kỳ	Ma MH	Tiếng việt	Tiếng Anh		Tổng cộng	Lý thuyết	Thực hành/ Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
	IT114IU	Kiến trúc phần mềm	Software Architecture	Tự chọn	4	3	1	
	IT096IU	Lập trình mạng	Net-centric Programming	Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks
	Tổng					14	6	
VIII (tổng	IT076IU	Công nghệ Phần mềm	Software Engineering	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
số 19 tín chỉ, trong đó	IT159IU	Trí thông minh nhân tạo	Artificial Intelligence	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming và IT153IU (3,0) Discrete Mathematics
sinh viên	PE021IU	Pháp luật đại cương	General law	Bắt buộc	3	3	0	Không
chọn 1 môn tự chọn	PE018IU	Lịch sử Đảng Cộng Sản Việt Nam	History of Vietnamese Communist Party	Bắt buộc	2	2	0	Môn học trước PE017IU (2,0) Scientific Socialism
tự do		Tự chọn tự do	Free elective	Tự chọn	3	3	0	Không

Нос	Tên MH (bắt		buộc/tự	Tín ch	í		Môn học tiên quyết (TQ)/ - Môn học học trước (HT)/	
kỳ	IVIa IVIII	Tiếng việt Tiếng Anh cộng t	Lý thuyết	Thực hành/ Thí nghiệm	Môn học song hành (SH)			
3 tín chỉ)	IT120IU	Khởi nghiệp	Entrepreneurshi p	Bắt buộc	3	3	0	Không
	Tổng				19	17	2	
IX (tổng	IT017IU	Hệ điều hành	Operating Systems	Bắt buộc	4	3	1	Môn học học trước IT089IU (3,1) Computer Architecture và IT013IU (3,1) Algorithms and Data Structure
số 13 tín chỉ)	PE019IU	Tư tưởng Hồ Chí Minh	Ho Chi Minh's Thoughts	Bắt buộc	2	2	0	Môn học trước PE018IU (2,0) History of Vietnamese Communist Party
- ,	IT083IU	Thực tập tốt nghiệp	Special Study of the Field	Bắt buộc	3	0	3	Không
	Tổng				9	5	4	
X- học kỳ hè	IT082IU	Thực tập công nghiệp	Internship	Bắt buộc	3	0	3	Không
(3 TC)	Tổng	Γổng				0	3	

Нос	NA~ NATI	Tên MH		Loại MH (bắt buộc/tự chọn)	Tín ch	í		Môn học tiên quyết (TQ)/
kỳ	Mã MH	Tiếng việt	Tiếng Anh		Thire	- Môn học học trước (HT)/ Môn học song hành (SH)		
XI (10 tín	IT058IU	Luận văn tốt nghiệp	Thesis	Bắt buộc	10	0	10	Môn học trước IT083IU Special Study of the Field (3,0)
chỉ)	Tổng cộng				10	0	10	
	Tổng				153	115	38	

10.2. Trình độ IE1

Bảng 8. Kế hoạch giảng dạy đối với người học đạt trình độ IE1

		Tên MH		Loại MH (bắt	Tín ch	-		Môn học tiên quyết (TQ)/
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
I (tổng	ENTP01	Tiếng Anh Tăng Cường 1	Intensive English 1	Bắt buộc	17	17	0	Không
số 17 tín	ENTP02	Tiếng Anh Tăng Cường 2	Intensive English 2	Bắt buộc	17	17	0	Môn học trước Tiếng Anh Tăng Cường 1
chỉ)	Tổng				34	34	0	
II	MA001IU	Toán 1	Calculus 1	Bắt buộc	4	4	0	Không
(tổng số	IT064IU	Nhập môn Tin học	Introduction to Computing	Bắt buộc	3	3	0	Không

		Tên MH		Loại MH (bắt	Tín ch	ıi		Môn học tiên quyết (TQ)/
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
17 tín chỉ)	EN008IU	Tiếng Anh chuyên ngành 1 (kỹ năng nghe)	Listening AE1	Bắt buộc	2	2	0	Không
	PH013IU	Vật lý 1	Physics 1	Bắt buộc	2	2	0	Không
	EN007IU	Tiếng Anh chuyên ngành 1 (kỹ năng viết)	Writing AE1	Bắt buộc	2	2	0	Không
	IT116IU	Lập trình C/C++	C/C++ Programming	Bắt buộc	4	3	1	Không
	Tổng				17	16	1	
	PH015IU	Vật lý 3	Physics 3	Bắt buộc	3	3	0	Môn học trước PH013IU Physics 1 và học song hành môn PH016IU Physics 3 Laboratory
	PH016IU	Thực hành Vật lý 3	Physics 3 Laboratory	Bắt buộc	1	0	1	Học song hành môn PH015IU Physics 3
III (tổng số	EN012IU	Tiếng Anh chuyên ngành 2 (kỹ năng nói)	Speaking AE2	Bắt buộc	2	2	0	Môn học trước EN008IU Listening AE1 và EN007IU Writing AE1
19 tín chỉ)	EN011IU	Tiếng Anh chuyên ngành 2 (kỹ năng viết)	Writing AE2	Bắt buộc	2	2	0	Môn học trước EN008IU Listening AE1 và EN007IU Writing AE1
	IT069IU	Lập trình hướng đối tượng	Object-Oriented Programming	Bắt buộc	4	3	1	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming

		Tên MH		Loại MH (bắt	Tín ch	i		Môn học tiên quyết (TQ)/
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
	IT153IU	Toán rời rạc	Discrete Mathematics	Bắt buộc	3	3	0	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming; IT154IU (3,0) Linear Algebra hoặc MA023IU (4,0) Calculus 3
	IT091IU	Mạng máy tính	Computer Networks	Bắt buộc	4	3	1	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming
	Tổng				19	16	3	
	MA003IU	Toán 2	Calculus 2	Bắt buộc	4	4	0	Môn học học trước MA001IU (4,0) Calculus 1
	IT154IU	Đại số tuyến tính	Linear Algebra	Bắt buộc	3	3	0	Không
IV (tổng	IT013IU	Cấu trúc dữ liệu và giải thuật	Algorithms and Data Structures	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
số 20 tín chỉ)	IT079IU	Nguyên lý Quản trị Cơ sở dữ liệu	Principles of Database Management	Bắt buộc	4	3	1	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming
	PE015IU	Triết học Mác-Lênin	Philosophy Marx - Lenin	Bắt buộc	3	3	0	Không

		Tên MH		Loại MH (bắt	Tín ch	i		Môn học tiên quyết (TQ)/
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
	PE016IU	Kinh tế chính trị Mác- Lênin	Marxist – Leninist Political Economy	Bắt buộc	2	2	0	Không
	Tổng	Öng					2	
	PT001IU	Giáo dục thể chất 1	Physical Training 1	Bắt buộc	3	0	3	Không
	IT089IU	Kiến trúc máy tính	Computer Architecture	Bắt buộc	4	3	1	Không
V (tổng số 19	IT094IU	Quản lý hệ thống thông tin	Information System Management	Tự chọn	4	3	1	Môn học học trước IT079IU (3,1) Principles of Database Management
tín chỉ, trong đó	IT056IU	Quản lý dự án CNTT	IT Project Management	Tự chọn	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
sinh viên chọn 1	IT024IU	Đồ hoạ Máy tính	Computer Graphics	Tự chọn	Tự chọn	4	3	Môn học học trước IT069IU (3,1) Object-Oriented Programming
môn tự	IT157IU	Học sâu	Deep Learning	Tự chọn	4	3	1	
chọn 4 tín chỉ)	IT134IU	Internet Van vật	Internet of Things	Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks
	IT133IU	Phát triển ứng dụng di động	Mobile Application Development	Tự chọn	4	3	1	Môn học học trước IT090IU (3,1) Object-Oriented Analysis and Design
	IT044IU	Tương tác người và máy	Human Computer Interaction	Tự chọn	4	3	1	

		Tên MH		Loại MH (bắt	Tín ch	i		Môn học tiên quyết (TQ)/
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
	IT164IU	Điện toán đám mây	Cloud computing	Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks
	IT165IU	Công nghệ và Triển khai bảo mật	Security Technology and Implementation	Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks
	IT166IU	Kiểm tra chất lượng phần mềm	Software Quality Verification and Validation	Tự chọn	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
	IT167IU	Phát triển ứng dụng game	Game Application Development	Tự chọn	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
	IT150IU	Chuỗi khối	Blockchain	Tự chọn	4	3	1	
	IT156IU	Phát triển và vận hành liên tục	Development & Operation (DevOps)	Tự chọn	4	3	1	
	IT138IU	Trực quan hóa dữ liệu	Data Science and Visualization	Tự chọn	4	3	1	
	PE008IU	Tư Duy Phản Biện	Critical Thinking	Tự chọn	3	3	0	
	IT090IU	Phân tích và thiết kế hướng đối tượng	Object-Oriented Analysis and Design	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
	IT093IU	Phát triển ứng dụng Web	Web Application Development	Bắt buộc	4	3	1	Môn học học trước IT079IU (3,1) Principles of

		Tên MH		Loại MH (bắt	Tín ch	น้		Môn học tiên quyết (TQ)/
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học tren quyết (TQ)/ Môn học học trước (HT)/ Môn học song hành (SH)
								Database Management và IT069IU (3,1) Object- Oriented Programming
	Tổng				19	12	7	
	PT002IU	Giáo dục thể chất 2	Physical Training 2	Bắt buộc	3	0	3	Không
VI	MA026IU	Xác suất, thống kê và quá trình ngẫu nhiên	Probability, Statistic & Random Process	Bắt buộc	3	3	0	Môn học trước MA001IUCalculus 1 and MA003IU Calculus 2
(tổng số 20 tín chỉ,	PE017IU	Chủ nghĩa xã hội khoa học	Scientific Socialism	Bắt buộc	2	2	0	Môn học trước PE016IU (2,0) Marxist – Leninist Political Economy
trong đó sinh	IT092IU	Nguyên lý của Ngôn ngữ lập trình	Principles of Programming Languages	Bắt buộc	4	3	1	
viên chọn 2 môn	IT160IU	Khai thác dữ liệu	Data Mining	Tự chọn	4	3	1	Môn học trước IT069IU (3,1) Object-Oriented Programming
tự chọn 8 tín chỉ	IT130IU	Xử lý ảnh Kỹ thuật số	Digital Image Processing	Tự chọn	4	3	1	
)	IT114IU	Kiến trúc phần mềm	Software Architecture	Tự chọn	4	3	1	
	IT096IU	Lập trình mạng	Net-centric Programming	Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks
	Tổng				20	14	6	

		Tên MH		Loại MH (bắt	Tín ch	₁		Môn học tiên quyết (TQ)/
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
VII (tổng	IT076IU	Công nghệ Phần mềm	Software Engineering	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
số 19 tín chỉ, trong đó	IT159IU	Trí thông minh nhân tạo	Artificial Intelligence	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming và IT153IU (3,0) Discrete Mathematics
sinh viên	PE021IU	Pháp luật đại cương	General law	Bắt buộc	3	3	0	Không
chọn 1 môn tự	PE018IU	Lịch sử Đảng Cộng Sản Việt Nam	History of Vietnamese Communist Party	Bắt buộc	2	2	0	Môn học trước PE017IU (2,0) Scientific Socialism
chọn		Tự chọn tự do	Free elective	Tự chọn	3	3	0	Không
tự do 3 tín chỉ)	IT120IU	Khởi nghiệp	Entrepreneurship	Bắt buộc	3	3	0	Không
,	Tổng				19	17	2	
VIII (tổng	IT017IU	Hệ điều hành	Operating Systems		4	3	1	Môn học học trước IT089IU (3,1) Computer Architecture và IT013IU (3,1) Algorithms and Data Structure
số 13 tín chỉ)	PE019IU	Tư tưởng Hồ Chí Minh	Ho Chi Minh's Thoughts		2	2	0	Môn học trước PE018IU (2,0) History of Vietnamese Communist Party
	IT083IU	Thực tập tốt nghiệp	Special Study of the Field		3	0	3	Không

Học kỳ	Mã MH	Tên MH		Loại MH (bắt	Tín chỉ			Môn học tiên quyết (TQ)/
		Tiếng việt	Tiếng Anh	buộc/tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
	Tổng				9	5	4	
IX-	IT082IU	Thực tập công nghiệp	Internship	Bắt buộc	3	0	3	Không
HK hè								
(3	Tổng				3	0	3	
TC)								
X	IT058IU	Luận văn tốt nghiệp	Thesis	Bắt buôc	10	0	10	Môn học trước IT083IU Special Study of the Field
(tống số 10	1103610	Luạn van tot ngmẹp	THESIS	Dat buọc	10	U	10	(3,0)
tín chỉ)	Tổng cộng				10	0	10	
	Tổng					148	38	

10.3. Trình độ IE0 Bảng 9. Kế hoạch giảng dạy đối với người học đạt trình độ IE0

	Mã MH	Tên MH		Loại MH	Tín chỉ			Môn học tiên quyết (TQ)/
Học kỳ		Tiếng việt	Tiếng Anh	(bắt buộc/ tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
I (tổng	ENTP00	Tiếng Anh Tăng Cường 0	Intensive English 0	Bắt buộc	17	17	0	Không
số 17 tín	ENTP01	Tiếng Anh Tăng Cường 1	Intensive English 1	Bắt buộc	17	17	0	Môn học trước Tiếng Anh Tăng Cường 1
chỉ)	Tổng	Γổng				34	0	

Học kỳ	Мã МН	Tên MH		Loại MH	Tín chỉ			Môn học tiên quyết (TQ)/	
		Tiếng việt	Tiếng Anh	(bắt buộc/ tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)	
II (17 tín chỉ)	ENTP02	Tiếng Anh Tăng Cường 2	Intensive English 2	Bắt buộc	17	17	0	Môn học trước Tiếng Anh Tăng Cường 1	
	Tổng				17	17	0		
	MA001IU	Toán 1	Calculus 1	Bắt buộc	4	4	0	Không	
	IT064IU	Nhập môn Tin học	Introduction to Computing	Bắt buộc	3	3	0	Không	
III (tổng	EN008IU	Tiếng Anh chuyên ngành 1 (kỹ năng nghe)	Listening AE1	Bắt buộc	2	2	0	Không	
số	PH013IU	Vật lý 1	Physics 1	Bắt buộc	2	2	0	Không	
17 tín chỉ)	EN007IU	Tiếng Anh chuyên ngành 1 (kỹ năng viết)	Writing AE1	Bắt buộc	2	2	0	Không	
	IT116IU	Lập trình C/C++	C/C++ Programming	Bắt buộc	4	3	1	Không	
	Tổng					16	1		
IV (tổng số	PH015IU	Vật lý 3	Physics 3	Bắt buộc	3	3	0	Môn học trước PH013IU Physics 1 và học song hành môn PH016IU Physics 3 Laboratory	
19 tín chỉ)	PH016IU	Thực hành Vật lý 3	Physics 3 Laboratory	Bắt buộc	1	0	1	Học song hành môn PH015IU Physics 3	

		Tên MH		Loại MH	Tín ch	าใ		Môn học tiên quyết (TQ)/
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	(bắt buộc/ tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
	EN012IU	Tiếng Anh chuyên ngành 2 (kỹ năng nói)	Speaking AE2	Bắt buộc	2	2	0	Môn học trước EN008IU Listening AE1 và EN007IU Writing AE1
	EN011IU	Tiếng Anh chuyên ngành 2 (kỹ năng viết)	Writing AE2	Bắt buộc	2	2	0	Môn học trước EN008IU Listening AE1 và EN007IU Writing AE1
	IT069IU	Lập trình hướng đối tượng	Object-Oriented Programming	Bắt buộc	4	3	1	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming
	IT153IU	Toán rời rạc	Discrete Mathematics	Bắt buộc	3	3	0	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming; IT154IU (3,0) Linear Algebra hoặc MA023IU (4,0) Calculus 3
	IT091IU	Mạng máy tính	Computer Networks	Bắt buộc	4	3	1	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming
	Tổng			19	16	3		
V	MA003IU	Toán 2	Calculus 2	Bắt buộc	4	4	0	Môn học học trước MA001IU (4,0) Calculus 1

		Tên MH		Loại MH (bắt buộc/	Tín ch	₁		Môn học tiên quyết (TQ)/		
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh tự ch		Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)		
(tổng	IT154IU	Đại số tuyến tính	Linear Algebra	Bắt buộc	3	3	0	Không		
số 20 tín chỉ)	IT013IU	Cấu trúc dữ liệu và giải thuật	Algorithms and Data Structures	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming		
	IT079IU Nguyen ly Quan Databa		Principles of Database Management	Bắt buộc	4	3	1	Môn học học trước IT116IU (3,1) C/C++ Programming hoặc IT149IU (3,1) Fundamentals of Programming		
	PE015IU	Triết học Mác- Lênin	Philosophy Marx - Lenin	Bắt buộc	3	3	0	Không		
	PE016IU	Kinh tế chính trị Marxist – Leninist Mác-Lênin Political Economy		Bắt buộc	2	2	0	Không		
	Tổng				20	18	2			
VI (tổng	PT001IU	Giáo dục thể chất 1	Physical Training 1	Bắt buộc	3	0	3	Không		
số 19 tín chỉ,	IT089IU	Kiến trúc máy tính	Computer Architecture	Bắt buộc	4	3	1	Không		
trong đó sinh	IT090IU	Phân tích và thiết kế hướng đối tượng	Object-Oriented Analysis and Design	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming		
viên chọn 1	Phát triển ứng Web Application B		Bắt buộc	4	3	1	Môn học học trước IT079IU (3,1) Principles of			

		Tên MH		Loại MH	Tín ch	Î		Môn học tiên quyết (TQ)/
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	(bắt buộc/ tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
môn tự chọn 4							Database Management và IT069IU (3,1) Object-Oriented Programming	
tín chỉ)	IT094IU	Quản lý hệ thống thông tin	Information System Management	Tự chọn	4	3	1	Môn học học trước IT079IU (3,1) Principles of Database Management
	IT056IU	Quản lý dự án CNTT	IT Project Management	Tự chọn	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
	IT024IU	Đồ hoạ Máy tính	Computer Graphics	Tự chọn	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
	IT157IU	Học sâu	Deep Learning	Tự chọn	4	3	1	
	IT134IU	Internet Vạn vật	Internet of Things	Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks
	IT133IU	Phát triển ứng dụng di động	Mobile Application Development	Tự chọn	4	3	1	Môn học học trước IT090IU (3,1) Object-Oriented Analysis and Design
	IT044IU	Tương tác người và máy	Human Computer Interaction	Tự chọn	4	3	1	
	IT164IU Diện toán đám Cloud computing Công nghệ và Security Triển khai bảo Technology and Implementation		Cloud computing	Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks
			Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks	

		Tên MH		Loại MH	Tín ch	i		Môn học tiên quyết (TQ)/
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	(bắt buộc/ tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
	IT166IU	Kiểm tra chất lượng phần mềm	Software Quality Verification and Validation	Tự chọn	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
	IT167IU	Phát triển ứng dụng game	Game Application Development	Tự chọn	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
	IT150IU	Chuỗi khối	Blockchain	Tự chọn	4	3	1	
	IT156IU	Phát triển và vận hành liên tục	Development & Operation (DevOps)	Tự chọn	4	3	1	
	IT138IU	Trực quan hóa dữ liệu	Data Science and Visualization	Tự chọn	4	3	1	
	PE008IU	Tư Duy Phản Biện	Critical Thinking	Tự chọn	3	3	0	
	Tổng				19	12	7	
VII (tổng	PT002IU	Giáo dục thể chất 2	Physical Training 2	Bắt buộc	3	0	3	Không
số 20 tín chỉ, trong đó	MA026IU	Xác suất, thống kê và quá trình ngẫu Statistic hhiên & Random Process		Bắt buộc	3	3	0	Môn học trước MA001IUCalculus 1 and MA003IU Calculus 2

		Tên MH		Loại MH	Tín ch	<u>i</u>		Môn học tiên quyết (TQ)/
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	(bắt buộc/ tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
sinh viên chọn 2	PE017IU	Chủ nghĩa xã hội khoa học	Scientific Socialism	Bắt buộc	2	2	0	Môn học trước PE016IU (2,0) Marxist – Leninist Political Economy
viên chọn 2 môn	IT092IU Ngôn ngữ lập Programm		Principles of Programming Languages	Bắt buộc	4	3	1	
tự chọn 8	IT160IU	Khai thác dữ liệu	Data Mining	Tự chọn	4	3	1	Môn học trước IT069IU (3,1) Object-Oriented Programming
tín chỉ)	IT130IU	Xử lý ảnh Kỹ thuật số	Digital Image Processing	Tự chọn	4	3	1	
	IT114IU	Kiến trúc phần mềm	Software Architecture	Tự chọn	4	3	1	
	IT096IU	Lập trình mạng Net-centric Programming		Tự chọn	4	3	1	Môn học học trước IT091IU (3,1) Computer Networks
	Tổng				20	14	6	
VIII- (tổng	IT076IU	Công nghệ Phần mềm	Software Engineering	Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming
số 19 tín chỉ, trong đó	Trí thông minh Artificial Intelligence		Bắt buộc	4	3	1	Môn học học trước IT069IU (3,1) Object-Oriented Programming và IT153IU (3,0) Discrete Mathematics	

		Tên MH		Loại MH	Tín ch	₁		Môn học tiên quyết (TQ)/
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	(bắt buộc/ tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
sinh viên	PE021IU	Pháp luật đại cương	General law	Bắt buộc	3	3	0	Không
chọn 1 môn tự	PE018IU Cộng Sản Việt Nam		History of Vietnamese Communist Party	Bắt buộc	2	2 0		Môn học trước PE017IU (2,0) Scientific Socialism
chọn tự do 3		Tự chọn tự do	Free elective		3	3	0	Không
tín chỉ)	IT120IU	IT120IU Khởi nghiệp Entrepreneurship		Bắt buộc	3	3	0	Không
	Tổng				19	17	2	
IX- (tổng số 3 tín chỉ)	IT082IU	Thực tập công nghiệp	Internship	Bắt buộc	3	0	3	Không
	Tổng				3	0	3	
X (tổng số 13	IT017IU	Hệ điều hành Operating Systems			4	3	1	Môn học học trước IT089IU (3,1) Computer Architecture và IT013IU (3,1) Algorithms and Data Structure
tín chỉ)	PE019IU	Tư tưởng Hồ Chí Minh	Ho Chi Minh's Thoughts		2	2	0	Môn học trước PE018IU (2,0) History of Vietnamese Communist Party

		Tên MH		Loại MH	Tín ch	i		Môn học tiên quyết (TQ)/
Học kỳ	Mã MH	Tiếng việt	Tiếng Anh	(bắt buộc/ tự chọn)	Tổng cộng	Lý thuyết	Thực hành/Thí nghiệm	Môn học học trước (HT)/ Môn học song hành (SH)
	IT083IU	Thực tập tốt nghiệp	Special Study of the Field		3	0	3	Không
	Tổng				13	8	5	
XI								
(tổng số 10	IT058IU	Luận văn tốt nghiệp	Thesis	Bắt buộc	10	0	10	Môn học trước IT083IU Special Study of the Field (3,0)
tín chỉ)	Tổng cộng				10	0	10	
	Tổng				203	165	38	

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

Học kỳ	Tên môn học		Chuẩn đầu ra của CTĐT								
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6				
	Calculus 1	/ /									
	Introduction to Computing	✓			✓	✓					
	Listening AE1			///							
I	Physics 1	✓									
•	Writing AE1			///							
	C/C++ Programming	√	///								
	Calculus 1	//									
	Physics 3	√									
	Physics 3 Laboratory	√									
	Speaking AE2			///							
ΤΤ	Writing AE2			///							
II	Object-Oriented Programming	/ /	///				√				
	Discrete Mathematics	✓	√				✓				
	Computer Networks	//	///			✓					
	Calculus 2	$\checkmark\checkmark$									
	Linear Algebra	✓	✓		✓						
	Algorithms and Data Structures	//	///				✓				
III	Principles of Database Management	///	///			//					
	Philosophy Marx - Lenin				//						
	Marxist – Leninist Political Economy				//						
	Computer Architecture	√	√				√				
V (sinh	Object-Oriented Analysis and Design	✓	✓			√					
viên	Web Application	,	,			,	,				
chọn 1	Development	✓	✓			✓	✓				
môn tự	Information System		√		√						
chọn 4	Management (môn tự chọn)		, '		,						
tín chỉ)	IT Project Management (môn tự chọn)		✓	✓		✓	✓				

Học kỳ	Tên môn học		Chuẩ	n đầu ra	của CT	ΤĐΤ	
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
	Computer Graphics (môn tự chọn)	√	√			√	√
	Deep Learning (môn tự chọn)	✓	√				√
	Internet of Things (môn tự chọn)		///			//	√
	Mobile Application Development (môn tự chọn)	/ /	///				✓
	Human Computer Interaction (môn tự chọn)	✓	√	//			
	Cloud computing (môn tự chọn)	✓	/ /				✓
	Security Technology and Implementation (môn tự chọn)	//	√	✓	✓		
	Software Quality Verification and Validation (môn tự chọn)	//	/ /				√
	Game Application Development (môn tự chọn)	✓	/ /				✓
	Blockchain (môn tự chọn)	\checkmark	V				\checkmark
	Development & Operation (DevOps) (môn tự chọn)	✓	//				√
	Data Science and Visualization (môn tự chọn)	✓	//	√			
	Critical Thinking (môn tự chọn)			//	✓		
	Probability, Statistic & Random Process	/ /					
VI	Scientific Socialism				\ \		
(sinh viên	Principles of Programming Languages	✓	√				
chọn 2	Data Mining (môn tự chọn)	✓	<u> </u>			✓	✓
viên	Digital Image Processing						
chọn 2 môn tự	(môn tự chọn)	\checkmark				✓	✓
chọn 8	Software Architecture (môn						
tín chỉ)	tự chọn)	✓	✓				✓
	Net-centric Programming (môn tự chọn)	✓	///				√
VI	Internship		✓		✓	✓	✓
	Software Engineering			//		///	///

Học kỳ	Tên môn học		Chuẩ	n đầu ra	của CT	TĐT	
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
VII	Artificial Intelligence	√	√				✓
(sinh	General law						
viên	History of Vietnamese				//		
chọn 1	Communist Party						
môn tự	Free elective						
chọn tư do)	Entrepreneurship			✓	✓	✓	
tự do)	Operating Systems	√	√				
VIII	Ho Chi Minh's Thoughts				//		
VIII	Special Study of the Field		√	√			√
	Thesis	√	√	√			✓
	Data Mining (môn tự chọn)	√				✓	✓
	Digital Image Processing	,				,	,
	(môn tự chọn)	✓				√	√
	Software Architecture (môn tự chọn)	✓	✓				✓
	Net-centric Programming (môn tự chọn)	✓	///				✓
	Information System Management (môn tự chọn)		√		√		
	IT Project Management (môn tự chọn)		✓	√		√	√
	Computer Graphics (môn tự chon)	✓	✓			√	√
	Deep Learning (môn tự chon)	√	✓				√
IX	Internet of Things (môn tự chọn)		///			//	√
	Mobile Application Development (môn tự chọn)	/ /	///				√
	Human Computer Interaction (môn tự chọn)	√	√	//			
	Cloud computing (môn tự chọn)	√	/ /				√
	Security Technology and Implementation (môn tự chọn)	//	√	√	√		
	Software Quality Verification and Validation (môn tự chọn)	//	/ /				√
	Game Application Development (môn tự chọn)	✓	//				✓

Học kỳ	Tên môn học	Chuẩn đầu ra của CTĐT							
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6		
	Blockchain (môn tự chọn)	√	//				√		
	Development & Operation (DevOps) (môn tự chọn)	✓	//				✓		
	Data Science and Visualization (môn tự chọn)	√	//	√					
	Critical Thinking (môn tự chọn)			//	√				

Lưu ý: Trong ma trận, các khóa học đóng góp vào tất cả các kết quả học tập ở ba cấp độ khác nhau: hỗ trợ nhiều (\checkmark \checkmark), ít hỗ trợ hơn (\checkmark) và không hỗ trợ.

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

12.1. PE015IU - Triết học Mác-Lênin (Philosophy Marx - Lenin)

Số tín chỉ : 3(3LT + 0TH)

Điều kiện tiên quyết/Môn học trước: không

Mô tả môn học:

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

12.2. PE016IU - Kinh tế chính trị Mác-Lênin (Marxist – Leninist Political Economy)

Số tín chỉ : 2(2LT + 0TH)

Môn học song hành: Triết học Mác-Lênin

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-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. PE017IU - Chủ nghĩa xã hội khoa học (Scientific Socialism)

Số tín chỉ : 2 (2LT + 0TH)

Điều kiện tiên quyết/Môn học trước: Triết học Mác-Lênin, Kinh tế chính trị Mác-Lênin Mô tả môn học:

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

12.4. PE018IU - Lịch sử Đảng Cộng Sản Việt Nam (History of Vietnamese Communist Party)

Số tín chỉ: 2 (2LT + 0TH)

Điều kiện tiên quyết/Môn học trước: Triết học Mác-Lênin, Kinh tế chính trị Mác-Lênin, Chủ nghĩa xã hôi khoa học.

Mô tả môn học:

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

12.5. PE019IU - Tư tưởng Hồ Chí Minh (Ho Chi Minh's Thoughts)

Số tín chỉ : 2(2LT + 0TH)

Điều kiện tiên quyết/Môn học trước: Triết học Mác-Lênin, Kinh tế chính trị Mác-Lênin, Chủ nghĩa xã hội khoa học.

Mô tả môn học:

Môn học trang bị cho sinh viên những kiến thức cơ bản về: đối tượng, phương pháp nghiên cứu và ý nghĩa học tập môn tư tưởng Hồ Chí Minh; về cơ sở, quá trình hình thành và phát triển tư tưởng Hồ Chí Minh; về độc lập dân tộc và đoàn kết quốc tế; về văn hóa, đạo đức, con người.

12.6. MA001IU - Toán 1 (Calculus 1)

Số tín chỉ : 4 (4LT + 0TH)

Điều kiện tiên quyết/Môn học trước: Không

Mô tả môn học:

Nội dung chính: Hàm số, Giới hạn, Tính liên tục, Đạo hàm, Đạo hàm cho các hàm cơ bản, Qui 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.

12.7. MA003IU- Toán 2 (Calculus 2)

Số tín chỉ : 4 (4LT + 0TH)

Điều kiện tiên quyết/Môn học trước: Toán 1

Mô tả môn học:

Dãy và chuỗi; Kiểm tra sự hội tụ; Chuỗi mủ; Chuỗi Taylor và Maclaurin; Hệ tọa độ Cartesian; Đường thẳng, Mặt và Mặt phẳng; Đạo hàm và tích phân của hàm Vécto; Chiều dài đường cong; Mặt phẳng tham số; Mặt tiếp xúc; Vécto Gradient; Cực trị; Nhân tử Lagrange; Tích phân bội: tích phân hai lớp, tích phân ba lớp, những kỹ thuật tính tích phân; Trường Vécto, tích phân đường, tích phân mặt.

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: Toán 1, Toán 2

Mô tả môn học:

Phương trình vi phân cấp một, phương trình vi phân cấp hai, hệ số không xác định, phương sai của tham số, phương trình vi phân tuyến tính cấp cao, nghiệm chuỗi của phương trình vi phân tuyến tính cấp hai với hệ số không là hằng, hệ phương trình tuyến tính cấp một, cơ bản về phương trình đạo hàm riêng và phương pháp tách biến, phương pháp số.

12.8. MA026IU - Xác suất, thống kê và quá trình ngẫu nhiên (Probability, Statistic & Random Process)

Số tín chỉ : 3(3LT + 0TH)

Điều kiện tiên quyết/Môn học trước: Toán 1, Toán 2

Mô tả môn học:

Môn học trình bày lý thuyết xác suất theo quan điểm độ đo. Nội dung chính bao gồm kiến thức về các biến cố (độc lập, có điều kiện,...), các biến ngẫu nhiên, phân phối, kỳ vọng, phương sai và các định lý giới hạn quan trọng trong xác suất (định lý giới hạn trung tâm, luật số lớn, ...).

12.9. PH013IU - Vật lý 1 (Physics 1)

Số tín chỉ : 2(2LT + 0TH)

Điều kiện tiên quyết/Môn học trước: Không

Mô tả môn học:

Khảo sát động học, động lực học, năng lượng học của chuyển động của chất điểm và của vật rắn. Khảo sát động lực học lưu chất, tính chất của khí lí tưởng, và các nguyên lí nhiệt động lực học.

12.10. PH015IU & PH016IU - Vật lý 3 (Physics 3 + Physics 3 Laboratory)

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: Vật lý 1

Mô tả môn học:

Môn học cung cấp cho sinh viên những kiến thức cơ bản về điện và từ.

12.11. IT154IU - Đại số tuyến tính (Linear algebra)

Mã MH: IT154IU **Số tín chỉ:** 3 (3,0)

Điều kiện tiên quyết/Môn học trước: Toán 1

Mô tả môn học:

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.

12.12. IT153IU – Toán rời rac (Discrete Mathematics)

Số tín chỉ: 3 (3LT + 0TH)

Điều kiện tiên quyết/Môn học trước: C/C++ Programming hoặc Fundamentals of Programming; Linear Algebra hoặc Calculus 3

Mô tả môn học:

Môn học giúp sinh viên phát triển khả năng tư duy, suy nghĩ và diễn giải dựa trên toán học, logic, ứng dụng khả năng này để phân tích, xử lý và giải quyết các đối tượng rời rạc trong thực tế. Đây là khóa học hướng ứng dụng dựa trên việc nghiên cứu các sự kiện xảy ra là nhỏ hay rời rạc phân đoạn trong khoa học, kinh tế, công nghiệp.... Sinh viên sẽ được giới thiệu các công cụ toán học về toán rời rạc như: lý thuyết tổ hợp; lý thuyết quan hệ (quan hệ tương đương, quan hệ sắp xếp); bài toán đếm (giới thiệu về bài toán và phần mở rộng về hệ thức truy hồi); bài toán tồn tại; bài toán liệt kê; lý thuyết đại số Boole; lý thuyết đồ thị và cây. Các ứng dụng thực tế sẽ được giới thiệu trong suốt khóa học.

12.13. PE021IU – Pháp Luật Đại cương

Số tín chỉ : 3(3LT + 0TH)

Điều kiện tiên quyết/Môn học trước: không

Mô tả môn học:

Môn 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, sinh viên sẽ nâng cao nhận thức về trách nhiệm đảm bảo công lý, trong đó có việc chấm dứt tham những trong xã hội.

12.14. EN007IU & EN008IU - Tiếng anh chuyên ngành 1 (Academic English 1)

Số tín chỉ : 4 (4LT + 0TH)

Điều kiện tiên quyết/Môn học trước: không

Mô tả môn học:

Môn học nhằm nâng cao kỹ năng viết trình độ tiền 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 đọan, 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. 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 giồi thêm vốn từ vựng học thuật.

12.15. EN011IU & EN012IU - Tiếng anh chuyên ngành 2 (Academic English 2)

Số tín chỉ : 4 (4LT + 0TH)

Điều kiện tiên quyết/Môn học trước: Tiếng anh chuyên ngành 1

Mô tả môn học:

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. Môn học cung cấp cho sinh viên các chiến lược thiết thực sử dụng trong việc thuyết trình. Ngòai 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.

12.16. IT064IU - Nhập môn Tin học (Introduction to computing)

Số tín chỉ: 3 (3 LT+0TH)

Điều kiện tiên quyết/Môn học trước: Không

Mô tả môn học:

Môn học giới thiệu những khái niệm cơ bản, những mô hình và xu hướng trong ngành công nghiệp Công nghệ thông tin. Ngoài ra, sinh viên được giới thiệu về các chuyên ngành, về cơ cấu các môn học trong mỗi chuyên ngành, ý nghĩa của các môn học, các nghề nghiệp liên quan đến mỗi chuyên ngành, định hướng nghề nghiệp cho sinh viên.

12.17. IT116IU - Lập trình C/C++ (C/C++ Programming)

Số tín chỉ: 4 (3 LT+1TH)

Điều kiện tiên quyết/Môn học trước: Không

Mô tả môn học:

Môn học giúp phát triển những giải thuật và giới thiệu những nguyên tắc trong lập trình dùng C và C++. Các chủ đề bao gồm: giới thiệu máy tính và điện toán, phát triển chương trình, cú pháp ngôn ngữ lập trình C/C++ và các phương pháp số căn bản cho kỹ sư. Môi trường Unix và một số tiện ích cũng được giới thiệu trong môn học này.

12.18. IT069IU - Lập trình hướng đối tượng (Object Oriented Programming)

Số tín chỉ: 4 (3 LT+1TH)

Điều kiện tiên quyết/Môn học trước: Lập trình C/C++ hoặc Lập trình cơ bản Mô tả môn học:

Lập trình và các cấu trúc dữ liệu cơ bản dùng ngôn ngữ Java. Các cấu trúc điều khiển cơ bản như vòng lặp, mảng, đệ qui và con trỏ. Thiết kế hướng đối tương: lớp, thừa kế, overload và đa hình. Cấu trúc dữ liệu trừu tượng: danh sách, danh sách liên kết, chồng và hàng. Giới thiệu về phân tích giải thuật, dùng ký hiệu O, các phương pháp tìm kiếm và sắp xếp.

12.19. IT013IU - Cấu trúc dữ liệu và giải thuật (Algorithms and Data Strutures)

Số tín chỉ: 4 (3 LT+1TH)

Điều kiện tiên quyết/Môn học trước: Lập trình hướng đối tượng

Mô tả môn học:

Tìm hiểu những đặc điểm quan trọng của cấu trúc dữ liệu và giải thuật. Cách sử dụng những cấu trúc này để hỗ trợ thiết kế giải thuật. Giới thiệu về các kỹ thuật tìm kiếm, sắp xếp và băm.

12.20. IT079IU - Nguyên lý Quản trị Cơ sở dữ liệu (Principle of Database Management).

Số tín chỉ: 4 (3 LT+1TH)

Điều kiện tiên quyết/Môn học trước: Lập trình C/C++ hoặc Lập trình cơ bản

Mô tả môn học:

Môn học nhằm cung cấp cho người học kiến thức tổng quan về: kiến trúc Cơ sở dữ liệu (CSDL), phương pháp quản trị CSDL; các mô hình dữ liệu phân cấp, mô hình dữ liệu mạng và mô hình dữ liệu quan hệ; phương pháp thiết kế mô hình thực thể kết hợp và mô hình cơ sở dữ liệu quan hệ; các phụ thuộc hàm cho dữ liệu và cách chuẩn hóa dữ liệu, các ràng buộc toàn vẹn dữ liệu và bảo mật dữ liệu; các cơ chế quản lý giao tác cho hệ quản trị CSDL đa người dùng; ngoài ra môn học còn giới thiệu một số hệ quản trị CSDL thông dụng như SQL Server và một số hệ quản trị CSDL thương mại khác.

12.21. IT089IU - Cấu trúc máy tính (Computer Architecture)

Số tín chỉ: 4 (3 LT+1TH)

Điều kiện tiên quyết/Môn học trước: Thiết kế logic số

Mô tả môn học:

Lịch sử và các nguyên lý của cấu trúc máy tính, cấu tạo máy tính, hợp ngữ và mã máy tính, số học của máy tính, thiết kế ALU, hiệu năng của máy tính, đường dẫn dữ liệu và điều khiển, pipelining, cấu trúc phân tầng của bộ nhớ, thiết bị xuất nhập, và các bộ xử lý di động cũng như đa lõi.

12.22. IT091IU - Mạng Máy Tính (Computer Networks)

Số tín chỉ: 4 (3 LT+1TH)

Điều kiện tiên quyết/Môn học trước: Lập trình C/C++, Lập trình hướng đối tượng Mô tả môn học:

Giới thiệu về mạng, cấu trúc OSI, chuyển mạch gói, mạng nội bộ, Ethernet, mạng không dây, và các giao thức mạng.

12.23. IT090IU- Phân tích và thiết kế hướng đối tượng (Object Oriented Analysis and Design)

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: Lập trình hướng đối tượng

Mô tả môn học:

Mô hình hóa hệ thống. Các khái niệm về phân tích và thiết kế hệ thống. Chu kỳ phát triển sản phẩm. Quy trình hợp nhất và những công đoạn thực hiện như: lấy yêu cầu, phân tích, thiết kế, hiện thực và kiểm thử. Nội dung nâng cao bao gồm cơ sở dữ liệu hướng đối tượng, mẫu thiết kế, lập trình Extreme.

12.24. IT076IU - Công nghệ phần mềm (Software Engineering)

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: Lập trình hướng đối tượng

Mô tả môn học:

Môn học giới thiệu quy trình công nghệ phần mềm. Khảo sát hoạt động doanh nghiệp. Thảo luận với khách hàng về yêu cầu. Chọn công nghệ thiết kế. Phân tích hệ thống theo hướng đối tượng. Thiết kế và lập trình dự án.

12.24. IT093IU - Phát triển ứng dụng Web (Web Application Development)

Số tín chỉ: 4 (3 LT+1TH)

Điều kiện tiên quyết/Môn học trước: Lập trình hướng đối tượng, Nguyên lý Quản Trị Cơ sở dữ liêu

Mô tả môn học:

Sử dụng các kiến thức và kỹ năng để phát triển ứng dụng Web dựa trên các tiện ích, công nghệ và môi trường phát triển của Java như HTML, Java Server Page, Java Bean, MVC Model. Ngoài ra còn mở rộng thêm các kiến thức liên quan đến kiến trúc của Java như Ajax và Struts. Môn học này làm nền tảng để sinh viên thực hiện các đề án môn học cũng như luận văn tốt nghiệp theo hướng Web.

12.25. IT092IU - Nguyên lý Ngôn ngữ lập trình (Principle of Programming Languages)

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: không

Mô tả môn học:

Môn học nhằm làm cho người học quen thuộc với một số khái niệm cơ bản của các ngôn ngữ lập trình, từ đó nâng cao khả năng tiếp thu các ngôn ngữ lập trình khác. Các kiểu ngôn ngữ lập trình khác nhau (chẳng hạn như ngôn ngữ lập trình luận lý, ngôn ngữ lập trình chức năng, ngôn ngữ lập trình thủ tục, ngôn ngữ lập trình hướng đối tượng) cũng được so sánh và các phương pháp cài đặt cũng được tìm hiểu và thảo luận.

12.26. IT017IU - Hệ điều hành (Operating System)

Số tín chỉ: 4 (3 LT+1TH)

Điều kiện tiên quyết/Môn học trước: Cấu trúc dữ liệu và giải thuật, Kiến trúc máy tính, Lập trình C/C++

Mô tả môn học:

Môn học trang bị cho sinh viên khả năng định nghĩa và giải thích các nguyên lý của hệ điều hành. Hiểu về kiến trúc của một hệ điều hành. Khả năng lập trình để giao tiếp với các chức năng và dịch vụ hệ thống.

12.27. IT159IU - Trí thông minh nhân tạo (Artificial Intelligent)

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: Toán rời rạc hoặc Đại số tuyến tính, Lập trình hướng đối tượng

Mô tả môn học:

Môn học nhằm cung cấp một cách tiếp cận kỹ thuật vào các khái niệm cơ bản trong lĩnh vực trí tuệ nhân tạo. Nội dung cụ thể bao gồm: lịch sử trí tuệ nhân tạo, các tác tử, các phương pháp tìm kiếm (tìm kiếm trên không gian trạng thái, tìm kiếm có thông tin và tìm kiếm không có thông tin, tìm kiếm thỏa mãn ràng buộc hoặc tìm kiếm cho trò chơi), biểu diễn tri thức (biểu diễn tri thức cụ thể bằng logic, hệ thống lập luận bằng logic), hoạch định, và ngôn ngữ

Lisp. Môn học này thích hợp cho sinh viên nào muốn có một kiến thức cơ bản vững chắc về trí tuệ nhân tạo hoặc chuẩn bị cho những phát triển sâu hơn trong lĩnh vực Trí tuệ nhân tạo.

12.28. IT160IU – Khai thác Dữ liệu (Data Mining, môn tự chọn)

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: Lập trình hướng đối tượng

Mô tả môn học:

Môn học này giới thiệu cho sinh viên các nguyên lý, thuật toán khai phá dữ liệu, yêu cầu của một quá trình khai phá dữ liệu. Học sinh sẽ nghiên cứu các khái niệm và thuật toán khai thác dữ liệu để giải quyết các vấn đề khám phá tri thức. Học sinh có thể phát triển các kỹ năng sử dụng phần mềm khai thác dữ liệu gần đây để giải quyết các vấn đề thực tế và tích lũy kinh nghiệm thực hiện nghiên cứu và học tập độc lập.

12.29. IT130IU – Xử lý ảnh Kỹ thuật số (Digital Image Processing, môn tự chọn)

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: không.

Mô tả môn học:

Môn học này giới thiệu cho sinh viên các nguyên lý, thuật toán khai phá dữ liệu, yêu cầu của một quá trình khai phá dữ liệu. Học sinh sẽ nghiên cứu các khái niệm và thuật toán khai thác dữ liệu để giải quyết các vấn đề khám phá tri thức. Học sinh có thể phát triển các kỹ năng sử dụng phần mềm khai thác dữ liệu gần đây để giải quyết các vấn đề thực tế và tích lũy kinh nghiệm thực hiện nghiên cứu và học tập độc lập.

12.30. IT114IU – Kiến trúc phần mềm (Software Architecture, môn tự chọn)

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: không.

Mô tả môn học:

Cung cấp cho sinh viên sự hiểu biết thấu đáo về các phương pháp và kỹ thuật khác nhau trong phân tích, thiết kế và triển khai hệ thống thông tin bằng cách sử dụng UML.

12.31. IT096IU - Lập trình mạng (Net-Centric Programming, môn tự chọn)

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: Mạng máy tính

Mô tả môn học:

Môn học cung cấp các kiến thức cơ sở và nâng cao về các kỹ thuật lập trình mạng TCP/IP và UDP. Giúp sinh viên có khả năng xây dựng định dạng dữ liệu để thiết kế các giao thức truyền dữ liệu trên mạng. Hướng dẫn sinh viên lập trình được các ứng dụng có kết nối mạng Client/Server độc lập sử dụng ở mức socket và một số giao thức mạng cấp ứng dụng phổ biến như HTTP, FTP, DNS, Email... Môn học cũng cung cấp cho sinh viên các kỹ năng phát triển phần mềm trên các công cụ và môi trường trực quan như PyCharm, Visual Studio...

12.32. IT094IU - Quản lý Hệ thống thông tin (Information System Management, môn tư chon)

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: Nguyên lý Quản tri Cơ sở dữ liêu

Mô tả môn học:

Môn học hướng tới việc mô tả cách mà một hệ thống thông tin được sử dụng bởi các doanh nghiệp và sự ảnh hưởng của nó đến hoạt động của doanh nghiệp. Cùng với việc trình bày và tìm hiểu về công nghệ trong hệ thống thông tin, các vấn đề cơ bản là làm cách nào để các công nghệ được dùng giải quyết các vấn đề của doanh nghiệp và các cơ hội khai thác

chúng. Nội dung cụ thể gồm các vấn đề liên quan đến tổ chức, quản lý, mạng doanh nghiệp; hạ tầng công nghệ thông tin doanh nghiệp; các hệ thống hỗ trợ quản lý và tổ chức cho doanh nghiệp số; xây dựng và quản lý hệ thống thông tin.

12.33. IT056IU - Quản trị Dự án Phần mềm (Software Project Management, môn tự chọn)

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: Lập trình hướng đối tượng

Mô tả môn học:

Soạn đề cương kế hoạch dự án. Phỏng vấn và chuẩn bị yêu cầu khách hàng. Ước tính chi phí, thời gian, nhân lực để hoàn tất dự án. Quản lý công đoạn thiết kế và lập trìng hệ thống. Kiểm soát chất lượng: thử nghiệm phần mềm, kiểm soát yêu cầu khách hàng.

12.34. IT024IU - Đồ hoạ máy tính (Computer Graphics, môn tự chọn)

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: Lập trình C/C++, Lập trình hướng đối tượng Mô tả môn học:

Triển khai các giải thuật và ngôn ngữ cho việc tương tác trong đồ hoạ máy tính. Các khái niệm về hệ trục toạ độ trong không gian 2 chiều, 3 chiều, không gian véc tơ đường cong, bề mặt được sinh ra từ việc thiết kế, bố trí xây dựng các đối tượng đồ hoạ. Ngoài ra còn phát triển các mô hình kết hợp camera để tạo ảnh và xử lý ảnh.

12.35. IT157IU – Học sâu (Deep Learning, môn tự chọn)

Số tín chỉ : 4 (3LT + 1TH)

Điều kiện tiên quyết/Môn học trước: khônG

Mô tả môn học:

Khóa học này giúp sinh viên hiểu được các khả năng, kỹ thức và hậu quả của việc học sâu và chuẩn bị cho sinh viên tham gia phát triển công nghệ AI hàng đầu.

12.36. IT134IU - Internet van vật (Internet of Things, môn tự chọn)

Số tín chỉ: 4 (3LT+1TH)

Điều kiện tiên quyết/Môn học trước: Mạng máy tính

Mô tả môn học:

Môn học giải thích về kiến trúc, thành phần của mạng Internet vạn vật. Sinh viên sẽ được học về các kỹ thuật truyền thông khác nhau, từ tầm gần đến tầm xa như là Bluetooth, Zigbee, Wifi, LoRa, NB-IoT,... Ngoài ra, các kỹ thuật lưu trữ, tổ chức và phân tích dữ liệu còn được học trong môn học này. Sau đó, sinh viên sẽ được học các khái niệm, nguyên lý cơ bản và cấu tạo cơ bản của các hệ thống IoT cho các ứng dụng công nghiệp như y tế, sản xuất, nông nghiệp, v.v...

12.37. IT133IU - Phát triển ứng dụng di động (Mobile Application Development, môn tư chon)

Số tín chỉ: 4 (3LT+1TH)

Điều kiện tiên quyết/Môn học trước: Phân tích và thiết kế hướng đối tượng

Mô tả môn học:

Khóa học này được thiết kế nhằm giới thiệu và làm quen với sinh viên về lập trình trên môi trường di động: Nền tảng Android sẽ được sử dụng trong suốt khóa học. Khóa học bắt đầu với phần giới thiệu về các thành phần, khái niệm, cấu trúc cơ bản của ứng dụng Android sau đó tiếp tục với các thành phần giao diện người dùng phổ biến, lưu trữ liên tục,

cơ sở dữ liệu cho thiết bị di động, v.v. Giới thiệu về hầu hết các công cụ và công cụ phổ biến kỹ thuật viết ứng dụng Android cũng được kèm theo bằng tay về kinh nghiệm dưới dạng dự án lập trình bài tập trong phòng thí nghiệm.

12.38. IT044IU - Tương tác người và máy (Human Computer Interaction, môn tự chọn)

Số tín chỉ: 4 (3LT+1TH)

Điều kiện tiên quyết/Môn học trước: không

Mô tả môn học:

Môn học cung cấp cho sv các nguyên lý cơ bản trong tương tác giữa người và máy.

12.39. IT164IU – Điện toán đám mây (Cloud computing, môn tự chọn)

Số tín chỉ: 4 (3LT+1TH)

Điều kiện tiên quyết/Môn học trước: Computer Network

Mô tả môn học:

Môn học tập trung vào kỹ thuật lập trình song song cho tính toán trên đám mây và hệ thống

phân tán lớn. Các chủ đề được đề cập bao gồm tổng quan về điện toán đám mây, hệ thống đám mây, tính toán song song trên đám mây, hệ lưu trữ phân tán, ảo hóa, an toàn trên đám mây, và hệ điều hành đa nhân. Sinh viên sẽ được học các giải pháp hiện đại cho tính toán đám mây phát triển bởi Google, Amazon, Microsoft, Yahoo, VNWare và tương tự. Sinh viên sẽ được áp dụng các kiến thức vào các bài tập và đồ án thực hiện trên Amazon Web Services.

12.40. IT165IU – Công nghệ và Triển khai bảo mật (Security Technology and Implementation, môn tự chọn)

Số tín chỉ: 4 (3LT+1TH)

Điều kiện tiên quyết/Môn học trước: Computer Network

Mô tả môn học:

Môn học giới thiệu cho sinh viên nguyên lý của an toàn thông tin, hệ thống mật mã hóa (mã hóa đối xứng và mã hóa công cộng), quản lý rủi ro, an toàn cho kiến trúc và thiết kế, an toàn trong vận hành kinh doanh liên tục, kiểm soát truy cập, bảo vệ màng TCP/IP, tưởng

lửa, mạng ảo, IPSec, an toàn trong phát triển phần mềm.

12.41. IT0IU – Kiểm tra chất lượng phần mềm (Software Quality Verification and Validation, môn tự chọn)

Số tín chỉ: 4 (3LT+1TH)

Điều kiện tiên quyết/Môn học trước: không

Mô tả môn học:

Môn học giới thiệu về kiểm tra, kiểm định và kiểm thử phần mềm. Các chiến thuật và kỹ thuật cho kiểm thử phần mềm, và lên kế hoạch kiểm thử phần mềm cũng được giới thiệu.

12.42. IT167IU – Phát triển ứng dụng game (Game Application Development, môn tư chon)

Số tín chỉ: 4 (3LT+1TH)

Điều kiện tiên quyết/Môn học trước: Object-Oriented Programming

Mô tả môn học:

Môn học giới thiệu các định lý và kinh nghiệm thực hành quá trình thiết kế trờ chơi và trải nghiệm trò chơi. Sinh viên sẽ được làm quen với phương pháp, khái niệm và các tài liệu được dùng trong thiết kế trò chơi. Chiến thuật thiết kế theo hướng qui trình và tập trung vào

các mảng như tạo nhanh phiên bản mẫu, kiểm thử trò chơi, vòng lập thiết kế sử dụng cách tiếp cận tập trung vào người chơi.

12.43. IT150IU – Chuỗi khối (Blockchain, môn tự chọn)

Số tín chỉ: 4 (3LT+1TH)

Điều kiện tiên quyết/Môn học trước: không

Mô tả môn học:

Môn học này giới thiệu cho sinh viên nền tảng của công nghệ chuỗi khối và các ứng dụng của nó. Học sinh sẽ nghiên cứu các khái niệm và nguyên tắc blockchain hoạt động như thế nào. Khóa học này bao gồm các chủ đề liên quan đến không gian chuỗi khối. Khóa học bắt đầu với những điều cơ bản về chuỗi khối, mật mã, hiểu biết cơ bản về bitcoin. Sau đó, các ứng dụng của công nghệ blockchain được giới thiệu trong các lĩnh vực tài chính, y tế, chuỗi cung ứng, v.v. Một bức tranh hoàn chỉnh về hệ sinh thái xung quanh công nghệ blockchain và các xu hướng phát triển cũng được thảo luận.

12.44. IT156IU – Phát triển và vận hành liên tục (Development & Operation, môn tự chọn)

Số tín chỉ: 4 (3LT+1TH)

Điều kiện tiên quyết/Môn học trước: không

Mô tả môn học:

Khóa học này là phần giới thiệu về DevOps nhằm giúp sinh viên hiểu các nguyên tắc và thực tiễn của nó. Các khái niệm và thuật ngữ chính sẽ được đề cập bằng các nghiên cứu điển hình, ví dụ và bài tập thực tế trong đời thực. Các công cụ phổ biến và phổ biến để đạt được mô hình DevOps cũng sẽ được giới thiệu.

12.45. IT138IU – Trực quan hóa dữ liệu (Data Science and Visualization, môn tự chon)

Số tín chỉ: 4 (3LT+1TH)

Điều kiện tiên quyết/Môn học trước: không

Mô tả môn học:

Mục tiêu của khóa học này là giới thiệu cho sinh viên các nguyên tắc, phương pháp và kỹ thuật chính để phân tích dữ liệu trực quan một cách hiệu quả. Khóa học bắt đầu với mục tiêu và nguyên tắc chính của trực quan hóa dữ liệu. Khóa học tiếp tục với các khía cạnh khác nhau của trực quan hóa bao gồm các kỹ thuật và phương pháp trình bày các loại dữ liệu khác nhau cũng như thảo luận và phân tích trực quan hóa. Xuyên suốt khóa học, học viên sẽ được làm quen với nhiều hệ thống trực quan và công cụ trực quan thông qua các bài tập thực hành.

12.46. PE008IU – Tư duy Phản biện (Critical Thinking, môn tự chọn)

Số tín chỉ: 3 (3LT+0TH)

Điều kiện tiên quyết/Môn học trước: không

Mô tả môn học:

Tư duy phê phán nghiên cứu một quá trình không thể thiếu đối với tất cả những người có học thức - quá trình chúng ta phát triển và ủng hộ niềm tin của mình cũng như đánh giá sức mạnh của những lập luận của người khác trong các tình huống thực tế. Nó bao gồm thực hành về lý luận quy nạp và suy diễn, trình bày các lập luận dưới dạng nói và viết và phân tích việc sử dụng ngôn ngữ để tác động đến suy nghĩ. Khóa học cũng áp dụng quy trình suy luận vào các lĩnh vực khác như kinh doanh, khoa học, luật, khoa học xã hội, đạo đức và nghệ thuật.

12.47. IT120IU - Khởi nghiệp (Entrepreneurship, môn tự chọn)

Số tín chỉ: 3 (3LT)

Điều kiện tiên quyết/Môn học trước: không

Mô tả môn học: Môn học cung cấp kiến thức về khởi tạo doanh nghiệp, tư duy sáng tạo để đưa ra sản phẩm, dịch vụ mới có liên quan đến công nghệ. Vai trò của doanh nghiệp trẻ trong nền kinh tế và cách quản lý doanh nghiệp để khơi nguồn ý tưởng sáng tạo trong nhóm làm việc. Xây dựng và biến ý tưởng kinh doanh thành hiện thực.

12.48. IT082IU - Thực tập Công nghiệp (Internship)

Số tín chỉ: 3 (0 LT+3TH)

Điều kiện tiên quyết/Môn học trước: sinh viên năm 3 trở lên

Mô tả môn học:

Môn học nhằm tạo điều kiện cho sinh viên có cơ hội tiếp xúc với môi trường thực tế, nhằm để giải quyết những vấn đề thực tiễn trong sản xuất, cuộc sống hàng ngày. Nội dung chủ yếu bao gồm: xây dựng và quản trị hệ thống thông tin bằng web hoặc ứng dụng; tin học hóa các công tác văn phòng, công việc hang ngày; thiết kế, cài đặt vận hành mạng máy tính cho các doanh nghiệp, tổ chức. Tìm hiểu và ứng dụng các công nghệ mới.

12.49. IT083IU- Thực tập tốt nghiệp (Special Study of the Field)

Số tín chỉ: 3 (0 LT+3TH)

Điều kiện tiên quyết/Môn học trước: đủ số tín chỉ theo quy định

Mô tả môn học:

Môn học nhằm hướng dẫn sinh viên đến việc tìm hiểu phương pháp giải quyết một vấn đề tổng hợp thực tế. Nội dung hướng dẫn chủ yếu bao gồm: phương pháp tiếp cận vấn đề, các bước trong quá trình tìm hiểu vấn đề, các phương pháp tìm hiểu những giải pháp, các bước hoạch định, đề xuất giải pháp cho vấn đề.

12.50. IT058IU - Luận văn tốt nghiệp (Thesis)

Số tín chỉ: 10 (0LT+10TH)

Điều kiện tiên quyết/Môn học trước: Thực tập tốt nghiệp

Mô tả môn học:

Đây là các để tài có tính thực tiễn hoặc có tính khoa học cao, được thiết kế để bảo đảm sinh viên nắm và vận dụng được những kiến thức đã học trong chương trình. Sinh viên sẽ làm việc theo nhóm để thu thập yêu cầu, thiết kế, cài đặt và cung cấp giải pháp cho các vấn đề thực tế. Sinh viên có thể sử dụng mô hình thích hợp, phải tự quản lý chính đề án đố, theo các kỹ thuật quản lý đề án đã học. Kết quả của luận văn có thể là sản phẩm theo yêu cầu và các tài liệu liên quan.

TRƯỞNG KHOA

Manh

KT. HIỆU TRƯỞNG PHÓ HIỆU TRƯỞNG

Nguyễn Văn Sinh

Định Đức Anh Vũ

ĐẠI HỌC QUỐC GIA THÀNH PHÓ HÒ CHÍ MINH **TRƯỜNG ĐAI HOC QUỐC TẾ**

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

Phụ lục I

NỘI DUNG ĐIỀU CHỈNH CHƯƠNG TRÌNH ĐÀO TẠO NGÀNH KHOA HỌC MÁY TÍNH KHÓA 2024 SO VỚI KHÓA 2023

(Đính kèm Quyết định số /QĐ-ĐHQT ngày tháng năm 2024 của Hiệu trưởng Trường Đại học Quốc tế)

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

Không có nội dung điều chỉnh

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

Không có nội dung điều chỉnh

3. Điều chỉnh khác

Không có nội dung điều chỉnh

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

Không có nội dung điều chỉnh

ĐẠI HỌC QUỐC GIA THÀNH PHÓ HÒ CHÍ MINH **TRƯỜNG ĐẠI HỌC QUỐC TẾ**

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

Phụ lục II ĐỀ CƯƠNG CHI TIẾT CÁC MÔN HỌC

(Kèm theo Quyết định số: /QĐ-ĐHQT ngày tháng năm 2024 của Hiệu trưởng trường Đại học Quốc tế)

Course Name: Calculus 1

Course Code: MA001IU

Course This course equips students with basic concepts of calculus: limits, designation continuity, differentiation, and integration. Applications of these concepts are extensively discussed. 1.2 Semester(s) in which the course is taught Person Lectures of Department of Mathematics responsible for the course Language English Relation to Compulsory curriculum **Teaching** Lectures, assignments methods Workload (incl. (Estimated) Total workload: 120 contact hours, Contact hours (please specify whether lecture, exercise, laboratory self-study hours) session, etc.): 60 (lectures) Private study including examination preparation, specified in hours¹: 60

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

Credit points	4 (ECTS: 6.1	8)
Required and recommended prerequisites for joining the course	None	
Course objectives	These include	students with the main ideas and techniques of calculus. e limits, continuity, differentiation, and integration. ce practical applications of these ideas and techniques,
		tical examples taken from many areas of engineering,
		o skills in mathematical modelling and problem solving, nk logically, and adapt these skilss creatively to new
Course learning	Upon the succ	cessful completion of this course students will be able to:
outcomes	Competen cy 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	The description of the contents should clearly indic of the content and the level.	ate the v	veighting
	Weight: lecture session (4 hours)		
	-	a)	
	Teaching levels: I (Introduce); T (Teach); U (Utiliz Topic	Weig	Lev
	Eventions and Comba Invento Eventions Event	ht 1	el
	Functions and Graphs, Inverse Functions, Exponer and Logarithmic Functions	1	I, T
	Parametric Curves, Limit. One-sided Limits, Laws	1	I, T
	Limits.	1	1, 1
	Evaluating Limits. The Squeeze Theorem.	1	T, U
	Continuity. The Intermediate Value Theorem	1	1,0
	Tangent Lines and Velocity Problems. Rates of	1	T, U
	Change, Derivative.	-	
	Higher-Order Derivatives, Rules of	1	T, U
	Differentiation. Rates of Change in the Natural		
	and Social Sciences		
	Implicit Differentiation, Differentiation of	1	T, U
	Inverse Functions,		
	Logarithmic Differentiation, Linear	1	T, U
	Approximations. Differentials.		
	Related Rates, Maxima and Minima. Critical	1	T, U
	Point, The Mean Value Theorem.		
	The First and Second Derivative Test,	1	T, U
	Concavity. Shapes of Curves, Curve Sketching		
	Indeterminate Forms and l'Hôpital's Rules,	1	T, U
	Maxima and Minima Problems, Newton's		
	Method		
	Anti-derivatives and Indefinite Integrals, The Definite Integral	1	I, T
	Properties of the Definite Integral.	1	I, T,
	The Fundamental Theorem of Calculus,		Ú
	Integration by Substitution		
	Integration by Parts, Partial Fractions, Numerical	1	T, U
	Integration,		
	Improper Integrals, Areas between Curves	1	T, U
	Areas Enclosed by Parametric Curves		
	Volumes, Arc Length, Applications to	1	T, U
	Engineering, Economics and Science		
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.

Course Name: Introduction to Computing

Course Code: IT064

1. General information

Course designation Semester(s) in	This course introduces students to a broad knowledge of the computer science and information technology fields. Topics covered will include basic computer concepts, components of computer hardware and operating systems software as well as data and telecommunications systems. Students can use the knowledge they've gained to strengthen their future-oriented job. 1,3
which the course is taught	1,5
Person responsible for the course	Dr. Nguyen Trung Ky
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	Total workload: 135 hours. Contact hours: 45 hours (lecture). Private study including examination preparation, specified in hours: 90 hours.
Credit points	Number of credits: 3 (ECTS: 4.46) Lecture: 3 Laboratory: 0
Required and recommended prerequisites for joining the course	None
Course objectives	This course is to provide fundamentals and basic concepts of computer science and engineering, basics of Computing such as basic concepts, models, trends in industry. Introduction to majors and curricula, career path of all majors in computing, career orientation, job requirements and career opportunities in industry are also included in this course.
Course learning outcomes	CLO1: Demonstrate an in-depth understanding of fundamental knowledge and history of computing, all career paths in computing and learning methodologies in university. CLO2: Describe basic hardware and software concepts and basic computing terminologies

	CLO3: Make a plan for his/ho	er own future career	and his/h	er	
	works	or own ratare career	and morn	01	
1	CLO4: Seek information from	n the Internet and ma	nage his/	her	
	information.		U		
	CLO5: Follow the discussion	s of instructors and c	lassmate	<u>s.</u>	
		ourse learning outco	ome		
	Knowledge Cl	LO1, CLO2.			
		LO3, CLO4.			
	Attitude Cl	LO5.			
Content	The description of the content	ts should clearly indi	icate the		
	weighting of the content and				
	Weight: lecture session (3 ho	urs)			
	Teaching levels: I (Introduce)); T (Teach); U (Utili	ize)	Т	
	Topic		Weigh t	Leve l	
	The Overall Picture		1	I	
	Data and Information		2	T, U	
	Hardware	2	T, U		
	Algorithm and Programming	g Language	2	T, U	
	Operating System		2	T, U	
	Networking		2	T, U	
	Information System and App	plication	2	T, U	
	Majors and Curriculum, Orientation Careers at a Hard Software Company		1	I	
	Revision		1		
Examination forms	Multiple-choice questions, sh	ort-answer questions	8		
Study and examination requirements	Attendance: A minimum attendance for the class sessions. Student class participation. Question encouraged. Assignments/Examination: Spoints overall to pass this course.	ts will be assessed on ons and comment tudents must have n	the basis s are s	of their strongly	
Reading list	[1] Nell Dale and John Lewis, "Computer science: Illuminated", 7th Edition, Jones & Bartlett Learning Publisher, ISBN-13 978-1284155617, 2019. [2] J. Glenn Brookshear, "Computer Science: An Overview", 12 th				
	Edition, Pearson Publisher, IS [3] Peter Wentworth, Jeffre Computer Scientist: Learning	SBN-13 978-013376 ey Elkner, "How t	0064, 201 o Think	4. Like a	

Edition, Allen B. Downey and Chris Meyers, Green Tea Press Publisher, ISBN-13 978-0971677500, 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			X		
2	X			X		
3	X					
4	X					
5					X	

3. Planned learning activities and teaching methods

Week	Topic	CL	Assessmen	Learning	Resource
		0	ts	activities	S
1	The Overall Picture	1		Lecture,	[1].
				Discussion	Chapter 1
2	Binary Values and Number	1, 2	Quiz.	Lecture,	[1].
	System			In-class quiz	Chapter 2
3	Data Representation	1, 2	Quiz	Lecture,	[1].
	•			In-class quiz	Chapter 3
4	Gates and Circuits	1, 2	Quiz	Lecture,	[1].
				In-class quiz	Chapter 4
5	Computing Components	1, 2	Quiz	Lecture,	[1].
				In-class quiz	Chapter 5
6	Low-level Programming	1, 2	Quiz	Lecture,	[1].
	Languages and Pseudocode			In-class quiz	Chapter 6
7	Midterm				
8	Problem Solving and	1, 2	Quiz	Lecture,	[1].
	Algorithm,			In-class quiz	Chapter
	Abstract Data Types and				7,8
	Subprograms				
9	Object-oriented Design and	1, 2	Quiz	Lecture,	[1].
	High-level Programming			In-class quiz	Chapter 9
	Languages				
10	Operating System and File	1, 2	Quiz	Lecture,	[1].
	System and Directory				Chapter
				In-class quiz	10, 11

11	Information System, Artificial Intelligence	1, 2	Quiz	Lecture, In-class quiz	[1]. Chapter 12, 13
12	Simulation, Graphics, Gaming, and Other Programming Networks	1, 2	Quiz	Lecture, In-class quiz	[1]. Chapter 14, 15
13	The World Wide Web Computer Security	1, 2	Quiz	Lecture, In-class quiz	[1]. Chapter 16, 17
14	Majors and Curriculum, Career Paths and Orientation, Careers at Hardware, Network and Software Company	3, 4		Lecture, Discussion	
15	Revision			Review-test	
16	Final exam				

4. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5
Quiz (10%)	25%	25%	33.3	33.3	25%
Midterm examination (30%)	25%	25%			25%
Projects/Presentations/ Report (20%)	25%	25%	33.3 %	33.3	25%
Final examination (40%)	25%	25%	33.3 %	33.3 %	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. ←

5. Rubrics (optional)

5.1. Grading checklist

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

	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and	10		
summarizes principal content			
Introduction demonstrates thorough knowledge of	15		
relevant background and prior work			
Analysis and discussion demonstrate good subject	30		
mastery			
Summary and conclusions appropriate and	5		
complete			
Organization (10%)			
Distinct introduction, body, conclusions	5		
Content clearly and logically organized, good	5		
transitions			
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**

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

	T		. ,	
			Issue/ problem	
			to be	
			considered	
			critically is	
			stated but	
	Issue/ problem to		description	
	be considered	Issue/ problem	leaves some	
	critically is stated	to be considered	terms	
	clearly and	critically is	undefined,	Issue/
	described	stated,	ambiguities	problem to be
	comprehensively,	described, and	unexplored,	considered
	delivering all	clarified so that	boundaries	critically is
	relevant	understanding is	undetermined,	stated without
Explanati	information	not seriously	and/ or	clarification
on of	necessary for full	impeded by	backgrounds	or
issues	understanding.	omissions.	unknown.	description.
1550C5	understanding.	Offitssions.	Information is	description.
			taken from	
	T.C	T.C	source(s) with	
	Information is	Information is	some	
	taken from	taken from	interpretation/	
	source(s) with	source(s) with	evaluation, but	T 0
	enough	enough	not enough to	Information is
Evidence	interpretation/	interpretation/	develop a	taken from
Selecting	evaluation to	evaluation to	coherent	source(s)
and using	develop a	develop a	analysis or	without any
informatio	comprehensive	coherent	synthesis.	interpretation/
n to	analysis or	analysis or	Viewpoints of	evaluation.
investigat	synthesis.	synthesis.	experts are	Viewpoints of
e a point	Viewpoints of	Viewpoints of	taken as	experts are
of view or	experts are	experts are	mostly fact,	taken as fact,
conclusio	questioned	subject to	with little	without
n	thoroughly.	questioning.	questioning.	question.
				Shows an
			Questions	emerging
	Thoroughly		some	awareness of
	(systematically and		assumptions.	present
	methodically)		Identifies	assumptions
	analyzes own and		several	(sometimes
	others'	Identifies own	relevant	labels
	assumptions and	and others'	contexts when	assertions as
Influence	carefully evaluates	assumptions and	presenting a	assumptions).
of context	the relevance of	several relevant	position. May	Begins to
and	contexts when	contexts when	be more aware	identify some
assumpti	presenting a	presenting a	of others'	contexts
ons	position.	position.	assumptions	when
	I	I		

			than one's own	presenting a
			(or vice versa).	position.
	C : C: : : :		(of vice versa).	position.
	Specific position			
	(perspective,	G		
	thesis/ hypothesis)	Specific		
	is imaginative,	position		
	taking into account	(perspective,		
	the complexities of	thesis/hypothesi		
	an issue. Limits of	s) takes into		
	position	account the		
	(perspective,	complexities of		
	thesis/ hypothesis)	an issue. Others'	Specific	Specific
	are acknowledged.	points of view	position	position
Student's	Others' points of	are	(perspective,	(perspective,
position	view are	acknowledged	thesis/	thesis/
(perspecti	synthesized within	within position	hypothesis)	hypothesis) is
ve,	position	(perspective,	acknowledges	stated, but is
thesis/hyp	(perspective,	thesis/	different sides	simplistic and
othesis)	thesis/ hypothesis).	hypothesis).	of an issue.	obvious.
			Conclusion is	
		Conclusion is	logically tied	Conclusion is
		logically tied to	to information	inconsistently
	Conclusions and	a range of	(because	tied to some
	related outcomes	information,	information is	of the
	(consequences and	including	chosen to fit	information
	implications) are	opposing	the desired	discussed;
Conclusio	logical and reflect	viewpoints;	conclusion);	related
ns and	student's informed	related	some related	outcomes
related	evaluation and	outcomes	outcomes	(consequence
outcomes	ability to place	(consequences	(consequences	s and
(implicati	evidence and	and	and	implications)
ons and	perspectives	implications)	implications)	are
conseque	discussed in	are identified	are identified	oversimplifie
nces)	priority order.	clearly.	clearly.	d.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

ai communication value rabite for evaluating presentation tasks.				
	Capstone	Mile	Milestone	
	4	3	2	1
	Organizational	Organizational	Organizational	Organizational
	pattern (specific	pattern	pattern	pattern (specific
	introduction and	(specific	(specific	introduction and
	conclusion,	introduction	introduction	conclusion,
	sequenced	and conclusion,	and conclusion,	sequenced
Organizat	material within	sequenced	sequenced	material within
ion	the body, and	material within	material within	the body, and

	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.	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 understandabilit y of the presentation, and speaker appears uncomfortable.
Supportin g 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)

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Month

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh



VIETNAM NATIONAL UNIVERSITY HCMC INTERNATIONAL UNIVERSITY School of Languages

COURSE SYLLABUS

Course Name: Listening AE1
Course Code: **EN008IU**

1. General information

Course name	- (in English) LISTENING AE1 (Listening and Note-taking)
	- (in Vietnamese) Nghe AE1 (Nghe và ghi chú)
Course	The course is designed to prepare students for effective listening and note-
designatio	taking skills, so that they can pursue the courses in their majors without
n	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.
Semester(s) in	1, 2, 3
which the	
course is	
taught	
Person	Lecturers of School of Languages
responsible	
for	
the course	
Language	English
Relation to	☐ Compulsory
curriculum	□ Elective
Teachin	Lectures, lesson
g	Individual
methods	practice
	Discussion
	Pair work
	Group work
Workload	(Estimated) Total workload: 90
(incl. contact	Contact hours (lecture, exercise):
hours, self-	30
study	Private study including examination preparation, specified in hours ¹ : 60
hours)	
Credit points	2 credits (Theory: 2 + Practice: 0)
	3.08 ECTS (optional)
Number of	Theory: 30
periods	Practice: 0

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

	1					
Required and	- Prerequisites: Stu	dents must fulfil ONE of the following requirements to				
recommended	attend this course:					
prerequisites	 hold TOEF 	L iBT certificate with score ≥ 61				
for joining the	 hold IELTS 	certificate with score ≥ 5.5				
course	complete II	E2 course (for IU program)/ IE3 course (for				
	twinning pr	rograms)				
		urse code – Course name): None				
	=	Course code – Course name): None				
Course		r of objectives embedded in various teaching activities				
objective	in Listening AE1 c					
s	_	- Pre-listening activities: aim to activate students' current knowledge of the				
		ovide them with lecture language and effective strategies in				
		ote-taking to prepare themselves for the coming lecture.				
	_	sinclude reading (this can be done before class meetings),				
		reviewing what they have learned from the reading.				
		and post-listening activities: aim to enable students to put				
		vated knowledge and acquired strategies into work by				
	_					
	_	the lecture, using the outline given by the teacher or				
		emselves. They are later on asked to assess their				
	_	based on their notes and discuss them with their classmates.				
	Finally, as an o					
		ding on time and students' needs, students are asked				
	to summarize tl					
	-	vities: students are required to discuss the lecture topic and				
	to prepare argu	ments for or against the topic in the debate. The purpose is				
	to					
		ts' comprehension of the lecture, and to allow them to				
		ed academic language into practice, and to experience				
	the					
		a university lecture class.				
Course		al completion of this course, students will be able to:				
learning	Competency level	Course learning outcome (CLO)				
outcomes	Knowledge	CLO1. Apply knowledge of lecture language in				
	Miowicage	listening				
		comprehension via giving accurate information				
	Skill	CLO2. Demonstrate appropriate listening strategies				
		and note-taking skills in taking organized notes of				
		academic lectures.				
	CLO3. Perform listening comprehension in writing a					
	summary of a lecture.					
	Attitude	CLO4. Display discipline, responsibilities, and				
		ethical				
		practices as an individual and a team member in				
		attending class regularly and actively participating in				
	class activities					

Content	The description of the contents should clearly indicate	the weighti	ng
	of the content and the level.		
	Weight: lecture session (2 hours)		
	Teaching levels: I (Introduce); T (Teach); U (Utilize)		
	Topic	Weight	Level
	Orientation & Introduction of strategies and technique	_	2
	I	I, T, Uno	ote-
	taking	_, _ ,	
	Chapter 1: New Trends in Marketing Research	3	Т,
	UChapter 2: Business Ethics	3	Т,
	U	3	1,
	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
		3	T, U
	Chapter 6: Intelligent Machines		
	Chapter 7: Sibling Relationships	3	T, U
	Chapter 8: Multiple Intelligences	3	T, U
	Chapter 9: The Art of Graffiti	3	T, U
Eii	Final Sample Test & Review	2	T, U
Examination	Paper-based tests: True-False questions, short-answer questions and ended	luestions, o	pen-
forms	questions (such as writing a summary paragraph)		
Study and	Attendance		
examinatio	Regular on-time attendance in this course is expected. I	t is compul	sorv
n	that students attend at least 80% of the course to be eligi	-	•
requirement	examination.		
S	Missed tests		
	Students are not allowed to miss any of the tests (both or	n-going ass	essment
	and final test). There are very few exceptions. (On		
	reasonable excuses, e.g. certified paper from doctors, m	•	•
	the tests.)	iay stadenti	o re take
	Class behavior		
	Students are supposed to:		
	 prepare thoroughly for each class in accordance wi 	th the	
	syllabus and complete allassignments upon the inst		
	request	iractor 5	
	 participate fully and constructively in all class activ 	vities (and	
	discussions if any)	ines (and	
	 display appropriate courtesy to all involved in the c 	lace	
	 display appropriate courtesy to all involved in the courtesy to all involved in t	1433	
	regarding their performance		
		han 50/100	nointa
	Assignments/Examination: Students must have more the overall to pass this course.	nan 50/100	points
	overall to pass this course.		

D 1' 1' 4	[1] Frazie, L., & Leeming, S. (2013). Lecture ready 3.
Reading list	Oxford: Oxford University Press.
	References:
	[2] Frazie, L., & Leeming, S. (2013). Lecture ready 1, 2. Oxford:
Oxford University Press.	

1. Learning Outcomes Matrix (optional)

2. Planned learning activities and teaching methods

2. Plan	Planned learning activities and teaching methods Learning Learning				
Week	Topic	CLO	activities	Assessments	Resources
1	Orientation	1, 2, 4	detivities		
2	Chapter 1 New Trends inMarketing Research Recognizing topic introducing and lectureplan presenting expressions Organizing ideas by outlining	1, 2, 4	Lecture Group work Individual task	Ongoing assessment Midterm exam	[1] p.2-13
3	Chapter 2 Business Ethics Recognizing transition expressions Using symbols and abbreviations	1, 2, 4	Lecture Group work Individual task	Ongoing assessment Midterm exam	[1] p.14-25
4	Review	1, 2, 4	Lecture Group work Individual task	Ongoing assessment Midterm exam	Designed by lecturer
5	Chapter 3 Trends in Children's Media Use Recognizing generalization and support expressions	1, 2, 4	Lecture Group work Individual task	Ongoing assessment Midterm exam	[1] p.28-39
6	Chapter 4 The Changing Music Industry Recognizing expressions for clarification or emphasis Organizing notes byusing a split-page format	1, 2, 4	Lecture Group work Individual task	Ongoing assessment Midterm exam	[1] p.40-52

Week	Topic	CLO	Learning activities	Assessments	Resources
7	Chapter 5 The Placebo Effect Recognizing cause andeffect expressions Noting causes and effects	1, 2, 4	Lecture Group work Individual task	Ongoing assessment Midterm exam	[1] p.54-65
8	Sample midterm exam + Correction	1, 2, 4		Ongoing assessment Midterm exam	
	MID-	TERM EX	AMINATION		
9	Chapter 6 IntelligentMachines Recognizing expressions used topredict causes and effects Using arrows to showthe relationship between causes and effects	1-4	Lecture Group work Individual task	Ongoing assessme nt Final exam	[1] p.66-78
10	<u>Review</u>	1-4	Lecture Group work Individual task	Ongoing assessmen t Final exam	Designed by lecturer
11	Chapter 7 Sibling Relationships Recognizing expressions of comparison and contrast Noting comparison and contrast	1-4	Lecture Group work Individual task	Ongoing assessment Final exam	[1] p.80-91
12	Chapter 8 Multiple Intelligences Recognizing non-verbalsignals indicating important information Representing information in list form	1-4	Lecture Group work Individual task	Ongoing assessment Final exam	[1] p.92-104
13	Review	1-4	Lecture Group work Individual task	Ongoing assessmen t Final exam	Designed by lecturer

Week	Topic	CLO	Learning activities	Assessments	Resources
	Chapter 9	1-4	Lecture	Ongoing	
	The Art of Graffiti		Group	assessmen	
14	Recognizing		work	t Final	[1] p.105-
1.	expressions of		Individu	exam	117
	definition Reviewing		al task		
	and practicing all note				
	taking strategies				
	Sample final exam			Ongoing	
15	± Correction	1-4		assessmen	
	± Correction			t Final	
				exam	
FINAL EXAMINATION					

3. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Ongoing assessment (30%)	80%	80%		80%
	Pass	Pass		Pass
	Part 1	Part 2		
Midterm exam (30%)	80%	80%		
	Pass	Pass		
	Part 1	Part 2	Part 3	
Final exam (40%)	80%	80%	80%	
	Pass	Pass	Pass	

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

4. Rubrics (optional)

4.1. Rubrics for Midterm exam

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

4.2. Rubrics for Final exam

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

Evaluative criteria for Part 3

- 1. **Content accuracy** (**16 pts**): All statements are accurate and relevant. Summary includes main idea and important details of the given lecture.
- 2. **Organization & Grammar (4 pts):** The summary is in the form of a paragraph.

 $No/minor\ punctuation/grammatical/spelling\ errors.$

Date revised: 17 June, 2024

Ho Chi Minh City, 17 June, 2024 **Dean of School of Languages**(Signature)

Dr. Nguyễn Huy Cường

Course Name: Physics 1

Course Code: PH013IU

1. General information

Course designation	This subject will provide an introduction to mechanics including: concepts and principles of kinetics, dynamics, energetics of motion of a particle and a rigid body.			
Semester(s) in which the course is taught	1, 2			
Person responsible for the course	Assoc. Prof. Phan Bảo Ngọc Dr. Phan Hiền Vũ			
Language	English			
Relation to curriculum	Compulsory			
Teaching methods	Lecture, lesson, assignment.			
Workload (incl.	(Estimated) Total workload: 90			
contact hours, self-study hours)	Contact hours (please specify whether lecture, exercise, laboratory session, etc.): lecture: 30			
	Private study including examination preparation, specified in hours ² : 60			
Credit points	2 (ECTS: 3.09)			
Required and recommended prerequisites for joining the course	None			
Course objectives	 This course will provide students with: The basic knowledge of general Mechanics Physics Skills to solve problems in engineering environment by applying both theoretical and experimental techniques Understanding and skills needed to use physical laws governing real process and to solve them in the engineering environment Confidence and fluency in discussing physics in English. 			

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

Course learning	Upon the success able to:	sful completion of this course	students	s will be
outcomes	Competency	Course learning outcome	(CLO)	
	level	Course learning outcome	(CLO)	
	Knowledge	CLO1. An ability to u	nderstan	d of bas
		knowledge of law of		
		dynamics of rigid body.		
		CLO2. An ability to ana	alysis an	d design
		problem in science and eng	-	
	Skill	CLO3. An ability in app	lying kn	owledge
		physics		_
	Attitude	CLO4. An ability to comm	unicate e	ffectively
		writing manner		
Content	weighting of the co			ie
	Teaching levels: I	(Introduce); T (Teach); U (U	tılıze)	
	Topic		Weig ht	Lev el
	Chapter 1: Bases of Kinematics			I, T
	Chapter 2: The Law of Motion			I, T
	Chapter 3: Work and Mechanical Energy			I, T
	Chapter 4: Linea	Chapter 4: Linear Momentum and Collisions		
	Chapter 5: Rotat a Fixed Axis	ion of a Rigid Object About	2	I, T
	Chapter 6: Equilibrium and Elasticity		2	I, T
	Chapter 7: Universal Gravitation			I, T
Examination forms	Short-answer que	stions		
Study and examination requirements Attendance: A minimum attendance of 80 per for the class sessions. Students will be assessed their class participation. Questions and commencouraged.				asis of
	Assignments/Examination: Students must have more than 50/100 points overall to pass this course.			

Reading list	[1] Halliday D., Resnick R. and Walker, J. (2011) <i>Fundamentals of Physics</i> , 9 th edition, John Willey and Sons, Inc.
	[2] Alonso M. and Finn E.J. (1992) <i>Physics</i> , Addison-Wesley Publishing Company.
	[3] Hecht, E. (2000) <i>Physics: Calculus</i> , 2 nd edition, Brooks/Cole.
	[4] Faughn/Serway (2006) Serway's College Physics, Thomson
	Brooks/Cole.

1. 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:

	PLO									
CLO	1	2	3	4	5	6	7	8	9	10
1	X									
2	X									
3										
4										

2. Planned learning activities and teaching methods

Wee		CL	Assessment	Learning	Resource
k	Topic	O	S	activities	S
				Lecture,	
				Discussion,	[1].0.
1-2	Chapter 1: Bases of Kinematics	1	Quiz1	Inclass-Quiz	[2].1.
				Lecture,	
				Inclass,	
3-4	Chapter 2: The Law of Motion	1	HW1	HW	[1].9.
				Lecture,	
	Chapter 3: Work and			Discussion,	
5-6-7	Mechanical Energy	3	Quiz2	Inclass-Quiz	[2].2.
				Lecture,	
	Chapter 4: Linear Momentum		HW2,	Group work,	[1]. 2, 4
8-9	and Collisions	2	Quiz3	HW	[2]. 2
10	Midterm				
				Lecture,	
	Chapter 5: Rotation of a Rigid			Group work,	[2]. 4.
11-12	Object About a Fixed Axis	3	HW3	HW	[1]. 18.
	Chapter 6: Equilibrium and			Lecture,	
13-14	Elasticity	3		Group work	[3]. 10
				Lecture,	
	Chapter 7: Universal			Discussion,	
15-16	Gravitation	3	HW4	HW	[2]. 8

17 Final exam

3. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Attendance +				
Homework + in-				
class discussion				
(15%)				
			Qz1, Qz2,	Qz1, Qz2,
Quizzes (Qz) /	Qz1, Qz3/	Qz2, Qz4/	Qz3, Qz4 /	Qz3, Qz4 /
assignment (As)	As.P1	As.P2	As.P3	As.P4
(15%)	50%Pass	50%Pass	50%Pass	50%Pass
Midterm exam	Q1, Q2, Q3	Q4, Q5	Q3, Q5	Q3, Q5
(30%)	50%Pass	50%Pass	50%Pass	50%Pass
	Q1, Q2, Q3	Q4, Q5	Q3, Q5	Q3, Q5
Final exam (40%)	50%Pass	50%Pass	50%Pass	50%Pass

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

5. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Rep	orts		
Student: HW/Assignm	nent:		
Date: Evaluator:			• • • • • • • •
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal	10		
content			
Introduction demonstrates thorough knowledge of relevant	15		
background and prior work			
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	Milest	Benchmark	
	4	3	2	1
			Issue/ problem	
			to be	
			considered	
			critically is	
			stated but	
	Issue/ problem to		description	
	be considered		leaves some	
	critically is stated	Issue/ problem to	terms	
	clearly and	be considered	undefined,	
	described	critically is stated,	ambiguities	Issue/ problem
	comprehensively,	described, and	unexplored,	to be
	delivering all	clarified so that	boundaries	considered
	relevant	understanding is	undetermined,	critically is
	information	not seriously	and/ or	stated without
Explanation of	necessary for full	impeded by	backgrounds	clarification or
issues	understanding.	omissions.	unknown.	description.
	Information is	Information is	Information is	Information is
	taken from	taken from	taken from	taken from
	source(s) with	source(s) with	source(s) with	source(s)
Evidence	enough	enough	some	without any
Selecting and	interpretation/	interpretation/	interpretation/	interpretation/
using information	evaluation to	evaluation to	evaluation, but	evaluation.
to investigate a	develop a	develop a	not enough to	Viewpoints of
point of view or	comprehensive	coherent analysis	develop a	experts are
conclusion	analysis or	or synthesis.	coherent	taken as fact,

	synthesis.	Viewpoints of	analysis or	without
	Viewpoints of	experts are subject	synthesis.	question.
	experts are	to questioning.	Viewpoints of	
	questioned		experts are	
	thoroughly.		taken as	
			mostly fact,	
			with little	
			questioning.	
			Questions	Shows an
			some	emerging
	Thoroughly		assumptions.	awareness of
	(systematically		Identifies	present
	and methodically)		several	assumptions
	analyzes own and		relevant	(sometimes
	others'		contexts when	labels
	assumptions and	Identifies own and	presenting a	assertions as
	carefully	others'	position. May	assumptions).
	evaluates the	assumptions and	be more aware	Begins to
	relevance of	several relevant	of others'	identify some
Influence of	contexts when	contexts when	assumptions	contexts when
context and	presenting a	presenting a	than one's own	presenting a
assumptions	position.	position.	(or vice versa).	position.
•	Specific position	1	/	
	(perspective,			
	thesis/ hypothesis)			
	is imaginative,			
	taking into			
	account the			
	complexities of an	Specific position		
	issue. Limits of	(perspective,		
	position	thesis/hypothesis)		
	(perspective,	takes into account		
	thesis/ hypothesis)	the complexities		
	are acknowledged.	of an issue.	Specific	Specific
	Others' points of	Others' points of	position	position
	view are	view are	(perspective,	(perspective,
	synthesized within	acknowledged	thesis/	thesis/
Student's	position	within position	hypothesis)	hypothesis) is
position	(perspective,	(perspective,	acknowledges	stated, but is
(perspective,	thesis/	thesis/	different sides	simplistic and
thesis/hypothesis)	hypothesis).	hypothesis).	of an issue.	obvious.
	Conclusions and	Conclusion is	Conclusion is	Conclusion is
	related outcomes	logically tied to a	logically tied	inconsistently
	(consequences	range of	to information	tied to some of
	and implications)	information,	(because	the
Conclusions and	are logical and	including	information is	information
related outcomes	reflect student's	opposing	chosen to fit	discussed;
(implications and	informed	viewpoints;	the desired	related
consequences)	evaluation and	related outcomes	conclusion);	outcomes

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

Source: Association of American Colleges and Universities
Oral communication value rubric for evaluating presentation tasks:

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

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

Source: Association of American Colleges and Universities
6. Date revised: January 12, 2022



VIETNAM NATIONAL UNIVERSITY HCMC INTERNATIONAL UNIVERSITY

School of Languages

COURSE SYLLABUS Course Name: Writing AE1

Course Code: EN007IU

1. General information

- (in English) WRITING AE1 (Academic Writing) Course name - (in Vietnamese) Viết học thuật This course provides students with comprehensive instructions and practice Course designation essay writing, including transforming ideas into different functions of writing such as process, cause-effect, comparison-contrast, and argumentative essays. Semester(s) in 1, 2, 3 which the course is taught Person Lecturers of School of Languages responsible for the course Language English Relation to Compulsory curriculum Teaching Lecture, lesson, project methods Workload (Estimated) Total workload: 90 (incl. contact Contact hours (lecture, exercise): hours, self-30 Private study including examination preparation, specified in hours¹: 60 study hours) Credit points 2 credits (Theory: 2 + Practice: 0) 3.08 ECTS (optional) Students must fulfil ONE of the following requirements to attend this course: Required and hold TOEFL iBT certificate with score ≥ 61 recommended hold IELTS certificate with score ≥ 5.5 prerequisites complete IE2 course (for IU program)/ IE 3 course (for for joining the twinning program) course

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

Course	Throughout the wh	ole course, students are required to r	ead univers	sity-level				
objectives	texts to develop th	ne ability to read critically and to	respond ac	curately,				
	coherently and academically in writing. Through providing them with crucial							
	writing skills such a	as brainstorming, paraphrasing, idea d	eveloping,	revising,				
	and editing, this co							
	prepares the stude	nts for research paper writing in the	e next leve	el of AE2				
	writing.							
Course learning		l completion of this course, students	will be able	e to:				
outcomes	 	l Course learning outcome (CLO)						
	Knowledge	CLO1. Follow different steps in the	writing pro	ocess to				
		produce a complete essay						
	Skill	CLO2. Use signal language that are	-					
		different functions (describe a proce						
		causes and effects, compare and cor						
		arguments) CLO3. Construct a com						
		including appropriately written thes						
		sentences, and restatement CLO4. F	Provide a co	ounter-				
		argument and a rebutal in						
	argumentative essay.							
	Attitude CLO5. Display discipline, responsibilities, and ethical							
	practices as an individual and a team member in							
		attending						
		class regularly and actively particip	ating in cla	SS				
Contont	The description of	activities	1. 4	_				
Content	The description of the contents should clearly indicate the weighting of the content and the level.							
	, and the second							
	Weight: lecture session (2 hours)							
		Introduce); T (Teach); U (Utilize)	XX7 - 1 - 1 - 4	T1				
	Topic	1 ' 337'	Weight	Level				
	The process of Aca	G	1	I, T, U				
	Using Outside Sour		3	T, U				
	From Paragraph to	Essay	4	T, U				
	Process Essays		4	T, U				
	Cause/Effect Essay		4	T, U				
	Comparison/ Contr	ast Essays	4	T, U				
	Argumentative Essa	ays	6	T, U				
	Summarizing		2	U				
	Review & Correction	on	2	U				
Examination	Essay writing							

Study and	Attendance
examination	Regular on-time attendance in this course is expected. A student will be
requirements	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.
	Missed Tests
	Students are not allowed to miss any of the tests (both Mid-term and Final).
	There are very fewexceptions. Only with extremely reasonable excuses (eg.
	certified paper from doctors), students may re-take the examination.
	Class Behaviors
	Students are required to treat their studying in college as a full-time job and
	spend an adequate amount of time for this Writing 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.
	Plagiarism
	Students are warned not to copy from other books or from their peers for
	all assessment tasks. Committing plagiarism will result in 0 point for the
	task. Students who plagiarize twice will be prohibited from sitting the final
	examination.
	Assignments/Examination: Students must have more than 50/100 points
	overall to pass this course.
Reading list	[1] Oshima, A., & Hogue, A. (2017). Longman Academic Writing
	Series, Level 4: Essays (5th ed.). New Jersey, NJ: Pearson
	Longman.
	[2] Oshima, A., & Hogue, A. (2006). Longman Academic Writing Series,
	Level 4: Essays (4th ed.). New Jersey, NJ: Pearson Longman.
Loorning O	utcomes Matrix (ontional)

2. Learning Outcomes Matrix (optional)3. Planned learning activities and teaching methods

Week	Торіс	CLO	Learning activities	Assessments	Resources	
------	-------	-----	---------------------	-------------	-----------	--

	The process of Academic Writing				
	Step 1: Creating (Prewriting) Step 2:				
	Planning (Outlining)Step 3: Writing		Lecture		[2] pp. 265-
	Step 4: Polishing <i>Using</i>		Group		[2] pp. 203- 279
1	Outside Sources Paraphrasing	1, 5	work	assessment	
	Plagiarism and how to avoid		Individual	& Midterm	[1] 50 65
	plagiarism		writing	exam	[1] pp. 58- 65

Week	Topic	CLO	Learning activities	Assessments	Resources
2	Using Outside Sources (Cont'd) Strategies for writing a successful summary Review/ Correction:	5	Lecture Group work Individual writing	Ongoing assessment & Midterm exam	[1] pp. 58 -72
3 & 4	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: • Restatemen t Final thoughts Outlines of essays	1,3,5	Lecture Group work Individual writing	Ongoing assessment & Midterm exam	[1] pp. 74– 100
5	Process Essays Introduction Analyzing the models Thesis statements for process essays Transitional signals	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Midterm exam	[1] pp. 101- 115

Week	Topic	\perp CLO	Learning activities	Assessments	Resources
6	Cause/ Effect Essays Introduction Analyzing the models Organization Signal words and phrases	2,3,5	Lecture Group work Individual writing	Ongoing assessment & Midterm exam	[1] pp. 116- 132

	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				
	bodyparagraph and the		Lecture		
8	conclusion on one of the two	225	Group work	Ongoing	[1] pp. 116 -
O	topics left (except for the ones	2,3,5	Individual	assessment &	132
	that has been worked on in		writing	Midterm exam	
	class and assigned as				
	homework) or a topic of the				
	lecturer's choice:				
	• The cause of obesity				
	• The effects of				
	involvement insports				
	on young children				
	• The causes of				
	stress in				
	collegestudents				
	• The effects of regular				
	reading on students'				
	lives MIDTERM EXAMINATION				
				ı	
	Comparison/ Contrast Essays				
	Introduction		Lecture		
	Analyzing the models		Group work	Ongoing	
9	Organization:	2,3,5	Individual		[1] pp. 133-
7	Points of comparison		writing	Final exam	151
	Point-by-point organization				
	Block organization				
	Comparison and Contrast				
	signal words Comparison/Contract		Lastums		
	Comparison/ Contrast		Lecture Group work	Ongoing	
10	Essays (Cont'd) Review/ Correction: Lecturer	2,3,5	Group work Individual	assessment &	[1] pp. 133-
	gives feedback to one or	, ,	writing	Final exam	151
	two students' writings in		witting		
	class.				

Week	Торіс	CLO	Learning activities	Assessments	Resources
	In-class Assignment:				
	Write a compare and contrast				
	essay on the topic left or a				
	topic ofthe 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 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		Lecture	Ongoing	
10	 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 university cultures in two different countries 	2,3,5	Group work Individual writing	assessment & Final exam	[1] pp. 133- 151
	cultures of a small town and a big city				

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

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Ongoing assessment (30%)	80% Pass				
Midterm exam (30%)	80% Pass	80% Pass	80% Pass		

|--|

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

5. Rubrics (optional)

5.1. Midterm exam rubrics (100 points)

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

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

Notes:

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

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

^{*}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.

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

		CLO
	words	
	(100%)	
Language use and mechanics (20)	20	
A wide variety of sentence patterns and vocabulary are presented correctly.		CLO 2
Language control is good, and meaning is clear.		CLO 2
Spelling, capitalization and punctuation are correct.		
Content: (20)	20	
The essay fulfills the task requirements, and the topic is fullyaddressed.		CLO 3
The content is originally created by the students.		
Organization: (60)		
Introduction:		
The introduction has a thesis statement. (10)	10	
Body:		
At least one paragraph discusses the counter-arguments. (10)	10	
Each paragraph discusses a particular point and begins with aclear topic		
sentence. (10)	10	CLO 1,3,4
Each paragraph has specific supporting details (fact, examples, etc.). There		CLO 1,5,4
are no sentences that are off-topic. (10)	10	
Each paragraph has cohesion and coherence. There are transition signals to		
show		
the relationship among ideas and to link paragraphs. (10)		
Conclusion:	10	
The conclusion summarizes the main points and paraphrases the thesis		
statement,		
begins with a conclusion signal, and leaves the readers with the writer's final		
thought on the topic. (10)	10	
Total	100	
1 Otal	100	

Date revised: 17 June, 2024 Ho Chi Minh City, 17 June, 2024 Dean of School of Languages (Signature)

Dr. Nguyễn Huy Cường

Course Name: C/C++ Programming

Course Code: IT116IU

2. General information

Course designation	Learning the basics of pro	Learning the basics of programming			
Semester(s) in which the course is taught	2				
Person responsible for the course	MSc. Le Thanh Son				
Language	English				
Relation to curriculum	Compulsory (CS, NE, CE	Compulsory (CS, NE, CE)			
Teaching methods	Lecture				
Workload (incl. contact hours, self-study hours)	(Estimated) Total workloa Contact hours: 45 (lecture Private study including ex hours: 120				
Credit points	Number of credits: 4 (EC Lecture: 3 Laboratory: 1	TS: 6.18)			
Required and recommended prerequisites for joining the course	None				
Course objectives	languages which are the The course enables studen language. The course cov flows, simple data structu	on learning the basics of programming foundations for further studies in IT. Its to get familiar with C programming ers all basic C data structures, control ares as well as other advanced topics it operators, file processing, dynamic			
Course learning outcomes	CLO 1. Understand programming languages and applications, how applications work CLO 2. Understand basic data structure and control flow of C programming language CLO 3. Able to write applications using C				
	Competency level Course learning outcome (CLO)				
	Knowledge	1			
	Skill	2, 3			
	Attitude				
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 (U	Jtilize)	
	Topic	Weigh	Level
		t	
	Introduction to Computer and Programming	1	I
	Language		
	Introduction to C Programming Language	1	I, T
	C Basic Data Types	1	T, U
	Control Flow: Branching statements	1	T, U
	Control Flow: Iteration	1	T, U
	Functions	1	T, U
	Array	1	T, U
	Pointers	1	T, U
	String	1	T, U
	File Processing	1	T, U
	Dynamic Memory Allocation	1	T, U
	Struct, Union	1	T, U
	Bitwise Operation	1	T, U
	Linked list, Stack, Queue	1	T, U
	Binary tree	1	T, U
Examination forms	Short-answer questions, Programming exercise	es	
Study and	Attendance: A minimum attendance of 80 percentage of 80 percentage at the state of 80 percentage		
examination	compulsory for the class sessions. Students wi		
requirements	the basis of their class participation. Questions and comments		
	are strongly encouraged.	.1	
	Assignments/Examination: Students must have	e more tha	ın
Reading list	50/100 points overall to pass this course.	16	
Reading list	1. Paul Deitel, C How to Program 8th, 201	10	

3. 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\SL OT	1	2	3	4	5	6
1	X					
2		XXX				
3		XXX				

4. Planned learning activities and teaching methods

Week	Topic	CLO	Assessment	Learning	Resource
			S	activities	S

1	Introduction to Computer and Programming Language	1	Quiz	Lecture	1
2	Introduction to C Programming Language	1	Quiz	Lecture	1
3	C Basic Data Types	1	Quiz	Lecture	1
4	Control Flow: Branching statements	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	1
5	Control Flow: Iteration	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	1
6	Functions	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	1
7	Array	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	1
8	Pointers	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	1
Midte	erm	•			•
9	String	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
10	File Processing	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
11	Dynamic Memory Allocation	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
12	Struct, Union	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
13	Bitwise Operation	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
14	Linked list, Stack, Queue	2, 3	Quiz, Lab, Final	Lecture, Discussion	1

				, In-class Exercise	
15	Binary tree	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
Final					

5. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Quiz / Assigment (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.

6. Rubrics (optional)

5.1. Grading checklist

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

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

	<u> </u>		*.1 1*1	
			with little	
			questioning.	
				Shows an
			Questions	emerging
			some	awareness of
			assumptions.	present
	Thoroughly		Identifies	assumptions
	(systematically and		several	(sometimes
	methodically)		relevant	labels
	analyzes own and		contexts when	assertions as
	others'	Identifies own	presenting a	assumptions).
	assumptions and	and others'	position. May	Begins to
	carefully evaluates	assumptions and	be more aware	identify some
	the relevance of	several relevant	of others'	contexts
Influence of	contexts when	contexts when	assumptions	when
context and	presenting a	presenting a	than one's own	presenting a
assumptions	position.	position.	(or vice versa).	position.
assumptions	Specific position	position.	(or vice versu).	position.
	(perspective,			
		Specific		
	thesis/ hypothesis)	Specific		
	is imaginative,	position		
	taking into account	(perspective,		
	the complexities of	thesis/hypothesi		
	an issue. Limits of	s) takes into		
	position	account the		
	(perspective,	complexities of	G : C'	G
	thesis/ hypothesis)	an issue. Others'	Specific	Specific
	are acknowledged.	points of view	position	position
Student's	Others' points of	are	(perspective,	(perspective,
position	view are	acknowledged	thesis/	thesis/
(perspective	synthesized within	within position	hypothesis)	hypothesis) is
,	position	(perspective,	acknowledges	stated, but is
thesis/hypot	(perspective,	thesis/	different sides	simplistic and
hesis)	thesis/ hypothesis).	hypothesis).	of an issue.	obvious.
			Conclusion is	
	Conclusions and	Conclusion is	logically tied	Conclusion is
	related outcomes	logically tied to	to information	inconsistently
	(consequences and	a range of	(because	tied to some
	implications) are	information,	information is	of the
	logical and reflect	including	chosen to fit	information
Conclusions	student's informed	opposing	the desired	discussed;
and related	evaluation and	viewpoints;	conclusion);	related
outcomes	ability to place	related	some related	outcomes
(implication	evidence and	outcomes	outcomes	(consequence
s and	perspectives	(consequences	(consequences	s and
consequence	discussed in	and	and	implications)
s)	priority order.	implications)	implications)	are
		/	· · · · · · · · · · · · · · · · · · ·	1

	are identified	are identified	oversimplifie
	clearly.	clearly.	d.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

<u>Orai communic</u>		tone Milestone Benchmark					
	Capstone		2				
	4	3	<u> </u>	1			
	Organizational						
	pattern (specific						
	introduction and	Organizational					
	conclusion,	pattern	Organizational				
	sequenced	(specific	pattern				
	material within	introduction	(specific	Organizational			
	the body, and	and conclusion,	introduction	pattern (specific			
	transitions) is	sequenced	and conclusion,	introduction and			
	clearly and	material within	sequenced	conclusion,			
	consistently	the body, and	material within	sequenced			
1	observable and	transitions) is	the body, and	material within			
1	is skillful and	clearly and	transitions) is	the body, and			
1	makes the	consistently	intermittently	transitions) is			
1	content of the	observable	observable	not observable			
Organizatio	presentation	within the	within the	within the			
n	cohesive.	presentation.	presentation.	presentation.			
1			Language				
1	Language	Language	choices are				
1	choices are	choices are	mundane and	Language			
1	imaginative,	thoughtful and	commonplace	choices are			
	memorable, and	generally	and partially	unclear and			
	compelling, and	support the	support the	minimally			
1	enhance the	effectiveness of	effectiveness of	support the			
1	effectiveness of	the	the	effectiveness of			
1	the presentation.	presentation.	presentation.	the presentation.			
1	_		Language in	•			
1	*	*	*	*			
Language	audience.	* * *		to audience.			
			Delivery	Delivery			
	T	Delivery	•	•			
	(posture,	techniques	(posture,	(posture,			
	gesture, eye	•	gesture, eye	gesture, eye			
	contact, and	_	contact, and	contact, and			
	vocal	contact, and	vocal	vocal			
	expressiveness)	vocal	expressiveness)	expressiveness)			
	make the	expressiveness)	make the	detract from the			
		make the		understandabilit			
	_		_				
		•	· ·	•			
		•	_	_			
Delivery	_		* *				
Language	Language in presentation is appropriate to audience. Delivery techniques (posture, gesture, eye contact, and vocal expressiveness)	Language in presentation is appropriate to audience. Delivery techniques (posture, gesture, eye contact, and vocal expressiveness)	Language in presentation is appropriate to audience. Delivery techniques (posture, gesture, eye contact, and vocal expressiveness)	Language in presentation is not appropriate to audience. Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the			

	A			
	A variety of			
	types of			
	supporting	Supporting	Supporting	
	materials	materials	materials	Insufficient
	(explanations,	(explanations,	(explanations,	supporting
	examples,	examples,	examples,	materials
	illustrations,	illustrations,	illustrations,	(explanations,
	statistics,	statistics,	statistics,	examples,
	analogies,	analogies,	analogies,	illustrations,
	quotations from	quotations from	quotations from	statistics,
	relevant	relevant	relevant	analogies,
	authorities)	authorities)	authorities)	quotations from
	make	make	make	relevant
	appropriate	appropriate	appropriate	authorities)
	reference to	reference to	reference to	make reference
	information or	information or	information or	to information or
	analysis that	analysis that	analysis that	analysis that
	significantly	generally	partially	minimally
	supports the	supports the	supports the	supports the
	presentation or	presentation or	presentation or	presentation or
	establishes the	establishes the	establishes the	establishes the
	presenter's	presenter's	presenter's	presenter's
	credibility/	credibility/	credibility/	credibility/
Supporting	authority on the	authority on the	authority on the	authority on the
Material	topic.	topic.	topic.	topic.
	Central message			
	is compelling			
	(precisely		Central	
	stated,	Central	message is	Central message
	appropriately	message is	basically	can be deduced
	repeated,	clear and	understandable	but is not
	memorable, and	consistent with	but is not often	explicitly stated
Central	strongly	the supporting	repeated and is	in the
Message	supported.)	material.	not memorable.	presentation.
C 1	ation of American (7 11 1 TT ·	• , •	

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

 $\begin{tabular}{ll} Ho~Chi~Minh~City,~15/02/2022\\ \begin{tabular}{ll} \textbf{Dean of School of Computer Science and Engineering}\\ \hline \end{tabular}$

Assoc.Prof. Nguyen Van Sinh

Course Name: Physics 3

Course Code: PH015IU

1. General information

Course designation	This subject will provide a basic knowledge of electricity and magnetism.
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Assoc. Prof. Phan Bảo Ngọc
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, assignment.
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 135 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): lecture: 45 Private study including examination preparation, specified in hours: 90
Credit points	3 (ECTS: 4.46)
Required and recommended prerequisites for joining the course	Physics 1
Course objectives	 This course will provide students with: The basic knowledge of electricity and magnetism such as electric charge, electric potential, magnetic fields, electromagnetic waves, etc. Skills to solve problems in engineering environment by applying both theoretical and experimental techniques. Understanding and skills needed to use physical laws governing real process and to solve them in the engineering environment. Confidence and fluency in discussing physics in English.

Course learning outcomes	Upon the succe able to:	ssful completion of this cours	se student	s will be		
	Competency level	Course learning outcome (C	CLO)			
	Knowledge CLO1. An ability to understand backnowledge of electricity and magnetism states as electric charge, electric potent magnetic fields, electromagnetic waves.					
		CLO2. Examine proble engineering environment	em solvi	ing in		
	Skill	Skill CLO3. Understand and acquire skills needed to use physical laws governing real process and to solve them in the engineering environment				
	Attitude	CLO4. Develop confidence discussing physics in English		ency in		
Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)					
	Topic	Weight	Level			
	Chapter 1: Ele	3	I, T,			
	Chapter 1. Lie	3	U I, I,			
	Chapter 2: Capacitance	2	I, T,			
	Chapter 3: Cu Current Circui	3	I, T, U			
	Chapter 4: Ma	2	I, T, U			
	Chapter 5: Ele	2	I, T, U			
	Chapter 6: E and Alternatin	2	I, T, U			
	Chapter 7: Electromagnet	*	1	I, T, U		
Examination forms	Short-answer qu	uestions				
Study and examination requirements	compulsory for	minimum attendance of 80 pe the class sessions. Students war class participation. Question couraged.	vill be ass			

	Assignments/Examination: Students must have more than 50/100 points overall to pass this course.				
Reading list	[1] Halliday D., Resnick R. and Walker, J. (2011) <i>Fundamentals of Physics</i> , 9 th edition, John Willey and Sons, Inc.				
	[2] Alonso M. and Finn E.J. (1992) <i>Physics</i> , Addison-Wesley Publishing Company.				
	[3] Hecht, E. (2000) <i>Physics: Calculus</i> , 2 nd edition, Brooks/Cole.				
	[4] Faughn/Serway (2006) <i>Serway's College Physics</i> , Thomson Brooks/Cole.				

2. Learning Outcomes Matrix (optional)

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

	PLO									
CLO	1	2	3	4	5	6	7	8	9	10
1	X									
2	X									
3										
4										

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
			Quiz 1/	uctivities	
		1, 2,	Assignment	Lecture,	[1].0.
1-3	Chapter 1: Electric Fields	3, 4	Midterm exam	Discussion	[2].1.
			Quiz 2/		
	Chapter 2: Electric	1, 2,	Assignment	Lecture,	
4-5	Potential and Capacitance	3, 4	Midterm exam	Discussion	[1].9.
	Chapter 3: Current and				
	Resistance. Direct Current	1, 2,	Assignment	Lecture,	
6-7	Circuits	3, 4	Midterm exam	Discussion	[2].2.
	Chapter 4: Magnetism	1, 2,	Assignment	Lecture,	[2]. 4.
8	(Part 1)	3, 4	Final exam	Discussion	[1]. 18.
9-10	Midterm				
			Quiz 3/		
	Chapter 4: Magnetism	1, 2,	Assignment	Lecture,	[2]. 4.
11-12	(Part 2)	3, 4	Final exam	Discussion	[1]. 18.
			Quiz 4/		
	Chapter 5: Electromagnetic	1, 2,	Assignment	Lecture,	
13-14	Induction	3, 4	Final exam	Discussion	[3]. 10

Week	Topic	CLO	Assessments	Learning	Resources
				activities	
	Chapter 6: Electromagnetic				
	Oscillations and	1, 2,	Assignment	Lecture,	[2]. 4.
15-16	Alternating Current	3, 4	Final exam	Discussion	[1]. 18.
	Chapter 7: Maxwell's				
	Equation and	1, 2,			
17	Electromagnetic Waves	3, 4	Final exam	Lecture	[3]. 10
18-19	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Attendance + Homework				
+ in-class discussion				
(15%)				
			Qz1, Qz2,	Qz1, Qz2,
	Qz1, Qz3/	Qz2, Qz4/	Qz3, Qz4 /	Qz3, Qz4 /
Quizzes (Qz) /	As.P1	As.P2	As.P3	As.P4
assignment (As) (15%)	50%Pass	50%Pass	50%Pass	50%Pass
	Q1, Q2, Q3	Q4, Q5	Q3, Q5	Q3, Q5
Midterm exam (30%)	50%Pass	50%Pass	50%Pass	50%Pass
	Q1, Q2, Q3	Q4, Q5	Q3, Q5	Q3, Q5
Final exam (40%)	50%Pass	50%Pass	50%Pass	50%Pass

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

5. Rubrics (optional)

5.1 Grading checklist

Grading checklist for Written Reports						
Student:	HW/	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

Hol	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:

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

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

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

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

stated,	the supporting	but is not often	in the
appropriately	material.	repeated and is	presentation.
repeated,		not memorable.	
memorable, and			
strongly			
supported.)			

Source: Association of American Colleges and Universities

Date revised: January 12, 2022

Course Name: Physics 3 Laboratory

Course Code: PH016IU

1. General information

Course designation	This course provides students with basic knowledge of electricity and magnetism in laboratory, consists of: Ohm's law, LRC circuit, RC circuit, LR circuit, magnetic fields of coils				
Semester(s) in which the course is taught	1, 2				
Person responsible for	Msc. Lê Thị Quế				
the course	Msc. Trịnh Thanh Thủy				
Language	English				
Relation to curriculum	Compulsory				
Teaching methods	Lecture, lesson, assignment.				
Workload (incl. contact	(Estimated) Total workload: 60				
hours, self-study hours)	Contact hours (please specify whether lecture, exercise, laboratory session, etc.): lecture: 30				
	Private study including examination preparation, specified in hours: 30				
Credit points	1 (ECTS: 2)				
Required and recommended prerequisites for joining the course	Physics 3 (PH015IU)				
Course objectives	This course will provide students with:				
	 The basic concepts in electricity and magnetism. Have laboratory experiences. Skills to solve problems in engineering environment by applying both theoretical and experimental techniques Skill to present scientific report in writing, and better understand the relations between theory and experiment. Confidence and fluency in discussing physics in English. 				

Course learning outcomes	Upon the success to:	sful comp	letion of the	his cour	se students will be able		
outcomes	Competency level			earning outcome (CLO)			
	Knowledge	Knowledge CLO1. Understand the basic concepts electricity and magnetism.					
	Skill CLO2. Approach and solve problems in Electricity and magnetism experiments						
			Write tanding tl periment	scient he relat	ific report, have ions between theory		
	Attitude		An ability ng Englis	•	nmunicate effectively er		
Content	The description of weighting of the o	o .			y indicate the		
		Weight: experimental session (4 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)					
	Topic	Weight	Level				
	Ohm's law		1	T, U			
	Resistances in Circuits		1	T, U			
	LRC Circuits		1	T, U			
	Kirchhoff's laws RC circuit		1	T, U			
			1	T, U			
	LR circuit		1	T, U			
	Magnetic fields	of coils	1	T, U			
	The e/m experi	ment	1	T, U			
Examination forms	Short-answer que	estions, ta	king expe	riment, v	write report		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.						
	Assignments/Examination: Students must have more than 5 points overall to pass this course.						
Reading list	[1] Halliday D., I Physics, 9 th edition				2011) Fundamentals of nc.		
	[2] Labguide						

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:

	PLO									
CLO	1	2	3	4	5	6	7	8	9	10
1	X									
2	X									
3										
4										

3. Planned learning activities and teaching methods

				Learning	
Week	Topic	CLO	Assessments	activities	Resources
	Ohm's law		Prelab answer, Lab	Taking	[1].
1		1, 2	report	experiment	[2].
	Resistances in	1, 2	Prelab answer, Lab	Taking	[1].
2	Circuits		report	experiment	[2].
	LRC Circuits	1, 2	Prelab answer, Lab	Taking	[1].
3			report	experiment	[2].
	Kirchhoff's laws	1, 2	Prelab answer, Lab	Taking	[1].
4			report	experiment	[2].
	RC circuit	1, 2	Prelab answer, Lab	Taking	[1].
5			report	experiment	[2].
	LR circuit	1, 2	Prelab answer, Lab	Taking	[1].
6			report	experiment	[2].
	Magnetic fields of	1, 2	Prelab answer, Lab	Taking	[1].
7	coils		report	experiment	[2].
	The e/m experiment	1, 2	Prelab answer, Lab	Taking	[1].
8			report	experiment	[2].
9	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Prelab	Prelab1-8			Prelab1-8
(20%)	60%Pass			60%Pass
Lab report (30%) Attendance (20%)	Labreport 1-8 50%Pass	Labreport 1-8 50%Pass	Labreport 1-8 50% Pass	Labreport 1-8 50%Pass
Final exam (30%)	Part I.1 50%Pass	Part I.2 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:	•••••	• • • • • • • • • • •	•
	Evalu	ıator:	
	•••••	· · · · · · · · · · · · · · · · · · ·	•••••
	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

H	lolistic 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	Milest	one	Benchmark
4	3	2	1

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

	G 101 11	T		
	Specific position			
	(perspective,			
	thesis/			
	hypothesis) is			
	imaginative,			
	taking into			
	account the			
	complexities of			
	an issue. Limits	Specific position		
	of position	(perspective,		
	(perspective,	thesis/hypothesis)		
	thesis/	takes into account		
	hypothesis) are	the complexities		
	acknowledged.	of an issue.	Specific	Specific
	Others' points of	Others' points of	position	position
	view are	view are	(perspective,	(perspective,
	synthesized	acknowledged	thesis/	thesis/
Student's	within position	within position	hypothesis)	hypothesis) is
position	(perspective,	(perspective,	acknowledges	stated, but is
(perspective,	thesis/	thesis/	different sides	simplistic and
thesis/hypothesis)	hypothesis).	hypothesis).	of an issue.	obvious.
31	, , , , , , , , , , , , , , , , , , ,	,	Conclusion is	
			logically tied	
	Conclusions and		to information	Conclusion is
	related outcomes	Conclusion is	(because	inconsistently
	(consequences	logically tied to a	information is	tied to some of
	and implications)	range of	chosen to fit	the
	are logical and	information,	the desired	information
	reflect student's	including	conclusion);	discussed;
	informed	opposing	some related	related
	evaluation and	viewpoints;	outcomes	outcomes
	ability to place	related outcomes	(consequences	(consequences
Conclusions and	evidence and	(consequences	and	and
related outcomes	perspectives	and implications)	implications)	implications)
(implications and	discussed in	are identified	are identified	are
consequences)	priority order.	clearly.	clearly.	oversimplified.
Course: Association		1 7 7 1 1		-

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

Orai communic	anon vance rabric j	or evaluating prese	munon tusics.	
	Capstone	Mile	stone	Benchmark
	4	3	2	1
	Organizational	Organizational	Organizational	Organizational
	pattern (specific	pattern (specific	pattern (specific	pattern (specific
	introduction and	introduction and	introduction and	introduction and
	conclusion,	conclusion,	conclusion,	conclusion,
	sequenced	sequenced	sequenced	sequenced
	material within	material within	material within	material within the
Organization	the body, and	the body, and	the body, and	body, and

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

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

Source: Association of American Colleges and Universities

6. Date revised: January 12, 202



VIETNAM NATIONAL UNIVERSITY HCMC INTERNATIONAL UNIVERSITY

School of Languages

Course Name: Speaking AE2

Course Code: EN012IU

1. General information

Course name	- (in English) SPEAKING AE2 (Effective Presentations)
	- (in Vietnamese) Nói AE2 (Bài thuyết trình hiệu quả)
Course designati on	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).
Semester(s) in which the course is taught	1, 2, 3
Person responsible for the course	Lecturers of School of Languages
Language	English
Relation to curriculu m	
Teachin g method s	Lecture, lesson, mini presentations
Workload (incl. contact hours, self- study hours)	(Estimated) Total workload: 90 Contact hours (lecture, exercise): 30 Private study including examination preparation, specified in hours¹: 60
Credit points	2 credits (Theory: 2 + Practice: 0) 3.08 ECTS (optional)

Required and recommende d	- Previous courses: Writing AE1 (EN007IU) and Listening AE1 (EN008IU) - Corequisites: None
prerequisites	
for joining the	
course	

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

objectiv es 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 Upon the successful completion of this course, students will be able to:	C	C 1 ' AE2 '		C -:			
appropriate language, applying effective visual aids, applying delivery techniques, dealing with questions and responding, performing body language, and so on. Upon the successful completion of this course, students will be able to: Competency levelCourse learning outcome (CLO) Knowledge CLO1: Apply effective visual aids in preparing and planning well-organized academic presentations Skill CLO2: Use appropriate language for academic presentations CLO3: Perform delivery techniques, body language and other para-linguistic elements in academic presentation CLO4: Demonstrate techniques to handle audience questions Attitude CLO5: Display discipline, responsibilities, and ethics practices as an individual and a team member i attending class regularly and actively participating is class activities Content The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (2 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) Topic Weight Level Orientation & 2 I, T, U The first few minutes 2 T, U The first few minutes 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 2 U evaluation and advice Introduction to persuasive speeches 2 T, U Methods of persuasion 2 T, U	Course	1		0 0	using the		
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				2	T, U		
Maintaining interest 2 T, U							
		Methods of per	suasion	2	T, U		

I .				7 I		
	Dealing with problems and questions	2	T, U			
	Body language	2	T, U			
	Individual presentations for the instructor's evaluation and advice	4	U			
Examinati on forms	Oral Presentations					
Study and examinatio n requireme nts	Attendance Regular on-time attendance in this course is expected. A student will be allowed no more than three absences. It is compulsory that the students attend at least 80% of the course to be eligible for the final examination. Missed Tests Students are not allowed to miss any of the tests (both Mid-term and Final). There are very fewexceptions. Only with extremely reasonable excuses (e.g. certified paper from doctors), students may re-take the examination.					
	 Class Behaviors Students are required to treat their studying in college as a full-time and spend an adequate amount of time for this Speaking AE2 course of approximately 8-10 hours per week (both in class and self-sturated Accordingly, students are supposed to follow the obligations below: Prepare thoroughly for each class in accordance with the course syllabus and completehome 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 					
	Plagiarism Students are warned not to copy from other book all assessment tasks. Committing plagiarism will task. Students who plagiarize twice will be profinal examination. Assignments/Examination: Students must have moverall to pass this course.	l result in hibited fr	0 point for om sitting	the the		
Reading list	[1] Lowe, S, & Pile, L. (2011). <i>Presenting.</i> Singapore: Cengage Learning [2] Comfort, J. (2021). <i>Effective presentations</i> . Oxford: Oxford University					

Press
[3] Lucas, S. (2019). The art of public speaking (13th ed.). New York:
McGraw-HillEducation.
[4] Harrington, D., & Lebeau, C. (2009). Speaking of speech. Macmillan

2. Planned learning activities and teaching methods

Wee k	Topi c	CLO	Learnig activiti es	Assessments	Resources
1	1. Orientation & Introduction 2. Needs analysis	1, 5	Lecture	Ongoing assessment Midterm exam	[1] Presenting, p. 5 [3]* The Art of Public Speaking, Chapter 6 + videos of introductory speeches
2	Building up confidenc e	2, 5	Lecture, Group work	Ongoing assessment Midterm exam	
3	Introduction to informative speeches Unit 1: The first few minutes	1, 2, 5	Lecture, Group work	Ongoing assessment Midterm exam	[1] Presenting, pp. 8-13 [2] Effective Presentations: p.7 + video clip; p.13+ video clip [3]The Art of Public Speaking, Chapter 10 [3]* The Art of Public Speaking, Chapter 15
4	Unit 3: Organizing what you want to say	1, 2, 5	Lecture, Group work	Ongoing assessment Midterm exam	[1] Presenting, pp. 22-27) [2] Effective Presentations: p.19 + video clip [3]* The Art of Public Speaking, Chapters 8+9
5	Unit 6: Summarizing and concluding	1, 2, 3, 5	Lecture, Group work	Ongoing assessment Midterm exam	[1] Presenting, pp. 40-45 [2] Effective Presentations: p.41 + video clip [3]* The Art of Public Speaking, Chapters 10

6	Unit 2: Using equipment	1, 2, 3, 5	Lecture	Ongoing assessment Midterm exam	[1] Presenting, pp. 14-21) [2] Effective Presentations: p.31 + video clip [3]* The Art of Public Speaking, Chapters 14
7	Delivery techniques: Putting it all together	1, 2, 3, 5	Lecture, Group work	Ongoing assessment Midterm exam	[2] Effective Presentations: p.50 + video clip Assignment: Topic(s) for group presentation) [3]* The Art of Public Speaking, Chapters 13
Wee	Topi	CLO	Learnin	Assessments	Resources
k	c	020	g activiti es	110000011101100	
8	Mini individual presentations or group presentations for the	1, 2, 3, 5	Group work	Ongoing assessment Midterm exam	
	instructor's evaluation and advice				
	MIDTERM EXAMIN	IATION	I		
9	Introduction to persuasive speeches	1, 5	Lecture, Group work	Ongoing assessment Final exam	[3] The art of public speaking, Chapter 15 (Handout given by the instructor)
10	Methods of persuasio n	1, 2, 3, 5	Lecture, Group work	Ongoing assessment Final exam	[3] The art of public speaking, Chapter 16 (Handout given by the instructor)
11	Unit 4: Maintaining interest	1, 2, 3, 5	Lecture, Group work	Ongoing assessment Final exam	[1] Presenting: pp. 28-33) [2] Effective Presentations: p.25 + video clip)

12	Unit 5: Dealing with problems and questions	4, 5	Lecture, Group work	Ongoing assessment Final exam	[1] Presenting: pp. 34-39) [2] Effective Presentations: p.44 (Question time) [3]* The Art of Public Speaking, Chapters 13
13	Unit 6: Body language	3, 5	Lecture, Group work	Ongoing assessment Final exam	[2] Effective Presentations: pp.36-39 [3]* The Art of Public Speaking, Chapters 13
14	Practice	1-5	Group work	Ongoing assessment Final exam	
15	Wrap-up and advice	1-5	Group work	Ongoing assessment Final exam	

3. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Ongoing assessment (30%)	80% Pass	80% Pass	80% Pass	80% Pass	80% Pass
Midterm exam (30%)	Criteria 4-7 80% Pass	Criteria 1-2 80% Pass	Criterion 3 80% Pass		
Final exam (40%)	Criteria 4-6 80% Pass	Criteria 1-2 80% Pass	Criterion 3 80% Pass	Criterion 4 80% Pass	

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

4. Rubrics

4.1. Rubrics for Midterm exam

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

4.2. Rubrics for Final exam

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

Date revised: 17 June, 2024

Ho Chi Minh City, 17 June, 2024 **Dean of School of Languages**(Signature)

Dr. Nguyễn Huy Cường

Course Name: Writing AE2 Course Code: EN011IU

1. General information

Course name	- (in English) WRITING AE2 (Research Paper Writing)
	- (in Vietnamese) Viết AE2 (Viết bài nghiên cứu)
Course	This course introduces basic concepts in research paper writing, especially
designation	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.
Semester(s) in	1, 2, 3
which the course is	
taught	
Person responsible	Lecturers of School of Languages
for	
the course	
Language	English
Relation to	S Compulsory
curriculum	Elective
Teaching methods	Lectures, lesson
	Individual
	practice
	Discussion
	Pair work
	Group
	work
	Project
Workload (incl.	(Estimated) Total workload: 90
contact hours, self-	Contact hours (lecture, exercise):
study	30
hours)	Private study including examination preparation, specified in hours ¹ : 60
Credit points	2 credits (Theory: 2 + Practice: 0)
	3.08 ECTS (optional)

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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	Previous course: W	7riting AE1 (EN007IU)		
recommended				
prerequisites for				
joining the				
course				
Course	Students are require	ed to work on the tasks selected to maximize their		
objectives	exposure to written	communication and are expected to become		
	competent writers i	in the particular genre: the research paper.		
	As writing is part of	of an integrated skill of reading and writing where		
	reading serves as ir	nput to trigger writing, this course is designed to		
	_	ive students with academic literature in their major		
		em read and critically respond to texts of a variety of		
		n natural sciences such as biology to social sciences and		
	humanities like edu	ication, linguistics and		
	psychology.			
Course learning	Upon the successfu	al completion of this course, students will be able to:		
outcomes	Competency	Course learning outcome (CLO)		
	level			
	Knowledge	CLO1. Apply knowledge about conceptual		
		categories- classifications, the structure of a		
		research paper and		
		appropriate academic language in writing a research		
	Skill	paper CLO2: Perform skills and strategies for reading		
		critically, analyzing, and annotating academic texts in		
		written summary		
		CLO3. Demonstrate research writing skills to present		
		an argument, a comparison, or a contrast in their		
		academic		
		study.		
	Attitude	CLO4. Display discipline, responsibilities, and		
		ethical		
		practices as an individual and a team member in		
		attending class regularly and actively participating in		
		class activities		

Content	The description of the contents should clearly indicate	the weighti	ng		
	of the content and the level.				
	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,		
	UUnit 2: Researching and Writing	2	T, U		
	Unit 3: Fundamentals & Feedback	2	T, U		
	Unit 4: Definitions, Vocabulary & Clarity	2	T, U		
	Unit 5: Generalizations, Facts and Honesty	4	T, U		
	Unit 6: Seeing Ideas and Sharing Texts	2	T, U		
	Unit 7: Description, Methods & Reality	2	T, U		
	Unit 8: Results, Discussion & Relevance	2	T, U		
	Unit 9: The Whole Academic Text	2	T, U		
	Unit 10: Creating the Whole Text	4	T, U		
	Course Review	2	U		
Examination	Open-ended questions; Essay writing				
forms					
Study and	Attendance				
examination	Regular on-time attendance in this course is expected	. A student	will be		
requirements	allowed no more than three absences. It is compulsor	y that the s	tudents		
	attend at least 80% of the course to be eligible for the	final exam	ination.		
	Assignment (Literature review)				
	Purpose: Students will use the knowledge of paraphr	•	_		
	developing arguments, and APA styles to write a 1,00	00-word lite	erature		
	review on a research scope of their choice.				
	Task:				
	 Follow guidelines on how to write a literature 				
	 Use relevant academic writing skills such as j 	-	ıg,		
	summarising, developing arguments, and APA	A 7th Style			
	Guidelines – see https://www.apastyle.org/				
	 Develop arguments in relation to the research 	scope and			
	identify the research gap	10 0			
	Notes: All papers should be typed, double-spaced, in	-			
	1-inch margins. All papersmust be original for th	is class. C	riterion-		
	referenced grading is used in this course.				
	Missed Tests				
	Students are not allowed to miss any of the tests (both Mid-term a				
	Final). There are very fewexceptions. Only with extremely reasonable				

excuses (eg. certified paper from doctors), students may re-take the examination.

Class Behaviors

Students are required to treat their studying in college as a full-time job and spend an adequate amount of time for this Writing AE2 course with approximately 8-10 hours per week (both in class and self- study). Accordingly, students are supposed to follow the obligations below:

- Prepare thoroughly for each class in accordance with the course syllabus and complete homeassignments 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.					
	examination. Assignments/Examination: Stopass this course.	Assignments/Examination: Students must have more than 50/100 points overal					
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). English for academic study: Extended					
	e e e e e e e e e e e e e e e e e e e	writing and research skills. Cambridge: Cambridge University Press. Garnet					
	Education						
		010). Great writing 5: Greater essays. Boston:					
	Heinle, Cengage Learning.	7 ·					
	[5] Keezer, S. (Ed.) (2003). W	[5] Keezer, S. (Ed.) (2003). Write your research report: A real-time					

2. Learning Outcomes Matrix (optional)

3. Planned learning activities and teaching methods

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

[6] Kumar, R. (2019). Research methodology: A step-by-step guidefor

guide. New Jersey: PearsonLearning Group.

beginners. Sage Publications

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

9	<u>Unit 6:</u> Seeing Ideas and Sharing	1, 3	Lecture	Ongoing	[1] pp. 75-88
9	Texts		Lecture	assessment	[1] pp. 73-88
Week	Topic	CLO	Learning activities	Assessments	Resources
	Writing about events in time		Group	& Final	
	Connecting events		work	exam	
	Reading and writing about visuals		Individual		
	Learning about peer reviews		task		
	<u>Unit 7:</u> Description, Methods &	1, 3			
	Reality		Lecture		
10	Describing processes and products		Group	Ongoing	
	The language for writing about		work	assessment	[1] pp. 89-
	processes		Individual	& Final	103
	Writing the Methods section		task	exam	
	Giving and getting formal peer				
	feedback				
	<u>Unit 8:</u> Results, Discussion &	1, 3	Lecture	0,000	
	Relevance		Group	Ongoing assessment & Final exam	[1] nn 104
11	What is an argument? The language		work		[1] pp. 104- 118
	of argument The Results and Discussion sections		Individual		110
	Finding an academic voice		task	exam	
	Unit 9: The Whole Academic Text	1, 2, 3			
	S-P-S-E: Focus on structureS-P-S-E	1, 2, 3	Lecture	Ongoing	
	in the introduction		Group	assessment	[1] pp. 119-
12	The language of coherence and		work	& Final	133
	connection		Individual	exam	133
	Teacher evaluation		task		
		1, 2, 3	Lecture		
	Unit 10: Creating the Whole Text	, ,	Group	Ongoing	[1] 124
13	Structure of the research paper		work	assessment	[1] pp. 134-
	Creating your own research		Individual	& Final	139
			task	exam	
	Unit 10: Creating the Whole Text	1-4	Lecture	Ongoing	
	Plagiarism Creating citations		Group	Ongoing assessment	[1] pp. 140-
14	Paraphrase and summary		work	& Final	148
	Authorial identity		Individual	exam	170
	7 Kathorian Identity		task	CAUII	
				Ongoing	
15	Sample final exam + Correction	1-4		assessment	
	WAR THE TAXABLE TO TH	- •		& Final	
				exam	
	FINAL E	XAMINA	IION		

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Ongoing assessment (30%)	80% Pass	80% Pass	80% Pass	80% Pass
	Part 1		Part 2	
Midterm exam (30%)	80% Pass		80% Pass	
		Part 1	Part 2	
Final exam (40%)		80% Pass	80% Pass	

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

5. Rubrics (optional)

5.1. Rubrics for Midterm exam

Part 1: (30 pts) Read a given text and create a graphic display or an outline that categorises the two-level classifications made in the text. (CLO1)

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

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

5.2. Rubrics for Final Exam

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

CATEGORIES	S CRITERIA		CLO
Accuracy and	- The summary contains all of the key ideas in the	10	CLO2
completeness of the	original, reflecting complete and accurate		
content	information about the source.		
(10 pts)			
Paraphrasing	All sentences should reveal students' ability in	10	CLO2
(10 pts)	varying the language to avoid repetition.		

Organization	The summary starts with a general evaluation	3	CLO2
(5 pts)	and includes several sub-topics that explain key		
	ideas from the original.	2	
	The summary is organized and coherent.		
Grammar, usage	All sentences are clear, accurate and complete.	3	CLO2
and mechanics	The summary contains one or two minor errors,	2	
(5 pts)	but these do not obscure the meaning.		
	Total	30	

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

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

Date revised: 17 June, 2024

Ho Chi Minh City, 17 June, 2024

Dean of School of Languages

(Signature)

Dr. Nguyễn Huy Cường

Course Name: Object-Oriented Programming

Course Code: IT069IU

1.General information

Course designation	basic no	otions to professional p	ts to the object-oriented programming frinciples for designing an object-oriented			
Semester(s) in which the course is taught	software 3	ntware.				
Person responsible for the course	Dr. Trai	n Thanh Tung				
Language	English					
Relation to curriculum	Compul	sory (all programs)				
Teaching methods	Lecture	, lesson, project, semin	ar.			
Workload (incl. contact hours, self-study hours)	Contact etc.): 45	(lecture) + 30 (laborat	whether lecture, exercise, laboratory sestory) nation preparation, specified in hours: 1			
Credit points	Number Lecture Laborat		5.18)			
Required and recommended prerequisites for joining the course	Prerequ	isite course of OOP: C	/C++ Programming			
Course objectives	termino such as	logies and basic desigr classes, objects, abstra	programming and design. Topics inclusing principles of object-oriented programmention, encapsulation, inheritance, sign principles, and design patterns			
Course learning outcomes	classes, CLO 2. languag CLO 3.	LO 1. Explain and use concepts in object-oriented programming including asses, objects, abstraction, encapsulation, inheritance, and polymorphism. LO 2. Implement an object-oriented solution in JAVA programming aguage. LO 3. Analyze design principles and design patterns in object-oriented ograming				
		Competency level	Course learning outcome (CLO)			

	Knowledge	CLO1		
	Skill	CLO2, CLO3		
	Attitude			
				-
Content	content and the level. Weight: lecture session (ntents should clearly indica 3 hours) duce); T (Teach); U (Utilize		ting of the
	Topic		Weight	Level
	Introduction to Java		3	I
	Introduction to Obje	ect-Oriented Programming	3	I, T
	Classes and Objects		3	T
	Inheritance and com	position	3	T
	Polymorphism		3	T
	Design with interfac	ces and abstract classes	3	T
	Building Objects Exception handling		3	T
			3	T
	Generic classes and	Generic classes and methods		T
	Introduction to SOL	ID principles	3	T, U
	Single responsibility	y principle		
	Open/closed princip	le	1.5	T, U
	Lisko substitution p	rinciple	1.5	T, U
	Interface segregation		1.5	T, U
	Dependency inversi		1.5	T, U
		rough Design Patterns	6	T, U
Examination forms	Short-answer questions			
Study and examination requirements	sessions. Students will be Questions and comments Assignments/Examination overall to pass this course		eir class part e than 50/100	icipation.) points
Reading list	Program, 11th Ed 2. Matt Weisfeld, The Addison-Wesley, 3. Erich Gamma, Ri Design Patterns: 1	othor), Harvey Deitel (Author), Harvey Deitel (Author), Prentice Hall, 2017 the Object-Oriented Thought, 2009 tichard Helm, Ralph Johnson Elements of Reusable Object Professional, 1994	t Process, 3rd and John V	d Edition, lissides,

4. Eric Freeman, Bert Bates, Kathy Sierra and Elisabeth Robson, Head First Design Patterns: A Brain-Friendly Guide, O'Reilly Media, 2004

2. Learning Outcomes Matrix

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

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Java	1	Quiz	Lecture	[1]
2	Introduction to Object- Oriented Programming	1	Quiz	Lecture, Discussion	[1,2]
3	Classes and Objects	2	Quiz, Lab, Midterm	Lecture, Discussion, In-class exercises	[1,2]
4	Inheritance and composition	2	Quiz, Lab, Midterm	Lecture, Discussion, In-class exercises	[1,2]

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

4. Assessment plan

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

5. Rubrics (optional)

5.1. Grading checklist

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

Но	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:

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

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

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

Oral communication value rubric for evaluating presentation tasks:

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

	,		4	
	and	support the	and partially	support the
	compelling,	effectiveness	support the	effectiveness of
	and enhance	of the	effectiveness of	the presentation.
	the	presentation.	the	Language in
	effectiveness	Language in	presentation.	presentation is
	of the	presentation is	Language in	not appropriate
	presentation.	appropriate to	presentation is	to audience.
	Language in	audience.	appropriate to	
	presentation is		audience.	
	appropriate to			
	audience.			
	Delivery			
	techniques	Delivery	Delivery	
	(posture,	techniques	techniques	Delivery
	gesture, eye	(posture,	(posture,	techniques
	contact, and	gesture, eye	gesture, eye	(posture, gesture,
	vocal	contact, and	contact, and	eye contact, and
	expressiveness)	vocal	vocal	vocal
	make the	expressiveness)	expressiveness)	expressiveness)
	presentation	make the	make the	detract from the
	compelling,	presentation	presentation	understandability
	and speaker	interesting, and	understandable,	of the
	appears	speaker	and speaker	presentation, and
	polished and	appears	appears	speaker appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
•	A variety of	Supporting	Supporting	Insufficient
	types of	materials	materials	supporting
	supporting	(explanations,	(explanations,	materials
	materials	examples,	examples,	(explanations,
	(explanations,	illustrations,	illustrations,	examples,
	examples,	statistics,	statistics,	illustrations,
	illustrations,	analogies,	analogies,	statistics,
	statistics,	quotations	quotations	analogies,
	analogies,	from relevant	from relevant	quotations from
	quotations	authorities)	authorities)	relevant
	from relevant	make	make	authorities)
	authorities)	appropriate	appropriate	make reference
	make	reference to	reference to	to information or
	appropriate	information or	information or	analysis that
	reference to	analysis that	analysis that	minimally
	information or	generally	partially	supports the
Supporting	analysis that	supports the	supports the	presentation or
Material	significantly	presentation or	presentation or	establishes the

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Ergineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Discrete Mathematics

Course Code: IT153IU

1. General information

Ocheral information	_ _
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.
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)	Total workload: 135 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 (lecture) Private study including examination preparation, specified in hours: 90
Credit points	Number of credits : 3 (ECTS: 4.46) Lecture: 3 Laboratory: 0
Required and recommended	C/C++ Programming
prerequisites for joining the course	Calculus 1, 2
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.

Competency level	Course learning outcome (CLO)
Knowledge	CLO1, CLO2
Skill	CLO2, CLO3
Attitude	CLO4

Content

The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 teaching hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)

Topic	Weight	Level
Week 1: Course syllabus and	3	I,T
introduction; Logic and		
propositions		
Week 2: Logic and	3	I,T,U
propositions (continue)		
Week 3: Propositional	3	I,T,U
Equivalences; predicates and		
quantifiers		
Week 4: Nested Quantifiers	3	I,T,U
and Methods of Proof		
Week 5: Induction and	3	I,T,U
recursion		
Week 6&7: Number of theory	3	I,T,U
Week 8: Counting: part 1, 2;	3	I,T,U
midterm review		
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 qı	uestions	
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	 Kenneth H. Rosen, Discrete and Its Applications 8th edi Oscar Levin, Discrete math Introduction. 3rd edition, 20 Vietnamese book: N.V.Sin N.T.T.Sang, N.M.Quân, "Natrong Công nghệ Thông tin Quốc gia TPHCM, ISBN: 90, 2018. 	tion, 2019 nematics A 019. h, T.M.Hå Nền tảng T ", NXB -	An Open	

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
O						
1	X	X				
2	X	X				
3		X				
4						X

3. Planned learning activities and teaching methods

	anned learning activit			T	
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, In-class exercises	[1, 2]
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

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 having scores greater than 50 out of 100.

5. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports					
Student:	HW/Assignment:				
Date:					
	Max.	Score	Comments		
Technical content (60%)					
Abstract clearly identifies purpose and summarizes principal	10				
content					
Introduction demonstrates thorough knowledge of relevant	15				
background and prior work					
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

H	olistic 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:

Critical triticals	Capstone Capstone	valuating questions in exams: Milestone Benchmark			
	4	3	2	1	
	-		Issue/ problem to	_	
	Issue/ problem to		be considered		
	be considered		critically is stated		
	critically is stated	Issue/ problem to	but description		
	clearly and	be considered	leaves some terms		
	described	critically is stated,	undefined,		
	comprehensively,	described, and	ambiguities	Issue/ problem to	
	delivering all	clarified so that	unexplored,	be considered	
	relevant	understanding is	boundaries	critically is stated	
	information	not seriously	undetermined, and/	without	
Explanation of	necessary for full	impeded by	or backgrounds	clarification or	
issues	understanding.	omissions.	unknown.	description.	
100000	Information is	omissions.		description.	
	taken from				
	source(s) with	Information is	Information is		
	enough	taken from	taken from		
	interpretation/	source(s) with	source(s) with		
	evaluation to	enough	some interpretation/	Information is	
	develop a	interpretation/	evaluation, but not	taken from	
	comprehensive	evaluation to	enough to develop	source(s) without	
Evidence	analysis or	develop a coherent	a coherent analysis	any interpretation/	
Selecting and using	synthesis.	analysis or	or synthesis.	evaluation.	
information to	Viewpoints of	synthesis.	Viewpoints of	Viewpoints of	
investigate a point	experts are	Viewpoints of	experts are taken as	experts are taken as	
of view or	questioned	experts are subject	mostly fact, with	fact, without	
conclusion	thoroughly.	to questioning.	little questioning.	question.	
Conclusion	Thoroughly	to questioning.	nttic questioning.	Shows an emerging	
	(systematically		Questions some	awareness of	
	and methodically)		assumptions.	present	
	analyzes own and		Identifies several	assumptions	
	others'	Identifies own and	relevant contexts	(sometimes labels	
	assumptions and	others'	when presenting a	assertions as	
	carefully evaluates	assumptions and	position. May be	assumptions).	
	the relevance of	several relevant	more aware of	Begins to identify	
Influence of	contexts when	contexts when	others' assumptions	some contexts	
context and	presenting a	presenting a	than one's own (or	when presenting a	
assumptions	position.	presenting a position.	vice versa).	position.	
assumpuons		•	vice versaj.	position.	
	Specific position	Specific position			
	(perspective,	(perspective,	Specific position	Specific position	
	thesis/ hypothesis)	thesis/hypothesis)	(perspective, thesis/	(perspective,	
	is imaginative,	takes into account	hypothesis)	thesis/ hypothesis)	
Student's position	taking into account	the complexities of	acknowledges	is stated, but is	
(perspective,	the complexities of	an issue. Others'	different sides of an	simplistic and	
thesis/hypothesis)	an issue. Limits of	points of view are	issue.	obvious.	

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

Source: Association of American Colleges and Universities
Oral communication value rubric for evaluating presentation tasks:

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

	1 (1	- CC4' C		
	enhance the	effectiveness of	presentation.	presentation.
	effectiveness of	the presentation.	Language in	Language in
	the presentation.	Language in	presentation is	presentation is not
	Language in	presentation is	appropriate to	appropriate to
	presentation is	appropriate to	audience.	audience.
	appropriate to	audience.		
	audience.			
	Delivery			Delivery
	techniques	Delivery		techniques
	(posture, gesture,	techniques		(posture, gesture,
	eye contact, and	(posture, gesture,		eye contact, and
	vocal	eye contact, and	Delivery techniques	vocal
	expressiveness)	vocal	(posture, gesture, eye	expressiveness)
	make the	expressiveness)	contact, and vocal	detract from the
	presentation	make the	expressiveness) make	understandability
	compelling, and	presentation	the presentation	of the
	speaker appears	interesting, and	understandable, and	presentation, and
	polished and	speaker appears	speaker appears	speaker appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
Denvery	A variety of	connortable.	temative.	unconnortable.
	•	Cympostino		
	types of	Supporting materials		Insufficient
	supporting			
	materials	(explanations,		supporting
	(explanations,	examples,		materials
	examples,	illustrations,		(explanations,
	illustrations,	statistics,		examples,
	statistics,	analogies,	Supporting materials	illustrations,
	analogies,	quotations from	(explanations,	statistics,
	quotations from	relevant	examples,	analogies,
	relevant	authorities)	illustrations,	quotations from
	authorities) make	make	statistics, analogies,	relevant
	appropriate	appropriate	quotations from	authorities) make
	reference to	reference to	relevant authorities)	reference to
	information or	information or	make appropriate	information or
	analysis that	analysis that	reference to	analysis that
	significantly	generally	information or	minimally
	supports the	supports the	analysis that partially	supports the
	presentation or	presentation or	supports the	presentation or
	establishes the	establishes the	presentation or	establishes the
	presenter's	presenter's	establishes the	presenter's
	credibility/	credibility/	presenter's	credibility/
Supporting	authority on the	authority on the	credibility/ authority	authority on the
Material	topic.	topic.	on the topic.	topic.
	Central message	•	Central message is	•
	is compelling	Central message	basically	Central message
Central	(precisely stated,	is clear and	understandable but is	can be deduced
Message	appropriately	consistent with	not often repeated	but is not
	PPI PII attorij	TOTAL WILL	1131 STISH TOPOULOG	2 46 10 110 6

repeated, memorable, and	the supporting material.	and is not memorable.	explicitly stated in the presentation.
strongly			-
supported.)			

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022 **Dean of School of Computer Science and Engineering**

Assoc.Prof. Nguyen Van Sinh

Course Name: Computer Networks

Course Code: IT091IU

1. General information

Course designation	This subject covers the fun networks	This subject covers the fundamental knowledge of computer networks				
Semester(s) in which the course is taught	3,5					
Person responsible for the course	Assoc. Prof. Vo Thi Luu P	huong.				
Language	English					
Relation to curriculum	Compulsory (CS, NE, CE)					
Teaching methods	Lecture, lesson, project, seminar.					
Workload (incl. contact hours, self-study hours)	(Estimated) 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 (ECTS: 6.18) Lecture: 3 Laboratory: 1					
Required and recommended prerequisites for joining the course	C/C++ Programming or Fundamentals of Programming					
Course objectives	This course covers the fundamental knowledge of computer networks such as OSI, TCP/IP models, network architectures, LAN, WAN, the typical network protocols. The students will also study to design, implement and monitor a small / medium scale network.					
Course learning outcomes	computer networks;	onents, architecture, and protocols in n designing a small/medium computer work in teams;				
	Competency level	Course learning outcome (CLO)				
	Knowledge	CLO1				
	Skill	CLO2, CLO3				
	Attitude CLO2					
Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)					
	Topic Weight Level					

	Introduction of computer networks	2	T, U			
	Network applications: HTTP, FTP, DNS, SMTP	2	T, U			
	Transport layer: congestion control, TCP, UDP	2	T, U			
	IP addressing, CIDR, VLSM					
	Network layer: routing algorithms, routing protocols	2	T, U			
	Datalink layer and physical layer	2	T, U			
	Wireless and mobile networks	2	T			
	Some advanced topics in contemporary networks	1	U			
Examination forms	Multiple-choice questions, short-answer questions					
Study and examination	Attendance: A minimum attendance of 80 percent is	s compuls	ory for			
requirements	the class sessions. Students will be assessed on the l	oasis of th	eir class			
	participation. Questions and comments are strongly	encourage	ed.			
	Assignments/Examination: Students must have mor	e than 50/	100			
	points overall to pass this course.					
Reading list	 J. F. Kurose and K. W. Ross, Computer Netw Down Approach 7th, 2014 	orking: A	Тор			

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	√ √					
2		$\checkmark\checkmark\checkmark$				
3					✓	

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1-2	Introduction of computer networks	1	Midterm	lecture	Chapter 1, [1]
3-4	Network applications: HTTP, FTP, DNS, SMTP	1	Midterm, Lab	lecture, lab	Chapter 2, [1]
5-6	Transport layer: congestion control, TCP, UDP	1	Midterm, Lab	lecture, lab	Chapter 3, [1]
	Midterm				
7-8	IP addressing, CIDR, VLSM	2	Final, Lab	lecture, lab	Chapter 4, [1]
9-10	Network layer: routing algorithms, routing protocols	1,2	Final, Lab	lecture, lab	Chapter 5, [1]

11-12	Datalink layer and physical layer	1,2	Final, Lab	lecture, lab	Chapter 6, [1]
13-14	Wireless and mobile networks	1	Final	lecture	Chapter 7, [1]
15	Some advanced topics in contemporary networks	3	Group project	group work	Literature
10	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Exercises, quizzes, attendants (10%)	30%		30%
Group project (5%)		30%	40%
Labs (25%)		30%	30%
Midterm examination (30%)	40%		
Final examination (30%)	30%	40%	

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:			t:
Date:			
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal	10		
content			
Introduction demonstrates thorough knowledge of relevant	15		
background and prior work			
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	Mile	Milestone	
	4	3	2	1
			Issue/ problem to	
			be considered	
			critically is stated	
		Issue/ problem to	but description	
	Issue/ problem to be	be considered	leaves some terms	
	considered critically	critically is	undefined,	
	is stated clearly and	stated, described,	ambiguities	Issue/ problem
	described	and clarified so	unexplored,	to be
	comprehensively,	that	boundaries	considered
	delivering all	understanding is	undetermined,	critically is
	relevant information	not seriously	and/ or	stated without
Explanation of	necessary for full	impeded by	backgrounds	clarification or
issues	understanding.	omissions.	unknown.	description.
			Information is	
	Information is taken	Information is	taken from	
	from source(s) with	taken from	source(s) with	
	enough	source(s) with	some	Information is
	interpretation/	enough	interpretation/	taken from
	evaluation to	interpretation/	evaluation, but not	source(s)
	develop a	evaluation to	enough to develop	without any
Evidence	comprehensive	develop a	a coherent analysis	interpretation/
Selecting and	analysis or	coherent analysis	or synthesis.	evaluation.
using	synthesis.	or synthesis.	Viewpoints of	Viewpoints of
information to	Viewpoints of	Viewpoints of	experts are taken	experts are
investigate a	experts are	experts are	as mostly fact,	taken as fact,
point of view or	questioned	subject to	with little	without
conclusion	thoroughly.	questioning.	questioning.	question.

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

Source: Association of American Colleges and Universities
Oral communication value rubric for evaluating presentation tasks:

	Capstone	Miles		Benchmark
	4	3	2	1
	Organizational pattern (specific introduction and		_	
Organization	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.	the presentation. 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 is compelling (precisely stated, appropriately repeated, memorable, and	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
Central Message	strongly supported.)	supporting material.	repeated and is not memorable.	in the presentation.

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Calculus 2

Course Code: MA003IU

1. General information

Course designation	This course is a continuation of Calculus 1. Its aim to equip student with basis concepts of sequence, series, vector functions, functions of several variables, multiple integrals and their applications
Semester(s) in which the course is taught	1, 2
Person responsible for the course	Assoc. Prof.Mai Duc Thanh, Assoc. Prof. Tran Vu Khanh, Dr. Nguyen Minh Quan, Dr. Nguyen Anh Tu, Dr. Ta Quoc Bao.
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 ³ : 60
Credit points	4 (ECTS: 6.18)
Required and recommende d prerequisites for joining the course	Calculus 1

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

Course objectives	 4. To provide students with the main ideas and techniques of calculus. These include sequences, series, functions of several variables, optimal problems, multiple integrals, vector calculus. 5. To introduce practical applications of these ideas and techniques, through practical examples taken from many areas of engineering, business, and life sciences. 6. To develop skills in mathematical modelling and problem solving, ability to think logically, and adapt these skills creatively to new 	
	situations Upon the success	aful completion of this course students will be able to:
Course learning	Competency	Course learning outcome (CLO)
outcomes	level	
	Knowledge	CLO1. Have basic knowledge of series, functions of several variables, mupliple integrals (Program outcomes: a) CLO2. Have basic knowledge of vector calculus (Program outcomes: a)
	Skill	CLO3. Can compute partial derivatives, multiple integral (Program outcomes: a, j) CLO4. Can show the convergence of a sequence and a series and u, se power series to simplify computation. Can show the optimal problem using partial derivaties, can find the volume of an object in higher dimension by using the multiple integrals (Program outcomes: i, h)
	Attitude	CLO5. Confident when dealing with partial derivaties, multiple integrals. Comfortable with using partial derivatives and multiple integrals in practical situations. (Program outcome: j, k)

Content	The description of the contents should clearly indicate the weighting of the content and the level.					
	Weight: lecture session (4 hours)					
	Teaching levels: I (Introduce); T (Teach); U (Utilize)					
	Topic		Leve l			
	Sequences and Convergence	1	I, T			
	Series	1	I, T			
	Tests for Convergence	1	T, U			
	Power series	1	T, U			
	Representations of Functions as Power series	1	T, U			
	Taylor and Maclaurin series	1	T, U			
	Vector Functions and Space Curves, Limit and continuity of vector functions	1	I, T			
	Derivatives and Integrals of vector functions, Length of space curves	1	T, U			
	Functions of Several Variables, Limits and Continuity	1	I,T			
	Partial Derivatives, Tangent Plane and Linear Approximations	1	T, U			
	Chain Rules, Directional Derivatives and Gradient	1	T, U			
	Maximum and Minimum Values of Functions of two variables	1	T, U			
	Lagrange Multipliers and Applications	1	T, U			
	Double Integrals in Rectangles, Iterated Integrals	1	I, T			
	Double, Triple Integrals in General regions and Applications	2	T,U			
Examination forms	Written examination					
Study and examination requirements	Attendance: A minimum attendance of 80 percent i class sessions. Students will be assessed on the basi participation. Questions and comments are strongly	s of their encourag	class ged.			
requirements	Assignments/Examination: Students must have more overall to pass this course.	_				

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

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

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

3. Planned learning activities and teaching methods

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

		1	T	
6	Functions of Several Variables,	2, 4, 5	Quiz	Lectures and Quiz
	Limit and Continuty,			
7	Partial Derivatives, Tangent Plances and Linear Approximations,	3, 5	HW	Lectures and Quiz
8	Chain Rule, Directional Derivaties and Gradient Vectors,	3, 5	HW	Lectures and Quiz
Midter	m Exam			
9	Maximun and Minimun Values, Larange Multipliers	2, 4	HW	Lectures and Quiz
10	Double Integrals over Rectangles, Iterated Integrals, Double Integrals over General Regions	2, 4	HW	Lectures and Quiz
11	Double Integrals in Polar Coordinates, Application of Double Integrals.	4, 5	HW	Lectures and Quiz
12	Triple Integrals, Triple Integrals in Cylindrical and Spherial Coordinates. Change of Variables in Multiple Integrals	2, 4	Quiz	Lectures and Quiz
13	Vector Fields, Line Integrals, the Fundamental Theorem for Line Integrals	4, 5	HW	Lectures and Quiz
14	Green's Theorem, Curl and Divergence, Surface Integrals	2, 4, 5	HW	Lectures and Quiz
15	Stokes' Theorem, Divergence Theorem.	1, 2, 3, 4	Exercises	
Final E	Exam			

4. Assessment plan

Assessment	CLO1	CLO2	CLO3	CLO4	CLO5
Type					
In-class	Qz1->Qz4	Qz5->Qz8	Qz1->Qz4	Qz5->Qz8	Qz2, 4, 6, 8
exercises/	80% Pass	80%Pass	80% Pass	80% Pass	70% Pass
quizzes					
(10%)					

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.

Course Name: Linear Algebra

Course Code: IT154IU

1. General information

1. General information	
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.
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: 135 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 (lecture) Private study including examination preparation, specified in hours: 90
Credit points	Number of credits: 3 (ECTS: 4.46) Lecture: 3 Laboratory: 0
Required and recommended prerequisites for joining the course	Calculus 2
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.

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

The description of the contents should clearly indicate the weighting of the content and the level.

Weight: lecture session (3 hours)

Teaching levels: I (Introduce); T (Teach); U (Utilize)

Topic	Weight	Level
Introduction to python, colab	1	I, U
What is linear structures		
Fundamentals and geometry of \mathbb{R}^n space	2	T, U
Matrix algebra: vectors, matrices.		
Linear systems, parametric equations and systems of linear equations		
Solving systems of linear equations	2	T, U
Subspace of \mathbb{R}^n , linear independence, base and		
dimension in \mathbb{R}^n		
Python in linear algebra		
Solving linear system with numpy	1	T, U
Norm in \mathbb{R}^n with Python		
Abstract vector spaces, base and dimension for	1	T, U
abstract vector spaces.		
Special kinds of matrices and vectors.		
Span in abstract vector spaces.	2	T, U

	1				
Fundamentals of linear transformations.					
Demo of linear transformations in Python.					
Linear Transformation in abstract vector space	1	T, U			
Linear Transformation and Inverses					
Geometric Transformation of Plane, Image and	1	I, T,			
Kernel, Isomorphism and linear map		U			
Isomorphic Vector Spaces					
Introduction to determinant	1	I, T			
Determinant expansions.					
Properties of determinant.					
Elementary Row Operations and the	2	I, T,			
Determinant		U			
Eigenvectors and Eigenvalues, Eigen-					
11					
Short-answer questions, Long-answer questions, proquestions	ogrammir	ng			
_		•			
	_	•			
	re man 50	/100			
<u> </u>	annlicatio	one 3rd			
edition	аррисанс	nis, siu			
2. B. Kolman and David R. Hill, Introductory Linear Algebra: A					
Applied First Course (8th edition, 9th edition))				
3. Jim Hefferon, Linear Algebra, 4th edition.					
4. github: Python in linear algebra, matrix comp	uting.				
	Linear Transformation in abstract vector space Linear Transformation and Inverses Geometric Transformation of Plane, Image and Kernel, Isomorphism and linear map Isomorphic Vector Spaces Introduction to determinant Determinant expansions. Properties of determinant. Elementary Row Operations and the Determinant Eigenvectors and Eigenvalues, Eigendecompositions Introduction to some application of linear algebra: PCA, OLS, Short-answer questions, Long-answer questions, propustions Attendance: A minimum attendance of 80 percent in the class sessions. Students will be assessed on the participation. Questions and comments are strongly Assignments/Examination: Students must have more points overall to pass this course. 1. R.O. Hill, Elementary Linear Algebra and Its edition 2. B. Kolman and David R. Hill, Introductory Linear Algebra First Course (8th edition, 9th edition) 3. Jim Hefferon, Linear Algebra, 4th edition.	Demo of linear transformations in Python. Linear Transformation in abstract vector space Linear Transformation and Inverses Geometric Transformation of Plane, Image and Kernel, Isomorphism and linear map Isomorphic Vector Spaces Introduction to determinant Determinant expansions. Properties of determinant. Elementary Row Operations and the Determinant Eigenvectors and Eigenvalues, Eigendecompositions Introduction to some application of linear algebra: PCA, OLS, Short-answer questions, Long-answer questions, programming questions Attendance: A minimum attendance of 80 percent is compuls the class sessions. Students will be assessed on the basis of the participation. Questions and comments are strongly encourage Assignments/Examination: Students must have more than 50 points overall to pass this course. 1. R.O. Hill, Elementary Linear Algebra and Its application edition 2. B. Kolman and David R. Hill, Introductory Linear Algebra Applied First Course (8th edition, 9th 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		X				
3		X	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,
4-5	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	CLO1	CLO2	CLO3	CLO4
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.

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

1. Grading checklist					
Grading checklist for Written Reports					
Student:	HW/A	ssignment	:		
Date:					
	Evalua	itor:			
	Max.	Score	Comments		
Technical content (60%)					
Abstract clearly identifies purpose and summarizes	10				
principal content					
Introduction demonstrates thorough knowledge of relevant	15				
background and prior work					
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	Capstone Milestone		Benchmark
	4	3	2	1
			Issue/ problem	
			to be considered	
			critically is	
	Issue/ problem to		stated but	
	be considered	Issue/ problem to	description	
	critically is stated	be considered	leaves some	
	clearly and	critically is	terms undefined,	
	described	stated, described,	ambiguities	Issue/ problem
	comprehensively,	and clarified so	unexplored,	to be
	delivering all	that	boundaries	considered
	relevant	understanding is	undetermined,	critically is
	information	not seriously	and/ or	stated without
Explanation of	necessary for full	impeded by	backgrounds	clarification or
issues	understanding.	omissions.	unknown.	description.

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

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

Oral communication value rubric for evaluating presentation tasks:

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

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

	establishes the presenter's credibility/ authority on the topic.	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.

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering Whenh

Assoc.Prof. Nguyen Van Sinh

Course Name: Algorithms and Data Structure

Course Code: IT013IU

1. General information

Course designation	This subject introduces students to basic data structures and algorithms				
Semester(s) in which the course is taught	4,6				
Person responsible for the course	Dr. Tran Thanh Tung	Dr. Tran Thanh Tung			
Language	English				
Relation to curriculum	Compulsory (All progra	ms)			
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 (ECTS: 6.18) Lecture: 3 Laboratory: 1				
Required and recommended prerequisites for joining the course	Object-Oriented Programming				
Course objectives	Introduction to data strudesign, analysis, and important	ctures and algorithms, including their plementation.			
Course learning outcomes	CLO 1. Understand basi CLO 2. Analyze and eva	c data structures and algorithms aluate data structures and algorithms. ms and select data structures for real			
	Competency level	Course learning outcome (CLO)			
	Knowledge	CLO1			
	Skill	CLO2, CLO3			
	Attitude	CLO3			
Content	weighting of the content Weight: lecture session				

	Review OOP & Java	3	Ι	
	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	
		. Question	is and co	omments
	•			
_			ve more	than
			,	ata
Struc	tures and Algorithms in	Java 6th, 2	2014	
2. Cormen, Thomas H., et al. Introduction to algorithms.				
MIT press, 2009.				
		es and algo	orithms	in Java.
	Attendance compulsory the basis of are strongly Assignment 50/100 point 1. Mich Struct 2. Corm MIT 3. Lafor	Arrays Complexity Sorting Queue, Stack List Recursion Advanced Sorting Binary Tree Hash Table Graphs Algorithms on graphs Short-answer questions Attendance: A minimum attendanc compulsory for the class sessions. Sthe basis of their class participation are strongly encouraged. Assignments/Examination: Student 50/100 points overall to pass this constructures and Algorithms in Structures and Algorithms in Cormen, Thomas H., et al. In MIT press, 2009.	Arrays Complexity Sorting Queue, Stack List Recursion Advanced Sorting Binary Tree Hash Table Graphs Algorithms on graphs Algorithms on graphs Short-answer questions Attendance: A minimum attendance of 80 percompulsory for the class sessions. Students with basis of their class participation. Question are strongly encouraged. Assignments/Examination: Students must have 50/100 points overall to pass this course. 1. Michael T. Goodrich and Roberto Tames Structures and Algorithms in Java 6th, 22. Cormen, Thomas H., et al. Introduction MIT press, 2009. 3. Lafore, Robert. Data structures and algorithms and algorithms in Java 6th, 22.	Arrays 3 T Complexity 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, U Short-answer questions Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be as the basis of their class participation. Questions and coare strongly encouraged. Assignments/Examination: Students must have more 50/100 points overall to pass this course. 1. Michael T. Goodrich and Roberto Tamassia, Das Structures and Algorithms in Java 6th, 2014 2. Cormen, Thomas H., et al. Introduction to algor MIT press, 2009. 3. Lafore, Robert. Data structures and algorithms in structures and algorithms.

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		XXX				
3						X

3. Planned learning activities and teaching methods

We	k Topic	CLO	Assessments	Learning activities	Resources	
----	---------	-----	-------------	---------------------	-----------	--

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

Assessment plan

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

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

5. Rubrics (optional) 5.1. Grading checklist

mments

5.2. Holistic rubric

Holis	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				

TOTAL SCORE

100

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

			Issue/ problem	
			to be considered	
			critically is	
			stated but	
	T / 11 . 1		description	
	Issue/ problem to be		leaves some	
	considered critically		terms undefined,	
	is stated clearly and	Issue/ problem to be	ambiguities	T / 11
	described	considered critically	unexplored,	Issue/ problem to
	comprehensively,	is stated, described,	boundaries	be considered
	delivering all	and clarified so that	undetermined,	critically is stated
	relevant information	understanding is not	and/ or	without
Explanation of	necessary for full	seriously impeded	backgrounds	clarification or
issues	understanding.	by omissions.	unknown.	description.
			Information is	
			taken from	
			source(s) with	
			some	
			interpretation/	
	Information is taken	Information is taken	evaluation, but	T 0
	from source(s) with	from source(s) with	not enough to	Information is
	enough	enough	develop a	taken from
	interpretation/	interpretation/	coherent	source(s) without
	evaluation to develop	evaluation to	analysis or	any
Evidence	a comprehensive	develop a coherent	synthesis.	interpretation/
Selecting and	analysis or synthesis.	analysis or	Viewpoints of	evaluation.
using information	Viewpoints of	synthesis.	experts are	Viewpoints of
to investigate a	experts are	Viewpoints of	taken as mostly	experts are taken
point of view or	questioned	experts are subject	fact, with little	as fact, without
conclusion	thoroughly.	to questioning.	questioning.	question.
			Questions some	Shows an
	/D1 1.1		assumptions.	emerging
	Thoroughly		Identifies	awareness of
	(systematically and		several relevant	present
	methodically)		contexts when	assumptions
	analyzes own and	T1 .'C' 1	presenting a	(sometimes labels
	others' assumptions	Identifies own and	position. May	assertions as
	and carefully	others' assumptions	be more aware	assumptions).
T OI O	evaluates the	and several relevant	of others'	Begins to identify
Influence of	relevance of contexts	contexts when	assumptions	some contexts
context and	when presenting a	presenting a	than one's own	when presenting a
assumptions	position.	position.	(or vice versa).	position.

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

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

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering Wanh

Assoc.Prof. Nguyen Van Sinh

Course Name: Principles of Database Management

Course Code: IT079IU

1. General information

eneral information	,				
Course designation	This course focuses on the design and implementation of database management systems				
Semester(s) in which the course is taught	4	t systems			
Person responsible for the course	Assoc. Prof. Dr. Nguyen Thi Thuy Loan				
Language	English				
Relation to curriculum	Compulsory (NE, CS	,DS)			
Teaching methods	Lecture, lesson, proje	ct, 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 (ECTS: 6.18) Lecture: 3 Laboratory: 1				
Required and recommended prerequisites for joining the course	C/C++ 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 to retrieve and manipulate data as required. Competency level Course learning outcome (CLO) Knowledge CLO1				
	Skill	CLO2, CLO3			
	Attitude	CLO3			
	I L				

Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)						
	Topic						
	Introduction to Database Systems	3	I				
	Relational Model and Relational Algebra						
	Structured Query Language	6	T, U				
	(Extended) Entity Relationship Model	6	T, U				
	Relational Database Design	9	T, U				
	Normalization	6	T, U				
	Advanced SQL	6	T, U				
	Review	3	I, U				
Examination forms	Multiple-choice questions, short-answer						
Study and examination requirements	compulsory for the class sessions. Studer assessed on the basis of their class participand comments are strongly encouraged.	Assignments/Examination: Students must have more than					
Reading list	Sudarshan, Database System Conce 2. Jeffrey A. Hoffer, Ramesh Venkata Topi, Modern Database Manageme	 Abraham Silberschatz, Henry F. Korth, S. Sudarshan, Database System Concept 7th, 2020 Jeffrey A. Hoffer, Ramesh Venkataraman, Heikki Topi, Modern Database Management 13th, 2019 Ramez Elmasri, Shamkant Navathe, Fundamentals 					

2. Learning Outcomes Matrix (optional)

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

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

Planned learning activities and teaching methods

3.

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, Inclass, exercise	[1,3]
3	Structured Query Language	3	Quiz, Lab, Project, Midterm	Lecture, Discussion, Inclass, exercise	[1,2,3]
4	(Extended) Entity Relationship Model	2	Quiz, Project, Midterm	Lecture, Discussion, Inclass, exercise	[1,2,3]
5	Midterm				
6	Relational Database Design	2,3	Project, Final, Quiz, Lab	Lecture, Discussion, Inclass, exercise	[1,2]
7	Normalization	2,3	Quiz, Project, Final	Lecture, Discussion, Inclass, exercise	[2,3]
8	Advanced SQL	3	Quiz, Project, Final	Lecture, Discussion, Inclass, exercise	[1,3]
9	Review	2,3	Quiz	Discussion, In-class, exercise	[1,2,3]
10	Final exam				

4. Assessment plan

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

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

5. Rubrics (optional)

5.1. Grading checklist

Grading encember						
Grading checklist for Written Reports						
Student: HW/Assignment:						
Date:	·					
	Evalı	uator:				
	•••••		• • • • • • • • • •			
	Max.	Score	Comments			
Technical content (60%)						

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

Holistic rubric 5.2.

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

			1 1 1	
			backgrounds	
			unknown.	
			IC	
			Information is	
	T.C. 4: 1.1		taken from	
	Information is taken		source(s) with	
	from source(s) with		some	IC
	enough	T., C.,	interpretation/	Information is
	interpretation/ evaluation to	Information is taken	evaluation, but	taken from
		from source(s) with	not enough to	source(s)
	develop a	enough	develop a	without any
Evidence	comprehensive	interpretation/ evaluation to develop	coherent analysis or synthesis.	interpretation/ evaluation.
	analysis or	_	•	
Selecting and	synthesis. Viewpoints of	a coherent analysis or synthesis.	Viewpoints of experts are taken	Viewpoints of
using information to investigate a	experts are	Viewpoints of	as mostly fact,	experts are taken as fact,
point of view or	questioned	experts are subject to	with little	without
conclusion	thoroughly.	questioning.	questioning.	question.
Conclusion	diorouginy.	questioning.	questioning.	Shows an
				emerging
				awareness of
	Thoroughly		Questions some	present
	(systematically and		assumptions.	assumptions
	methodically)		Identifies several	(sometimes
	analyzes own and		relevant contexts	labels
	others' assumptions		when presenting	assertions as
	and carefully		a position. May	assumptions).
	evaluates the	Identifies own and	be more aware of	Begins to
	relevance of	others' assumptions	others'	identify some
Influence of	contexts when	and several relevant	assumptions than	contexts when
context and	presenting a	contexts when	one's own (or	presenting a
assumptions	position.	presenting a position.	vice versa).	position.
	Specific position	Specific position		
	(perspective, thesis/	(perspective,		
	hypothesis) is	thesis/hypothesis)		Specific
	imaginative, taking	takes into account the	Specific position	position
	into account the	complexities of an	(perspective,	(perspective,
	complexities of an	issue. Others' points	thesis/	thesis/
Student's	issue. Limits of	of view are	hypothesis)	hypothesis) is
position	position	acknowledged within	acknowledges	stated, but is
(perspective,	(perspective, thesis/	position (perspective,	different sides of	simplistic and
thesis/hypothesis)	hypothesis) are	thesis/ hypothesis).	an issue.	obvious.

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

	CC 4: C.41	.1	CC 4: C	т .
	effectiveness of the	the presentation.	effectiveness of	Language in
	presentation.	Language in	the presentation.	presentation is not
	Language in	presentation is	Language in	appropriate to
	presentation is	appropriate to	presentation is	audience.
	appropriate to	audience.	appropriate to	
	audience.	D 11	audience.	
	Delivery techniques	Delivery	Delivery	
	(posture, gesture,	techniques	techniques	Delivery techniques
	eye contact, and	(posture, gesture,	(posture, gesture,	(posture, gesture,
	vocal	eye contact, and	eye contact, and	eye contact, and
	expressiveness)	vocal	vocal	vocal
	make the	expressiveness)	expressiveness)	expressiveness)
	presentation	make the	make the	detract from the
	compelling, and	presentation	presentation	understandability of
	speaker appears	interesting, and	understandable,	the presentation,
	polished and	speaker appears	and speaker	and speaker appears
Delivery	confident.	comfortable.	appears tentative.	uncomfortable.
		Supporting		
		materials	Supporting	
		(explanations,	materials	
	A variety of types of	examples,	(explanations,	
	supporting materials	illustrations,	examples,	Insufficient
	(explanations,	statistics,	illustrations,	supporting materials
	examples,	analogies,	statistics,	(explanations,
	illustrations,	quotations from	analogies,	examples,
	statistics, analogies,	relevant	quotations from	illustrations,
	quotations from	authorities) make	relevant	statistics, analogies,
	relevant authorities)	appropriate	authorities) make	quotations from
	make appropriate	reference to	appropriate	relevant authorities)
	reference to	information or	reference to	make reference to
	information or	analysis that	information or	information or
	analysis that	generally	analysis that	analysis that
	significantly	supports the	partially supports	minimally supports
	supports the	presentation or	the presentation	the presentation or
	presentation or	establishes the	or establishes the	establishes the
	establishes the	presenter's	presenter's	presenter's
	presenter's	credibility/	credibility/	credibility/
Supporting	credibility/ authority	authority on the	authority on the	authority on the
Material	on the topic.	topic.	topic.	topic.
	Central message is		Central message	
	compelling	Central message	is basically	Central message
Central	(precisely stated,	is clear and	understandable	can be deduced but
Message	appropriately	consistent with	but is not often	is not explicitly

repeated,	the supporting	repeated and is	stated in the
memorable, and	material.	not memorable.	presentation.
strongly supported.)			

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022 **Dean of School of Computer Science and Engineering**

Assoc.Prof. Nguyen Van Sinh

Course Name: Philosophy Marx - Lenin

Course Code: PE015IU

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

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

ĐỀ CƯƠNG CHI TIẾT MÔN HỌC

Triết học Mác-Lênin (Philosophy Marx – Lenin)

1. Thông tin chung

Tên môn học (tiếng Việt):	Triết học Mác-Lênin
Tên môn học (tiếng Anh):	Philosophy Marx – Lenin
Mã số môn học:	PEO15 IU
Thuộc khối kiến thức:	Cơ sở
Số tín chỉ:	3
Số tiết lý thuyết:	30 (trên lớp)
Số tiết thực hành:	15 (trên lớp)
Số tiết tự học:	9 0 (về nhà)
Giảng viên phụ trách	Khoa Chính trị - Hành chính, ĐHQG-HCM

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

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

3. Mô tả môn học (Course Outlines)

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

4. Tài liệu phục vụ học tập:

- Bộ Giáo dục và Đào tạo (2019), Giáo trình Triết học Mác - Lênin, Nxb.



Chính trị quốc gia, Hà Nội.

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

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

Chuẩn đầu ra	1 0/10 10	Tiêu chí đánh giá	Mục tiêu môn học	Chuẩn đầu ra CDIO CTĐT	Mức độ giảng dạy (I/T/U)
5.1. K	iến thức				
LO.1	TRIÉT 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 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		1.1.3	13
		LO.2.1- Hiểu rõ vật chất theo quan điểm của chủ nghĩa duy vật biện chứng LO.2.2 – Hiểu rõ ý thức theo quan điểm của chủ nghĩa duy vật biện chứng 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.2.4 – Hiểu được phép biện chứng và phép biện chứng duy vật	2.1 2.1 2.1	1.1.3	Т4



		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 LO.2.6 – Hiểu rõ được các cặp phạm trù cơ bản của phép biện chứng duy vật và rút ra ý nghĩa phương pháp luận từng cặp phạm trù 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 LO.2.8 - Hiểu rõ được thực tiễn, nhận thức, vai trò của thực tiễn đối với nhận thức và chân lý	2.1 2.2	1.1.3	Т4
LO.3	CHỦ NGHĨA DUY VẬT LỊCH SỬ	LO.3.1 - Nắm được vai trò của sản xuất vật chất và phương thức sản xuất đối với sự tồn tại và phát triển xã hội 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	2.1 2.2	1.1.3	T4



		LO.3.7 - Hiểu rõ được con người, bản chất con người; hiện tượng tha hóa và giải phóng con người; mối quan hệ giữa cá nhân và xã hội, vai trò của quần chúng nhân dân			
5.2. 1	Kỹ năng				
LO.4	THỂ HIỆN KHẢ NĂNG KHÁI QUÁT HÓA, TƯ DUY, TRANH LUẬN,	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	2.1 2.2	2.1.1 2.3.1 2.4.4	U4
	PHÁN BIỆN, LÀM VIỆC NHÓM	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	4.4	2.5 3.1.5	
5.3. T	Thái độ				
LO.5	THỂ HIỆN Ý THỨC, NHẬN THỨC TRONG VA 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 vối 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 (Course Plan):

TT (tiết)	Nội dung giảng dạy	LO	Hoạt động dạy và học	Đánh giá
1 (1 tiết)	Giới thiệu về môn học	LO.1, LO.4;	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 nhón (GHW) - Đọc trước tài liệu chương 1.	
2 (15 tiết)	Chương 1 TRIẾT HỌC VÀ VAI TRÒ CỦA TRIẾT HỌC TRONG ĐỜI SỐNG XÃ HỘI	LO.1; LO.4 LO.5	Dạy: I. TRIẾT HỌC VÀ VẨN ĐỀ CƠ BẨN CỦA TRIẾT HỌC 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 TRIỆT HỌC MÁC - LÊNIN VÀ VAI TRÒ CỦA TRIỆT 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 - Lênir 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.	Thi giữa kỳ (Quiz)
3 (15 tiết)	Chương 2 CHỦ NGHĨA DUY VẬT BIỆN CHỨNG	LO.2 LO.4 LO.5	Dạy: I. VẬT CHẤT VÀ Ý THỰC 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 2. Nội dung của phép biện chứng duy	Thi giữa kỳ (Quiz) Thi cuối kỳ (FEX)





			vật III. LÝ LUẬN NHẬN THỰC 1. Các nguyên tắc của lý luận nhận thức duy vật biện chứng 2. Nguồn gốc, bản chất của nhận thức 3. Thực tiễn và vai trò của thực tiễn đối với nhận thức 4. Các giai đoạn cơ bản của quá trình nhận thức 5. Chân lý Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Đọc trước tài liệu chương 3 Dạy:	
4 (14 tiết)	Chương 3 CHỦ NGHĨA DUY VẬT LỊCH SỬ	LO.3 LO.4 LO.5	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 2. Ý thức xã hội và kết cấu của ý thức xã hội V. TRIẾT HỌC VÈ 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 4. Vấn đề con người trong sự nghiệp	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)



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

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

9. Một số lưu ý khác:

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

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

Tuần 4 (buổi thứ 4) thuyết trình theo thứ tự. Lưu ý các nhóm cần có mặt đủ và mang theo tất cả các tài liệu liên quan đến GHW khi đi thuyết trình.

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

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

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

KT. TRƯỞNG KHOA PHÓ TRƯỞNG KHOA

S. Nguyễn Đình Quốc Cường



Course Name: Marxist - Leninist Political Economy

Course Code: PE016IU

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

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

ĐÈ CƯƠNG CHI TIẾT MÔN HỌC

Kinh tế chính trị Mác-Lênin

(Marxist – Leninist Political Economy)

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:	PEO16 IU
Thuộc khối kiến thức:	Cơ sở
Số tín chỉ:	2
Số tiết lý thuyết:	20 (trên lớp)
Số tiết thực hành:	10 (trên lớp)
Số tiết tự học:	60 (về nhà)
Môn học song hành:	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. 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 lắp, 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 (Course Outlines)

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.I.Lê nin toàn cập, 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.

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+ Klaus Schwab (2015): Cách mạng công nghiệp lần thứ tư, Nxb Chính trị quốc gia - Sự thật, 2018.

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. Ki	ến thức				
		LO.1.1 –Nắm được sự hình thành và phát triển của Kinh tế chính trị Mác – Lênin			
LO.1	ĐỐI TƯỢNG, PHƯƠNG PHÁP NGHIÊN CỨU VÀ CHỨC NĂNG CỦA	LO.1.2 – Xác định được đối tượng nghiên cứu của kinh tế chính trị Mác – Lênin.	2.1		13
LO.1		LO.1.3 – Hiểu rõ được phương pháp nghiên cứu của kinh tế chính trị Mác – Lênin	2		
		LO.1.4 – Hiểu rõ các chức năng của môn học kinh tế chính trị Mác – Lênin.			
	HÀNG HÓA, THỊ TRƯỜNG VÀ VAI TRÒ CỦA CÁC CHỦ THỂ THAM GIA THỊ TRƯỜNG.		2.1		T4



		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.				
	GIÁ TRỊ THẶNG DU	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. 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 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 2.1 2.1 2.3			
LO.3	TE III IROONG	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. 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.	2.3		T4)
		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.	2.1 2.1 2.3	1		
		LO.4.1 – Hiểu rõ được quan hệ giữa cạnh tranh và độc quyền trong nền kinh tế thị trường.	2.1			

LO.4	ĐỘC QUYỀN	LO.4.2 - Hiểu rõ được nguyên nhân hình thành độc quyền trong nền kinh tế thị trường. 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 LO.4.4 - Hiểu rõ được nguyên nhân hình thành và phát triển của chủ nghĩa tư bản độc quyền nhà nước. 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.	2.1.2.12.3	T3
		LO.4.6 – Nắm được vai trò lịch sử của chủ nghĩa tư bản.	2.1	
	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 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		LO.5.3 – Nắm được những đặc trưng của kinh tế thị trường định hướng xã hội chủ nghĩa ở Việt Nam. 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	2.1	Т4
		nó. 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 LO.5.6 – Hiểu rõ được khái niệm lợi ích kinh tế và quan hệ lợi ích kinh tế	2.1	
		LO.5.7 –Hiểu rõ được vai trò của nhà nước trong đảm bảo hài hòa các quan hệ lợi ích	2.1	
		LO.6.1 – Hiểu rõ được cách mạng công nghiệp là gì, khái quát được các cuộc cách mạng đã diễn ra trong lịch sử.	2.1	
	-	LO.6.2 - Hiểu rõ vai trò của cách mạng công nghiệp đối với sự phát	2.1	Т4



LO.6	CÔNG NGHIỆP HÓA, HIỆN ĐẠI HÓA VÀ HỘI NHẬP KINH TÉ QUỐC TÉ CỦA VIỆT NAM	triển. LO.6.3 – Hiểu được công nghiệp hóa là gì và các mô hình công nghiệp hóa tiêu biểu trên thế giới. LO.6.4 – Hiểu rõ tính tất yếu khách quan của công nghiệp hóa, hiện đại hóa ở Việt Nam. LO.6.5 – Nắm được những nội dung của công nghiệp hóa, hiện đại hóa ở Việt Nam. 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. 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. LO.6.9 – Nắm được phương hướng nâng cao hiệu quả hội nhập kinh tế quốc tế trong phát triển của Việt	2.1 2.1 2.3 2.3 2.3	
5 2 K	ỹ năng	Nam		
LO.7	THỂ HIỆN KHẢ NĂNG KHÁI QUÁT HÓA, TƯ DUY, TRANH LUẬN, PHẢN BIỆN, LÀM VIỆC NHÓM	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 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 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	2.1 2.2 2.4	U4
5.3. T	hái 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 LO.8.2. Có ý thức, trách nhiệm cá nhân đối vối tập thể, cộng đồng LO.8.3. Có nhận thức về sự cần thiết học tập, nghiên cứu suốt đời và vận	2.1 2.2 2.3	U3

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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 (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 1 ĐỐI TƯỢNG, PHƯƠNG PHÁP NGHIÊN CỨU VÀ CHỨC NĂNG CỦA KINH TÉ CHÍNH TRỊ MÁC – LÊNIN	LO.1; LO.7 LO.8	Dạy: I. SỰ HÌNH THÀNH VÀ PHÁT TRIỀN CỦA KTCT MÁC – LÊNIN 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	Thi giữa



			GHW Dea truyéra tài liêu aburang 2	
3 (6 tiết)	Chương 2 HÀNG HÓA, THỊ TRƯỜNG VÀ VAI TRÒ CỦA CÁC CHỦ THỂ THAM GIA THỊ TRƯỜNG.	LO.2 LO.7 LO.8	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. - 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	Thi giữa kỳ (Quiz) Thi cuối kỳ (FEX)
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. I. 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 tư bản - Những nhân tố góp phần làm tăng quy mô tích lũy.	Thi giữa kỳ (Quiz) Thi cuối kỳ (FEX)

			 Một số hệ quả của tích lũy tư bản. III. CÁC HÌNH THỨC BIỀU 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 	
5 (5 tiết)	Chương 4 CẠNH TRANH VÀ ĐỘC QUYỀN TRONG NỀN KINH TẾ THỊ TRƯỜNG	LO.4 LO.7 LO.8	Dạy: I. QUAN HỆ GIỮA CẠNH TRANH VÀ ĐỘC QUYỀN TRONG NỀN 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. - 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	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	Dạy: I. KINH TẾ THỊ TRƯỜNG ĐỊNH HƯỚNG XÃ HỘI CHỦ NGHĨA Ở VIỆT NAM I. 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. II. HOÀN THIỆN THỂ CHẾ KINH TẾ	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)

			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. 1. Lợi ích kinh tế và quan hệ lợi ích kinh tế. 2. 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	
			Đọc trước tài liệu chương 6	
(5 tiất) H	Chương 6 CÔNG NGHIỆP HÓA, IIỆN ĐẠI HÓA VÀ HỘI NHẬP KINH TÉ QUỐC TẾ CỦA VIỆT NAM	LO.6 LO.7 LO.8	Dạy: I. CÔNG NGHIỆP HÓA, HIỆN ĐẠI HÓA Ở VIỆT NAM. 1. Khái quát cách mạng công nghiệp và công nghiệp hóa. - Khái quát về cách mạng công nghiệp - Công nghiệp hóa và các mô hình công nghiệp hóa trên thế giới 2. Tính tất yếu khách quan và nội dung của công nghiệp hóa, hiện đại hóa ở Việt Nam. - Tính tất yếu của công nghiệp hóa, hiện đại hóa ở Việt Nam. - Nội dung công nghiệp hóa, hiện đại hóa ở Việt Nam. 3. Công nghiệp hóa, hiện đại hóa ở Việt Nam. 3. Công nghiệp hóa, hiện đại hóa ở Việt Nam trong bối cảnh cách mạng công nghiệp lần thứ 4. II. HỘI NHẬP KINH TẾ QUỐC TẾ CỦA VIỆT NAM. 1. Khái niệm và các hình thức hội nhập kinh tế quốc tế. - Khái niệm và sự cần thiết khách quan của hội nhập kinh tế quốc tế. 2. Tác động của hội nhập kinh tế quốc tế đến phát triển của Việt Nam. - Tác động tích cực. - Tác động tiêu cực 3. Phương hướng nâng cao hiệu quả hội nhập kinh tế quốc tế trong phát triển của Việt Nam.	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)



Học ở lớp: Thảo luận và phát biểu trên
Học ngoài lớp: Hoàn thiện bài thuyết trình.

7. Đánh giá môn học

ST T	Mã	Tên	Mô tả	Tỷ trọng	Hình thức	LO
1	GH W	Thuyết trình nhóm	Thuyết trình nhóm về đề tài đã phân công	15%	Thuyết trình và bản báo cáo nhóm	LO.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%		LU.0

8. Tiêu chí đánh giá chuẩn đầu ra môn học

TT	Chuẩn đầu ra	Nôi dung	Phương pháp	Tiêu chí đánh
	Citaii dad ra	1101 dung	Thương pháp	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 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, lọi tức và địa tô tư bản chủ nghĩa	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
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	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 để thi của GV

CHINH TR

	của chủ nghĩa tư bản.			
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 dối 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 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.	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

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.

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

KT. TRƯỞNG KHOA

Nguyễn Đình Quốc Cường

Course Name: Computer Architecture

Course Code: IT089IU

1. General information

Course designation	This course introduces the principles of computer organization and the basic computer architecture.
Semester(s) in which the course is taught	4
Person responsible for the course	Dr. Le Hai Duong
Language	English
Relation to curriculum	Compulsory (CS, NE, CE)
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	(Estimated) 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 Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problems and group assignment.
Credit points	Number of credits : 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	Digital Logic Design
Course objectives	This course provides students the principles of computer architecture and organization. It covers the subjects on assembly language and machine code, computer arithmetic and ALU design, computer performance, datapath and control, pipelining, memory hierarchy, I/O devices, multi-processor architectures, and mobile and multi-core processors.
Course learning outcomes	CLO 1. Understand the principles of computer architecture and the interfaces between its hardware and software components; CLO 2. Understand computer arithmetic (both integer and floating point), datapath, control, pipelining, pipeline hazards and their remedies, computer buses and I/O peripherals, and multiprocessor architecture;

	CLO 3	. Create assembly pro	ograms and their machin	e code equi	valent:		
		. Analyze the perform	•		, , , , , ,		
	CLO 5. Analyze computer memory and its organization, especially the						
	ınterac	tion between cache a	_		\neg		
		Competency level Course learning outco		ome (CLO))		
		Knowledge	CLO1, CLO2				
		Skill	CLO3, CLO4, CLO5				
		Attitude					
Content	The de	scription of the conte	ents should clearly indica	ate the weig	hting of		
		ntent and the level.					
	Weight: lecture session (3 hours)						
	Teaching levels: I (Introduce); T (Teach); U (Utilize Topic			Weight	Level		
		History of computers, relations of software and			I		
	hardware components;						
		nbly language instruc	ctions	5	T, U		
	Comp	outer arithmetic princ	arithmetic principles and hardware 1		Т		
	design						
	Computer performance			1	T,U		
	Datapath and its control			2	T		
	Microprocessor pipelining			2	T, U		
	Memory hierarchy			1	T		
	I/O de	evices and buses		1	T		
	Multiprocessor			1	T		
Examination forms	Multip	le-choice questions,	short-answer questions	•	•		
Study and	Attend	ance: A minimum at	tendance of 80 percent is	•	•		
examination			will be assessed on the b				
requirements	participation. Questions and comments are strongly encouraged.						
	Assignments/Examination: Students must have more than 50/100						
D 1' 1'		overall to pass this co					
Reading list			d John L. Hennessy, Co	mputer			
		Organization and Des	ıgn 5th, 2013				

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	1	2	3	4	5	6
O						
1	X					
2	X					

3		X		X
4	X			
5	X			

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	History of computers, relations of software and hardware components;	1	Quiz, exam	Lecture	[1]
2	Assembly language instructions	3	Quiz, exam	Lecture, lab, exercises	[1]
3	Computer arithmetic principles and hardware design	2	Quiz, exam	Lecture, exercises	[1]
4	Midterm				
5	Computer performance	4	Quiz, exam	Lecture, exercises	[1]
6	Datapath and its control	1, 2	Quiz, exam	Lecture, exercises	[1]
7	Microprocessor pipelining		Quiz, exam	Lecture, exercises	[1]
8	Memory hierarchy	5	Quiz, exam	Lecture, exercises	[1]
9	I/O devices and buses	2	Quiz, exam	Lecture, exercises	[1]
10	Multiprocessor	2	Quiz, exam	Lecture, exercises	[1]
11	Final exam				

1. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Midterm examination (30%)	70%	70%	25%		
Final examination (40%)			50%	70%	70%
Exercises/ Quiz (30%)	30%	30%	25%	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 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. ←

1. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports					
HW/Assignment:					
Evaluator:					
,	HW/Assignment:				

	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal	10		
content			
Introduction demonstrates thorough knowledge of relevant	15		
background and prior work			
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

Н	Iolistic 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
	Issue/ problem to	Issue/ problem to	Issue/ problem to	Issue/ problem
	be considered	be considered	be considered	to be
Explanation of	critically is stated	critically is	critically is stated	considered
issues	clearly and	stated, described,	but description	critically is

	described	and clarified so	lagyag gama	stated without
		that	leaves some	clarification or
	comprehensively,		terms undefined,	
	delivering all	understanding is	ambiguities	description.
	relevant	not seriously	unexplored,	
	information	impeded by	boundaries	
	necessary for full	omissions.	undetermined,	
	understanding.		and/ or	
			backgrounds	
			unknown.	
			Information is	
	Information is		taken from	
	taken from	Information is	source(s) with	
	source(s) with	taken from	some	
	enough	source(s) with	interpretation/	Information is
	interpretation/	enough	evaluation, but	taken from
	evaluation to	interpretation/	not enough to	source(s)
	develop a	evaluation to	develop a	without any
	comprehensive	develop a	coherent analysis	interpretation/
Evidence	analysis or	coherent analysis	or synthesis.	evaluation.
Selecting and	synthesis.	or synthesis.	Viewpoints of	Viewpoints of
using information	Viewpoints of	Viewpoints of	experts are taken	experts are
to investigate a	experts are	experts are	as mostly fact,	taken as fact,
point of view or	questioned	subject to	with little	without
conclusion	thoroughly.	questioning.	questioning.	question.
				Shows an
	Thoroughly			emerging
	(systematically			awareness of
	and		Questions some	present
	methodically)		assumptions.	assumptions
	analyzes own		Identifies several	(sometimes
	and others'		relevant contexts	labels
	assumptions and	Identifies own	when presenting a	assertions as
	carefully	and others'	position. May be	assumptions).
	evaluates the	assumptions and	more aware of	Begins to
	relevance of	several relevant	others'	identify some
Influence of	contexts when	contexts when	assumptions than	contexts when
context and	presenting a	presenting a	one's own (or	presenting a
assumptions	position.	position.	vice versa).	position.
wordin privile	Specific position	Specific position	,100 ,0100/.	position.
	(perspective,	(perspective,		Specific
	thesis/	thesis/hypothesis)	Specific position	position
	hypothesis) is	takes into	(perspective,	(perspective,
	imaginative,	account the	thesis/	thesis/
Student's	taking into	complexities of	hypothesis)	hypothesis) is
position	account the	an issue. Others'	acknowledges	stated, but is
(perspective,	complexities of	points of view	different sides of	simplistic and
	an issue. Limits	_		obvious.
thesis/hypothesis)	an issue. Limits	are	an issue.	obvious.

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

			Longuaga	
	I amayana ahaisas ama	I an avecas	Language	
	Language choices are	Language	choices are	T 1 '
	imaginative,	choices are	mundane and	Language choices
	memorable, and	thoughtful and	commonplace	are unclear and
	compelling, and	generally	and partially	minimally support
	enhance the	support the	support the	the effectiveness
	effectiveness of the	effectiveness of	effectiveness of	of the
	presentation.	the presentation.	the presentation.	presentation.
	Language in	Language in	Language in	Language in
	presentation is	presentation is	presentation is	presentation is not
	appropriate to	appropriate to	appropriate to	appropriate to
Language	audience.	audience.	audience.	audience.
0			Delivery	Delivery
		Delivery	techniques	techniques
		techniques	(posture, gesture,	(posture, gesture,
	Delivery techniques	(posture, gesture,	eye contact, and	eye contact, and
	(posture, gesture, eye	eye contact, and	vocal	vocal
	contact, and vocal	vocal	expressiveness)	expressiveness)
	expressiveness) make	expressiveness)	make the	detract from the
	the presentation	make the	presentation	understandability
	compelling, and	presentation	understandable,	of the
	speaker appears	interesting, and	and speaker	presentation, and
	polished and	_	_	speaker appears
Dolivovy	confident.	speaker appears comfortable.	appears tentative.	uncomfortable.
Delivery	Comident.		tentative.	uncommortable.
		Supporting materials		Insufficient
			C	Insufficient
		(explanations,	Supporting	supporting
		examples,	materials	materials
		illustrations,	(explanations,	(explanations,
		statistics,	examples,	examples,
	A variety of types of	analogies,	illustrations,	illustrations,
	supporting materials	quotations from	statistics,	statistics,
	(explanations,	relevant	analogies,	analogies,
	examples,	authorities)	quotations from	quotations from
	illustrations,	make	relevant	relevant
	statistics, analogies,	appropriate	authorities) make	authorities) make
	quotations from	reference to	appropriate	reference to
	relevant authorities)	information or	reference to	information or
	make appropriate	analysis that	information or	analysis that
	reference to	generally	analysis that	minimally
	information or	supports the	partially supports	supports the
	analysis that	presentation or	the presentation	presentation or
	significantly supports	establishes the	or establishes the	establishes the
	the presentation or	presenter's	presenter's	presenter's
	establishes the	credibility/	credibility/	credibility/
Supporting	presenter's credibility/	authority on the	authority on the	authority on the
Material	authority on the topic.	topic.	topic.	topic.
	J	<u> </u>	1	

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Object-Oriented Analysis and Design

Course Code: IT090IU

1. General information

1. General informa					
1. Course designation	This course helps students learn about system life cycle development and the knowledge and skills required to develop object-oriented system.				
Semester(s) in which the course is taught	4				
Person responsible for the course	Dr. Ha Viet Uyen Synh				
Language	English				
Relation to curriculum	Compulsory (CS)				
Teaching methods	Lecture, lesson, project, seminar.				
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 195 hours. Contact hours: Lecture 45 hours, Lab 30 hours: Private hours: 120 hours. Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problems and group assignment.				
Credit points	Number of credits : 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1				
Required and recommended prerequisites for joining the course	Object-Oriented Programming				
Course objectives	The course tries to solve the following questions• What are design approaches other than object-oriented design? What is object-oriented design? • What is a good design? How do you differentiate between a good and a bad design? What are the important characteristics of a good design?				
Course learning outcomes	CLO 1. Identify client needs based on a written or verbal specification; CLO 2. Know how analyze and design a system with object-oriented concepts and design patterns; CLO 3. Know how to work in team effectively;				
	Competency level Course learning outcome (CLO)				
	Knowledge 1, 2				
	Skill 1, 3				
	Attitude 3				
L					

Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (45 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)							
	Topic	Weight	Level					
	Software development life cycle;	2	Т					
	Requirements gathering techniques;	1	Т					
	Analyze client's requirements;	4	Т					
	Design and implementation the system;	6	T, U					
	Design patterns;	2	T, U					
Examination forms	Multiple-choice questions, short-answer quest	ions						
Study and examination	Attendance: A minimum attendance of 80 per			or				
requirements	the class sessions. Students will be assessed or							
	class participation. Questions and comments a	re strongly	y					
	encouraged.							
	Assignments/Examination: Students must have more than 50/100 points overall to pass this course.							
Reading list				1. Craig Larman, Applying UML and Patterns - An introduction to Object-Oriented Analysis And Design 3rd, 2004				

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					
2		X				
3					X	

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Software development life cycle;	1	Midterm exam	Lecture, In-class activities	
2	Requirements gathering techniques;	1	Midterm exam	Lecture, In-class activities	
3	Analyze client's requirements;	1,3	Midterm exam, Assignment, Lab quiz	Lecture, In-class activities, Quiz	
4	Midterm				

5	Design and implementation the system;	2, 3	Final exam, Assignment, Lab quiz	Lecture, In-class activities, Quiz	
6	Design patterns;	2	Final exam	Lecture, In-class activities	
7	Final exam				

4. Assessment plan

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

Assessment Type	CLO1	CLO2	CLO3
Midterm examination (25%)	40%	25%	
Projects/Presentations/ Report (25%)	60%	30%	70%
Final examination (40%)		30%	10%
Exercises/ Quiz (10%)		15%	20%

- 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/A	Assignme	nt:				
Date:							
	Evalu	ator:					
	••••••						
	Max.	Score	Comments				
Technical content (60%)							
Abstract clearly identifies purpose and summarizes principal	10						
content							
Introduction demonstrates thorough knowledge of relevant	15						
background and prior work							
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

Н	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:

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

	1		.1 •	*.1 .
	questioned	experts are	synthesis.	without
	thoroughly.	subject to	Viewpoints of	question.
		questioning.	experts are	
			taken as	
			mostly fact,	
			with little	
			questioning.	
			Questions	
			some	Shows an
			assumptions.	emerging
			Identifies	awareness of
			several	present
	Thomography		relevant	*
	Thoroughly			assumptions
	(systematically and		contexts when	(sometimes
	methodically)		presenting a	labels
	analyzes own and	Identifies own	position. May	assertions as
	others' assumptions	and others'	be more aware	assumptions).
	and carefully	assumptions and	of others'	Begins to
	evaluates the	several relevant	assumptions	identify some
Influence of	relevance of contexts	contexts when	than one's own	contexts when
context and	when presenting a	presenting a	(or vice	presenting a
assumptions	position.	position.	versa).	position.
•	Specific position		,	
	(perspective, thesis/			
	hypothesis) is	Specific position		
	imaginative, taking	(perspective,		
	into account the	thesis/hypothesis)		
	complexities of an	takes into account		
	issue. Limits of			
		the complexities	C : C: -	C : C: -
	position (perspective,	of an issue.	Specific	Specific
	thesis/ hypothesis)	Others' points of	position	position
	are acknowledged.	view are	(perspective,	(perspective,
	Others' points of	acknowledged	thesis/	thesis/
Student's	view are synthesized	within position	hypothesis)	hypothesis) is
position	within position	(perspective,	acknowledges	stated, but is
(perspective,	(perspective, thesis/	thesis/	different sides	simplistic and
thesis/hypothesis)	hypothesis).	hypothesis).	of an issue.	obvious.
	Conclusions and	Conclusion is	Conclusion is	Conclusion is
	related outcomes	logically tied to a	logically tied	inconsistently
	(consequences and	range of	to information	tied to some of
	implications) are	information,	(because	the
	logical and reflect	including	information is	information
	student's informed	opposing	chosen to fit	discussed;
Conclusions and	evaluation and	viewpoints;	the desired	related
related outcomes	ability to place	related outcomes	conclusion);	outcomes
(implications and	evidence and	(consequences	some related	(consequences
_	perspectives	_		and
consequences)	perspectives	and implications)	outcomes	allu

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	ation value rubric for eva Capstone		stone	Benchmark
	4	3	2	1
		Organizational		
		pattern (specific	Organizational	
	Organizational pattern	introduction and	pattern (specific	Organizational
	(specific introduction	conclusion,	introduction and	pattern (specific
	and conclusion,	sequenced	conclusion,	introduction and
	sequenced material	material within	sequenced	conclusion,
	within the body, and	the body, and	material within	sequenced
	transitions) is clearly	transitions) is	the body, and	material within
	and consistently	clearly and	transitions) is	the body, and
	observable and is	consistently	intermittently	transitions) is not
	skillful and makes the	observable	observable	observable
	content of the	within the	within the	within the
Organization	presentation cohesive.	presentation.	presentation.	presentation.
			Language	
		Language	choices are	Language
	Language choices are	choices are	mundane and	choices are
	imaginative,	thoughtful and	commonplace	unclear and
	memorable, and	generally	and partially	minimally
	compelling, and	support the	support the	support the
	enhance the	effectiveness of	effectiveness of	effectiveness of
	effectiveness of the	the presentation.	the presentation.	the presentation.
	presentation. Language	Language in	Language in	Language in
	in presentation is	presentation is	presentation is	presentation is
	appropriate to	appropriate to	appropriate to	not appropriate
Language	audience.	audience.	audience.	to audience.
			Delivery	
		Delivery	techniques	Delivery
		techniques	(posture,	techniques
		(posture,	gesture, eye	(posture, gesture,
	D 11	gesture, eye	contact, and	eye contact, and
	Delivery techniques	contact, and	vocal	vocal
	(posture, gesture, eye	vocal	expressiveness)	expressiveness)
	contact, and vocal	expressiveness)	make the	detract from the
	expressiveness) make	make the	presentation	understandability
	the presentation	presentation	understandable,	of the
	compelling, and	interesting, and	and speaker	presentation, and
D.P.	speaker appears	speaker appears	appears	speaker appears
Delivery	polished and confident.	comfortable.	tentative.	uncomfortable.

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Internet of Things

Course Code: IT134IU

1. General information

Course designation	The course explains the architecture, components of Internet of Thing						
	netwo	rks.					
Semester(s) in which the course is taught							
Person responsible for the course	Dr. Le	Dr. Le Duy Tan					
Language	Englis	English					
Relation to curriculum	Electi	ve (All programs)					
Teaching methods	Lectur	re, lesson, project, sei	minar.				
Workload (incl.	(Estin	nated) Total workload	1: 195				
contact hours, self- study hours)	sessio	n, etc.): 45 (lecture) +					
	Privat 120	e study including exa	mination preparation, specified in hours:				
Credit points	Number of credits: 4 (ECTS: 6.18)						
	Lectur						
D 1 1		atory: 1					
Required and recommended prerequisites for joining the course	Computer Networks						
Course objectives	compo	onents from short ran e, Wi-fi, Lora, NB-Io	communication techniques between the ge to long range such as Bluetooth, T, Moreover, the data storage, are also studied in this course.				
Course learning	+		gning and implementing some Internet of				
outcomes	Thing	systems;					
		<u>•</u>	cting data then applying some data mining				
	techni		ata in some IoT applications.				
		Competency level	_				
		Knowledge	CLO 1				
	Skill CLO 1 and CLO 2						
		Attitude	CLO 1				
Content	The de	escription of the cont	ents should clearly indicate the weighting				
	-	content and the level					
	Weight: lecture session (3 hours)						
	Teaching levels: I (Introduce); T (Teach); U (Utilize)						

Topic	Weight	Level		
Week 1: Introduction to Internet of Things	1	I		
Week 2 : IoT applications (1st presentation from industry)	1	U		
Week 3: Sensors and actuators in IoTs	1	T		
Week 4-8: Communication technologies in IoTs: PAN (Bluetooth, Zigbee), LAN (IEEE 802.11), WAN (LoRa, LTE)	5	T		
Week 9: Data collection in IoT	1	T, U		
Week 10: IoT applications (cont.) (2nd presentation from industry)	1	U		
Week 11-14: Data analytics	4	T, U		
Week 15: Review	1	U		
Multiple-choice questions, short-answer questions				
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.				
[1] Raj Kamal, Internet of Things Architecture and Design Principles, Mc Graw H	ill India, 2	017		
 [2] Hanes, David, et al. IoT fundamentals: Networking technologies, protocols, and use cases for the internet of things. Cisco Press, 2017. [3] Singh, Rajesh, et al. Internet of things with Raspberry Pi and Arduino. CRC Press, 2019. [4] Dow, Colin. Internet of things programming projects: build modern IoT solutions with the Raspberry Pi 3 and Python. Packt 				
	Week 1: Introduction to Internet of Things Week 2: IoT applications (1st presentation from industry) Week 3: Sensors and actuators in IoTs Week 4-8: Communication technologies in IoTs: PAN (Bluetooth, Zigbee), LAN (IEEE 802.11), WAN (LoRa, LTE) Week 9: Data collection in IoT Week 10: IoT applications (cont.) (2nd presentation from industry) Week 11-14: Data analytics Week 15: Review Multiple-choice questions, short-answer questions Attendance: A minimum attendance of 80 percent is the class sessions. Students will be assessed on the participation. Questions and comments are strongly Assignments/Examination: Students must have mor points overall to pass this course. [1] Raj Kamal, Internet of Things Architecture and Design Principles, Mc Graw H [2] Hanes, David, et al. IoT fundamen technologies, protocols, and use cases for the Cisco Press, 2017. [3] Singh, Rajesh, et al. Internet of things with Arduino. CRC Press, 2019. [4] Dow, Colin. Internet of things programmi	Week 1: Introduction to Internet of Things Week 2: IoT applications (1st presentation from industry) Week 3: Sensors and actuators in IoTs Week 4-8: Communication technologies in IoTs: PAN (Bluetooth, Zigbee), LAN (IEEE 802.11), WAN (LoRa, LTE) Week 9: Data collection in IoT Week 10: IoT applications (cont.) (2nd presentation from industry) Week 11-14: Data analytics Week 15: Review Multiple-choice questions, short-answer questions Attendance: A minimum attendance of 80 percent is compulse the class sessions. Students will be assessed on the basis of the participation. Questions and comments are strongly encourage Assignments/Examination: Students must have more than 50/points overall to pass this course. [1] Raj Kamal, Internet of Things Architecture and Design Principles, Mc Graw Hill India, 2 [2] Hanes, David, et al. IoT fundamentals: Net technologies, protocols, and use cases for the internet of Cisco Press, 2017. [3] Singh, Rajesh, et al. Internet of things with Raspberry Arduino. CRC Press, 2019. [4] Dow, Colin. Internet of things programming project modern IoT solutions with the Raspberry Pi 3 and Pytho		

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		$\checkmark\checkmark\checkmark$			//	
2						>

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Internet of Things	1, 2	Homework	Lecture, Discussion,	[1]

				Inclass-Quiz	
2	IoT applications (1st presentation from industry)	1	Homework	Lecture, Group work	[2]
3	Sensors and actuators in IoTs	1	Homework	Lecture, Discussion, Inclass-Quiz	[1]
4	Midterm		Written exam		
5 - 9	Communication technologies in IoTs: PAN (Bluetooth, Zigbee), LAN (IEEE 802.11), WAN (LoRa, LTE)	1	Homework	Lecture, Discussion, Inclass-Quiz	[1] [2]
10	Data collection in IoT	2	Homework	Lecture, Discussion, Inclass-Quiz	[1]
11	IoT applications (cont.) (2nd presentation from industry)	1, 2	Homework	Lecture, Group work	[2]
12 - 14	Data analytics	2	Homework	Lecture, Discussion, Inclass-Quiz, Presentation	[1]
15	Week 15: Review		Homework	Review-Test	
	Final exam		Written exam		

4. Assessment plan

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

5. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports						
Student:	nt: HW/Assignment:					
Date:						
	Evalu	ator:				
	Max.	Score	Comments			
Technical content (60%)						

Abstract clearly identifies purpose and summarizes principal	10	
content		
Introduction demonstrates thorough knowledge of relevant	15	
background and prior work		
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**

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

			1/	
			and/ or	
			backgrounds	
			unknown.	
			T.C.	
			Information is	
			taken from	
			source(s) with	
	Information is		some	
	taken from	Information is	interpretation/	
	source(s) with	taken from	evaluation, but	
	enough	source(s) with	not enough to	Information is
	interpretation/	enough	develop a	taken from
	evaluation to	interpretation/	coherent	source(s)
	develop a	evaluation to	analysis or	without any
	comprehensive	develop a	synthesis.	interpretation/
Evidence	analysis or	coherent analysis	Viewpoints of	evaluation.
Selecting and	synthesis.	or synthesis.	experts are	Viewpoints of
using information	Viewpoints of	Viewpoints of	taken as	experts are
to investigate a	experts are	experts are	mostly fact,	taken as fact,
point of view or	questioned	subject to	with little	without
conclusion	thoroughly.	questioning.	questioning.	question.
			Questions	
			some	Shows an
			assumptions.	emerging
	Thoroughly		Identifies	awareness of
	(systematically		several	present
	and methodically)		relevant	assumptions
	analyzes own and		contexts when	(sometimes
	others'		presenting a	labels
	assumptions and	Identifies own	position. May	assertions as
	carefully	and others'	be more aware	assumptions).
	evaluates the	assumptions and	of others'	Begins to
	relevance of	several relevant	assumptions	identify some
Influence of	contexts when	contexts when	than one's own	contexts when
context and	presenting a	presenting a	(or vice	presenting a
assumptions	position.	position.	versa).	position.
•	Specific position	Specific position	,	
	(perspective,	(perspective,		
	thesis/	thesis/hypothesis)	Specific	Specific
	hypothesis) is	takes into account	position	position
	imaginative,	the complexities	(perspective,	(perspective,
	taking into	of an issue.	thesis/	thesis/
Student's	account the	Others' points of	hypothesis)	hypothesis) is
position	complexities of	view are	acknowledges	stated, but is
(perspective,	an issue. Limits	acknowledged	different sides	simplistic and
thesis/hypothesis)	of position	within position	of an issue.	obvious.
money pources	or position	"Tulli position	or air ibbac.	00 110 000.

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

Oral communication value rubric for evaluating presentation tasks:

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

	Language		Language	
	choices are	Languaga	choices are	
		Language		I anamana ahaisaa
	imaginative,	choices are	mundane and	Language choices
	memorable, and	thoughtful and	commonplace	are unclear and
	compelling, and	generally	and partially	minimally support
	enhance the	support the	support the	the effectiveness
	effectiveness of	effectiveness of	effectiveness of	of the
	the presentation.	the presentation.	the presentation.	presentation.
	Language in	Language in	Language in	Language in
	presentation is	presentation is	presentation is	presentation is not
	appropriate to	appropriate to	appropriate to	appropriate to
Language	audience.	audience.	audience.	audience.
	Delivery		Delivery	Delivery
	techniques	Delivery	techniques	techniques
	(posture, gesture,	techniques	(posture, gesture,	(posture, gesture,
	eye contact, and	(posture, gesture,	eye contact, and	eye contact, and
	vocal	eye contact, and	vocal	vocal
	expressiveness)	vocal	expressiveness)	expressiveness)
	make the	expressiveness)	make the	detract from the
	presentation	make the	presentation	understandability
	compelling, and	presentation	understandable,	of the
	speaker appears	interesting, and	and speaker	presentation, and
	polished and	speaker appears	and speaker	speaker appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
Denvery	confident.		tentative.	unconnortable.
	A vonictive of	Supporting materials		In sufficient
	A variety of		C	Insufficient
	types of	(explanations,	Supporting	supporting
	supporting	examples,	materials	materials
	materials	illustrations,	(explanations,	(explanations,
	(explanations,	statistics,	examples,	examples,
	examples,	analogies,	illustrations,	illustrations,
	illustrations,	quotations from	statistics,	statistics,
	statistics,	relevant	analogies,	analogies,
	analogies,	authorities)	quotations from	quotations from
	quotations from	make	relevant	relevant
	relevant	appropriate	authorities) make	authorities) make
	authorities) make	reference to	appropriate	reference to
	appropriate	information or	reference to	information or
	reference to	analysis that	information or	analysis that
	information or	generally	analysis that	minimally
	analysis that	supports the	partially supports	supports the
	significantly	presentation or	the presentation	presentation or
	supports the	establishes the	or establishes the	establishes the
	presentation or	presenter's	presenter's	presenter's
	establishes the	credibility/	credibility/	credibility/
Supporting	presenter's	authority on the	authority on the	authority on the
Material	credibility/	topic.	topic.	topic.
<u> </u>				

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Mobile Application Development

Course Code: IT133IU

1. General information

Course designation	Advanced programming course with focus on mobile environment			
Semester(s) in which the course is taught	7			
Person responsible for the course	MSc. Le Thanh Son			
Language	English			
Relation to curriculum	Elective (All programs)			
Teaching methods	Lecture			
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 (ECTS: 6.18) Lecture: 3 Laboratory: 1			
Required and recommended prerequisites for joining the course	Object-oriented analysis and design			
Course objectives	This course is designed to introduce and familiarize students with programming in the mobile environment: Android platform will be used throughout the course. The course starts with introductions to basic components, concepts, structures of Android applications then move on with common user interface elements, persistent storage, database for mobile etc. Introduction to most common tools and techniques for writing Android application is also included with hands on experience in form of lab exercise programming project.			
Course learning outcomes	CLO 1. Understand the structure of mobile application, especially Android application CLO 2. Understand most common mobile platform user interface, database, services CLO 3. Able to develop mobile application CLO 4. Team working Competency level Course learning outcome (CLO)			
	Knowledge 1			

		Skill	2, 3		
		Attitude	4		
Content	the con Weigh	e description of the contents should clearly in content and the level. eight: lecture session (3 hours) aching levels: I (Introduce); T (Teach); U (Ut			veighting of
		opic	ec), I (Ieucii), o (etii	Weight	Level
		troduction to mobile	programming	3	Ι
		ndroid and Modal Vi		3	I, T
	A	ctivity Lifecycle		3	I, T
		droid SDK Versions	and Compatbility	3	I, T
	C	reating UI: Layout ar	nd Widgets	3	T, U
	L	istFragment		3	
	V	iewPager		3	T, U
	D	ialogs		3	T, U
	M	lediaPlayer		3	T, U
	A	ction Bar		3	T, U
	Sa	aving and Loading Lo	ocal Files	3	T, U
	C	ontext Menu and Cor	ntextual Action Mode	3	T, U
	T	aking Pictures and H	andling Images	3	T, U
	In	itents		3	T, U
	В	rowsing the Web & V	WebView	3	T, U
Examination forms			short-answer questions		
Study and examination	the cla	ss sessions. Students	tendance of 80 percents will be assessed on the	e basis of	their class
requirements	Assign	participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points overall to pass this course.			
Reading list		C. Stewart, K. Marscicano, Android Programming: The Big Nerd Ranch Guide 3rd, 2017			
		D. Griffiths, Head Fir Guide 1st, 2015	rst Android Developme	ent: A Bra	in-Friendly

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
1	X					

2	X				
3		XX			XXX
4			X		XXX

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to mobile programming	1	Quiz	Lecture	2
2	Android and Modal View Controller	1	Quiz	Lecture	2
3	Activity Lifecycle	1	Quiz	Lecture	2
4	Adroid SDK Versions and Compatbility	1	Quiz, Lab, Midterm	Lecture, Discussion	2
5	Creating UI: Layout and Widgets	2, 3,	Quiz, Lab, Midterm	Lecture, Discussion, In-class Exercise	1
6	ListFragment	2, 3,	Quiz, Lab, Midterm	Lecture, Discussion, In-class Exercise	1
7	ViewPager	2, 3,	Quiz, Lab, Midterm	Lecture, Discussion, In-class Exercise	1
8	Dialogs	2, 3, 4	Quiz, Lab, Midterm	Lecture, Discussion, In-class Exercise	1
	Midterm				
9	MediaPlayer	2, 3, 4	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
10	Action Bar	2, 3,	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
11	Saving and Loading Local Files	2, 3,	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
12	Context Menu and Contextual Action Mode	2, 3,	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
13	Taking Pictures and Handling Images	2, 3,	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
14	Intents	2, 3,	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
15	Browsing the Web & WebView	2, 3,	Quiz, Lab, Final	Lecture, Discussion, In-class Exercise	1
	Final exam	•	-		•

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	

Quiz / Assigment (10%)	50%	10%	10%	70%
Labs (20%)	10%	30%	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.

5. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports				
Student:	HW/A	Assignme	ent:	
Date:				
	Evalu	ator:		
	Max.	Score	Comments	
Technical content (60%)				
Abstract clearly identifies purpose and summarizes principal	10			
content				
Introduction demonstrates thorough knowledge of relevant	15			
background and prior work				
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

Н	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.

5.3. Analytic rubric Critical thinking value rubric for evaluating questions in exams:

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

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

Oral communication value rubric for evaluating presentation tasks:

	Capstone	Milestone	Benchmark

	4	3	2	1
	Organizational			
	pattern (specific			
	introduction and			
	conclusion,	Organizational		
	sequenced	pattern (specific	Organizational	
	material within	introduction and	pattern (specific	
	the body, and	conclusion,	introduction and	Organizational
	transitions) is	sequenced	conclusion,	pattern (specific
	clearly and	material within	sequenced	introduction and
	consistently	the body, and	material within	conclusion,
	observable and is	transitions) is	the body, and	sequenced
	skillful and	clearly and	transitions) is	material within the
	makes the	consistently	intermittently	body, and
	content of the	observable	observable	transitions) is not
	presentation	within the	within the	observable within
Organization	cohesive.	presentation.	presentation.	the presentation.
	Language		Language	
	choices are	Language	choices are	
	imaginative,	choices are	mundane and	Language choices
	memorable, and	thoughtful and	commonplace	are unclear and
	compelling, and	generally	and partially	minimally support
	enhance the	support the	support the	the effectiveness
	effectiveness of	effectiveness of	effectiveness of	of the
	the presentation.	the presentation.	the presentation.	presentation.
	Language in	Language in	Language in	Language in
	presentation is	presentation is	presentation is	presentation is not
	appropriate to	appropriate to	appropriate to	appropriate to
Language	audience.	audience.	audience.	audience.
	Delivery	D 11	Delivery	Delivery
	techniques	Delivery	techniques	techniques
	(posture, gesture,	techniques	(posture, gesture,	(posture, gesture,
	eye contact, and	(posture, gesture,	eye contact, and	eye contact, and
	vocal	eye contact, and	vocal	vocal
	expressiveness)	vocal	expressiveness)	expressiveness)
	make the	expressiveness)	make the	detract from the
	presentation	make the	presentation	understandability
	compelling, and	presentation	understandable,	of the
	speaker appears	interesting, and	and speaker	presentation, and
Dolivory	polished and confident.	speaker appears comfortable.	appears	speaker appears uncomfortable.
Delivery	Commutati.	commontable.	tentative.	unconnortable.
	A variety of	Supporting	Supporting	Insufficient
	types of	materials	materials	supporting
	supporting	(explanations,	(explanations,	materials
	materials	examples,	examples,	(explanations,
Supporting	(explanations,	illustrations,	illustrations,	examples,
Material	examples,	statistics,	statistics,	illustrations,

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Human-Computer Interaction

Course Code: IT044IU

1. General information

1. General informa	ttion				
Course designation	This course provides students with fundamental interaction principles between human and computers.				
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, se	minar.		
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 (ECTS: 6.18) 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.				
		Competency level	Course learning outcome (CLO)		
		Knowledge	2, 3, 4		
		Skill	1		
		Attitude	1		

Content	The description of the contents should clearly indicate the weighting				
	of the content and the level.				
	Weight: lecture session (3 hours)				
	Teaching levels: I (Introduce); T (Teach); U ((Utilize)			
	Topic	Weigh t	Leve l		
	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		
	Data analysis	1	T,U		
Examination forms	Short-answer questions				
Study and	Attendance: A minimum attendance of 80 per				
examination	the class sessions. Students will be assessed o				
requirements	participation. Questions and comments are str		-		
	Assignments/Examination: Students must have points overall to pass this course.	ve more th	nan 50/100		
Reading list	points overall to pass this course.				
Reading list	[1] Sharp, H., Preece, J., Rogers, Y. (2019). In Beyond Human-Computer Interaction. United		•		
	[2] Dix, A. (2003). Human-computer Interaction. Germany: Pearson/Prentice-Hall.				
	[3] MacKenzie, I. S. (2012). Human-Computer Interaction: An Empirical Research Perspective. Netherlands: Elsevier Science.				

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	Assessme	Learning	Resources
			nts	activities	
1	Human factors	1	Midterm	In-class	
			exam	activities	
2,3	Human perception and	2	Midterm	In-class	
	cognition principles		exam	activities	
4,5	User-centered design	2	Midterm	In-class	
			exam,	activities	
			Project,		
			Lab quiz		
6	Requirements gathering	1	Midterm	In-class	
techniques	techniques		exam,	activities	
			Project		
7,8	Interface design process	2	Midterm	In-class	
			exam,	activities	
			Project		
Midter	m exam				_ _
9,10	Prototyping techniques	2	Project	In-class	
				activities	
11	Interface evaluation	3	Final	In-class	
	methodology		exam,	activities	
			Project		
12	Interaction styles and	3	Final	In-class	
	techniques		exam	activities	
13,14	HCI for mobile	4	Lab quiz	In-class	
	applications, the Web,			activities	
	and emerging				
	technologies				
15	Data analysis	2, 4	Final	In-class	
			exam,	activities	
			Project		
Final e	vam				

4. Assessment plan

ment plan	-	•		1
Assessment Type	CLO	CLO	CLO	CLO
	1	2	3	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%
1 mai examination (4070)	3070	/ -	/ -

5. Rubrics (optional) 5.1. Grading checklist

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

11011	stie i ubi ie				
Holis	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:

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

	presenting a position.		of others' assumptions than one's own (or vice versa).	contexts when presenting a position.
Student's position (perspec tive, thesis/hy pothesis	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/	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.
Conclusi ons and related outcome s (implica tions and consequ ences)	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.	hypothesis). 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
	Organizational	Organizational	Organizational	Organizational
	pattern (specific	pattern	pattern	pattern (specific
	introduction and	(specific	(specific	introduction and
	conclusion,	introduction	introduction	conclusion,
Organiz	sequenced	and conclusion,	and conclusion,	sequenced material
ation	material within	sequenced	sequenced	within the body,

	the heady and	material within	material within	and transitions) is
	the body, and			and transitions) is
	transitions) is	the body, and	the body, and	not observable
	clearly and	transitions) is	transitions) is	within the
	consistently	clearly and	intermittently	presentation.
	observable and	consistently	observable	
	is skillful and	observable	within the	
	makes the	within the	presentation.	
	content of the	presentation.		
	presentation			
	cohesive.		T	
	т	т	Language	
	Language	Language	choices are	
	choices are	choices are	mundane and	
	imaginative,	thoughtful and	commonplace	T 1 '
	memorable, and	generally	and partially	Language choices
	compelling, and	support the	support the	are unclear and
	enhance the	effectiveness of	effectiveness of	minimally support
	effectiveness of	the	the	the effectiveness of
	the presentation.	presentation.	presentation.	the presentation.
	Language in	Language in	Language in	Language in
_	presentation is	presentation is	presentation is	presentation is not
Languag	appropriate to	appropriate to	appropriate to	appropriate to
e	audience.	audience.	audience.	audience.
	Delivery	D 11	Delivery	D 11
	techniques	Delivery	techniques	Delivery
	(posture,	techniques	(posture,	techniques
	gesture, eye	(posture,	gesture, eye	(posture, gesture,
	contact, and	gesture, eye	contact, and	eye contact, and
	vocal	contact, and	vocal	vocal
	expressiveness)	vocal	expressiveness)	expressiveness)
	make the	expressiveness)	make the	detract from the
	presentation	make the	presentation	understandability
	compelling, and	presentation	understandable,	of the presentation,
	speaker appears	interesting, and	and speaker	and speaker
Dolizzawa	polished and confident.	speaker appears comfortable.	appears	appears
Delivery			tentative.	uncomfortable. Insufficient
	A variety of types of	Supporting materials	Supporting materials	supporting
	supporting	(explanations,	(explanations,	materials
	materials	examples,	examples,	(explanations,
	(explanations,	illustrations,	illustrations,	examples,
	examples,	statistics,	statistics,	illustrations,
	illustrations,	analogies,	analogies,	statistics,
	statistics,	quotations from	quotations from	analogies,
Supporti	analogies,	relevant	relevant	quotations from
ng	quotations from	authorities)	authorities)	relevant
Material	relevant	make	make	authorities) make
mact lat	1010 valit	munc	muse	addioffics) make

	authorities)	appropriate	appropriate	reference to
	make	reference to	reference to	information or
	appropriate	information or	information or	analysis that
	reference to	analysis that	analysis that	minimally supports
	information or	generally	partially	the presentation or
	analysis that	supports the	supports the	establishes the
	significantly	presentation or	presentation or	presenter's
	supports the	establishes the	establishes the	credibility/
	presentation or	presenter's	presenter's	authority on the
	establishes the	credibility/	credibility/	topic.
	presenter's	authority on the	authority on the	
	credibility/	topic.	topic.	
	authority on the			
	topic.			
	Central message			
	is compelling			
	(precisely	C . 1	Central .	
	stated,	Central .	message is	G 1
	appropriately	message is	basically	Central message
	repeated,	clear and	understandable	can be deduced but
C	memorable, and	consistent with	but is not often	is not explicitly
Central	strongly	the supporting	repeated and is	stated in the
Message	supported.)	material.	not memorable.	presentation.

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Cloud Computing

Course Code: IT164IU

1. General information

1. General information	mation
Course designation	The course presents a top-down view of cloud computing, from applications and administration to programming and infrastructure.
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	Number of credits: 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	Computer Networks
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 p group collaboration.	roblem using cloud	computin	g throug
	Competency level	Course learning of (CLO)	utcome	
	Knowledge	1		
	Skill	2, 3		
	Attitude	3		
Content	The description of the content of the content and the level. Weight: lecture session (3 hor Teaching levels: I (Introduce	ours)		weightin
	Topic		Weigh	Level
			t	-
	Introduction to Cloud Com	puting	1	I
	Cloud Computing Platform	1S	3	T
	Parallel Programming in the	e Cloud	3	T, U
	Distributed Storage System	ns	3	T, U
	Virtualization		2	T, U
	Cloud Security		2	T
	Multicore Operating System	ms	1	T
Examination forms	Short-answer questions, Prog	gramming exercises		
Study and	Attendance: A minimum atte	-	•	•
examination	the class sessions. Students w			
requirements	participation. Questions and			
	Assignments/Examination: S points overall to pass this cou		ore man.	50/100
Reading list	2. Rountree, Derrick, and computing: Understand computing in theory a	d Ileana Castrillo. <i>Th</i> ading the fundamenta	ıls of clou	-
	3. Patterson, Scott. Learn AWS Serverless Computing: A Beginner's Guide to Using AWS Lambda, Amazon API Gateway, and Services from Amazon Web Services. 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\SL	1	2	3	4	5	6
OT						
1	X					

2	XX		
3			X

3. Planned learning activities and teaching methods

We	Topic	CLO	Assessment	Learning	Resource
ek			S	activities	S
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
Mid	term				
9	Distributed Storage Systems – Part 2	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
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	1

Final	<u> </u>				
15	Multicore Operating Systems	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
14	Cloud Security – 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
12	Virtualization – Part 2	2, 3	Quiz, Lab, Final	, In-class Exercise Lecture, Discussion , In-class Exercise	1

4. Assessment plan

ossanono prom						
Assessment Type	CLO1	CLO2	CLO3			
Quiz / Assigment (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.

5. Rubrics (optional)

5.4. Grading checklist

Grading checklist for Written Reports					
Student: HW/Assignm	Student: HW/Assignment:				
Evaluator:			••••		
Date:					
	Max.	Score	Comments		
Technical content (60%)					
Abstract clearly identifies purpose and	10				
summarizes principal content					
Introduction demonstrates thorough	15				
knowledge of relevant background and prior					
work					

Analysis and discussion demonstrate good	30	
subject mastery		
Summary and conclusions appropriate and	5	
complete		
Organization (10%)		
Distinct introduction, body, conclusions	5	
Content clearly and logically organized, good	5	
transitions		
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	Miles	tone	Benchmark
	4	4 3		1
			Issue/ problem	
			to be	
			considered	
	Issue/ problem to		critically is	
	*		stated but	
	critically is stated	ed to be considered descripti		
	clearly and	critically is	leaves some	
	described	stated,	terms	
	comprehensively,	described, and	undefined,	Issue/ problem
	delivering all	clarified so that	ambiguities	to be considered
Expla	relevant	understanding is	unexplored,	critically is
natio	information	not seriously	boundaries	stated without
n of	necessary for full	impeded by	undetermined,	clarification or
issues	understanding.	omissions.	and/ or	description.

			backgrounds	
			unknown.	
Evide			Information is	
nce			taken from	
Selecti			source(s) with	
ng	Information is	Information is	some	
and	taken from	taken from	interpretation/	
using	source(s) with	source(s) with	evaluation, but	
inform	enough	enough	not enough to	
ation	interpretation/	interpretation/	develop a	Information is
to	evaluation to	evaluation to	coherent	taken from
investi	develop a	develop a	analysis or	source(s)
gate a	comprehensive	coherent	synthesis.	without any
point	analysis or	analysis or	Viewpoints of	interpretation/
of	synthesis.	synthesis.	experts are	evaluation.
view	Viewpoints of	Viewpoints of	taken as	Viewpoints of
or	experts are	experts are	mostly fact,	experts are taken
conclu	questioned	subject to	with little	as fact, without
sion	thoroughly.	questioning.	questioning.	question.
	Thoroughly (systematically and methodically)		Questions some assumptions. Identifies several relevant	Shows an emerging awareness of present assumptions
	analyzes own and		contexts when	(sometimes
Influe	others'	Identifies own	presenting a	labels assertions
nce of	assumptions and	and others'	position. May	as assumptions).
conte	carefully evaluates	assumptions and	be more aware	Begins to
xt	the relevance of	several relevant	of others'	identify some
and	contexts when	contexts when	assumptions	contexts when
assum	presenting a	presenting a	than one's own	presenting a
ptions	position.	position.	(or vice versa).	position.
	Specific position (perspective,	Specific		
	thesis/ hypothesis)	position		
	is imaginative,	(perspective,		
Stude	taking into account	thesis/hypothesi		
nt's	the complexities of	s) takes into		
positi	an issue. Limits of	account the	Specific	
on	position	complexities of	position	Specific position
(pers	(perspective,	an issue. Others'	(perspective,	(perspective,
pectiv	thesis/ hypothesis)	points of view	thesis/	thesis/
e,	are acknowledged.	are	hypothesis)	hypothesis) is
thesis/	Others' points of	acknowledged	acknowledges	stated, but is
hypot	view are	within position	different sides	simplistic and
hesis)	synthesized within	(perspective,	of an issue.	obvious.

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

	1	- cc t: c		T
	enhance the	effectiveness of	support the	Language in
	effectiveness of	the	effectiveness of	presentation is not
	the presentation.	presentation.	the	appropriate to
	Language in	Language in	presentation.	audience.
	presentation is	presentation is	Language in	
	appropriate to	appropriate to	presentation is	
	audience.	audience.	appropriate to	
			audience.	
	Delivery		Delivery	
	techniques	Delivery	techniques	Delivery
	(posture,	techniques	(posture,	techniques
	gesture, eye	(posture,	gesture, eye	(posture, gesture,
	contact, and	gesture, eye	contact, and	eye contact, and
	vocal	contact, and	vocal	vocal
	expressiveness)	vocal	expressiveness)	expressiveness)
	make the	expressiveness)	make the	detract from the
	presentation	make the	presentation	understandability
	compelling, and	presentation	understandable,	of the presentation,
	speaker appears	interesting, and	and speaker	and speaker
Delive	polished and	speaker appears	appears	appears
ry	confident.	comfortable.	tentative.	uncomfortable.
	A variety of			
	types of			
	supporting	Supporting	Supporting	
	materials	materials	materials	
	(explanations,	(explanations,	(explanations,	Insufficient
	examples,	examples,	examples,	supporting
	illustrations,	illustrations,	illustrations,	materials
	statistics,	statistics,	statistics,	(explanations,
	analogies,	analogies,	analogies,	examples,
	quotations from	quotations from	quotations from	illustrations,
	relevant	relevant	relevant	statistics,
	authorities)	authorities)	authorities)	analogies,
	make	make	make	_
	appropriate	appropriate	appropriate	quotations from relevant
	reference to	reference to	reference to	authorities) make
	information or	information or	information or	reference to
				information or
	analysis that significantly	analysis that	analysis that	
	supports the	generally	partially	analysis that
	* *	supports the	supports the presentation or	minimally supports
	presentation or establishes the	presentation or establishes the	establishes the	the presentation or establishes the
Sunn				
Supp	presenter's	presenter's	presenter's	presenter's
orting	credibility/	credibility/	credibility/	credibility/ authority on the
Motor	Olithority on the			
Mater ial	authority on the topic.	authority on the topic.	authority on the topic.	topic.

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

Source: Association of American Colleges and Universities Date revised: August 28, 2023

Ho Chi Minh City, 28/08/2023 **Dean of School of Computer Science and Engineering**

Assoc.Prof. Nguyen Van Sinh

Menh

Course Name: Security Technology and Implementation

Course Code: IT165IU

1. General information

General Inform	
Course designation	The course will concentrate on security technologies that can be employed to safeguard and maintain a network. The course will also cover risk management, business continuity and recovery planning, operations security, access control systems, and software development security.
Semester(s) in which the course is taught	7,9
Person responsible for the course	Dr. Le Hai Duong
Language	English
Relation to curriculum	Compulsory
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 (ECTS: 6.18) Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	Computer Networks
Course objectives	This course introduces students to information security principles, cryptography systems (symmetric and public key encryptions), risk management, security architecture and design, business continuity operations security, access control systems, protecting TCP/IP network, firewalls, virtual private network, IPSec, software development security.
Course learning outcomes	CLO 1. Gain understanding of information security and 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. Analyze and evaluate security risk and security design; CLO 4. Understand and apply software development security; CLO 5. Apply security technologies in operations.				
		Competency level	Course learning out (CLO)	tcome	
		Knowledge	CLO1, CLO2, CLO	4, CLO5	
		Skill	CLO2, CLO3, CLO4	4, CLO6	
	-	Attitude			
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)				
	Тор	ic		Weigh	Leve
	T. C			t	T
		rmation security pr		1	T
		ernance and risk m		1	T,U
		urity architecture ar		1	T
		iness continuity and ning;	d disaster recovery	1	T,U
	Ope	ration security;		2	T,U
	Acc	ess control systems	and methodology;	1	Т
	Cryp	ptography;		2	T,U
		rview network and rrity;	telecommunications	1	T,U
	Basi	ic security infrastru	ctures and routers;	1	Т
	Fire	walls		1	T,U
		usion detection syst ection systems	ems and intrusion	1	Т
	<u> </u>	ual private network	and IPSec;	1	Т
		ware Development		1	T,U
Examination forms			s, short-answer question	ons	
Study and examination requirements	for the their cl encour Assign	class sessions. Stulass participation. (caged.	attendance of 80 percedents will be assessed Questions and commerces: Students must have	on the ba nts are stro	sis of ongly

Reading list	1.	William Stallings and Lawrence Brown, Computer
		Security - Principles and Practice 4th edition, 2018
	2.	Mark S. Merkow and Jim Breithaupt, Information
		Security: Principles and Practices, 2nd edition, 2014.

2. Learning Outcomes Matrix

The relationship between Course Learning Outcomes (CLO) (1-6) 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		
2		X				
3	X					
4	X					
5	X					
6	X					

3. Planned learning activities and teaching methods

Wee k	Topic	CLO	Assessments	Learning activities	Resour ces
1	Information security principles	1	Quiz, Exam	Lecture, Exercises, Lab	[1,2]
2	Governance and risk management;	3	Quiz, Exam	Lecture, Lab	[2]
3	Security architecture and design;	3	Quiz, Exam	Lecture, Lab	[2]
4	Business continuity and disaster recovery planning;	3	Quiz, Exam	Lecture, Lab	[2]
5,6	Operation security;	5	Quiz, Exam	Lecture, Lab	[2]
7	Access control systems and methodology;	2		Lecture, Lab	
	Midterm exam				
8, 9	Cryptography;	1	Quiz, Exam	Lecture	[1]
10	Overview network and telecommunications;	5	Quiz, Exam	Lecture, Lab	[2]
11	Basic security infrastructures and routers;	5	Quiz, Exam	Lecture, Lab	[2]
12	Firewalls	5	Quiz, Exam	Lecture, Exercises,	[1,2]

13	Intrusion detection systems and intrusion protection systems	5	Quiz, Exam	Lecture, Exercises,	[1,2]
14	Virtual private network and IPSec;	5	Quiz, Exam	Lecture, Lab	[1,2]
15	Software Development security.	4	Quiz, Exam	Lecture	[2]
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Midterm examination (30%)	30%	80%	55%		10%
Final examination (40%)	40%			75%	60%
Exercises/ Quiz (30%)	30%	20%	45%	25%	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 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

Crading checklist for Written Paperts

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

Organization (10%)		
Distinct introduction, body, conclusions	5	
Content clearly and logically organized, good	5	
transitions		
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 rub	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	Miles	Benchmark	
4	3	2	1

]
Explan ation 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.
issues	unuerstanding.	OHHSSIOHS.	Information is	description.
Eviden ce	Information is taken from source(s) with	Information is taken from source(s) with	taken from source(s) with some interpretation/ evaluation, but	
Selectin	enough	enough	not enough to	Information is
g and using	interpretation/ evaluation to	interpretation/ evaluation to	develop a coherent	taken from source(s)
informa	develop a	develop a	analysis or	without any
tion to	comprehensive	coherent	synthesis.	interpretation/
investig	analysis or	analysis or	Viewpoints of	evaluation.
ate a	synthesis.	synthesis.	experts are	Viewpoints of
point of	Viewpoints of	Viewpoints of	taken as	experts are
view or	experts are	experts are	mostly fact,	taken as fact,
conclus	questioned	subject to	with little	without
ion	thoroughly.	questioning.	questioning.	question.
	Thoroughly		Questions some	Shows an
	Thoroughly (systematically and		assumptions.	emerging awareness of
	methodically)		Identifies	present
	analyzes own and		several	assumptions
	others'	Identifies own	relevant	(sometimes
Influen	assumptions and	and others'	contexts when	labels
ce of	carefully evaluates	assumptions and	presenting a	assertions as
context	the relevance of	several relevant	position. May	assumptions).
and	contexts when	contexts when	be more aware	Begins to
assump	presenting a	presenting a	of others'	identify some
tions	position.	position.	assumptions	contexts when

			than one's own	presenting a
			(or vice versa).	position.
			(or vice versu).	position
Studen	Specific position (perspective, thesis/ hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective,	Specific position (perspective, thesis/hypothesis) takes into account the complexities of		
t's	thesis/ hypothesis)	an issue. Others'	Specific	Specific
positio	are acknowledged.	points of view	position	position
n	Others' points of	are	(perspective,	(perspective,
(perspe	view are	acknowledged	thesis/	thesis/
ctive,	synthesized within	within position	hypothesis)	hypothesis) is
thesis/h	position	(perspective,	acknowledges	stated, but is
ypothe	(perspective,	thesis/	different sides	simplistic and
sis)	thesis/ hypothesis).	hypothesis).	of an issue.	obvious.
	Canalysians and	Conclusion is logically tied to	Conclusion is logically tied to information	Constraionia
Conslu	Conclusions and	a range of	(because	Conclusion is
Conclu sions	related outcomes	information,	information is	inconsistently tied to some of
and	(consequences and	including	chosen to fit the desired	the information
related	implications) are	opposing		discussed;
outcom	logical and reflect student's informed	viewpoints; related	conclusion); some related	related
es	evaluation and	outcomes	outcomes	outcomes
(implic	ability to place	(consequences	(consequences	(consequences
ations	evidence and	and	and	and
and	perspectives	implications)	implications)	implications)
conseq	discussed in	are identified	are identified	are
uences)	priority order.	clearly.	clearly.	oversimplified.
uences)	priority order.	cicarry.	cicarry.	oversimpilited.

Source: Association of American Colleges and Universities
Oral communication value rubric for evaluating presentation tasks:

Capstone	Milestone		Benchmark	
4	3	2	1	

Organi	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.
Zation	conesive.	presentation.	presentation.	the presentation.
Langu age	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.
age	Delivery	audience.	Delivery	audichee.
	techniques (posture, gesture, eye	Delivery techniques (posture,	techniques (posture, gesture, eye	Delivery techniques (posture, gesture,
	contact, and	gesture, eye	contact, and	eye contact, and
	vocal	contact, and vocal	vocal	vocal
	expressiveness) make the	expressiveness)	expressiveness) make the	expressiveness) detract from the
	presentation	make the	presentation	understandability
	compelling, and	presentation	understandable,	of the
	speaker appears	interesting, and	and speaker	presentation, and
Deliver	polished and	speaker appears	appears	speaker appears
y	confident.	comfortable.	tentative.	uncomfortable.

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sin

Course Name: Software Quality Verification and Validation

Course Code: IT166IU

1. General information

l <u>. General informat</u>	ion				
1. Course designation					
Semester(s) in which the course is taught	7,9	7,9			
Person responsible for the course	Tran Thanh T	Гran Thanh Tung, Dr.			
Language	English				
Relation to curriculum	Elective	Elective			
Teaching methods	Lecture, lesso	n, project, seminar	r .		
Workload (incl. contact hours, self-study hours)	whether lecturincluding examples responsibility:	(Estimated) Total workload: Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Private study including examination preparation, specified in hours: Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problems and group			
Credit points	Number of cre Lecture: 3 Laboratory: 1	edits : 4 (ECTS: 6.	18)		
Required and recommended prerequisites for joining the course	Object-Orient	ed Programming			
Course objectives	Strategies and	o software verifica techniques are pro ing software testin	esented for testing		
Course learning outcomes	CLO 1. Describe and explain how testing activities involve within software development process. CLO 2. Understand and apply best practices for software testing. CLO 3. Create test cases based on system requirement				
		Competency	Course		
		level	learning		
			outcome (CLO)		
		Knowledge	CLO1, CLO2		

	S	kill	CLO2, CLO	O3		
	A	Attitude	CLO2			
Content	weighting of the Weight: lecture s	The description of the contents should clearly weighting of the content and the level. Weight: lecture session (3 hours) Feaching levels: I (Introduce); T (Teach); U (
	Topic					
	Softwar	re Testing Overv	view 3		I	
	Software	Testing Foundat	ions 3		T	
	Software	Testing Activitie	es 3		T	
	Model-Dr	riven Test Desig	n 3		T, U	
	Test Auto	omation	3		T, U	
	Testing F	irst Approach	3		T	
	Criteria-B	Based Test Desig	n 3		T	
	Input Spa	ce Partitioning	3		T	
	Graph Co	verage	3		T	
	Logic Co	verage	3		T	
	Writing T	est Plans	3		T, U	
	Test imple	ementation	3		T, U	
Examination forms	Short-answer qu	estions				
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 Amr Testing, 2	1. Paul Ammann, Jeff Offutt; Introduction to Software Testing, 2nd, 2017				:
	2009. 3. Glendford	d J. Myers, Tom tware Testing, 2	Badgett, Co			The

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	XX					
2		XXX				

3			X
5			

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessment s	Learning activities	Resources
1	Software Testing Overview	1	Quiz	Lecture	
2	Software Testing Foundations	1	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
3	Software Testing Activities	2	Quiz	Lecture, Discussion	[2]
4	Model- Driven Test Design	1,2	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
5	Test Automation	2,3	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
6	Test Automation – Tools	1,2	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
7	Testing First Approach	2,3	Lab, Quiz, Midterm	Lecture, Discussion	
8	Criteria- Based Test Design	2,3	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
9	Midterm				
10	Input Space Partitioning – Part 1	1,2	Lab, Quiz, Final	Lecture, Discussion, In class exercises	[1,3]
11	Input Space Partitioning – Part 2	2,3	Lab, Quiz, Final	Lecture, Discussion	[1,2,3]
12	Graph Coverage	1,2	Lab, Quiz, Final	Lecture, Discussion, In class exercises	[1,3]

13	Logic Coverage	2,3	Lab, Quiz, Final	Lecture, Discussion	[1,3]
14	Writing Test Plans	1,2	Lab, Quiz, Final	Lecture, Discussion, In class exercises	[2,3]
15	Test implementat ion	2,3	Lab, Quiz, Final	Lecture, Discussion	[2,3]
16	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Quiz (5%)	X	X	
Labs (20%)		X	
Midterm examination (30%)	X	X	X
Projects/Presentati ons/ Report (10%)		X	X
Final examination (40%)	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. ←

5. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports					
nent:		• • • • • •			
		••••			
Max.	Score	Comments			
10					
15					
	Max.	Max. Score	Max. Score Comments		

Analysis and discussion demonstrate good	30	
subject mastery		
Summary and conclusions appropriate and	5	
complete		
Organization (10%)		
Distinct introduction, body, conclusions	5	
Content clearly and logically organized, good	5	
transitions		
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

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

			and/ or	
			backgrounds	
			unknown.	
			Information is	
			taken from	
			source(s) with	
	Information is	Information is	some	
Evidenc	taken from	taken from	interpretation/	
e	source(s) with	source(s) with	evaluation, but	
Selecting	enough	enough	not enough to	
and	interpretation/	interpretation/	develop a	Information is
using	evaluation to	evaluation to	coherent	taken from
informati	develop a	develop a	analysis or	source(s)
on to	comprehensive	coherent	synthesis.	without any
investiga	analysis or	analysis or	Viewpoints of	interpretation/
te a	synthesis.	synthesis.	experts are	evaluation.
point of	Viewpoints of	Viewpoints of	taken as	Viewpoints of
view or	experts are	experts are	mostly fact,	experts are taken
conclusi	questioned	subject to	with little	as fact, without
on	thoroughly.	questioning.	questioning.	question.
			Questions	
			some	Shows an
			assumptions.	emerging
	Thoroughly		Identifies	awareness of
	(systematically and		several	present
	methodically)		relevant	assumptions
	analyzes own and		contexts when	(sometimes
	others'	Identifies own	presenting a	labels assertions
Influenc	assumptions and	and others'	position. May	as assumptions).
e of	carefully evaluates	assumptions and	be more aware	Begins to
context	the relevance of	several relevant	of others'	identify some
and	contexts when	contexts when	assumptions	contexts when
assumpt	presenting a	presenting a	than one's own	presenting a
ions	position.	position.	(or vice versa).	position.
	Specific position	Specific		
	(perspective,	position		
C4141	thesis/ hypothesis)	(perspective,	Consider.	
Student'	is imaginative,	thesis/hypothesi	Specific	Charifia masiki
S	taking into account	s) takes into	position	Specific position
position	the complexities of	account the	(perspective, thesis/	(perspective, thesis/
(perspec	an issue. Limits of	complexities of an issue. Others'		
tive, thesis/hy	position		hypothesis)	hypothesis) is stated, but is
pothesis	(perspective, thesis/ hypothesis)	points of view	acknowledges different sides	simplistic and
homesis	~ ~	are	of an issue.	obvious.
J	are acknowledged.	acknowledged	of all issue.	obvious.

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

	enhance the	effectiveness of	support the	Languagain
	effectiveness of	the	support the effectiveness of	Language in
				presentation is not
	the presentation.	presentation.	the	appropriate to audience.
	Language in	Language in	presentation.	audience.
	presentation is	presentation is	Language in	
	appropriate to	appropriate to	presentation is	
	audience.	audience.	appropriate to	
	D 1'		audience.	
	Delivery	D 11	Delivery	D 11
	techniques	Delivery	techniques	Delivery
	(posture,	techniques	(posture,	techniques
	gesture, eye	(posture,	gesture, eye	(posture, gesture,
	contact, and	gesture, eye	contact, and	eye contact, and
	vocal	contact, and	vocal	vocal
	expressiveness)	vocal	expressiveness)	expressiveness)
	make the	expressiveness)	make the	detract from the
	presentation	make the	presentation	understandability
	compelling, and	presentation	understandable,	of the presentation,
	speaker appears	interesting, and	and speaker	and speaker
	polished and	speaker appears	appears	appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
	A variety of			
	types of			
	supporting	Supporting	Supporting	
	materials	materials	materials	
	(explanations,	(explanations,	(explanations,	Insufficient
	examples,	examples,	examples,	supporting
	illustrations,	illustrations,	illustrations,	materials
	statistics,	statistics,	statistics,	(explanations,
	analogies,	analogies,	analogies,	examples,
	quotations from	quotations from	quotations from	illustrations,
	relevant	relevant	relevant	statistics,
	authorities)	authorities)	authorities)	analogies,
	make .	make .	make .	quotations from
	appropriate	appropriate	appropriate	relevant
	reference to	reference to	reference to	authorities) make
	information or	information or	information or	reference to
	analysis that	analysis that	analysis that	information or
	significantly	generally	partially	analysis that
	supports the	supports the	supports the	minimally supports
	presentation or	presentation or	presentation or	the presentation or
	establishes the	establishes the	establishes the	establishes the
	presenter's	presenter's	presenter's	presenter's
Supporti	credibility/	credibility/	credibility/	credibility/
ng	authority on the	authority on the	authority on the	authority on the
Material	topic.	topic.	topic.	topic.

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

Source: Association of American Colleges and Universities

Date revised: August 29th, 2023

Ho Chi Minh City, 29/08/2023

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Game Development

Course Code: IT167IU

1. General information

1. General inic				
Course designation	This course is an introduction to the theory and practice of the process of designing games and playful experiences.			
Semester(s) in which the course is taught	7,9			
Person responsible for the course	Dr. Le Duy Tan			
Language	English			
Relation to curriculum	Compulsory			
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	Number of credits: 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1			
Required and recommended prerequisites for joining the course	Object Oriented Programming			
Course objectives	This course is an introduction to the theory and practice of the process of designing games and playful experiences. Students are familiarized with methods, concepts, techniques, and literature used in the design of games. The strategy is process-oriented, focusing on aspects such as: Rapid prototyping, play testing, and design iteration using a player-centered approach.			
Course learning outcomes	CLO 1. Understand the emergence of the academic study of design methods and game design. CLO 2. Able to structure and conduct a game design project from conceptualization to playable prototype.			

	CLO 3. Solve a real-world through group collaboration		design kr	nowledge		
	Competency level	Competency level Course learning of (CLO)				
	Knowledge	1				
	Skill	2, 3				
	Attitude	3				
	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize) Topic Weigh Level					
			t			
	Introduction to Game Dev	1	I			
	Platforms and Publishing	3	T			
	Game Development Cycle	3	T, U			
	Principles of Game Desig	3	T, U			
	Trade-Offs in Game Design	2	T, U			
	Game Engines, Game Sys Map and Level Editors	2	Т			
	Games Marketing and Dis	1	T			
Examination forms	Short-answer questions, Programming exercises					
Study and examination requirements	Attendance: A minimum attended the class sessions. Student class participation. Quesencouraged. Assignments/Examination: points overall to pass this c	s will be assessed on stions and comme Students must have r	the basis	s of their strongly		
Reading list	4. Nystrom, Robert. Game programming patterns. Genever Benning, 2014.					
	5. Gregory, Jason. Gan	ne engine architecture	e. crc Pres	s, 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:

CLO\SL	1	2	3	4	5	6
OT						

1	X			
2		XXX		
3				X

1. Planned learning activities and teaching methods

Wee	Topic	CLO	Assessment	Learning	Resour
k			S	activities	ces
1	Introduction to Game Development	1	Quiz	Lecture	1
2	Platforms and Publishing – Part 1	1	Quiz	Lecture	1
3	Platforms and Publishing – Part 2	1	Quiz	Lecture, Discussion , In-class Exercise	2
4	Platforms and Publishing – Part 3	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	1
5	Game Development Cycle – Part 1	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	1
6	Game Development Cycle – Part 2	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	2
7	Game Development Cycle – Part 3	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	1
8	Principles of Game Design – Part 1	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	1
Midte	erm				
9	Principles of Game Design – Part 2	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
10	Principles of Game Design – Part 3	2, 3	Quiz, Lab, Final	Lecture, Discussion	1

11	Trade-Offs in Game Design – Part 1	2, 3	Quiz, Lab, Final	, In-class Exercise Lecture, Discussion	1
	rait i		1 mai	, In-class Exercise	
12	Trade-Offs in Game Design – Part 2	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
13	Game Engines, Game Systems and Elements; Map and Level Editors – Part 1	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1, 2
14	Game Engines, Game Systems and Elements; Map and Level Editors – Part 2	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
15	Games Marketing and Distribution	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
Final					

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Quiz / Assigment (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.

5. Rubrics (optional)

5.7. Grading checklist

Grading checklist for Written Reports				
Student:	HW/Assignme	ent:		• • • • • •
Date:	Evaluator:			
		Max.	Score	Comments
Technical content (60	0%)			

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

5.8. Holistic rubric

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

5.9. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

	Capstone	Milestone		Benchmark
	4	3	2	1
	Issue/ problem to	Issue/ problem	Issue/ problem	Issue/
	be considered	to be considered	to be	problem to
	critically is stated	critically is	considered	be
Explanation	clearly and	stated,	critically is	considered
of issues	described	described, and	stated but	critically is

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

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

Source: Association of American Colleges and Universities
Oral communication value rubric for evaluating presentation tasks:

Oral communication value rabite for evaluating presentation tasks.					
	Capstone	Mile	stone	Benchmark	
	4	3	2	1	
	Organizational	Organizational	Organizational	Organizational	
	pattern (specific	pattern	pattern	pattern	
	introduction and	(specific	(specific	(specific	
	conclusion,	introduction	introduction	introduction	
	sequenced	and conclusion,	and conclusion,	and conclusion,	
	material within	sequenced	sequenced	sequenced	
Organizatio	the body, and	material within	material within	material within	
n	transitions) is	the body, and	the body, and	the body, and	

	clearly and consistently observable and is skillful and makes the content of the presentation cohesive.	transitions) is clearly and consistently observable within the presentation.	transitions) is intermittently observable within the presentation.	transitions) is not observable within the presentation.
•	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 understandabili ty of the presentation, and speaker appears uncomfortable.
Supporting Material	A variety of types of supporting materials (explanations, examples, illustrations, statistics,	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies,

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

Date revised: August 28, 2023

Ho Chi Minh City, 28/08/2023

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Blockchain

Course Code: IT150IU

1. General information

Course designation	Introduction to Blockchain technology
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: Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Private study including examination preparation, specified in hours: Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problems and group assignment.
Credit points	Number of credits : 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1
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

	CI O 2	Apply blookabain to	phniques to setup the	davalanm	ont			
			chniques to setup the leploying smart contra	•		arse of		
		•	grating cryptocurrence					
	web app		8	j miorope	.,	.5 1110		
		LO 4. Work in a team to build a blockchain application project.						
		Competency level Course learning outcome (CLO)						
		Knowledge	CLO1, CLO1					
		Skill	CLO3, CLO4					
		Attitude	CLO2					
Content		-	ts should clearly indi	cate the w	eighti	ng of		
		tent and the level.	`					
	_	lecture session (3 ho		70)				
	Teachin	Top); T (Teach); U (Utili	Weight	Leve	1		
	Ţ	ntroduction	120	3	I			
	 	Cryptography & crypt	ocurrencies	3	T			
	 	Iow Bitcoin achieve		3	I, T			
	<u>-</u>	Mechanics of Bitcoin		3	T, U			
	 	Iow to store and use	Bitcoin	3	T, U			
		Bitcoin mining		3	T			
		Bitcoin and Anonymit	V	3	Т			
		Ethereum	<u>*</u>	3	I, T			
	S	olidity		3	T, U			
	Т	oken		3	I, T			
	C	Dracle Tracle		3	I, T			
		Decentralized Applica	tions (Dapps)	3	T, U			
	Γ	Design pattern for blo	ckchain applications	3	T			
	R	Real-world application	ns	3	I, T			
Examination forms			nort-answer questions					
Study and			endance of 80 percent	_	-	or the		
examination			be assessed on the ba					
requirements			comments are strongl	•	_	nainta		
	_	to pass this course.	tudents must have mo	ore man 30	0/100	pomis		
Reading list			seph Bonneau, Edwa	rd Felten	Andre	w		
		~	_					
		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:

	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	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	
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	

Week	Торіс	CLO	Assessments	Learning activities	Resources
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	CLO1	CLO2	CLO3	CLO4
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. ←

1. Rubrics (optional)

5.1. Grading checklist

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	15	
background and prior work		
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

I	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	Milest	Milestone	
	4	3	2	1
	Issue/ problem to	Issue/ problem to	Issue/ problem	Issue/ problem
	be considered	be considered	to be	to be
	critically is stated	critically is stated,	considered	considered
	clearly and	described, and	critically is	critically is
	described	clarified so that	stated but	stated without
Explanation of	comprehensively,	understanding is	description	clarification or
issues	delivering all	not seriously	leaves some	description.

	malayyant	immeded by	tomas	
	relevant	impeded by	terms	
	information	omissions.	undefined,	
	necessary for full	erstanding. unexplored,		
	understanding.			
			boundaries	
			undetermined,	
			and/ or	
			backgrounds	
			unknown.	
			Information is	
			taken from	
			source(s) with	
	Information is		some	
	taken from	Information is	interpretation/	
	source(s) with	taken from	evaluation, but	
	enough	source(s) with	not enough to	Information is
	interpretation/	enough	develop a	taken from
	evaluation to	interpretation/	coherent	source(s)
	develop a	evaluation to	analysis or	without any
	comprehensive	develop a	synthesis.	interpretation/
Evidence	analysis or	coherent analysis	Viewpoints of	evaluation.
Selecting and	synthesis.	or synthesis.	experts are	Viewpoints of
using information	Viewpoints of	Viewpoints of	taken as	experts are
to investigate a	experts are	experts are	mostly fact,	taken as fact,
point of view or	questioned	subject to	with little	without
conclusion	thoroughly.	questioning.	questioning.	question.
	J ·	1	Questions	Shows an
			some	emerging
	Thoroughly		assumptions.	awareness of
	(systematically		Identifies	present
	and methodically)		several	assumptions
	analyzes own and		relevant	(sometimes
	others'		contexts when	labels
	assumptions and	Identifies own	presenting a	assertions as
	T and B		position. May	assumptions).
	evaluates the	assumptions and	be more aware	Begins to
	relevance of	several relevant	of others'	identify some
Influence of	contexts when	contexts when	assumptions	contexts when
context and	presenting a	presenting a	than one's own	presenting a
assumptions	position.	position.	(or vice versa).	position.
assumpuons	position.	position.	(or vice versa).	position.

	G :C: ::	T		
	Specific position			
	(perspective,			
	thesis/			
	hypothesis) is			
	imaginative,			
	taking into			
	account the			
	complexities of an			
	issue. Limits of	Specific position		
	position	(perspective,		
	(perspective,	thesis/hypothesis)		
	thesis/	takes into account		
	hypothesis) are	the complexities		
	acknowledged.	of an issue.	Specific	Specific
	Others' points of	Others' points of	position	position
	view are	view are	(perspective,	(perspective,
	synthesized	acknowledged	thesis/	thesis/
Student's	within position	within position	hypothesis)	hypothesis) is
position	(perspective,	(perspective,	acknowledges	stated, but is
(perspective,	thesis/	thesis/	different sides	simplistic and
thesis/hypothesis)	hypothesis).	hypothesis).	of an issue.	obvious.
J	<u> </u>	J F	Conclusion is	
			logically tied	
	Conclusions and		to information	
	related outcomes	Conclusion is	(because	Conclusion is
	(consequences	logically tied to a	information is	inconsistently
	and implications)	range of	chosen to fit	tied to some of
	are logical and	information,	the desired	the information
	reflect student's	including	conclusion);	discussed;
	informed	opposing	some related	related
	evaluation and	viewpoints;	outcomes	outcomes
	ability to place	related outcomes	(consequences	(consequences
Conclusions and	evidence and	(consequences	and	and
related outcomes	perspectives	and implications)	implications)	implications)
(implications and	discussed in	are identified	are identified	are
consequences)	priority order.	clearly.	clearly.	oversimplified.
Source: Association	· · · · · · · · · · · · · · · · · · ·		cicuity.	o versimpilited.

Oral communication value rubric for evaluating presentation tasks:

Capstone	Miles	stone	Benchmark
4	3	2	1

	0 : .: 1			
	Organizational			
	pattern (specific			
	introduction and			
	conclusion,	Organizational		
	sequenced	pattern (specific	Organizational	
	material within	introduction and	pattern (specific	
	the body, and	conclusion,	introduction and	Organizational
	transitions) is	sequenced	conclusion,	pattern (specific
	clearly and	material within	sequenced	introduction and
	consistently	the body, and	material within	conclusion,
	observable and is	transitions) is	the body, and	sequenced material
	skillful and	clearly and	transitions) is	within the body,
	makes the	consistently	intermittently	and transitions) is
	content of the	observable	observable	not observable
	presentation	within the	within the	within the
Organization	cohesive.	presentation.	presentation.	presentation.
	Language		Language	
	choices are	Language	choices are	
	imaginative,	choices are	mundane and	
	memorable, and	thoughtful and	commonplace	Language choices
	compelling, and	generally support	and partially	are unclear and
	enhance the	the effectiveness	support the	minimally support
	effectiveness of	of the	effectiveness of	the effectiveness
	the presentation.	presentation.	the presentation.	of the presentation.
	Language in	Language in	Language in	Language in
	presentation is	presentation is	presentation is	presentation is not
	appropriate to	appropriate to	appropriate to	appropriate to
Language	audience.	audience.	audience.	audience.
	Delivery			Delivery
	techniques	Delivery	Delivery	techniques
	(posture, gesture,	techniques	techniques	(posture, gesture,
	eye contact, and	(posture, gesture,	(posture, gesture,	eye contact, and
	vocal	eye contact, and	eye contact, and	vocal
	expressiveness)	vocal	vocal	expressiveness)
	make the	expressiveness)	expressiveness)	detract from the
	presentation	make the	make the	understandability
	compelling, and	presentation	presentation	of the presentation,
	speaker appears	interesting, and	understandable,	and speaker
	polished and	speaker appears	and speaker	appears
Delivery	confident.	comfortable.	appears tentative.	uncomfortable.

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Development and Operations (DevOps)

Course Code: IT156IU

1. General information

1. General information) <u>N</u>
Course designation	This course is an introduction to DevOps to help students understand its principles and practices. Key concepts and terminology will be covered with real-life case studies, examples and practical exercises. Common and popular tools to achieve DevOps models will be introduced as well.
Semester(s) in which the course is taught	7,8
Person responsible for the course	Tran Thanh Tung, PhD.
Language	English
Relation to curriculum	Elective (NE)
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 (ECTS: 6.18) Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	Software Engineering Computer Network
Course objectives	This course is an introduction to DevOps to help students understand its principles and practices. Key concepts and terminology will be covered with real-life case studies, example and practical exercises. Common and popular tools to achieve DevOps models will be introduced as well.
Course learning outcomes	CLO 1. Define and discuss the key concepts and principles of DevOps CLO 2 Explain the benefit of DevOps and continuous delivery CLO 3 Understand infrastructure automation, build and deployment automation, the transformation to DevOps models CLO 4. Work with common and popular DevOps tools

	Compete	ency level	Course learning outco	me (CLO)	
	Knowled	lge	1,2		
	Skill	_	3,4		
	Attitude		4		
Content	the content and to Weight: lecture s	<i>he level.</i> ession (3 h	nts should clearly indicalours) e); T (Teach); U (Utilize)		hting of
	Topic			Weight	Level
	Introduction to	DevOps		3	I
	Introduction to	Cloud Com	puting	3	I
	Linux Basics an	d Shell Scr	ripting	3	T,U
	Versioning and	Build Tool		3	T
	Automation: Co Deployment	ontinuous Ir	ntegration, Continuous	3	T
	Configuration M		t	3	I,T
	Containers, Con	tainer vs V	irtual Machine	3	I,T
	Deployment pip	eline		3	I,T
	Post production			3	I,T
	Disaster recover	ry		3	I
	Continuous Mon	nitoring for	DevOps	3	I,T
	Infrastructure ar		ent security	3	I
Examination forms Study and examination requirements	class sessions. St participation. Qu	inimum att udents will estions and amination: \$	endance of 80 percent is be assessed on the basis comments are strongly e Students must have more ourse.	of their cla	iss
Reading list	[1] Jeffery D.Smith, Operations Anti-Patterns, DevOps Solutions Manning Publications 2020				olutions,
	[2] Nicole Forsg DevOps: Build Organizations, IT	ing and	erate: The Science of I Scaling High Perform n Press 2018		vare and hnology
		es through	id Farley. Continuous Build, Test, and Deploy al, 2010		

[4] Paul M. Duvall, Steve Matyas, Andrew Glover. Continuous Integration: Improving Software Quality and Reducing Risk, Addison-Wesley Professional, 2007Len Bass and John Klein. Deployment and
Operations for Software Engineers, 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		XXX				
3						X

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to DevOps				
2,3	Introduction to Cloud Computing				
4,5	Linux Basics and Shell Scripting				
6	Versioning and Build Tool				
7	Automation: Continuous Integration, Continuous Deployment				
8	Configuration Management				
Midter	m exam				
9,10	Containers, Container vs Virtual Machine				
11	Deployment pipeline				
12	Post production				
13	Disaster recovery				
14	Continuous Monitoring for DevOps				
15	Infrastructure and deployment security				
Final e	xam				

4. **Assessment plan**

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

5.

Rubrics (optional) 1. Grading checklist **5.1.**

Grading checklist for Written Reports					
Student:	HW/A	HW/Assignment:			
Date:			•		
	Evalu	ator:			
	Max.	Score	Comments		
Technical content (60%)					
Abstract clearly identifies purpose and summarizes principal	10				
content					
Introduction demonstrates thorough knowledge of relevant	15				
background and prior work					
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**

I	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	Milest	one	Benchmark
	4	3	2	1
			Issue/ problem to be considered	
			critically is stated but	
	Issue/ problem to be considered critically is stated	Issue/ problem to	description leaves some terms	
	clearly and described	be considered critically is stated,	undefined, ambiguities	Issue/ problem
	comprehensively, delivering all relevant	described, and clarified so that understanding is	unexplored, boundaries undetermined,	to be considered critically is
Explanation of issues	information necessary for full understanding.	not seriously impeded by omissions.	and/ or backgrounds unknown.	stated without clarification or description.
issues	Information is taken from	Information is	Information is taken from source(s) with	description.
	source(s) with enough interpretation/ evaluation to	taken from source(s) with enough interpretation/	interpretation/ evaluation, but not enough to	Information is taken from source(s)
T. 11	develop a comprehensive	evaluation to develop a	develop a coherent	without any interpretation/
Evidence Selecting and	analysis or synthesis.	coherent analysis or synthesis.	analysis or synthesis.	evaluation. Viewpoints of
using information to investigate a	Viewpoints of experts are	Viewpoints of experts are	Viewpoints of experts are	experts are taken as fact,
point of view or conclusion	questioned thoroughly.	subject to questioning.	taken as mostly fact,	without question.

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

informed	viewpoints;	the desired	outcomes
evaluation and	related outcomes	conclusion);	(consequences
ability to place	(consequences	some related	and
evidence and	and implications)	outcomes	implications)
perspectives	are identified	(consequences	are
discussed in	clearly.	and	oversimplified.
priority order.		implications)	
-		are identified	
		clearly.	

Oral communication value rubric for evaluating presentation tasks:

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

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Data Science and Visualization

Course Code: IT138IU

1. General information

Course designation	Introduction to Data Visualization					
Semester(s) in which the course is taught	5					
Person responsible for the course	Γhanh 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: Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Private study including examination preparation, specified in hours: Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problems and group assignment.					
Credit points	Number of credits : 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1					
Required and recommended prerequisites for joining the course	None					
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.					
	Competency level Course learning outcome (CLO)					
	Knowledge CLO1					
L						

		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)					
		Торіс	,, , , , , , , , , , , , , , , , , , , ,	Weight	Level	
		Visualization design	principles	3	I, T	
		Perception, Cognition	n, Color	3	Т	
		Data abstraction, data	a types	3	I, T	
	,	Visual encoding with	marks and channels	3	T, U	
	,	Tasks and Interactivit	ty	3	T	
	,	Validation and visual	ization	3	T	
		Arrange text and sets		3	T	
	Arrange spatial data			3	T	
		Arrange tree and grap	ohs/networks	3	T	
		Facets and views		3	T	
		Focus+Context		3	T	
		Filtering and Aggrega	ation	3	T	
Examination forms Study and examination requirements	Attend class se particip	Multiple-choice questions, short-answer questions attendance: A minimum attendance of 80 percent is compulsory for the lass sessions. Students will be assessed on the basis of their class articipation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points				
Reading list	[1]		e Visual Display of Q	uantitativ	e Inforn	nation
	2nd, 2001 [2] Tamara Munzner, Visualization Analysis and Design 1st, 201 [3] Colin Ware, Visual Thinking for Design 1st, 2004 [4] Scott Murray, Interactive Data Visualization for the Web 1st, 2013					
	 [5] Alberto Cairo, The Functional Art: An introduction to information graphics and visualization 1st, 2012 [6] Cole Nussbaumer Knaflic, Storytelling with Data: A Data Visualization Guide for Business Professionals 1st, 2015 					

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	X				
2		X	X			
3		X				

3. 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	
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				

4. 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.

- 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	10			
principal content				
Introduction demonstrates thorough knowledge of	15			
relevant background and prior work				
Analysis and discussion demonstrate good subject	30			
mastery				
Summary and conclusions appropriate and complete	5			
Organization (10%)				
Distinct introduction, body, conclusions	5			
Content clearly and logically organized, good	5			
transitions				
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
			Issue/ problem	
			to be	
			considered	
			critically is	
			stated but	
	Issue/ problem to		description	
	be considered		leaves some	
	critically is stated	Issue/ problem to	terms	
	clearly and	be considered	undefined,	
	described	critically is stated,	ambiguities	Issue/ problem
	comprehensively,	described, and	unexplored,	to be
	delivering all	clarified so that	boundaries	considered
	relevant	understanding is	undetermined,	critically is
	information	not seriously	and/ or	stated without
Explanation of	necessary for full	impeded by	backgrounds	clarification or
issues	understanding.	omissions.	unknown.	description.

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

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

Source: Association of American Colleges and Universities
Oral communication value rubric for evaluating presentation tasks:

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

	1	I	1	I
	effectiveness of the	Language in	support the	effectiveness of
	presentation.	presentation is	effectiveness of	the presentation.
	Language in	appropriate to	the	Language in
	presentation is	audience.	presentation.	presentation is
	appropriate to		Language in	not appropriate
	audience.		presentation is	to audience.
			appropriate to	
			audience.	
			Delivery	
			techniques	Delivery
	Delivery techniques	Delivery	(posture,	techniques
	(posture, gesture,	techniques	gesture, eye	(posture, gesture,
	eye contact, and	(posture, gesture,	contact, and	eye contact, and
	vocal	eye contact, and	vocal	vocal
	expressiveness)	vocal	expressiveness)	expressiveness)
	make the	expressiveness)	make the	detract from the
	presentation	make the	presentation	understandability
	compelling, and	presentation	understandable,	of the
	speaker appears	interesting, and	and speaker	presentation, and
	polished and	speaker appears	appears	speaker appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
			Supporting	
			materials	Insufficient
		Supporting	(explanations,	supporting
		materials	examples,	materials
	A variety of types of	(explanations,	illustrations,	(explanations,
	supporting materials	examples,	statistics,	examples,
	(explanations,	illustrations,	analogies,	illustrations,
	examples,	statistics,	quotations from	statistics,
	illustrations,	analogies,	relevant	analogies,
	statistics, analogies,	quotations from	authorities)	quotations from
	quotations from	relevant	make	relevant
	relevant authorities)	authorities) make	appropriate	authorities) make
	make appropriate	appropriate	reference to	reference to
	reference to	reference to	information or	information or
	information or	information or	analysis that	analysis that
	analysis that	analysis that	partially	minimally
	significantly	generally supports	supports the	supports the
	supports the	the presentation or establishes the	presentation or establishes the	presentation or establishes the
	presentation or establishes the			
		presenter's	presenter's	presenter's
Supporting	presenter's	credibility/ authority on the	credibility/ authority on the	credibility/ authority on the
Supporting Material	credibility/ authority	•	•	· ·
Material	on the topic.	topic.	topic.	topic.

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022 **Dean of School of Computer Science and Engineering**

Assoc.Prof. Nguyen Van Sinh



VIETNAM NATIONAL UNIVERSITY HCMC INTERNATIONAL UNIVERSITY

School of Languages

COURSE SYLLABUS

Course Name: Critical Thinking

Course Code: PE008IU

1. General information

Course name	- Critical Thinking	
	- Tư duy Biện luận	
Course designation	This course provides students with the knowledge and practice necessary to sharpen their observation and judgment skills, enabling them to evaluate arguments effectively and construct compelling arguments of their own. Additionally, the course helps students evaluate information from diverse sources to obtain reliable data and avoid fallacies.	
Course type	☑ General knowledge / College Foundation Courses	
	☐ Fundamental/ English Foundation courses & English Core courses	
	☐ Specialized knowledge/ Specialization Core Courses & Specialization	
	□ Electives	
	☐ Internship/Project/Thesis	
	Others:	
Semester(s) in which the course is taught	1, 2, and 3	
Person	Assoc.Prof.Dr.Nguyễn Thị	
responsible for	Thủy Assoc.Prof.Dr.Phạm	
the course	Ngọc	
	Trần Thanh Tú (Ph.D)	
	Nguyễn Văn Tiếp	
	(Ph.D) Phạm Thanh	
	Tùng (Ph.D)	
	Đỗ Thị Diệu Ngọc (MA)	
Language	English	

Relation to	☑ Compulsory		
curriculum	□ Elective		
Teaching	Lectures		
methods	Discussion		
	Pair work		
	Group		
	work		
XX7 11 1 / 1	Project-based learn	Š.	
Workload (incl. contact hours,	·	vorkload: 135 hours	
self-study	contact hours (pleat session, etc.): 45 pe	se specify whether lecture, exercise, laboratory priods lectures	
hours)	Private study include hours	ling examination preparation, specified in hours ¹ : 90	
Credit points	3 credits (Theory: 3	S + Practice: 0)	
	4.62 ECTS (options	al)	
Number of	Theory: 45		
periods	Practice: 0		
Required and recommended	- Prerequisites: (Course code – Course name) EN007IU Writing AE1 and EN008IU Listening AE1		
prerequisites for joining the	- Corequisites: (Course code – Course name) none		
course	- Previous course (Course code – Course name) none		
Course	This course will end	able students to	
objectives	 know basic 	concepts of critical thinking	
	• identify, con	nstruct, analyze, and evaluate inductive and	
	deductive an	guments in spoken and written forms	
	recognize co	ommon fallacies in everyday reasoning	
Course learning	_ •	l completion of this course students will be able to:	
outcomes	Competency level	Course learning outcome (CLO)	
	Knowledge	CLO1: identify standards of and barriers to critical	
		thinking, and argument types belonging to deductive	
		and inductive reasoning	
		CLO2: identify logical fallacies of relevance and	
	G1 '11	insufficient evidence	
	Skill	CLO3: relate statements and evaluate the validity of	
		deductive arguments using Venn diagram and truth	
		tables CLO4: relate statements, summarize and evaluate	
		deductive & inductive arguments	
	1 1	deader, e de mader, e di gamento	

Attitude	CLO5: Display discipline, responsibilities, and ethical
	practices as an individual and a team member in
	attending class regularly and actively participating in class activities

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

Content	The description of the contents should clearly indicate content and the level.	the weight	ing of the	
	Weight: lecture session (3 hours)			
	Teaching levels: I (Introduce); T (Teach); U (Utilize)	1		
	Topic	Weigh t	Level	
	Introduction to Critical thinking	1	I, T, U	
	Recognizing arguments	1	I, T, U	
	Basic logical concepts	1	I, T, U	
	A little categorical logic	1	I, T, U	
	A little propositional logic	1	I, T, U	
	Logical fallacies I	1	I, T, U	
	Logical fallacies II	1	I, T, U	
	Analyzing arguments	1	I, T, U	
	Evaluating arguments and truth claims	1	I, T, U	
	Inductive reasoning	1	I, T, U	
	Group presentations + Review for exams	5	U	
Examinatio n forms	Written exams and project presentations			
Study and examinatio n requirement s	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]. Bassham, J., Irwin, W., Nardone, H., & Wallace, J. M. (2022). Critical Thinking: A Student's Introduction (7th ed.). McGraw-Hill Education			
	References:			
	[2]. Moore, B.N., & Parker, R. (2009). <i>Critical thinking</i> McGraw-Hill	g (9th ed.).	Boston:	
	[3]. Hurley, P. J. (2012). A concise introduction to logic Wadsworth: Cengage Learning.	c (11th ed.).	
	+ Relevant web resources			

2. Learning Outcomes Matrix (optional)

3. Planned learning activities and teaching methods

3. 1 lan	ned learning activities and teach		dus	Learnin	
Week	Topic	CLO	Assessments	g activitie s	Resources
1	Introduction to Critical thinking	1, 5	Ongoing assessment & Midterm exam	Lecture, Discussio	[1] Chapter 1
2	Recognizing arguments	1, 5	Ongoing assessment & Midterm exam	Lecture, Discussio	[1] Chapter 2
3	Basic logical concepts	2, 5	Ongoing assessment & Midterm exam	Lecture, Discussio n	[1] Chapter 3
4	A little categorical logic Quiz 1	3, 5	Ongoing assessment & Midterm exam	Lecture, Discussio n	[1] Chapter 9
5	A little propositional logic	3, 5	Ongoing assessment & Midterm exam	Lecture, Discussio n	[1] Chapter 10
6	Logical fallacies I	2, 5	Ongoing assessment & Midterm exam	Lecture, Discussio n	[1] Chapter 5
7	Logical fallacies II Quiz 2	2, 5	Ongoing assessment & Midterm exam	Lecture, Discussio	[1] Chapter 6
8	Review for midterm exam Sample test	1, 2, 3, 5	Ongoing assessment & Midterm exam		
	Midterm exam				
9	Analyzing arguments	4, 5	Ongoing assessment & Final exam	Lecture, Discussio	[1] Chapter 7
10	Evaluating arguments and truth claims	4, 5	Ongoing assessment & Final exam	Lecture, Discussio n	[1] Chapter 8
11	Inductive reasoning Quiz	4, 5	Ongoing assessment & Final exam	Lecture, Discussio	[1] Chapter 11

	3			n	
12-14	Group presentations	1-5	Ongoing assessment & Final exam	Presentatio n, Discussion	
15	Review for final exam Sample test	1-5	Ongoing assessment & Final exam		
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
	X	X	X	X	X
Ongoing assessment (30%)	60%Pass	60%Pass	60%Pass	60%Pass	60%Pass
	X		X		
Midterm exam (30%)	50%Pass		50%Pass		
		X		X	
Final exam (40%)		50%Pass		50%Pass	

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

5. Rubrics

Marks for multiple choice questions:

CLO1: 2pts/correct answer CLO2: 2pts/correct answer CLO3: 3pts/correct answer CLO4: 4pts/correct answer

6. Date revised: April 20th, 2024

7. Course coordinator/Lecturer: Đỗ Thị Diệu Ngọc

- School of Languages

- Email: dtdngoc@hcmiu.edu.vn

Ho Chi Minh City, / /2024

DEAN OF SCHOOL OF LANGUAGES

Dr. Nguyễn Huy Cường (Signature)

Course Name: Probability, Statistics and Random Process

Course Code: MA026IU

1. General information

Course designation	The course is aimed to provide the beginning students
	in engineering with the simple concepts and techniques
	of probabilistic and statistics models and stochastic
	processes.
Semester(s) in which the course is taught	1, 2, 3
Person responsible for the course	Dr. Ta Quoc Bao
	Dr. Pham Hai Ha
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study	(Estimated) Total workload: 135
hours)	Contact hours (please specify whether lecture,
	exercise, laboratory session, etc.): 45
	Private study including examination preparation,
	specified in hours: 90
Credit points	3 (ECTS: 4.46)
Required and recommended prerequisites	Calculus 1 and Calculus 2
for joining the course	
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	-	essful completion of the	his course	students
	will be able to:	T		
	Competency level	Course learning out	come (CL	O)
	Knowledge	important statistics mean, sample pro	rents, prob prob ibution and dom va including oportion,	pability, pability, d mean, riables; sample
	Skill	cLO2. Compute simple and complice probability rul probability, mean random variables random variables. CLO3. Conduparameter(s) and he procedure from same CLO4. Calculate probability, distribution, classificationary distribution, classificationary distribution.	cated even es; E and varia and funct ect e ypothesis uple data. ete tra uncone y state ar	ts with valuate ance of tion of stimate testing ansition ditional and find
Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)			
	Topic	s. 1 (miroduce), 1 (1e	Weight	
	_	to Probability	1	I, T
	Counting tech		1	
	Conditional	probability and	2	T, U T, U
	probability r		4	1,0
	Random	variables and	4	T, U
	mathematica		•	1,0
	Markov chair		2	T, U
		to Statistics and	1	I, T
	Statistics Des		1	1, 1
	Parameter es		2	T, U
	Hypothesis te		2	T, U
	11) pouriesis te	Jung	"	1,0
Examination forms	Written examin	nation		
Study and examination requirements		minimum attendance	of 80 perc	ent is
		the class sessions. St	-	
		basis of their class pa		
		comments are strongly		
		<i>8</i> .		

	Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	 R. Walpole et al, Probability and Statistics for Engineers and Scientists, 9th edition. S. Ross, Introduction to Probability Models, 9th edition. S. Ross, Introduction Probability and Statistics for Engineers and Scientist, 3th edition

2. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to probability	1	Quiz1	Lecture,	[1].1
				HW	[2].2
					[3].3
2	Counting techniques	2		Lecture,	[1].2
				HW	
3 - 4	Calculating probability	2	Quiz2	Lecture	[1].2
				HW	[2].1
					[3].3
5-6	Random variables	2		Lecture,	[1].3,
			Quiz3	HW	[2].2, 3
					[3].4
7	Mean – Variance – Covariance	2	HW1	Lecture,	[1].4
				Discussion,	[2].2
				HW	[3].4
8	Special distributions	2		Lecture,	[1].5, 6
				HW	[2].2
					[3].5
9	Midterm				
10 -11	Markov chain	4	HW2	Lecture,	[2].4
				Discussion,	
				HW	
12	Descriptive statistics	1		Lecture,	[1]. 1.
				Discussion,	[3].2
				HW	
13 - 14	Parameter estimation	3	Quiz4	Lecture,	[1]. 9
				Discussion,	[3].7
				HW	
15 - 16	Hypothesis testing	3	Quiz5	Lecture,	[1]. 10
				Discussion,	[3]. 8
				HW	
17	Final exam				

3. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
In-class exercises/quizzes (10%)	Qz1 70%Pass		Qz3, Qz4 70% Pass	

Homework exercises (10%)	HW1 70%Pass			HW2 70%Pass
Midterm exam (30%)	Part I 70%Pass	Part II 70%Pass		
Final exam (50%)			Part II 70%Pass	Part I 70%Pass

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

4. Date revised: January 12, 2022

Course Name: Chủ nghĩa xã hội khoa học

(Scientific socialism)

Course Code: PE017IU

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

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

ĐỀ CƯƠNG CHI TIẾT MÔN HỌC

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:	PE 017 IU		
Thuộc khối kiến thức:	Cơ sở		
Số tín chỉ:	2		
Số tiết lý thuyết:	30 (trên lớp)		
Số tiết thực hành:			
Số tiết tự học:	6 0 (về nhà)		
Môn học trước:	1. Kinh tế chính trị Mác – Lênin, 2. 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



- 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	I VIO TH	Tiêu chí đánh giá	Mục tiêu môn học	Chuẩn đầu ra CDIO CTĐT	Mức độ giảng dạy (I/T/U)
i.1. Ki	ến thức				
		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,			
LO.1	NHẬP MÔN CHỦ NGHĨA XÃ HỘI KHOA HỌC	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 tiêu biểu từ giai đoạn C. Mác đến giai đoạn Lênin và sau Lênin		1.1.3	13
		LO.1.3 – Nắm rõ được đối tượng, phương pháp và ý nghĩa của việc nghiên cứu Chủ nghĩa xã hội khoa học			
		LO.2.1- Hiểu rõ khái niệm giai cấp công nhân và đặc điểm của giai cấp công nhân			
		LO.2.2 – Nắm rõ nội dung, đặc điểm sứ mệnh lịch sử của giai cấp công nhân			
LO.2	SỬ MỆNH LỊCH SỬ CỦ	LO.2.3 – Giải thích được những điều kiện quy định sứ mệnh lịch Asử của giai cấp công nhân	2.1	1.1.3	T4
	GIAI CẤP CÔNG NHÂN	LO.2.4 – Phân tích được những điểm tương đồng và khác biệt của giai cấp công nhân hiện nay và	2.1	1.1.5	1.4
	1 1	viêc 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	2.2		

		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	2.1	1.1.3	13	N IIO
LO.4	DÂN CHỦ XÃ HỘI CHỦ NGHĨA VÀ NHÀ NƯỚC XÃ HỘI CHỦ NGHĨA	nay LO.4.1 – Giải thích được quan niệm về dân chủ và sự ra đời và phát triển của 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 nghãi ở Việt Nam LO.4.5 – Trình bày được đặc điểm và các giải pháp cơ bản	2.1	1.1.3	T4	

		nhằm xây dựng nhà nước pháp quyền xã hội chủ nghĩa ở Việt Nam hiện nay			
		LO.5.1 - Trình bày được khái niệm cơ cấu xã hội - giai cấp và sự biến đổi của cơ cấu xã hội giai cấp trong thời kỳ quá độ lên chủ nghĩa xã hội			
105	CƠ CÂU XÃ HỘI GIAI CẤP VÀ LIÊN MINH GIAI CẤP, TẦNG LỚP TRONG	LO.5.2 – Giải thích được tính tất yếu và nội dung của liên minh giai cấp, tầng lớp trong thời kỳ quá độ lên chủ nghĩa xã hội	2.1	1.1.3	13
LO.5	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 kỳ quá độ và trình bày được những giải pháp cơ bản nhằm xây dựng, phát triển khối liên minh giai cấp, tần lớp xã hội ở Việt Nam hiện nay		111.5	απός ο
		LO.6.1- Hiểu rõ khái niệm, đặc	2.1		
		trưng cơ bản của dân tộc và quan điểm của chủ nghĩa Mác - Leenin về vấn đề dân tộc LO.6.2 – Trình bày được những	2.1		
LO.6	TÔN GIÁO TRONG THỜ		2.1	1.1.3	T4
	KÝ QUÁ ĐỘ LÊN CHƯ NGHĨA XÃ HỘI	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 Việt Nam đối với tín ngưỡng tôn	2.1 2.2		

		giáo hiện nay	2.1 2.2			
		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				
		LO.7.1 - Khái lược được vị trí, chức năng và vai trò của gia đình trong xã hội				
	VÂN ĐỀ GIA ĐÌNH	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	TRONG THỜI KỲ	LO.1.3 – 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	2.1	1.1.3	13	A HHAI
5 2 Ki	ỹ năng					*
3.2. H)	nung	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		2.1.1 2.3.1		
LO.8	THỂ HIỆN KHẢ NĂNG KHÁI QUÁT HÓA, TƯ DUY, TRANH LUẬN, PHẢN BIỆN, LÀM	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	2.1 2.2	2.4.4	U4	
	VIỆC NHÓM	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		2.5 3.1.5		

LO.9	THỂ HIỆN Ý THỨC, NHẬN THỨC TRONG VA 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 – Lênin về CNXH và con đường đi lên CNXH ở Việt Nam. 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 vân dụng nó trong cuộc sống.	2.1 2.2	3.1	U3
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6. Kế hoạch giảng dạy theo buổi học (Course Plan):

TT (tiết)	Nội dung giảng dạy	LO	Hoạt động dạy và học	Đánh giá
1 (1 tiết)	Giới thiệu về môn học	LO.1, LO.4;	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	LO.1; LO.4 LO.5	Dạy: 1. SỰ RA ĐỜI CỦA CHỦ NGHĨA XÃ HỘI KHOA HỌC 11 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 TRIỀN 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 chủ nghĩa xã hội khoa học trong điều kiện mới 2.3. Sự vận dụng và phát triển sáng tạo chủ nghĩa xã hội khoa học từ sau khi Lênin qua đời đến nay 3. ĐỐI TƯỢNG, PHƯƠNG PHÁF VÀ Ý NGHĨA CỦA VIỆC NGHIÊN CỨU CHỦ NGHĨA XÃ HỘI KHOA HỌC 3.1. Đối tượng nghiên cứu của chỉ	Thi giữa kỳ (Quiz)

			nghĩa xã hội khoa học 3.2. Phương pháp nghiên cứu của chủ nghĩa xã hội khoa học 3.3. Ý nghĩa của viêc 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 SỬ MỆNH LỊCH SỬ CỦA GIAI CẤP CÔNG NHÂN	LO.2 LO.4 LO.5	Dạy: 1. QUAN ĐIỂM CƠ BẢN CỦA CHỦ NGHĨA MÁC - LEENIN VỀ GIAI CẬP CÔNG NHÂN VÀ SỰ MỆNH LỊCH SỬ THỂ GIỚI CỦA GIAI CẬP 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 SỬ MỆNH LỊCH SỬ CỦA GIAI CẤP CÔNG NHÂN HIỆN NAY	
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 trung cơ bản của chủ	(GHW)

			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	
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 3.3. Phát huy dân chủ xã hội chủ nghĩa ở Việt Nam 3.4. Nhà nước pháp quyền xã hội chủ nghĩa ở Việt Nam 3.5. Thát huy dân chủ xã hội chủ nghĩa ở Việt Nam 3.6. Thát huy dân chủ xã hội chủ nghĩa, xây dựng nhà nước pháp quyền xã hội chủ nghĩa ở Việt Nam hiện nay Học ở lớp: Thảo luận và phát biểu trên lớp Học ngoài lớp: Đọc trước tài liệu chương 5	(GHW) Thi cuối kỳ (FEX)
6	Chương 5 CƠ CẦU XÃ HỘI - GIAI CẬP VÀ LIÊN MINH GIAI CẤP, TẦNG LỚP TRONG THỜI KỲ QUÁ	LO.3 LO.4 LO.5	Dạy: 1. CƠ CẦU XÃ HỘI GIAI CẦP TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 1.1. Khái niệm và vị trí của cơ cấu xã	nhóm (GHW)





	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 CẨP, TẨNG LỚP TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI 3. CƠ CẦU XÃ HỘI - GIAI CẦP VÀ LIÊN MINH GIAI CẦP, TẨNG 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 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 Dạy: 1. DÂN TỘC TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI		
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	 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 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)	500
8	Chương 7	LO.2	Day:	Thuyết	

VẤN ĐỀ GIA ĐÌNH TRONG THỜI KỲ QUÁ ĐỘ LÊN CHỦ NGHĨA XÃ HỘI	1. KHÁI NIỆM, VỊ TRÍ VÀ CHỨC NĂNG CỦA GIA ĐÌNH 1.1. Khái niệm gia đình 1.2. Vị trí của gia đình trong xã hội 1.3. Chức năng cơ bản của gia đình 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 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	
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7. Đánh giá môn học

ST T	Mã	Tên	Mô tả	Tỷ trọng	Hình thức	LO
1	GH W	Thuyết trình nhóm	Thuyết trình nhóm về đề tài đã phân công	15%	Thuyết trình và bản báo cáo nhóm	LO.3 LO.4 LO.5 LO.6 LO.7
2	Quiz	Bài thi giữa kỳ	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%	
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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	Chương 5	Thảo luận tại lớp (Discussion in Class) Thi cuối kỳ (FEX)	Tiêu chí đánh giá thuyết trình nhóm, thảo luận tại lớp







	độ lên chủ nghĩa xã hội			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 & nhiệt tình thảo luận, phát biểu xây dựng bài, nghiêm túc trong giờ học.

TP. Hồ Chí Minh, ngày 07 tháng 02 năm 2019

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KT. TRƯỞNG KHOA PHÓ TRƯỞNG KHOA

Nguyễn Đình Quốc Cường

Course Name: Principles of Programming Languages

Course Code: IT092

1. General information

	Competency level	Course learning	
Course learning outcomes	CLO 1. Understand a wide range of programming paradigms CLO 2. Understand how different programming languages evolved CLO 3. Understand the differences in problem domains and language suitability CLO 4. Understand the basic features of programming language translation CLO 5. Understand implementation techniques for selected language constructs		
Course objectives	This course helps students: Learn important princillanguages; Learn basic components of programming programming language paradigms; Improve programgineering skills	ng languages; Le camming and sof	earn
Required and recommended prerequisites for joining the course	None		
Credit points	Number of credits : 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1		
Workload (incl. contact hours, self-study hours)	Total workload: 195 Contact hours: 45 (lecture) + 30 (laboratory) Private study including examination preparation, s	specified in hour	s: 120
Teaching methods	Lecture, lesson, project, seminar.		
Relation to curriculum	Compulsory (CS)		
Language	English		
Person responsible for the course	Dr. Ha Viet Uyen Synh		
Semester(s) in which the course is taught	6		
Course designation	This course provides students the important princillanguages.	ples of program	ming

			outcom (CLO)	e		
		Knowledge	1,2,3,4,	5		
		Skill	2			
		Attitude				
Content	The descr	ription of the contents should clearly in	dicate the	weighting of the	\overline{e}	
		nd the level.				
	_	lecture session (3 hours)				
	Teaching	levels: I (Introduce); T (Teach); U (Uti	llize)			
		Topic	Weight	Level		
		Preliminaries	3	I,T		
		Evolution of the Major Programmin Languages	6	I,T		
		Functional Programming Languages	6	I,T		
		Software processes Describing Syntax and Semantics	3	I,T		
		Lexical and Syntax Analytics	3	I,T		
		Names, Bindings, Type Checking, and Scopes	3	I,T		
		Data Types	3	I,T		
		Expressions and Assignment Statement	3	I,T		
		Logic Programming Languages	6	I,T		
		Statement-Level Control Structures	3	I,T		
		Subprograms	3	I,T		
		Implement Subprograms	3	I,T		
Examination forms	Multiple-	choice questions, short-answer question	ns			
Study and examination		Attendance: A minimum attendance of 80 percent is compulsory for the				
requirements	class sessions. Students will be assessed on the basis of their class					
	participation. Questions and comments are strongly encouraged.					
		ents/Examination: Students must have r	nore than 5	50/100 points		
		pass this course.				
Reading list	1. Rol	bert W. Sebesta, Concepts of programm	ing langua	ges 10th, 2012	•	
		rence W.Pratt and Marvin V. Zelkowitz	z, Program	ming Language	es	
	- D	esign and Implementation 4th, 2011				

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Preliminaries	1	Quiz,	lecture, exercises	
2	Evolution of the Major Programming Languages	2,3	Quiz,	lecture, exercises	
3	Functional Programming Languages	2,3	Quiz, Lab, Exam	lecture, exercises, lab	
4	Software processes Describing Syntax and Semantics	3,4,5	Quiz, Exam	lecture, exercises	
5	Lexical and Syntax Analytics	4,5	Quiz, Exam	lecture, exercises	
6	Midterm				
7	Names, Bindings, Type Checking, and Scopes	4,5	Quiz, Exam	lecture, exercises	
8	Data Types	4,5	Quiz, Exam	lecture, exercises	
9	Expressions and Assignment Statement	4,5	Quiz, Exam	lecture, exercises	
10	Logic Programming Languages	2,3	Quiz, Lab, Exam	lecture, exercises, lab	
11	Statement-Level Control Structures	4,5	Quiz, Exam	lecture, exercises	
12	Subprograms	4,5	Quiz, Exam	lecture, exercises	
13	Implement Subprograms	4,5	Quiz, Exam	lecture, exercises	
14	Final exam				

4. Assessment plan

Assessment Type CL	O1 CLO2	CLO3	CLO4	CLO5

Midterm examination (30%)	50%	50%	50%		
Final examination (40%)				50%	50%
Exercises/ Quiz (10%)	20%	20%	20%	20%	20%
Lab. Assignments (20%)	30%	30%	30%	30%	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:					
	Evalu	ator:			
	Max.	Score	Comments		
Technical content (60%)					
Abstract clearly identifies purpose and summarizes principal content	10				
Introduction demonstrates thorough knowledge of relevant	15				
background and prior work					
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:

	ue rubric for evaluating (Capstone	Miles		Benchmark
	4	3	2	1
	Issue/ problem to be considered critically is stated clearly and described	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 terms undefined, ambiguities unexplored, boundaries	Issue/ problem to be considered
	comprehensively,	understanding is	undetermined,	critically is
Explanation of issues	delivering all relevant information necessary for full understanding.	not seriously impeded by omissions.	and/ or backgrounds unknown.	stated without clarification or description.
Evidence Selecting and using information to investigate a point of view or conclusion	Information is taken from source(s) with enough interpretation/ evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly.	Information is taken from source(s) with enough interpretation/ evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning.	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	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a	Identifies own and others' assumptions and several relevant contexts when presenting a	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).
assumptions	position.	position.	assumptions	Begins to

			than one's own (or vice versa).	identify some contexts when presenting a position.
Student's position (perspective,	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/	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and
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.	an issue. 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		Benchmark	
	4	3	2	1
Organization	Organizational pattern (specific introduction and conclusion, sequenced material	Organizational pattern (specific introduction and conclusion,	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is	Organizational pattern (specific introduction and conclusion, sequenced

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

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Data Mining

Course Code: IT160IU

1. General information

Course designation	This subject introduces the students to the principles and algorithms of data mining, and the requirements of a data mining process.				
Semester(s) in which the course is taught	6,8				
Person responsible for the course	Dr. Nguyen Thi Thanh Sa	ang			
Language	English				
Relation to curriculum	Elective (CS, NE, CE) Compulsory (DS)				
Teaching methods	Lecture, lesson, project, l	aboratory.			
Workload (incl. contact hours, self-study hours)	(Estimated) 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 (ECTS: 6.18) Lecture: 3 Laboratory: 1				
Required and recommended prerequisites for joining the course	Object-Oriented Programming				
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					
	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	The description of the con	The description of the contents should clearly indicate the weighting of the				
	content and the level.					
	Weight: lecture session (3	3 hours)				
	Teaching levels: I (Introd	uce); T (Teach); U (Utilize)				
Examination forms	Multiple-choice questions	s, short-answer questions				
Study and examination	Attendance: A minimum	attendance of 80 percent is compulsory for the				
requirements	class sessions. Students w	vill be assessed on the basis of their class				
	participation. Questions a	and comments are strongly encouraged.				
	Assignments/Examination	n: Students must have more than 50/100 points				
	overall to pass this course	· 2.				
Reading list	[1] Jiawei Han, Michelino 3 rd Edition, 2011.	e Kamber, Data Mining: Concepts and Techniques,				
	[2] Ian H.Witten, Eibe Fr	ank, Mark A. Hall, and Christopher J. Pal, <i>Data</i>				
	Mining: Practical Machin	ne Learning Tools and Techniques, Fourth Edition,				
	Morgan Kaufmann, 2016.					
	[3] A. Lawrynowicz, Semantic Data Mining: An Ontology-based Approach					
	-	Web), IOS Press (April 15, 2017), ISBN-10				
	1614997454.	<u>-</u>				

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 to Data Mining	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 Correlations: Basic Concept and Methods	2,3,4	Quiz.s10-11	Lecture, In-class quiz	[1]. Chapter 6; [2]. Chapter 4.5
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	CLO1	CLO2	CLO3	CLO4
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/A	HW/Assignment:			
Date:					
	Evalu	ator:			
		• • • • • • • • • •			
	Max.	Score	Comments		
Technical content (60%)					
Abstract clearly identifies purpose and summarizes principal content	10				
Introduction demonstrates thorough knowledge of relevant	15				
background and prior work					
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

	1	T	T / 11	1
			Issue/ problem	
			to be considered	
			critically is	
			stated but	
			description	
	Issue/ problem to be	Issue/ problem to	leaves some	
	considered critically	be considered	terms undefined,	
	is stated clearly and	critically is stated,	ambiguities	
	described	described, and	unexplored,	Issue/ problem
	comprehensively,	clarified so that	boundaries	to be considered
	delivering all	understanding is	undetermined,	critically is
	relevant information	not seriously	and/ or	stated without
Explanation of	necessary for full	impeded by	backgrounds	clarification or
issues	understanding.	omissions.	unknown.	description.
	<i>S</i> .		Information is	P · · ·
			taken from	
			source(s) with	
	Information is taken		some	
	from source(s) with	Information is	interpretation/	
	enough	taken from	evaluation, but	
	interpretation/	source(s) with	not enough to	Information is
	evaluation to	enough	develop a	taken from
	develop a	interpretation/	coherent	source(s)
	comprehensive	evaluation to	analysis or	without any
Evidence	analysis or	develop a coherent	synthesis.	interpretation/
Selecting and	synthesis.	analysis or	Viewpoints of	evaluation.
		_	experts are taken	Viewpoints of
using information	Viewpoints of	synthesis.	_	•
to investigate a	experts are	Viewpoints of	as mostly fact,	experts are taken
point of view or	questioned	experts are subject	with little	as fact, without
conclusion	thoroughly.	to questioning.	questioning.	question.
			0	Shows an
	The amount of the		Questions some	emerging
	Thoroughly		assumptions.	awareness of
	(systematically and		Identifies several relevant	present
	methodically)			assumptions
	analyzes own and		contexts when	(sometimes
	others' assumptions	Identifies are	presenting a	labels assertions
	and carefully	Identifies own and	position. May be	as assumptions).
	evaluates the	others' assumptions	more aware of	Begins to
T.C.	relevance of	and several relevant	others'	identify some
Influence of	contexts when	contexts when	assumptions	contexts when
context and	presenting a	presenting a	than one's own	presenting a
assumptions	position.	position.	(or vice versa).	position.

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Digital Image Processing

Course Code: IT130IU

1. General information

Course designation	This course provides students fundamental knowledge of digital image processing				
Semester(s) in which the course is taught	7				
Person responsible for the course	Dr. Ha Viet Uyen Synh				
Language	English				
Relation to curriculum	Elective (All programs)				
Teaching methods	Lecture, lesson, project, semina	r.			
Workload (incl.	Total workload: 195				
contact hours, self-	Contact hours: 45 (lecture) + 30	(laboratory) ation preparation, specified in hours: 120			
study hours)	Number of credits : 4 (ECTS: 6				
Credit points	Lecture: 3	.10)			
	Laboratory: 1				
Required and recommended prerequisites for joining the course	None				
Course objectives	This course helps students discuss digital image processing fundamentals; review of Digital Signal Processing algorithms such as Discrete Fourier Transform; intensity transforms, frequency domain filtering; image restoration and reconstruction; color image processing; multiresolution processing; image compression; morphological image processing.				
Course learning	CLO 1. Understand bases of dig	•			
outcomes	CLO 2. Understand the color in	· ·			
	CLO 3. Apply special-domain image filtering.				
	Competency level Knowledge	Course learning outcome (CLO) 1,2			
	Skill	3			
Content	Attitude The description of the contents should clearly in digete the varieting of the				
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)				
1 cacining ic void. I (introduce), i (i cacin), o (otilize)					

	Topic	Weight	Level
	Chapter 1: Introduction	3	I, T
	Chapter 2: Digital Image Fundamentals	6	I, T
	Chapter 3: Intensity Transformations and Spatial Filtering (part 1)	3	T, U
	Chapter 3: Intensity Transformations and Spatial Filtering (part 2)	6	T, U
	Chapter 4: Filtering in the frequency domain	6	T, U
	Chapter 5: Image restoration and reconstruction	3	T, U
	Chapter 6: Color Image processing	3	T, U
	Chapter 7: Wavelets and multiresolution processing (part 1)	3	T, U
	Chapter 7: Wavelets and multiresolution processing (part 2)		T, U
	Chapter 8: Image compression	3	T, U
	Chapter 9: Morphological image processing	3	T, U
	Chapter 10: Image segmentation	3	T, U
	Chapter 11: Representation and description	3	T, U
	Chapter 12: Object recognition	3	T, U
	Revision Application Design and Development	3	
Examination forms	Multiple-choice questions, short-answer questions		
Study and examination requirements	Attendance: A minimum attendance of 80 percent is compuls sessions. Students will be assessed on the basis of their class Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50 overall to pass this course.	participati	on.
Reading list	1. Rafael C. Gonzalez, Richard E. Woods, Digital Image I 2008	Processing	; 3rd,

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
239						

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Chapter 1: Introduction	1,2	Quiz, Lab, Exam	lecture, exercises	
2	Chapter 2: Digital Image Fundamentals	1,2	Quiz, Lab, Exam	lecture, exercises, lab	
3	Chapter 3: Intensity Transformations and Spatial Filtering (part 1)	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab	
4	Chapter 3: Intensity Transformations and Spatial Filtering (part 2)	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab	
5	Chapter 4: Filtering in the frequency domain	1,2	Quiz, Lab, Exam	lecture, exercises, lab	
6	Chapter 5: Image restoration and reconstruction	1,2	Quiz, Lab, Exam	lecture, exercises, lab	
7	Chapter 6: Color Image processing	1,2	Quiz, Lab, Exam	lecture, exercises, lab	
8	Midterm				
9	Chapter 7: Wavelets and multiresolution processing (part 1)	2,3	Quiz, Lab, Exam	lecture, exercises, lab	
10	Chapter 7: Wavelets and multiresolution processing (part 2)	2,3	Quiz, Lab, Exam	lecture, exercises, lab	
11	Chapter 8: Image compression	2,3	Quiz, Lab, Exam	lecture, exercises, lab	
12	Chapter 9: Morphological image processing	2,3	Quiz, Lab, Exam	lecture, exercises, lab	
13	Chapter 10: Image segmentation	2,3	Quiz, Lab, Exam	lecture, exercises, lab	
14	Chapter 11: Representation and description	2,3	Quiz, Lab, Exam	lecture, exercises, lab	
15	Chapter 12: Object recognition	2,3	Quiz, Lab, Exam	lecture, exercises, lab	
16	Revision Application Design and Development	1,2,3			
17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Labs (20%)	20%	20%	20%

Midterm examination (30%)	30%	30%	30%
Final examination (40%)	40%	40%	40%
Exercises/ Quiz (10%)	10%	10%	10%

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/	HW/Assignment:		
Date:			•••	
	Eval	uator:		
	Max.	Score	Comments	
Technical content (60%)				
Abstract clearly identifies purpose and summarizes	10			
principal content				
Introduction demonstrates thorough knowledge of	15			
relevant background and prior work				
Analysis and discussion demonstrate good subject	30			
mastery				
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

Holi	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 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	<u> </u>	estone	Benchmark
	4	3	2	1
			Issue/ problem	
		Issue/	to be considered	
		problem to be	critically is	
	Issue/ problem to	considered	stated but	
	be considered	critically is	description	
	critically is stated	stated,	leaves some	
	clearly and	described,	terms undefined,	
	described	and clarified	ambiguities	
	comprehensively,	so that	unexplored,	Issue/ problem to
	delivering all	understandin	boundaries	be considered
	relevant	g is not	undetermined,	critically is stated
	information	seriously	and/ or	without
Explanatio	necessary for full	impeded by	backgrounds	clarification or
n of issues	understanding.	omissions.	unknown.	description.
			Information is	
			taken from	
	Information is	Information	source(s) with	
	taken from	is taken from	some	
	source(s) with	source(s)	interpretation/	
	enough	with enough	evaluation, but	
	interpretation/	interpretation	not enough to	Information is
Evidence	evaluation to	/ evaluation	develop a	taken from
Selecting	develop a	to develop a	coherent	source(s) without
and using	comprehensive	coherent	analysis or	any
information	analysis or	analysis or	synthesis.	interpretation/
to	synthesis.	synthesis.	Viewpoints of	evaluation.
investigate a	Viewpoints of	Viewpoints	experts are	Viewpoints of
point of	experts are	of experts are	taken as mostly	experts are taken
view or	questioned	subject to	fact, with little	as fact, without
conclusion	thoroughly.	questioning.	questioning.	question.
	Thoroughly	Identifies	Questions some	Shows an
	(systematically	own and	assumptions.	emerging
T 01 0	and methodically)	others'	Identifies	awareness of
Influence of	analyzes own and	assumptions	several relevant	present
context and	others'	and several	contexts when	assumptions
assumption	assumptions and	relevant	presenting a	(sometimes labels
S	carefully	contexts	position. May	assertions as

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	<u> </u>		
Capstone		Milestone	Benchmark

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

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Software Architecture

Course Code: IT114IU

1. General information

Course designation	This co	*	methodogies and technic	ques in So	ftware	
Semester(s) in which the course is taught	7	otare.				
Person responsible for the course	Dr. Ha	Viet Uyen Synh				
Language	English	l				
Relation to curriculum	Electiv	e (CS)				
Teaching methods	Lecture	e, lesson, project, semi	nar.			
Workload (incl. contact hours, self-study hours)	Contac	Total workload: 195 Contact hours: 45 (lecture) + 30 (laboratory) Private study including examination preparation, specified in hours: 120				
Credit points	Lecture	Number of credits : 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1				
Required and recommended prerequisites for joining the course	Software Engineering					
Course objectives	method		orough understanding of s in analysis, design and UML.		ntation o	f
Course learning outcomes	the tech	nniques for each step Using a CASE tool in Apply to a real system	of the System Developm analysis and design of an Course learning outcome	a system.		d
		Knowledge	1,2	ome (CLC	<i>)</i>	
		Skill	3			
		Attitude	3			
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)					the
	Topic				Level	
	Int	roduction to systems a	nalysis and design,	3	I	

		_		—	
	Requirements.	3	T,U		
	Use Case Modeling	6	T,U		
	Dynamic Modeling 6 State Dependent Dynamic Interestion Modeling 6		T,U		
	State-Dependent Dynamic Interaction Modeling 6		T,U		
	Data Modeling 6		T,U		
	Normal Forms	6	T,U		
	Structural Modeing	6	T,U		
	Architectural Design.	3	I,T		
Examination forms	Multiple-choice questions, short-answer questions				
Study and examination	Attendance: A minimum attendance of 80 percent is c	ompulsor	y for the		
requirements	class sessions. Students will be assessed on the basis of	of their cla	ass		
	participation. Questions and comments are strongly en	ncouraged	l.		
	Assignments/Examination: Students must have more to	than 50/10	00 points		
	overall to pass this course.				
Reading list	1. Kenneth E. Kendall, Julie E. Kendall, Systems A	Analysis a	nd Design	1	
	7th, 2006				
	2. Gary B. Shelly, Thomas J. Cashman, Harry J. Rosenblatt, Systems				
	Analysis and Design 4th, 2001	,	•		

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	Introduction to systems analysis and design,	1,2	Quiz	lecture, exercises	
2	Requirements.	1,2,3	Quiz, Lab	lecture, exercises, lab	
3	Use Case Modeling	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab	
4	Midterm				

5	Dynamic Modeling	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab	
6	State-Dependent Dynamic Interaction Modeling	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab	
7	Data Modeling	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab	
8	Normal Forms	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab	
9	Structural Modeing	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab	
10	Architectural Design.	1,2	Quiz	lecture, exercises	
11	Final exam				

4. Assessment plan

Assessment Type

Assessment Type	CLO1	CLO2	CLO3
Midterm examination (30%)	30%	30%	30%
Final examination (40%)	40%	40%	40%
Exercises/ Quiz (10%)	10%	10%	10%
Lab. Assignments (20%)	20%	20%	20%

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/A	Assignme	nt:		
Date:					
	Evaluator:				
	Max.	Score	Comments		
Technical content (60%)					
Abstract clearly identifies purpose and summarizes principal content	10				
Introduction demonstrates thorough knowledge of relevant	15				
background and prior work					
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 Capstone	Milest	one	Benchmark
	4	3	2	1
			Issue/ problem	
			to be considered	
			critically is	
			stated but	
			description	
	Issue/ problem to be	Issue/ problem to	leaves some	
	considered critically	be considered	terms undefined,	
	is stated clearly and	critically is stated,	ambiguities	
	described	described, and	unexplored,	Issue/ problem
	comprehensively,	clarified so that	boundaries	to be considered
	delivering all	understanding is	undetermined,	critically is
	relevant information	not seriously	and/ or	stated without
Explanation of	necessary for full	impeded by	backgrounds	clarification or
issues	understanding.	omissions.	unknown.	description.

			Information is	
			taken from	
	T 0		source(s) with	
	Information is taken		some	
	from source(s) with	Information is	interpretation/	
	enough	taken from	evaluation, but	
	interpretation/	source(s) with	not enough to	Information is
	evaluation to	enough	develop a	taken from
	develop a	interpretation/	coherent	source(s)
	comprehensive	evaluation to	analysis or	without any
Evidence	analysis or	develop a coherent	synthesis.	interpretation/
Selecting and	synthesis.	analysis or	Viewpoints of	evaluation.
using information	Viewpoints of	synthesis.	experts are taken	Viewpoints of
to investigate a	experts are	Viewpoints of	as mostly fact,	experts are taken
point of view or	questioned	experts are subject	with little	as fact, without
conclusion	thoroughly.	to questioning.	questioning.	question.
	<u> </u>			Shows an
			Questions some	emerging
	Thoroughly		assumptions.	awareness of
	(systematically and		Identifies	present
	methodically)		several relevant	assumptions
	analyzes own and		contexts when	(sometimes
	others' assumptions		presenting a	labels assertions
	and carefully	Identifies own and	position. May be	as assumptions).
	evaluates the	others' assumptions	more aware of	Begins to
	relevance of	and several relevant	others'	identify some
Influence of	contexts when	contexts when	assumptions	contexts when
context and	presenting a	presenting a	than one's own	presenting a
assumptions	position.	position.	(or vice versa).	position.
	Specific position	1		
	(perspective, thesis/			
	hypothesis) is			
	imaginative, taking			
	into account the			
	complexities of an	Specific position		
	issue. Limits of	(perspective,		
	position	thesis/hypothesis)		
	(perspective, thesis/	takes into account		
	hypothesis) are	the complexities of	Specific position	Specific position
	acknowledged.	an issue. Others'	(perspective,	(perspective,
	Others' points of	points of view are	thesis/	thesis/
	view are synthesized	acknowledged	hypothesis)	hypothesis) is
Student's position	within position	within position	acknowledges	stated, but is
(perspective,	(perspective, thesis/	(perspective, thesis/	different sides of	simplistic and
thesis/hypothesis)	hypothesis).	hypothesis).	an issue.	obvious.
mesis/ny pomesis)	nypouicsis).	250	an issue.	ouvious.

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

	Capstone		Milestone	Benchmark
	4	3	2	1
	Organizational			
	pattern (specific			
	introduction			
	and conclusion,	Organizational		
	sequenced	pattern (specific		
	material within	introduction		Organizational
	the body, and	and conclusion,		pattern (specific
	transitions) is	sequenced		introduction and
	clearly and	material within		conclusion,
	consistently	the body, and	Organizational pattern	sequenced
	observable and	transitions) is	(specific introduction and	material within
	is skillful and	clearly and	conclusion, sequenced material	the body, and
	makes the	consistently	within the body, and	transitions) is not
	content of the	observable	transitions) is intermittently	observable
	presentation	within the	observable within the	within the
Organization	cohesive.	presentation.	presentation.	presentation.
	Language	Language		Language
	choices are	choices are		choices are
	imaginative,	thoughtful and		unclear and
	memorable, and	generally	Language choices are mundane	minimally
	compelling, and	support the	and commonplace and partially	support the
	enhance the	effectiveness of	support the effectiveness of the	effectiveness of
	effectiveness of	the	presentation. Language in	the presentation.
	the	presentation.	presentation is appropriate to	Language in
Language	presentation.	Language in 25	audience.	presentation is

	Language in presentation is appropriate to	presentation is appropriate to audience.		not appropriate to audience.
	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	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and
Delivery	polished and confident.	speaker appears comfortable.	presentation understandable, and speaker appears tentative.	speaker appears uncomfortable.
Denvery	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/	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	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/
Supporting	authority on the	authority on the	presenter's credibility/	authority on the
Material	topic.	topic.	authority on the topic.	topic.

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Assoc.Prof. Nguyen Van Sinh

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Course Name: Net-centric Programming

Course Code: IT096IU

1. General information

Course designation	Advanced	programming course	with focus on developing network a	pplication		
Semester(s) in which the course is taught	6					
Person responsible for the course	MSc. Le T	e Thanh Son				
Language	English					
Relation to curriculum	Compulsor Elective (C					
Teaching methods	Lecture					
Workload (incl. contact hours, self-study hours)	etc.): 45 (le	ours (please specify weeture) + 30 (laborate	hether lecture, exercise, laboratory sory) ation preparation, specified in hours:			
Credit points	Lecture: 3	Number of credits : 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1				
Required and recommended prerequisites for joining the course	Computer	Networks				
Course objectives	systems us Software I Memory A Relationsh and Stream Secure Pro	Advanced programming with a focus on developing software for networked systems using UNIX as a reference platform. Topics: Programming Tools, Software Design, Programming Techniques, Environment of a UNIX Process, Memory Allocation, Garbage Collection, Process Control, Process Relationships, Signals, Reliable Signals, Threads, I/O Multiplexing, Datagram and Stream Sockets, Multicasting, Device Driver and Kernel Programming, Secure Programming				
Course learning outcomes	CLO 1. Understand the structure of network applications CLO 2. Able to develop network applications using TCP and UDP sockets CLO 3. Understand and implement network applications using popular Internet protocols CLO 4. Team working					
		Competency level Knowledge	Course learning outcome (CLO) 1, 2, 3	_		
		Knowledge	1, 2, 3			

		Skill	2, 3		
		Attitude	4		
Content	content and Weight: le	d the level. cture session (3 hour	should clearly indicate the was) T (Teach); U (Utilize)	veighting o	f the
	Topic	-			Level
	Network	revisions		Weight 3	I
	Introducti Programm		networking and Socket	3	I, T
	TCP Soci	ket Programming		3	T, U
	UDP Soc	ket Programming		3	T, U
	Socket na	ame and DNS		3	T, U
	Network	Data and Network E	rrors		
	Caches and Message Queues				T, U
	HTTP Clients				T, U
	HTTP Se	rver		3	T, U
	Web Socket, Web Frame Work				T, U
	Web Scraping				T, U
	Building and Parsing Email			3	T, U
	FTP			3	T, U
	Telnet an	d SSH		3	T, U
	Remote P	Procedure Call (RPC)		3	T, U
Examination forms		hoice questions, short		1 6 1	1
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	 Michael J.Donahoo, Kenneth L.Calvert, TCP/IP Socket in C: A Practical Guide for Programmers 2nd, 2009 W. R. Stevens, B. Fenner, A. M. Rudoff, Unix Network Programming, Vol. 1: The Sockets Networking API 3rd, 2003 Brandon Rhodes, Foundations of Python Network Programming 3rd, 2014 				

2. Learning Outcomes Matrix

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

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

3. Planned learning activities and teaching methods

Week	Veek Topic CLO Assessi		Assessments	Learning activities	Resources
1	Network revisions	1	Quiz	Lecture	2
2	Introduction to Client/Server 2 networking and Socket Programming		Quiz, Lab, Midterm	Lecture	1
3	TCP Socket Programming	2	Quiz, Lab, Midterm	Lecture, Discussion	1, 2
4	UDP Socket Programming	2	Quiz, Lab, Midterm	Lecture, Discussion	1, 2
5	Socket name and DNS	2	Quiz, Lab, Midterm	Lecture, Discussion	2, 3
6	Network Data and Network Errors	2	Quiz, Lab, Midterm	Lecture, Discussion	2, 3
7	Caches and Message Queues	2	Quiz, Lab, Midterm	Lecture, Discussion	2, 3
8	HTTP Clients	3, 4	Quiz, Lab, Final	Lecture, Discussion	2, 3
Midter	m exam			•	·
9	HTTP Server	3, 4	Quiz, Lab, Final	Lecture, Discussion	2, 3
10	Web Socket, Web Frame Work	3, 4	Quiz, Final	Lecture, Discussion	2, 3
11	Web Scraping	3, 4	Quiz, Final	Lecture, Discussion	2, 3
12	Building and Parsing Email	3	Quiz, Final	Lecture, Discussion	2, 3
13	FTP	3	Quiz, Final	Lecture, Discussion	2, 3
14	Telnet and SSH	3	Quiz, Final	Lecture, Discussion	2, 3
15	Remote Procedure Call (RPC)	3	Quiz, Final		
Final e	exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Quiz / Assigment (10%)		10%	10%	100%
Labs (20%)	30%	30%	40%	
Midterm examination (30%)	70%	40%		
Final examination (40%)		20%	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/A	HW/Assignment:			
Date:					
	Evalu	ator:			
		• • • • • • • • • • •			
	Max.	Score	Comments		
Technical content (60%)					
Abstract clearly identifies purpose and summarizes principal content	10				
Introduction demonstrates thorough knowledge of relevant	15				
background and prior work					
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				

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

	evaluates the relevance of contexts when presenting a position.	presenting a position.	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 Universitie

Oral communication value rubric for evaluating presentation tasks:

Capstone	Mileston	Benchmark	
4	3	2	1

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

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Internship

Course Code: IT082IU

1. General information

Course designation	This course helps students to do an internship in industry and prepare a topic for a pre-thesis and thesis
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	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	Total workload: 90 hours Private study including examination preparation, specified in hours: 90
Credit points	Number of credits : 3 (ECTS: 4.91) Lecture: 0 Laboratory: 3
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 School and an instructor at the organization. The student will join/run a technical project, and/or participate in soft skills courses. The internship lasts minimum 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 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					
Content	The description of the contents should clearly indicate the weighting of the content and the level. 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	Ū			
	Study and solve some issues in product 9 U development					
	Implement some new functions or 9 U features for the project product					
	Presentation	9	Ū			
Examination forms	Multiple-choice questions, sho					
Study and			•	cent is compulsory for the class		
examination	sessions. Students will be assessed on the basis of their class participation.					
requirements	Questions and comments are strongly encouraged.					
	Assignments/Examination: Stu	idents n	nust hav	ve more than 50/100 points overall		
	to pass this course.					
Reading list						

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
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	1,2	Check and	Research and	At company or
	or features for the project		Evaluate	working	organization
	product				
6	Presentation	1,2,3	Check and	Research and	At company or
6	Presentation	1,2,3	Check and Evaluate	Research and working	At company or organization

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/A	HW/Assignment:				
Date:						
	Evalu	ator:				
	Max.	Score	Comments			
Technical content (60%)						
Abstract clearly identifies purpose and summarizes principal content	10					
Introduction demonstrates thorough knowledge of relevant	15					
background and prior work						
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:

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

	and carefully	procenting a	procenting	(somotimes
	and carefully	presenting a	presenting a	(sometimes
	evaluates the	position.	position. May be	labels assertions
	relevance of		more aware of	as assumptions).
	contexts when		others'	Begins to
	presenting a		assumptions	identify some
	position.		than one's own	contexts when
			(or vice versa).	presenting a
				position.
	Specific position			
	(perspective, thesis/			
	hypothesis) is			
	imaginative, taking			
	into account the			
	complexities of an	Specific position		
	issue. Limits of	(perspective,		
	position	thesis/hypothesis)		
	(perspective, thesis/	takes into account		
	hypothesis) are	the complexities of	Specific position	Specific position
	acknowledged.	an issue. Others'	(perspective,	(perspective,
	Others' points of	points of view are	thesis/	thesis/
	view are synthesized	acknowledged	hypothesis)	hypothesis) is
Student's position	within position	within position	acknowledges	stated, but is
(perspective,	(perspective, thesis/	(perspective, thesis/	different sides of	simplistic and
thesis/hypothesis)	hypothesis).	hypothesis).	an issue.	obvious.
thesis/hypothesis)	nypotnesis):	nypotnesis).	Conclusion is	0011045.
			logically tied to	
			information	
	Conclusions and		(because	
	related outcomes		information is	
	(consequences and	Conclusion is	chosen to fit the	Conclusion is
	implications) are	logically tied to a	desired	inconsistently
	logical and reflect	range of	conclusion);	tied to some of
	student's informed	information,	some related	the information
	evaluation and	including opposing	outcomes	discussed;
	ability to place	viewpoints; related	(consequences	related outcomes
Conclusions and	evidence and	outcomes	and	(consequences
related outcomes	perspectives	(consequences and	implications) are	and
(implications and	discussed in priority	implications) are	identified	implications) are
consequences)	order.	identified clearly.	clearly.	oversimplified.
	of American Colleges ar		cicarry.	oversimpinicu.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

Capstone	Mile	stone	Benchmark
4	3	2	1

			Ī	T
	Organizational			
	pattern (specific			
	introduction and			
	conclusion,	Organizational		
	sequenced material	pattern (specific	Organizational	
	within the body,	introduction and	pattern (specific	Organizational
	and transitions) is	conclusion,	introduction and	pattern (specific
	clearly and	sequenced material	conclusion,	introduction and
	consistently	within the body,	sequenced material	conclusion,
	observable and is	and transitions) is	within the body,	sequenced material
	skillful and makes	clearly and	and transitions) is	within the body, and
	the content of the	consistently	intermittently	transitions) is not
	presentation	observable within	observable within	observable within
Organization	cohesive.	the presentation.	the presentation.	the presentation.
- Sameanon	Language choices	mo presentation.	no presentation.	mo procentation.
	are imaginative,		Language choices	
	memorable, and	Language choices	are mundane and	Language choices
	compelling, and	are thoughtful and	commonplace and	are unclear and
	enhance the	generally support	partially support	minimally support
	effectiveness of the	the effectiveness of	the effectiveness of	the effectiveness of
	presentation.	the presentation.	the presentation.	the presentation.
	Language in	Language in	Language in	_
				Language in
	presentation is	presentation is	presentation is	presentation is not
Languaga	appropriate to audience.	appropriate to audience.	appropriate to audience.	appropriate to audience.
Language		audience.	audience.	audience.
	Delivery	Daliman	Dalissams	
	techniques	Delivery	Delivery	Dalissams to almi assas
	(posture, gesture,	techniques	techniques	Delivery techniques
	eye contact, and	(posture, gesture,	(posture, gesture,	(posture, gesture,
	vocal	eye contact, and	eye contact, and	eye contact, and
	expressiveness)	vocal	vocal	vocal
	make the	expressiveness)	expressiveness)	expressiveness)
	presentation	make the	make the	detract from the
	compelling, and	presentation	presentation	understandability of
	speaker appears	interesting, and	understandable,	the presentation, and
	polished and	speaker appears	and speaker	speaker appears
Delivery	confident.	comfortable.	appears tentative.	uncomfortable.
	A variety of types	Supporting	Supporting	Insufficient
	of supporting	materials	materials	supporting materials
	materials	(explanations,	(explanations,	(explanations,
	(explanations,	examples,	examples,	examples,
	examples,	illustrations,	illustrations,	illustrations,
	illustrations,	statistics,	statistics,	statistics, analogies,
Supporting	statistics, analogies,	analogies,	analogies,	quotations from
Material	quotations from	quotations from	quotations from	relevant authorities)

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Software Engineering

Course Code: IT076IU

1. General information

Course designation	This course focuses on the design of software by implementing significant projects in teams
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: 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 (ECTS: 6.18) Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	Object-Oriented Programming
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	CLO 1. Describe the implement of software development process. CLO 2. Apply the principles and methods of software engineering in practice. CLO3. Practice teamwork skills in a software engineering project. 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)					
		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 qu	estions, short-answer questio	ns	-		
Study and	Attendance: A min	imum attendance of 80 perce	nt is co	mpulsory for the	class	
examination	sessions. Students	will be assessed on the basis	of their	class participation	on.	
requirements	Ouestions and com	ments are strongly encourage	ed.	1 1		
1	_	ination: Students must have		an 50/100 points	s overall	
	to pass this course.			on correspond	, 0 , 01011	
Reading list	•	illa Caftruana Enginearing 10	04 1 - 201	0		
Reading list	1. Ian Sommerville, Software Engineering 10th, 2019.					
	2. Hyrum Wright, Titus Winters, and Tom Manshreck. Software					
	Engineering at Google, 2020					
	3. Hans van Vli	et, Software Engineering: Pri	nciples	and Practice 3rd	1, 2008	

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
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, Inclass, exercise	[1,3]
3	Requirements	2,3	Quiz, Midterm, Project	Lecture, Discussion, Inclass, exercise	[1,2]
4	The user experience	2,3	Quiz, Midterm, Project	Lecture, Discussion, Inclass, exercise	[1,2]

5	System design	2,3	Quiz, Midterm, Project	Lecture, Discussion, Inclass, exercise	[1,2,3]
6	Midterm		Troject	crass, creresse	
7	Program development	2,3	Quiz, Final, Project	Lecture, Discussion, Inclass, exercise	[1,2,3]
8	Reliability and testing	2,3	Quiz, Final, Project	Lecture, Discussion, Inclass, exercise	[1,2,3]
9	The business of software development	2,3	Quiz, Project	Lecture, Discussion, Inclass, exercise	[1,2,3]
10	Review	1,3	Quiz	Discussion, In-class, exercise	[1,2]
11	Final exam				

4. Assessment plan

P-W					
Assessment Type	CLO1	CLO2	CLO3		
Midterm examination (25%)	30%	20%			
Projects/Presentations/ Report (25%)	30%	30%	60%		
Final examination (40%)	30%	40%			
Exercises/ Quiz (10%)	10%	10%	40%		

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

2. Rubrics (optional)5.1. Grading checklist

Grading checklist for Written Reports					
Student:	HW/Assignment:				
Date:					
	Evaluator:				
	1				
	Max.	Score	Comments		
Technical content (60%)					
Abstract clearly identifies purpose and summarizes principal content	10				
Introduction demonstrates thorough knowledge of relevant	15				
background and prior work					
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
			Issue/ problem	
			to be considered	
			critically is	
			stated but	
			description	
	Issue/ problem to be	Issue/ problem to	leaves some	
	considered critically	be considered	terms undefined,	
	is stated clearly and	critically is stated,	ambiguities	
	described	described, and	unexplored,	Issue/ problem
	comprehensively,	clarified so that	boundaries	to be considered
	delivering all	understanding is	undetermined,	critically is
	relevant information	not seriously	and/ or	stated without
Explanation of	necessary for full	impeded by	backgrounds	clarification or
issues	understanding.	omissions.	unknown.	description.
	Information is taken		Information is	
	from source(s) with	Information is	taken from	Information is
	enough	taken from	source(s) with	taken from
	interpretation/	source(s) with	some	source(s)
	evaluation to	enough	interpretation/	without any
Evidence	develop a	interpretation/	evaluation, but	interpretation/
Selecting and	comprehensive	evaluation to	not enough to	evaluation.
using information	analysis or	develop a coherent	develop a	Viewpoints of
to investigate a	synthesis.	analysis or	coherent	experts are taken
point of view or	Viewpoints of	synthesis.	analysis or	as fact, without
conclusion	experts are	Viewpoints of	synthesis.	question.

	questioned	avnarte ara subject	Viewpoints of	
	questioned	experts are subject	Viewpoints of	
	thoroughly.	to questioning.	experts are taken	
			as mostly fact,	
			with little	
			questioning.	
				Charra
			Overtions some	Shows an
	The annual lay		Questions some	emerging
	Thoroughly		assumptions.	awareness of
	(systematically and		Identifies	present
	methodically)		several relevant	assumptions
	analyzes own and		contexts when	(sometimes
	others' assumptions	T1	presenting a	labels assertions
	and carefully	Identifies own and	position. May be	as assumptions).
	evaluates the	others' assumptions	more aware of	Begins to
T (9)	relevance of	and several relevant	others'	identify some
Influence of	contexts when	contexts when	assumptions	contexts when
context and	presenting a	presenting a	than one's own	presenting a
assumptions	position.	position.	(or vice versa).	position.
	Specific position			
	(perspective, thesis/			
	hypothesis) is			
	imaginative, taking			
	into account the			
	complexities of an	Specific position		
	issue. Limits of	(perspective,		
	position	thesis/hypothesis)		
	(perspective, thesis/	takes into account		
	hypothesis) are	the complexities of	Specific position	Specific position
	acknowledged.	an issue. Others'	(perspective,	(perspective,
	Others' points of	points of view are	thesis/	thesis/
	view are synthesized	acknowledged	hypothesis)	hypothesis) is
Student's position	within position	within position	acknowledges	stated, but is
(perspective,	(perspective, thesis/	(perspective, thesis/	different sides of	simplistic and
thesis/hypothesis)	hypothesis).	hypothesis).	an issue.	obvious.
	Conclusions and		Conclusion is	
	related outcomes	Conclusion is	logically tied to	Conclusion is
	(consequences and	logically tied to a	information	inconsistently
	implications) are	range of	(because	tied to some of
	logical and reflect	information,	information is	the information
Conclusions and	student's informed	including opposing	chosen to fit the	discussed;
related outcomes	evaluation and	viewpoints; related	desired	related outcomes
(implications and	ability to place	outcomes	conclusion);	(consequences
consequences)	evidence and	(consequences and	some related	and

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

Source: Association of American Colleges and Universities
Oral communication value rubric for evaluating presentation tasks:

	Capstone	Mile	stone	Benchmark
	4	3	2	1
	Organizational			
	pattern (specific			
	introduction and			
	conclusion,	Organizational		
	sequenced material	pattern (specific	Organizational	
	within the body,	introduction and	pattern (specific	Organizational
	and transitions) is	conclusion,	introduction and	pattern (specific
	clearly and	sequenced material	conclusion,	introduction and
	consistently	within the body,	sequenced material	conclusion,
	observable and is	and transitions) is	within the body,	sequenced material
	skillful and makes	clearly and	and transitions) is	within the body, and
	the content of the	consistently	intermittently	transitions) is not
	presentation	observable within	observable within	observable within
Organization	cohesive.	the presentation.	the presentation.	the presentation.
	Language choices			
	are imaginative,		Language choices	
	memorable, and	Language choices	are mundane and	Language choices
	compelling, and	are thoughtful and	commonplace and	are unclear and
	enhance the	generally support	partially support	minimally support
	effectiveness of the	the effectiveness of	the effectiveness of	the effectiveness of
	presentation.	the presentation.	the presentation.	the presentation.
	Language in	Language in	Language in	Language in
	presentation is	presentation is	presentation is	presentation is not
	appropriate to	appropriate to	appropriate to	appropriate to
Language	audience.	audience.	audience.	audience.
	Delivery			Delivery techniques
	techniques	Delivery	Delivery	(posture, gesture,
	(posture, gesture,	techniques	techniques	eye contact, and
	eye contact, and	(posture, gesture,	(posture, gesture,	vocal
	vocal	eye contact, and	eye contact, and	expressiveness)
	expressiveness)	vocal	vocal	detract from the
	make the	expressiveness)	expressiveness)	understandability of
	presentation	make the	make the	the presentation, and
	compelling, and	presentation	presentation	speaker appears
Delivery	speaker appears	interesting, and 274	understandable,	uncomfortable.

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Web Application Development

Course Code: IT093IU

1. General information

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					
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)					
Teaching methods	Lecture, lesson, project, semin	nar.				
Workload (incl. contact hours, self-study hours)	etc.): 45 (lecture) + 30 (labora	whether lecture, exercise, laboratory session, tory) nation preparation, specified in hours: 120				
Credit points		Number of credits : 4 (ECTS: 6.18) Lecture: 3				
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.					
	Competency level	Course learning outcome (CLO)				
	Knowledge	CLO1				
	Skill	CLO2, CLO3				
	Attitude CLO4					
Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 teaching hours)					

	Teaching levels: I (Introduce); T (Teach); U (Utilize)			
	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, JavaScri 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 JavaS 2017.			
	4. Refer VN book: N.V.Sinh, N.T.T.Sang, T.M.Hà "Y Web cho Thương mại điện tử trên Netbeans", Nh 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	CL O	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, In-class exercises	[1,2,3,4]
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	Repor	ts			
Student: HW/Assignment:					
Date: Evaluator:					
	Max.	Score	Comments		
Technical content (60%)					
Abstract clearly identifies purpose and summarizes	10				
principal content					
Introduction demonstrates thorough knowledge of	15				
relevant background and prior work					
Analysis and discussion demonstrate good subject					
mastery					
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					
Clear and easy to read					
Quality of Layout and Graphics (10%)	10				
TOTAL SCORE	100				

5.2. Holistic rubric

Но	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

Mile

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

			than one's own (or vice versa).	Begins to identify some contexts when presenting a position.
Student's position (perspective, thesis/hypoth esis)	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

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

			I amound at 1	Language de la
		T 1 '	Language choices	Language choices
		Language choices	are mundane and	are unclear and
		are thoughtful and	commonplace and	minimally support
	Language choices are	generally support	partially support	the effectiveness
	imaginative, memorable, and	the effectiveness of	the effectiveness of	of the
	compelling, and enhance the	the presentation.	the presentation.	presentation.
	effectiveness of the	Language in	Language in	Language in
	presentation. Language in	presentation is	presentation is	presentation is not
	presentation is appropriate to	appropriate to	appropriate to	appropriate to
Language	audience.	audience.	audience.	audience.
				Delivery
		Delivery	Delivery	techniques
		techniques	techniques	(posture, gesture,
		(posture, gesture,	(posture, gesture,	eye contact, and
		eye contact, and	eye contact, and	vocal
	Delivery techniques	vocal	vocal	expressiveness)
	(posture, gesture, eye	expressiveness)	expressiveness)	detract from the
	contact, and vocal	make the	make the	understandability
	expressiveness) make the	presentation	presentation	of the
	presentation compelling, and	interesting, and	understandable,	presentation, and
	speaker appears polished and	speaker appears	and speaker	speaker appears
Delivery	confident.	comfortable.	appears tentative.	uncomfortable.
Zenvery	Comment	Comfortable	appears tentarive.	Insufficient
		Supporting	Supporting	supporting
		materials	materials	materials
		(explanations,	(explanations,	(explanations,
		examples,	examples,	examples,
		illustrations,	illustrations,	illustrations,
		statistics,	statistics,	statistics,
		analogies,	analogies,	analogies,
		quotations from	quotations from	quotations from
		_ -	*	*
	A variety of types of	relevant	relevant	relevant
	A variety of types of	authorities) make	authorities) make	authorities) make
	supporting materials	appropriate	appropriate	reference to
	(explanations, examples,	reference to	reference to	information or
	illustrations, statistics,	information or	information or	analysis that
	analogies, quotations from	analysis that	analysis that	minimally
	relevant authorities) make	generally supports	partially supports	supports the
	appropriate reference to	the presentation or	the presentation or	presentation or
	information or analysis that	establishes the	establishes the	establishes the
	significantly supports the	presenter's	presenter's	presenter's
g	presentation or establishes	credibility/	credibility/	credibility/
Supporting	the presenter's credibility/	authority on the	authority on the	authority on the
Material	authority on the topic.	topic.	topic.	topic.
		Central message is	Central message is	
	Central message is	clear and consistent	basically	Central message
Central	compelling (precisely stated,	with the supporting	understandable but	can be deduced
Message	appropriately repeated,	material.	is not often	but is not

memorable, and strongly	repeated and is not	explicitly stated in
supported.)	memorable.	the presentation.

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022 **Dean of School of Computer Science and Engineering**

Assoc.Prof. Nguyen Van Sinh

Course Name: Artificial Intelligence

Course Code: IT159IU

1. General information

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.						
Semester(s) in which the course is taught	6,8						
Person responsible for the course	Dr. Nguyen Trung Ky						
Language	English						
Relation to curriculum	Elective						
Teaching methods	Lecture, lesson, project, laboratory.						
Workload (incl. contact hours, self-study hours)	Total workload: 195 Contact hours: 45 hours (lectures) + 30 hours (laboratory) Private study including examination preparation, specified in hours: 120						
Credit points	Number of credits: 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1						
Required and recommended prerequisites for joining the course	Object-Oriented Programming Algorithms and Data Structures Discrete Mathematics Probability, Statistic & Random Process						
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 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	Competency level Course learning outcome (CLO)						

	, 	
	Skill	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 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	The description of the o	contents should clearly indicate the weighting of the

The description of the contents should clearly indicate the weighting of the content and the level.

Weight: lecture session (3 hours)

Teaching levels: I (Introduce); T (Teach); U (Utilize)

Topic	Weight	Level
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:	1	T, U
 Random Variables and Events 		

	 Joint and Marginal Distributions Conditional Distribution Product Rule, Chain Rule, Bayes' Rule Inference 		
	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	Attendance: A minimum attendance of 80 percent is compul sessions. Students will be assessed on the basis of their computations and comments are strongly analyzinged.		
requirements	Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/ to pass this course.	100 point	ts overall
Reading list	[1] Stuart Russell and Peter Norvig, "Artificial Intelligence: A Fourth Edition, 2020.		
	[2] David L. Poole and Alan K. Mackworth, "Artificial Intelligation of Computational Agents", Second Edition, 2017.	gence: F	oundation

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				X
4	X	X				X

3. Planned learning activities and teaching methods

3. P	lanned learning activities and teaching	metho	us	T	1
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]. Chapter19[2]. Chapter15
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	3, 4	Quiz	Lecture,	[1]. Chapter
	Expectation-Maximization Algorithm			Discussion	20
					[2]. Chapter
					24
16	Revision			Review-test	
17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
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.

- 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 Re	ports		
Student:	HW/Assignment:		nt:
Date:			•
	Evalu	ator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes principal content	10		
Introduction demonstrates thorough knowledge of relevant	15		
background and prior work			
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
			Issue/ problem	
			to be considered	
			critically is	
			stated but	
			description	
	Issue/ problem to be	Issue/ problem to	leaves some	
	considered critically	be considered	terms undefined,	
	is stated clearly and	critically is stated,	ambiguities	
	described	described, and	unexplored,	Issue/ problem
	comprehensively,	clarified so that	boundaries	to be considered
	delivering all	understanding is	undetermined,	critically is
	relevant information	not seriously	and/ or	stated without
Explanation of	necessary for full	impeded by	backgrounds	clarification or
issues	understanding.	omissions.	unknown.	description.
	Information is taken		Information is	
	from source(s) with	Information is	taken from	
	enough	taken from	source(s) with	
	interpretation/	source(s) with	some	Information is
	evaluation to	enough	interpretation/	taken from
	develop a	interpretation/	evaluation, but	source(s)
	comprehensive	evaluation to	not enough to	without any
Evidence	analysis or	develop a coherent	develop a	interpretation/
Selecting and	synthesis.	analysis or	coherent	evaluation.
using information	Viewpoints of	synthesis.	analysis or	Viewpoints of
to investigate a	experts are	Viewpoints of	synthesis.	experts are taken
point of view or	questioned	experts are subject	Viewpoints of	as fact, without
conclusion	thoroughly.	to questioning.	experts are taken	question.

	1		(1 C (
			as mostly fact,	
			with little	
			questioning.	
				Shows an
			Questions some	emerging
	Thoroughly		assumptions.	awareness of
	(systematically and		Identifies	present
	methodically)		several relevant	assumptions
	analyzes own and		contexts when	(sometimes
	others' assumptions		presenting a	labels assertions
	and carefully	Identifies own and	position. May be	as assumptions).
	evaluates the	others' assumptions	more aware of	Begins to
	relevance of	and several relevant	others'	identify some
Influence of	contexts when	contexts when	assumptions	contexts when
context and	presenting a	presenting a	than one's own	presenting a
assumptions	position.	position.	(or vice versa).	position.
monthion	Specific position	position.	(or vice versa).	position.
	(perspective, thesis/			
	hypothesis) is			
	imaginative, taking			
	into account the			
	complexities of an	Specific position		
	issue. Limits of	(perspective,		
	position	thesis/hypothesis)		
	(perspective, thesis/	takes into account		
	hypothesis) are	the complexities of	Specific position	Specific position
	acknowledged.	an issue. Others'	(perspective,	(perspective,
	Others' points of	points of view are	thesis/	thesis/
	view are synthesized	acknowledged	hypothesis)	hypothesis) is
Student's position	within position	within position	acknowledges	stated, but is
(perspective,	(perspective, thesis/	(perspective, thesis/	different sides of	simplistic and
thesis/hypothesis)	hypothesis).	hypothesis).	an issue.	obvious.
,		, ,	Conclusion is	
	Conclusions and	Conclusion is	logically tied to	Conclusion is
	related outcomes	logically tied to a	information	inconsistently
	(consequences and	range of	(because	tied to some of
	implications) are	information,	information is	the information
	logical and reflect	including opposing	chosen to fit the	discussed;
	student's informed	viewpoints; related	desired	related outcomes
Conclusions and	evaluation and	outcomes	conclusion);	(consequences
related outcomes	ability to place	(consequences and	some related	and
(implications and	evidence and	implications) are	outcomes	implications) are
consequences)	perspectives	identified clearly.	(consequences	oversimplified.

discussed in priority	and
order.	implications) are
	identified
	clearly.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh



General Law PE021IU

1. General information

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

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

Course objectives	The overarching aims of this course are to: • Provide essential knowledge of Vietnamese legal system through integrated technology and real cases for social and cultural sustainability.			
	 Raise awareness of responsibility toward others and how to stand for ending all types of legal violations, especially corruption in various social contexts. Practice necessary skills to act as an ambassador to ensure social 			
	 Use integ 	al equitable rights. grated online legal resources and communication tools to help identify issues and develop countermeasures.		
Course learning	Upon the success	ful completion of this course, students will be able to:		
outcomes	Competency	Course learning outcome (CLO)		
	Knowledge	CLO1. Apply appropriate legal knowledge in the Vietnamese legal system to solve legal issues in various social contexts for a fair sustainable lifelong being. CLO1.1. Apply general knowledge on state and law to solve legal issues in various social contexts for a fair sustainable lifelong being. CLO1.2. Apply principle legal norms in some law branches such as constitution, civil, criminal, labor and administrative law to solve legal issues in various social contexts for a fair sustainable lifelong being.		
	Skill	CLO2. Communicate knowledge in the Vietnamese legal system to encourage people to raise their legal rights aiming for fair social/cultural moves. CLO3. Integrate ICTs to solve legal issues in various		
	Attitude	Social contexts. 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	students will ur Criminal law, ad Vietnam, From th	introduce students to Vietnamese legal systems. In particular, idensities their rights and obligations in the Constitution, iministrative law, civil law, labor law and enterprise law of its, students will raise awareness towards their responsibility to cluding 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.

Workland

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 plantarism

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 before attendance in classes.

Required Course Texts and Materials

Legal Texts:

- 1. Constitution of Vietnam 2013
- Civil Code of Vietnam 2015
- Criminal Code of Vietnam 2015 (amended in 2017)
- 4. Law on Law on Handling of Administrative Violations 2012
- Law on Enterprises 2020
- 6. Labour Code 2019
- Law on anti-corruption 2018.

Available at https://hatvietnam.vn/ or Blackboard

Books:

- PGS.TS. Phan Trung Hien, Giáo trình Pháp Luật Đại cương, NXB Chính Trị Quốc Gia Sự Thật 2022.
- Mai Hong Quy (Chief Editor) (2rd 2017), Introduction to Vietnamese Law, Hong Duc Publishing House.

Additional materials provided in Blackboard

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, kiến trí đầu tranh phòng, chống tham những, tiêu cực, góp phần xây dựng đáng và nhà nước ta ngày càng trong sạch, văng mạnh, NXB Chính Trị Quốc Gia Sư 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, Gião 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:

2.75577	PLO/SLO									
SLO	1	2	3	34	5	6	7	8	9	10
1	R,M	-18				R,M	R,M	R,M	R,M	R,M
2	3000000		R,M			. Accesses	***************************************	300700		0.0000
3		100	R,M				33	13	100	33
4			3,000	R,M			3	1		3
5					R.M.					

R: Reinforced M: Mastere

3. Planned learning activities and teaching methods

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

2	Introduction to law? What is law? Nature of law Forms of law Structure of law Categorization of legal system. Enforcement Breach of law and liabilities for breach of law Introduction to structure of Vietnamese legal system	1×5 (level 1 - introduced)	Tests Peer evaluations Class- performance evaluations	Discussions Case studies	PPT - Introduction to Vietnamese legal system available on Blackboard
	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.	I-5 (Level R - neinbecod)	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	I-5 (Level R - neindoccad)	Tests Peer evaluations Class- performance evaluations	Discussions Case studies	PPTs – Constitutional law available on Blackboard Constitution 2013 available on Blackboard
5	Administrative Law Definition and nature of administrative law Administrative law violations Liabilities for breach of administrative law, exemption from the liability	1-5 (Level R - reinfecced)	Tests Peer evaluations Class- performance evaluations	Discussions Case studies and law on anti- corruption	
6	Criminal Law Definition and nature of criminal law	1-5 (Level R - reinforced)	Tests Peer evaluations Class- performance	Discussions Case studies, especially cases related	PPT Criminal law available on Blackboard

	Crimes Punishments		evaluations	to corruption	Criminal code 2015 available or Blackboard
7	Criminal Law (Cont) Crimes related to corruption Punishments for corruption	1-5 (Level R - ninderced)	Tests Peer evaluations Class- performance evaluations	Discussions Case studies, especially cases related to corruption	PPT- Criminal lav available or Blackboard Criminal code 2015 available or Blackboard
8	Revision for mid-term exam		Quizzes Projects		
9	Civil Law (Part I) Definition and nature Civil law relationship Subject of civil law Property and ownership Civil transactions	1-5 (Level R - reinforced)	Tests Peer evaluations Class- performance evaluations	Discussions Case studies	PPT- Civil lav available of Blackboard Civil code 201: available of 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 lav available or Blackboard Civil code 201: available or Blackboard
н	Civil Law (Part III) Inheritance Testamentary inheritance Intestacy	1-5 (Level M - Mastery)	Tests Peer evaluations Class- performance evaluations	Discussions Case studies	PPT- Civil lav available o Blackboard Civil code 201 available o Blackboard
12	Law on Enterprises Introduction to law on enterprises Introduction to forms, features, establishment, reorganization and dissolution of an enterprise	1-5 (Level 1 - Introduced)	Tests Peer evaluations Class- performance evaluations	Discussions Case studies	PPT— Law or enterprises available or Blackboard Law on enterprise 2020 available or Blackboard
115	Labor Law Definition, and nature of labour law Employees and employers Working time, and resting time Salary (including salary for overtime working hours)	1-5 (Level M - Mastery)	Tests Peer evaluations Class- performance evaluations	Discussions Case studies	PPT- Labor lav available of Blackboard Labor code 2019 available of Blackboard
14	Labour Law (Cont.)	I-5 (Level M -	Tests Peer evaluations	Discussions Case studies	PPT- Labor lav available o

	Employment contracts Labor disciplines Dispute settlements	Mastery)	Class- performance evaluations	Blackboard Labor code 2019 available on Blackboard
15	Revision/Tutoring classes	14: 14:	Quizzes Projects	2 X

4. Assessment plan

Assessment Type	CLOI	CLO2	CLO3	CL04	CLO5
In class evaluation (20%)	70%	80%	100%	100%	100%
	pass	pass	pass	pass	pass
Midterm examination	70%	80%	100%	100%	100%
(30%)	pass	pass	pass	pass	pass
Final examination (50%)	70%	80%	100%	100%	100%
	pass	pass	pass	pass	pass

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

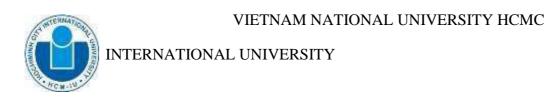
5. Rubrics

No.	CLOs	Criteria	COMPLET ELY FAIL Below 30%	INADEQUAT E 30% = 49%	ADEQUATE 50% - 69%	ABOVE AVERAGE 70% - 89%	EXEMPLARY ≥ 90%
	CLO1	Organisat ion and clarificati on	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 underdevelope d	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		Originalit y and usefulnes s 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 duta/infor mation	Shows no effort to incorporate information from primary and secondary sources	Shows little information from sources. Poor handling of sources	Shows moderate amount of source information incorporated. Some key points supported by sources. Quotations may be poorly integrated into paragraphs. Some possible problems with source citations	Draws upon sources to support most points. Some evidence may not support arguments or may appear where inappropriate. Quotations integrated well into paragraphs. Sources cited correctly	Draws upon primary and secondary source information in useful and illuminating ways to support key points. Excellent integration of quoted material into paragraphs. Source cited correctly
d	CLO2	Use of framewor ks	Shows no effort to structure	Shows limited ability to structure	Shows effort to link problems with the theoretical	Shows ability to structure problems in	Shows ability to structure problems in correspondence to

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

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

Huỳnh Khả Tú



COURSE SYLLABUS

Course Name: Engineering Ethics and Professional Skills

Course Code: PE020IU

1. General Information

Module designation	PE020IU – Engineering Ethics and Professional Skills				
	This course is designed to introduce engineering students to the concepts, theory and practice of engineering ethics. It will allow students to explore the relationship between ethics and engineering, and apply classical moral theory and decision making for engineering issues encountered in academic and professional careers. This course also provides students with the professional skills: sharing ideas and concepts, team working, and presentation skills.				
Semester(s) in which the module is taught	All semesters in each academi	c year			
Person responsible for the module	Dr. Nguyen, Hoai Nghia, Dr. l	Huynh, Vo Trung Dung			
Language	English				
Relation to curriculum	☑General☐Fundamental☐Specialization☐Project/Internship/Thesis	⊠ Compulsory □ Elective			
Teaching methods	Lecture, presentation, and assignments.				
Workload (incl. contact hours, self- study hours)	Total workload: 127.5 Contact hours (lecture): 37.5 Private study including examination preparation, specified in hours: 90				
Credit points	3 credits/4.64 ECTS				
Required and recommended prerequisites for joining the module	None				

Module objectives/intended	Overall objectives are to equip IU the philosophies of ethics, profession		•			
learning outcomes	Students who complete the course will be able to perform the following tasks:					
	(1) Having knowledge of the definition of engineering ethics,					
	codes of ethics, ethic philosophies, intellectual propert copyright, and fair use of copyrighted materials and resear data. (2) Using different problem-solving techniques to solve ethic dilemmas. (3) Analyzing social, environmental, legal aspects, safety and sustainability issues of engineering activities.					
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)					
	Topi	Weigh	Level			
	c	t				
	Introduction to engineering professionalism and ethics	1	I			
	Engineers in Society	1	T, U			
	Moral choices and codes of ethics	1	T, U			
	Philosophical ethics	2	I, T, U			
	Ethical problem-solving techniques	1	T, U			
	Engineers at the Workplaces - Leadership	2	T, U			
	Truth in actions and words Academic and Research Ethics	1	Т			
	Commitment to Safety	1	T, U			
	Internet ethics, Privacy Issues and Intellectual Property Rights	1	T, U			
	Environmental ethics Sustainable engineering	1	Т			
	Review	1	T			
Examination forms	Constructed-response test					

Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed based on their class participation. Questions and comments are strongly encouraged.
	Assignments/Examination: Students must have more than 50/100 points overall to pass this module.
Reading list	Textbook:
	[1] M. W. Martin and R. Schinzinger (2010). <i>Introduction to engineering ethics</i> McGraw-Hill Education 2 nd edition
	[2] C. B. Fleddermann. (2011). <i>Engineering Ethics</i> , Pearson 4th edition

2. Learning Outcomes Matrix (optional)

The relationship between Course Learning Outcomes (1-3) and Intended Learning Outcomes (ILO) is shown in the following table:

1	2 2	3	4	5	Skills 6	7	8	Attitu 9	10
1			4	5	6	7	8		10
	2	₃						2	
		3							
		ľ	L					3	
	4							4	
_	Co	ontribu	ıtion o	f CLOs 1	o ILOs				
0.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
	M	M							
	0.0	T I	0.0 3.0 3.0	0.0 3.0 3.0 0.0	0.0 3.0 3.0 0.0 0.0	0.0 3.0 3.0 0.0 0.0 0.0	0.0 3.0 3.0 0.0 0.0 0.0 0.0	0.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0	0.0 3.0 3.0 0.0 0.0 0.0 0.0 3.0

${\bf 3. \ Planned \ learning \ activities \ and \ teaching \ methods}$

Week	Торі	CLO	Assessment	Learning activities	Resources
	c		S		
1	Introduction to	1		Lecture,	[1] Chapter
	engineering			Discussion	1
	professionalism and				
	ethics				
2	Engineers in Society	1	HW1	Lecture, HW1	[1] Chapter
			and/or	and/or Quiz1	4
			Quiz1		
3	Moral choices and codes of	1	Presentatio	Lecture,	[1] Chapter
	ethics		n 1	Presentation1	2
4, 5	Philosophical ethics	1, 2	HW2	Lecture, HW2	[1] Chapter
			and/or	and/or Quiz2	3
			Quiz2	-	
	Ethical problem-		Presentation	Lecture, HW3	
6	solving techniques	2	2, HW3	and/or Quiz3	[4] Chapter
			and/or		4
			Quiz3		

7, 8	Engineers at the Workplaces - Leadership	1	Quiz4	Lecture, Discussion Quiz4	[1] Chapter 6
9-10	FINAL EXAM				
11-12	Truth in actions and words Academic and Research Ethics	1, 3	Quiz5	Lecture, Quiz5	[1] Chapter 7
13	Commitment to Safety	1, 3	Quiz6	Lecture, Discussion Quiz6	[1] Chapte rs 5, 6
14-15	Internet Ethics Privacy Issues and Intellectual Property Rights	1, 3	Quiz7	Lecture, Discussion Quiz7	[1] Chapter 13
16	Environmental ethics Sustainable engineering	1, 3	Quiz8	Lecture, Discussion Quiz8	[1] Chapter 9
Week	Topi c	CLO	Assessments	Learning activities	Resources
17	Review				
18-19	FINAL EXAM				

4. Assessment plan

Assessment Type	CLO	CLO	CLO3
	1	2	
In-class exercises/quizzes (10%)	Qz1, Qz4,	Qz2, Qz3	Qz5, Qz6, Qz7,
	50%Pass	50%Pass	Qz8,
			50%Pass
Homework exercises/	Presentation	Presentation	
Presentation (20%)	1	2	
	50%Pass	50%Pass	
	MCQ, Case	MCQ, Case	
Midterm exam (20%)	study 50%	study 50%	
	Pass	Pass	
			MCQ, Case
Final exam (50%)			study 50%
			Pass

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

5. Date revised: August 14, 2023

Ho Chi Minh City, 14/08/2023 HEAD OF UNDERGRADUATE ACADEMIC AFFAIRS

Huỳnh Khả Tú

Course Name: Lịch sử Đảng Cộng sản Việt Nam (History of Vietnamese communist party)

Course Code: PE018IU

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

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

ĐỀ CƯƠNG CHI TIẾT MÔN HỌC

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

1. Thông tin chung

Tên môn học (tiếng Việt):	Lịch sử Đảng Cộng sản Việt Nam		
Tên môn học (tiếng Anh):	History of Vietnamese communist party		
Mã số môn học:	PE018IU		
Thuộc khối kiến thức:	Cơ sở		
Số tín chỉ:	2		
Số tiết lý thuyết:	20 (trên lớp)		
Số tiết thực hành:	10 (trên lớp)		
Số tiết tự học:	90 (về nhà)		
Môn học trước:	1. Triết học Mác – Lênin, 2. Kinh tế chính trị Mác – Lênin, 3. Chủ nghĩa xã hội khoa học		
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 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	2.1	1.1.3	13
LO.2	ĐẢNG CỘNG SẢN VIỆT NAM RA ĐỜI VÀ LÃNH ĐẠO ĐẦU TRANH GIÀNH CHÍNH QUYỀN (1930-1945)		2.1	1.1.3	Т4



		LO.2.3- Nắm được nội dung hội nghị thành lập Đảng và Cương lĩnh chính trị đầu tiên của Đảng LO.2.4 – Hiểu được ý nghĩa lịch sử của việc thành lập Đảng Cộng sản Việt Nam LO.2.5 – Nắm rõ các phong trào cách mạng 1930-1935 và các chủ trương khôi phục phong trào năm 1932-1935 LO.2.6 – Nắm rõ phong trào dân chủ năm 1936-1939	2.1 2.1 2.1		
		LO.2.7 – Nắm rõ phong trào giải phóng dân tộc 1939- 1945	2.1		
		LO.2.8 – Hiểu rõ tính chất, ý nghĩa và kinh nghiệm của Cách mạng Tháng Tám năm 1945	2.1		
		LO.3.1 – Hiểu được chủ trương xây dựng và bảo vệ chính quyền cách mạng 1945-1946	2.1		
LO.3	ĐẢNG LÃNH ĐẠO HAI CUỘC KHÁNG CHIẾN,	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	2.1	1.1.3	T4
	HOÀN THÀNH GIẢI PHÓNG DÂN TỘC, THỐNG NHẤT ĐẤT NƯỚC (1945-1975)	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		
		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	۷,1	1.1.3	T4



		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	2.1		
		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 ĐÔI MỚI (1975-2018)	LO.4.1 – Hiểu rõ chủ trương xây dựng chủ nghĩa xã hội và bảo vệ Tổ quốc 1975-1981 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	1.1.3	Т4
		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	2.1 2.2		-
		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 5.3. Thái độ	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
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 theo buổi 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;	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 III. 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 ĐÂU 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) I. Bối cảnh lịch sử 2. Nguyễn Ái Quốc chuẩn bị các điều kiện để thành lập Đảng 3. Thành lập Đảng Cộng sản Việt Nam và Cương lĩnh chính trị	kỳ (Quiz) Thi cuối kỳ (FEX)

			đầu tiên của Đảng 4. Ý nghĩa lịch sử của việc thành lập Đảng Cộng sản Việt Nam	
			II. ĐẢNG LÃNH ĐẠO ĐẦU TRANH GIÀNH CHÍNH QUYỀN (1930-1945) 1. Phong trào cách mạng 1930- 1935 và khôi phục phong trào 1932-1935 2. Phong trào dân chủ 1936-1939 3. Phong trào giải phóng dân tộc 1939-1945 4. 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	
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 DỤNG, BẢO VỆ CHÍNH QUYỀN CÁCH MẠNG VÀ KHÁNG CHIẾN CHỐNG THỰC DÂN PHÁP XÂM LƯỢC (1945-1954) I. Xây dựng và bảo vệ chính quyền cách mạng 1945-1946 2. Đường lối kháng chiến toàn quốc chống thực dân Pháp xâm 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	Thuyết trình nhóm (GHW) Thi cuối kỳ (FEX)
			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 ĐỂ QUỐC MỸ XÂM LƯỢC, GIẢI PHÓNG MIỀN NAM, THỐNG NHÂT 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. ĐẢNH 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, ĐẦY MẠNH CÔNG NGHIỆP HÓA, HIỆN ĐẠI HÓA VÀ HỘI NHẬP QUỐC TÉ (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	Thảo luận nhóm (DIC) Thi cuối kỳ (FEX)	OA HÀNH CHÍN

 Những thắng lợi vĩ đại của cách mạng Việt Nam Những bài học lớn về sự lãnh đạo của Đảng Học ngoài lớp: Hoàn thiện bài thuyết trình

7. Đánh giá môn học

ST T	Mã	Tên	Mô tả	Tỷ trọng	Hình thức	LO
1	GH W	Thuyết trình nhóm	Thuyết trình nhóm về đề tài đã phân công	20%	Thuyết trình và bản 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 FI	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),	Chương 1	Thi giữa kỳ (Quiz)	Ngân hàng đề thi của GV

	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)			
LO.3 LO.5	Nắm rõ quá trình lãnh đạo của Đảng đối với hai cuộc kháng chiến chống thực dân Pháp và để 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 thị 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.

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./.

CHINH TRI - HANH CHINH

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

KT. TRƯỞNG KHOA PHÓ TRƯỞNG KHOA

S. Nghyễn Đình Quốc Cường



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

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

ĐỀ CƯƠNG CHI TIẾT MÔN HỌC

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:	PEO19 IU		
Thuộc khối kiến thức:	Cơ sở		
Số tín chỉ:	2		
Số tiết lý thuyết:	20 (trên lớp)		
Số tiết thực hành:	10 (trên lớp)		
Số tiết tự học:	90 (về nhà)		
Môn học trước:	1. Triết học Mác – Lênin, 2. Kinh tế chính trị Mác – Lênin, 3. Chủ nghĩa xã hội khoa học		
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 Chi 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. Ki	ến thức				
		LO.1.1 – Nắm được khái niệm tư tưởng Hồ Chí Minh	2.1		
	KHÁI NIỆM, ĐỐI TƯỢNG, PHƯƠNG PHÁP NGHIÊN CỨU	LO.1.2 – Nắm rõ được đối tượng nghiên cứu.	2.1	- 1	
LO.1 VÀ Ý NGHĨA HỌC TẬP MÔN TƯ TƯỞNG HÒ CHÍ MINH	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.	2.1	1.1.3	13	
		LO.1.4 - Nắm được ý nghĩa học tập, nghiên cứu môn học tư tưởng đối với sinh viên.	2.1		
	LINIL THÀNH VÀ	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	2.1	1.1.3	I4
	O.2 PHÁT TRIỂN TƯ TƯỞNG HỒ CH MINH	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	2.1	1.1.3	14

LO.3	TƯ TƯỞNG HÔ CHÍ MINH VỀ ĐỘC LẬP	Hồ Chí Minh đối với cách mạng Việt Nam và sự phát triển tiến bộ của nhân loại. 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.	2.1	1.1.3	13
	DÂN TỘC VÀ CHỦ NGHĨA XÃ HỘI	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	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		2.1	1.1.3	I4 I4
LO.5	TƯ TƯỞNG HỒ CHÍ MINH VÈ ĐẠI ĐOÀN KẾT TOÀN DÂN TỘC VÀ ĐOÀN KÉT 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	1.1.3	14 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).	2.1	1.1.3	I4

		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	2.1		I4
		người trong việc xây dựng văn hóa, đạo đức, con người Việt Nam hiện nay.	2.1		Т4
5.2. K	ỹ năng				
		LO.7.1 Có kỹ năng tư duy, phân tích, đánh giá tư tưởng Hồ Chí Minh.	2.2	2.1.1 2.3.1	
.O.7	THỂ HIỆN KHẢ NĂNG TƯ DUY, PHÂN TÍCH, ĐÁNH GIÁ, 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	2.4.4	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.	2.2	2.5 3.1.5	
5.3. T	hái độ				
		LO.6.1. Nhận thức được vai trò, giá trị của tư tưởng Hồ Chí Minh đối với Đảng và dân tộc Việt Nam.	2.3		
LO.7	THỂ HIỆN Ý THỨC, NHẬN THỨC TRONG VA SAU KHI HỌC TẬP	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.	2.3	3.1	U3
		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		

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 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. 	
			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	
	Chương 1		 Phương pháp luận của việc nghiên cứu tư tưởng Hồ Chí Minh 	
	KHÁI NIỆM, ĐỐI		4. Một số phương pháp cụ thể	
2	TƯỢNG, PHƯƠNG PHÁP NGHIÊN CỨU VÀ Ý NGHĨA HỌC	LO.1;	IV. Ý NGHĨA CỦA VIỆC HỌC TẬP MÔN HỌC TƯ TƯỞNG HÔ CHÍ MINH	
	TẬP MÔN TƯ TƯỞNG HÔ CHÍ		 Góp phần nâng cao năng lực tư duy lý luận 	
	MINH		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	THANH A.
			 Xây dựng, rèn luyện phương pháp và phong cách công tác. Học ở lớp: Trao đổi, phát biểu trên lớp 	ING * HP
			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 TRIỀN TƯ TƯỞNG HỘ CHÍ	LO.2	Dạy: I. CƠ SỞ HÌNH THÀNH TƯ TƯỞNG HÔ CHÍ MINH 1. Cơ sở thực tiễn 2. Cơ sở lý luận	Thi giữa kỳ (Quiz) Thi cuối kỳ (FEX)

	MINH		II. QUÁ TRÌNH HÌNH THÀNH VÀ PHÁT TRIỂN TƯ TƯỞNG HÔ 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 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 HÔ 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		7 /8
4	Chương 3 TƯ TƯỞNG HÔ CHÍ MINH VỀ ĐỘC LẬP DÂN TỘC GẮN LIỀN VỚI CHỦ NGHĨA XÃ HỘI	LO.3 LO.5	Dạy: I. TƯ TƯỞNG HỔ 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	nhóm (GHW) Thi cuối kỳ (FEX)	



biện Học ở lớp: Các nhóm thuyết trình tại lớp TƯ TƯỞNG HỘ CHÍ II. MINH VÊ CHỦ NGHĨA XÃ HỘI VÀ XÂY DỰNG CHỦ NGHĨA XÃ HÔI Ở VIỆT NAM 1. Tư tưởng Hồ Chí Kinh về chủ nghĩa xã hội Tư tưởng Hô Chí Minh vê 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 HỘ CHÍ MINH VỀ MỐI QUAN HỆ GIỮA ĐỘC LẬP DÂN TỘC VÀ CHỦ NGHĨA XÃ HỘI 1. Độc lập dân tộc là cơ sở, tiên để để tiên lên chủ nghĩa xã hôi Chủ nghĩa xã hội là điều kiện để đảm bảo nên độc lập dân tộc vững chắc IV. VẬN DỤNG TƯ TƯỚNG HÔ CHÍ MINH VỀ ĐỘC LẬP DÂN TỐC GĂN LIÊN VỚI CHU **NGHIA** XA HÖI TRONG SƯ NGHIỆP CÁCH MANG VIÊT 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 3. Củng cô, kiện toàn, phát huy sức mạnh và hiệu quả hoạt động của toàn hệ thống chính 4. Đầu tranh chống những biểu hiện suy thoái ề tư tưởng chính

trị, đạo đức, lối sống và"tự diễn biến", "tự chuyển hóa"



trong nội bộ

5	Chương 4 TƯ TƯỞNG HỖ CHÍ MINH VỀ ĐẢNG CỘNG SẢN VỆT NAM VÀ NHÀ NƯỚC CỦA NHÂN DÂN, DO NHÂN DÂN VÀ VÌ NHÂN DÂN	LO.4 LO.5	Học ngoài lớp: Đọc trước tài liệu chương 4 Dạy: I. TƯ TƯỞNG HÔ 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 HÔ CHÍ MINH VỀ NHÀ NƯỚC CỦA NHÂN DÂN, DO NHÂN DÂN, VÌ NHÂN DÂN 1. Nhà nuoqse dân chủ 2. Nhà nước pháp quyền 3. Nhà nước trong sạch, vững mạnh III. VẬN DỤNG TƯ TƯỞNG HÔ CHÍ MINH VÀO CÔNG TÁC XÂY DỤNG ĐẢNG VÀ XÂY DỤNG NHÀ NƯỚC 1. Xây dựng Đảng thật sự trong sạch, vững mạnh 2. Xây dựng Nhà nước Học ngoài lớp: Hoàn thiện bài	Thảo luận nhóm (DIC) Thi cuối kỳ (FEX)
6	Chương 5 TƯ TƯỞNG HỒ CHÍ MINH VÈ ĐẠI ĐOÀN KẾT DÂN TỘC VÀ ĐOÀN KẾT QUỐC TẾ		thuyết trình Dạy: I. TƯ TƯỞNG HÔ 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	



Chương 6 TƯ TƯỞNG HỒ CHÍ	NAY 1. Quán triệt tư tưởng Hồ Chí Minh về dại 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 Dạy: I. TƯ TƯỞNG HÔ 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
	5. Phương thức xây dựng khối đại đoàn kết dân tộc Dạy: Chấm thuyết trình & phản biện Học ở lớp: Thảo luận tại lớp II. TƯ TƯỞNG HÔ 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 HÔ CHÍ MINH VỀ ĐẠI ĐOÀN KẾT DÂN TỘC VÀ ĐOÀN KẾT QUỐC TẾ TRONG GIAI ĐOẠN HIỆN NAY

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 HỘ 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 HỘ 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	GH W	Thuyết trình nhóm	Thuyết trình nhóm về để tài đã phân công	150%	Thuyết trình và bản 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 để chung Để 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 người. Vận dụng tư tưởng Hồ Chí Minh về văn hóa, đạo đức và con người trong việc rèn luyện, tu dưỡng bản thân. 	Chương 6	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



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 để 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

CHÍNH TRI - HÀNH CHÍ

 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 07 tháng 02 năm 2020

KT.TRƯỞNG KHOA PHÓ TRƯỞNG KHOA

TS. Ngayễn Đình Quốc Cường

Course Name: Entrepreneurship

Course Code: IT120IU

1. General information

Course designation	An introduction to the creative and innovative managerial practices of successful entrepreneurship.
Semester(s) in which the course is taught	7
Person responsible for the course	MSc. Dao Tran Hoang Chau
Language	English
Relation to curriculum	Compulsory (CS, NE, CE) Elective (DS)
Teaching methods	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	Total workload: 135 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): 45 (lecture) Private study including examination preparation, specified in hours: 90
Credit points	Number of credits : 3 (ECTS: 4.46) Lecture: 3 Laboratory: 0
Required and recommended prerequisites for joining the course	None
Course objectives	This course reviews the significant economic and social contributions entrepreneurs provide to society, the intense lifestyle commitment, and the skills necessary for entrepreneurial success. It explores how to identify and develop solutions to the most common leadership and personal challenges faced by entrepreneurs when starting new ventures or launching new products. It also promotes a deeper understanding of what is required to be a successful entrepreneur, highlights the skills and tools necessary to start a new business and explores alternatives to common pitfalls. This course applies entrepreneurial marketing approaches used by successful entrepreneurs. These include utilizing industry sector trends, identifying emerging customer niches, developing new products/services, using guerilla marketing strategies, and Internet and social marketing strategies.

	anal and interfination sites presusin feating comsucces soft	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			preneurial processes; ology to boost busines	s performa	ance;	
0 000 0 1110 0	CLC	3. Manage marketir	ng strategy and financia	•		
	ente	rprise;				
		Competency level		come (CL	<i>(</i> O)	
	Knowledge 1, 2, 3					
		Skill	1, 3			
		Attitude	3			
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)					
	l	pic		Weight		
			ivity and Innovation;	3	I, T	
	l	eative Problem Solvii		3	T, U	
	Develop a Product. Generate Ideas and Protect Inventions;					
	Ma	rketing Strategies;		3	T, U	
	Finance and Accounting 4 T, U				T, U	
Examination forms			s, short-answer questic			
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			& Lechter, Technolog	У		

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:

	SI	O				
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, Inclass activities, Quiz	
2	Creative Problem Solving Model;	1	Midterm exam	Lecture, Inclass activities, Quiz	
3	Develop a Product. Generate Ideas and Protect Inventions;	2	Midterm exam, Assignment	Lecture, Inclass 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	CLO1	CLO2	CLO3
Midterm examination (25%)	50%	50%	
Projects/Presentations/ Report (25%)			60%
Final examination (40%)			40%
Exercises/ Quiz (10%)	50%	50%	

Rubrics (optional)

1. Grading checklist

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

2. Holistic rubric

Holis	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.

3. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

contexts when presenting a position. Specific position (perspective, thesis/ hypothesis) are acknowledged. Others' position Student's position (perspective, thesis/ hypothesis) are acknowledged. Others' position (perspective, thesis/ hypothesis) are acknowledged. Within position (perspective, thesis/ thesi
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acknowledged. Others' points of view ore view are synthesized position within position within position (perspective, position of view ore position within position or position (perspective, position or position
Others' points of view view are are thesis/ thesis/ thesis/ synthesized acknowledged hypothesis) is thesis/ position within position within position (perspective, thesis/ thesis/ thesis/ thesis/ thesis/ position acknowledge hypothesis) is the side of the sid
Student'sview are synthesizedare acknowledgedthesis/ hypothesis)(perspective, hypothesis)positionwithin positionwithin positionacknowledge acknowledgehypothesis) is hypothesis) is stated, but is
Student's positionsynthesized within positionacknowledged within positionhypothesis) acknowledge s differentthesis/ hypothesis) is stated, but is
position within position within position (perspective, (pe
(perspective, (perspective, s different stated, but is
Jr
s) hypothesis). hypothesis). issue. obvious.
Conclusion
is logically
Conclusions tied to
and related Conclusion is information Conclusion is
and information, is chosen to of the
implications) including fit the information
are logical and opposing desired discussed;
reflect student's viewpoints; conclusion); related
informed related some related outcomes
Conclusionsevaluation andoutcomesoutcomes(consequence)
and related ability to place (consequences (consequence s and
outcomesevidence andands andimplications)
(implications perspectives implications) implications) are
and discussed in are identified are identified oversimplifie
consequences) priority order. clearly. clearly. d.

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

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

Source: Association of American Colleges and Universities

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Special Study of the Field

Course Code: IT083IU

1. General information

1. General intori	1		, , 1 1			
Course designation	This a th	•	ts to do a research topic and prepare for			
Semester(s) in which the course is taught	7					
Person responsible for the course	Lec	Lecturers (thesis advisor)				
Language	Eng	English				
Relation to curriculum	Con	Compulsory				
Teaching methods	Lec	ture, lesson, project,	seminar.			
Workload (incl.	`	(Total workload: 90 hours				
contact hours, self-		Contact hours (please specify whether lecture, exercise,				
study hours)		laboratory session, etc.): Private study including examination preparation, specified in				
	Private study including examination preparation, specified in hours: 90					
Credit points	Number of credits: 3 (ECTS: 4.91)					
1	Lecture: 0					
		Laboratory: 3				
Required and	_	Required number of credits,				
recommended	Inte	Internship				
prerequisites for joining the course						
	Students are advised to select a subject under the guidance of a					
Course objectives			content might be a research topic or			
			on that underlies the graduation thesis.			
			fields of academic program that are			
	aca	demic or practical.				
Course learning		O 1. Research a speci	•			
outcomes			el or system architecture of the			
	application product					
	CLO 3. Have a good preparation to develop and improve the					
	product in the thesis.					
		Competency level	Course learning outcome (CLO)			
		Knowledge	CLO1			
		Skill	CLO1, CLO2			
		Attitude	CLO3			

Content	The description of the contents should clearly i	The description of the contents should clearly indicate the				
	weighting of the content and the level.					
	Weight: in the whole semester.					
	Teaching levels: I (Introduce); T (Teach); U (Utilize)					
	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					
	Write a report	10	U			
Examination forms	Multiple-choice questions, short-answer questions					
Study and	Attendance: A minimum attendance of 80 percent is compulsory					
examination	for the appointments with lecturer. Students will be assessed on					
requirements	the basis of their class participation. Questions and comments					
	are strongly encouraged.					
	Assignments/Tasks: Students must have more to	than 50/10	0 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		X				
2		X				X
3			X			

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

4	Research and propose some solutions	1,2	Check and Evaluate	Discuss and Research	Related work, books and research papers
5	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
6	Testing and evaluating solutions or products	1,2	Check and Evaluate	Discuss and Research	Related work, books and research papers
7	Write a report	1,2	Check and Evaluate	Discuss and Research	Related work, books and research papers
8	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:			••			
	Evalı	ıator:				
	Max.	Score	Comments			
Technical content (60%)						
Abstract clearly identifies purpose and summarizes	10					
principal content						
Introduction demonstrates thorough knowledge of	15					
relevant background and prior work						
Analysis and discussion demonstrate good subject						
mastery						
Summary and conclusions appropriate and complete	5					
Organization (10%)						
Distinct introduction, body, conclusions	5					
Content clearly and logically organized, good	5					
transitions						
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

Holis	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:

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

			IC4.'	
			Information	
			is taken from	
			source(s)	
			with some	
	Information is	Information is	interpretation	
	taken from	taken from	/ evaluation,	
	source(s) with	source(s) with	but not	
	enough	` '		Information is
		enough	enough to	
	interpretation/	interpretation/	develop a	taken from
	evaluation to	evaluation to	coherent	source(s)
	develop a	develop a	analysis or	without any
Evidence	comprehensive	coherent	synthesis.	interpretation/
Selecting and	analysis or	analysis or	Viewpoints	evaluation.
using	synthesis.	synthesis.	of experts are	Viewpoints of
information to	Viewpoints of	Viewpoints of	taken as	experts are
investigate a	experts are	experts are	mostly fact,	taken as fact,
point of view or	questioned	subject to	with little	without
conclusion	thoroughly.	questioning.	questioning.	question.
Conclusion	thoroughly.	questioning.	Questions Questions	question.
			_	
			some	C1
			assumptions.	Shows an
			Identifies	emerging
	Thoroughly		several	awareness of
	(systematically		relevant	present
	and		contexts	assumptions
	methodically)		when	(sometimes
	analyzes own		presenting a	labels
	and others'		position.	assertions as
	assumptions	Identifies own	May be more	assumptions).
	and carefully	and others'	aware of	Begins to
	evaluates the	assumptions and	others'	identify some
	relevance of	several relevant	assumptions	contexts
Influence of	contexts when	contexts when	than one's	when
context and	presenting a	presenting a	own (or vice	presenting a
assumptions	position.	position.	versa).	position.
	Specific	Specific		
	position	position		
	(perspective,	(perspective,		
	thesis/	thesis/hypothesi	Specific	
	hypothesis) is	s) takes into	position	Specific
	imaginative,	account the	(perspective,	position
	taking into	complexities of	thesis/	(perspective,
Student's	account the	an issue. Others'	hypothesis)	thesis/
position	complexities of	points of view	acknowledge	hypothesis) is
(perspective,	an issue. Limits	are	s different	stated, but is
thesis/hypothesi	of position	acknowledged	sides of an	simplistic and
· -	_	_		_
s)	(perspective,	within position	issue.	obvious.

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

Oral communication value rubric for evaluating presentation tasks:						
	Capstone	Mile	stone	Benchmark		
	4	3	2	1		
	Organizational					
	pattern	Organizational				
	(specific	pattern	Organizational			
	introduction	(specific	pattern			
	and conclusion,	introduction	(specific	Organizational		
	sequenced	and conclusion,	introduction	pattern (specific		
	material within	sequenced	and conclusion,	introduction and		
	the body, and	material within	sequenced	conclusion,		
	transitions) is	the body, and	material within	sequenced		
	clearly and	transitions) is	the body, and	material within		
	consistently	clearly and	transitions) is	the body, and		
	observable and	consistently	intermittently	transitions) is not		
	is skillful and	observable	observable	observable		
	makes the	within the	within the	within the		
Organization	content of the	presentation.	presentation.	presentation.		

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

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022 **Dean of School of Computer Science and Engineering**

Assoc.Prof. Nguyen Van Sinh

Course Name: Thesis

Course Code: IT058IU

1. General information

1. General inform	
Course designation	This course evaluates students obtained knowledges to complete the academic program.
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	Lecture, lesson, project, seminar.
Workload (incl. contact hours, self-study hours)	Contact hours: 300 hours Private study including examination preparation, specified in hours: 300
Credit points	Number of credits: 10 (ECTS: 16.37) Lecture: 0 Laboratory: 10
Required and recommended prerequisites for joining the course	Required number of credits Special Study of the Field
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).
Course learning outcomes	CLO 1. Research a specific topic in the field. CLO 2. Design the model or system architecture of the application product

	Commenter and Commenter and COLON					
	Competency level Course learning out		tcome (CI	LO)		
	Knowledge	CLO1				
	Skill	CLO1, CLO2				
	Attitude	CLO3				
Content	The description of the co	ontents should clearly	indicate th	ie		
	weighting of the content					
	Weight: in the whole las					
	Teaching levels: I (Introd	duce); T (Teach); U (U	Jtilize)	1		
	Topic	Weight	Level			
	Find out the thesis topic	Find out the thesis topic				
	Review and evaluate ex	20	U			
	Research and propose s	Research and propose some solutions				
	Deploy the thesis produ	40	U			
	Testing and evaluating	solutions or products	40	U		
	Thesis defense		1	U		
Examination forms	Multiple-choice questions, short-answer questions					
Study and	Attendance: A minimum attendance of 80 percent is compulsory					
examination	for the class sessions. Students will be assessed on the basis of					
requirements	their class participation. Questions and comments are strongly					
	encouraged.					
	Assignments/Examination		e more tha	n		
D 11 11	50/100 points overall to	pass this course.				
Reading list						

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				
2	X	X				X
3			X			

3. Planned learning activities and teaching methods

Week	Topic	CLO	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
4	Research and propose some solutions	1,2	Check and Evaluate	Discuss and Research	Related work, books and research papers
5	Deploy the thesis product	1,2	Check and Evaluate	Discuss and Research	Related work, books and research papers
6	Testing and evaluating solutions or products	1,2	Check and Evaluate	Discuss and Research	Related work, books and research papers
7	Thesis defense	1,2,3	By committee	presentation	
8	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	10					
principal content						
Introduction demonstrates thorough knowledge of	15					
relevant background and prior work						
Analysis and discussion demonstrate good subject	30					
mastery						

Summary and conclusions appropriate and complete	5	
Organization (10%)		
Distinct introduction, body, conclusions	5	
Content clearly and logically organized, good	5	
transitions		
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**

Holis	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	Milest	one	Benchmark
	4	3	2	1
			Issue/	
			problem to	
			be	
	Issue/ problem		considered	
	to be considered		critically is	
	critically is	Issue/ problem	stated but	
	stated clearly	to be considered	description	
	and described	critically is	leaves some	Issue/
	comprehensivel	stated,	terms	problem to be
	y, delivering all	described, and	undefined,	considered
	relevant	clarified so that	ambiguities	critically is
	information	understanding is	unexplored,	stated without
	necessary for	not seriously	boundaries	clarification
Explanation of	full	impeded by	undetermine	or
issues	understanding.	omissions.	d, and/ or	description.

			backgrounds	
			unknown.	
			T.C.	
			Information is taken from	
			source(s)	
			with some	
	Information is	Information is	interpretation	
	taken from	taken from	/ evaluation, but not	
	source(s) with enough	source(s) with enough	enough to	Information is
	interpretation/	interpretation/	develop a	taken from
	evaluation to	evaluation to	coherent	source(s)
I I	develop a	develop a	analysis or	without any
	comprehensive analysis or	coherent analysis or	synthesis. Viewpoints	interpretation/ evaluation.
_	synthesis.	synthesis.	of experts are	Viewpoints of
U	Viewpoints of	Viewpoints of	taken as	experts are
_	experts are	experts are	mostly fact,	taken as fact,
	questioned	subject to	with little	without
Conclusion	thoroughly.	questioning.	questioning. Questions	question.
			some	
			assumptions.	Shows an
	7D1 1.1		Identifies	emerging
I I	Thoroughly (systematically		several relevant	awareness of present
	and		contexts	assumptions
	methodically)		when	(sometimes
	analyzes own		presenting a	labels
	and others'	Idontifica	position.	assertions as
	assumptions and carefully	Identifies own and others'	May be more aware of	assumptions). Begins to
	evaluates the	assumptions and	others'	identify some
	relevance of	several relevant	assumptions	contexts
	contexts when	contexts when	than one's	when
	presenting a position.	presenting a position.	own (or vice versa).	presenting a position.
-	Specific	Specific	Specific	position.
	position	position	position	Specific
	(perspective,	(perspective,	(perspective,	position
1	thesis/	thesis/hypothesi	thesis/	(perspective,
	hypothesis) is imaginative,	s) takes into account the	hypothesis) acknowledge	thesis/ hypothesis) is
	taking into	complexities of	s different	stated, but is

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

Oral communication value rubric for evaluating presentation tasks:

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

	consistently	consistently	observable	within the
	observable and	observable	within the	presentation.
	is skillful and	within the	presentation.	presentation.
	makes the		presentation.	
		presentation.		
	content of the			
	presentation			
	cohesive.			
	Language			
	choices are			
	imaginative,		Language	
	memorable,	Language	choices are	
	and	choices are	mundane and	Language
	compelling,	thoughtful and	commonplace	choices are
	and enhance	generally	and partially	unclear and
	the	support the	support the	minimally
	effectiveness	effectiveness	effectiveness of	support the
	of the	of the	the	effectiveness of
	presentation.	presentation.	presentation.	the presentation.
	Language in	Language in	Language in	Language in
	presentation is	presentation is	presentation is	presentation is
	appropriate to	appropriate to	appropriate to	not appropriate
Language	audience.	audience.	audience.	to audience.
	Delivery			
	techniques	Delivery	Delivery	
	(posture,	techniques	techniques	Delivery
	gesture, eye	(posture,	(posture,	techniques
	contact, and	gesture, eye	gesture, eye	(posture, gesture,
	vocal	contact, and	contact, and	eye contact, and
	expressiveness)	vocal	vocal	vocal
	make the	expressiveness)	expressiveness)	expressiveness)
	presentation	make the	make the	detract from the
	compelling,	presentation	presentation	understandability
	and speaker	interesting, and	understandable,	of the
	appears	speaker	and speaker	presentation, and
	polished and	appears	appears	speaker appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
•	A variety of	Supporting	Supporting	Insufficient
	types of	materials	materials	supporting
	supporting	(explanations,	(explanations,	materials
	materials	examples,	examples,	(explanations,
	(explanations,	illustrations,	illustrations,	examples,
	examples,	statistics,	statistics,	illustrations,
	illustrations,	analogies,	analogies,	statistics,
	statistics,	quotations	quotations	analogies,
	analogies,	from relevant	from relevant	quotations from
Supporting	quotations	authorities)	authorities)	relevant
Material	from relevant	make	make	authorities)
Maichai	110111 Televalit	make	такс	aumornics)

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Data Mining

Course Code: IT160IU

1. General information

Course designation	This subject introduces the students to the principles and algorithms of data mining, and the requirements of a data				
	mining process.				
Semester(s) in which the course is taught	6,8				
Person responsible for the course	Dr. Nguyen Thi	Γhanh Sang			
Language	English	English			
Relation to curriculum	Elective (CS, NE Compulsory (DS	Elective (CS, NE, CE) Compulsory (DS)			
Teaching methods	Lecture, lesson, p	project, laboratory.			
Workload (incl. contact hours, self- study hours)	laboratory session	l workload: 195 lease specify whether lecture, exercise, n, etc.): 45 (lecture) + 30 (laboratory) luding examination preparation, specified in			
Credit points	Number of credits: 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1				
Required and recommended prerequisites for joining the course	Object-Oriented Programming				
Course objectives	solve problems o with skills of using	dy data mining concepts and algorithms to f knowledge discovery. They will be equipped any recent data mining software for solving as and gain experience of doing independent wh.			
Course learning					
outcomes	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 be mining process.	ouild a dat	a	
Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)				
	Topic		Weight	Level	
	Introduction to I	Data Mining	1	I	
	Know your data	1	T, U		
	Data preprocessi	Data preprocessing			
	Data mining kno	wledge representation	1	T, U	
	Evaluating what	's been learned	1	T	
	Data mining algo	orithms: Classification	2	T, U	
	Mining Frequen Correlations: Ba	2	Т		
	Data mining algo	2	T		
	Classification: A	Classification: Advanced Methods			
	Semantic data m	ining	1	I	
Examination forms Study and examination requirements	Multiple-choice questions, short-answer questions 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, <i>Data Mining: Concepts and Techniques</i> , 3 rd Edition, 2011. [2] Ian H.Witten, Eibe Frank, Mark A. Hall, and Christopher J. Pal, <i>Data Mining: Practical Machine Learning Tools and Techniques</i> , Fourth Edition, Morgan Kaufmann, 2016. [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:

			SI	O		
CLO	1	2	3	4	5	6

1	X			
2	X			
3				X
4			X	

3. Planned learning activities and teaching methods

	Tanned learning activit		1		1_
Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Data Mining	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 Correlations: Basic Concept and Methods	2,3,4	Quiz.s10-11	Lecture, In-class quiz	[1]. Chapter 6; [2]. Chapter 4.5
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	CLO1	CLO2	CLO3	CLO4
Labs (10%)			100%	
Programming (20%)			70%	30%
Midterm examination (30%)	50%	50%		
Final examination (40%)		40%	60%	

5. Rubrics (optional)

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

5.4. Holistic rubric

Holis	stic 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.

5.5. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

	analysis or synthesis. Viewpoints of experts are questioned thoroughly.	analysis or synthesis. Viewpoints of experts are subject to questioning.	develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little	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.	questioning. 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/hypothesi s) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/ hypothesis) acknowledge s different sides of an issue.	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious.

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Digital Image Processing

Course Code: IT130IU

1. General information

Course designation		ents fundamental knowledge of digital		
Course designation	image processing	ones randamental knowledge of digital		
Semester(s) in which the course is taught	7			
Person responsible for the course	Dr. Ha Viet Uyen Synh			
Language	English			
Relation to curriculum	Elective (All programs)			
Teaching methods	Lecture, lesson, project, s	eminar.		
Workload (incl.	Total workload: 195			
contact hours, self- study hours)	Contact hours: 45 (lecture Private study including exhours: 120	e) + 30 (laboratory) xamination preparation, specified in		
Credit points	Number of credits : 4 (EC Lecture: 3 Laboratory: 1	CTS: 6.18)		
Required and recommended prerequisites for joining the course				
Course objectives	fundamentals; review of I such as Discrete Fourier T frequency domain filterin	s discuss digital image processing Digital Signal Processing algorithms Fransform; intensity transforms, g; image restoration and reconstruction; nultiresolution processing; image cal image processing.		
Course learning outcomes		of digital image formation. color image foundations. main image filtering.		
	Competency level	Course learning outcome (CLO)		
	Knowledge	1,2		
	Skill	3		
	Attitude			
Content	The description of the cor	ntents should clearly indicate the		
	weighting of the content and the level.			
	Weight: lecture session (3	hours)		

	Teaching levels: I (Introduce); T (Teach); U (U	tilize)	
	Topic	Weight	Level
	Chapter 1: Introduction	3	I, T
	Chapter 2: Digital Image Fundamentals	6	I, T
	Chapter 3: Intensity Transformations and Spatial Filtering (part 1)	3	T, U
	Chapter 3: Intensity Transformations and Spatial Filtering (part 2)	6	T, U
	Chapter 4: Filtering in the frequency domain	6	T, U
	Chapter 5: Image restoration and reconstruction	3	T, U
	Chapter 6: Color Image processing	3	T, U
	Chapter 7: Wavelets and multiresolution processing (part 1)	3	T, U
	Chapter 7: Wavelets and multiresolution processing (part 2)	3	T, U
	Chapter 8: Image compression	3	T, U
	Chapter 9: Morphological image processing	3	T, U
	Chapter 10: Image segmentation	3	T, U
	Chapter 11: Representation and description	3	T, U
	Chapter 12: Object recognition	3	T, U
	Revision Application Design and Development	3	
Examination forms	Multiple-choice questions, short-answer question	ons	
Study and	Attendance: A minimum attendance of 80 perce	-	
examination	for the class sessions. Students will be assessed		
requirements	their class participation. Questions and commer encouraged.	its are stro	ngly
	Assignments/Examination: Students must have	more than	50/100
	points overall to pass this course.		
Reading list	6. Rafael C. Gonzalez, Richard E. Woods, D. Processing 3rd, 2008	Digital Ima	ge

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Chapter 1: Introduction	1,2	Quiz, Lab, Exam	lecture, exercises	
2	Chapter 2: Digital Image Fundamentals	1,2	Quiz, Lab, Exam	lecture, exercises, lab	
3	Chapter 3: Intensity Transformations and Spatial Filtering (part 1)	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab	
4	Chapter 3: Intensity Transformations and Spatial Filtering (part 2)	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab	
5	Chapter 4: Filtering in the frequency domain	1,2	Quiz, Lab, Exam	lecture, exercises, lab	
6	Chapter 5: Image restoration and reconstruction	1,2	Quiz, Lab, Exam	lecture, exercises, lab	
7	Chapter 6: Color Image processing	1,2	Quiz, Lab, Exam	lecture, exercises, lab	
8	Midterm				
9	Chapter 7: Wavelets and multiresolution processing (part 1)	2,3	Quiz, Lab, Exam	lecture, exercises, lab	
10	Chapter 7: Wavelets and multiresolution processing (part 2)	2,3	Quiz, Lab, Exam	lecture, exercises, lab	
11	Chapter 8: Image compression	2,3	Quiz, Lab, Exam	lecture, exercises, lab	
12	Chapter 9: Morphological image processing	2,3	Quiz, Lab, Exam	lecture, exercises, lab	
13	Chapter 10: Image segmentation	2,3	Quiz, Lab, Exam	lecture, exercises, lab	

14	Chapter 11: Representation and description	2,3	Quiz, Lab, Exam	lecture, exercises, lab
15	Chapter 12: Object recognition	2,3	Quiz, Lab, Exam	lecture, exercises, lab
16	Revision Application Design and Development	1,2,3		
17	Final exam			

4. Assessment plan

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

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:			•••		
	Evalu	uator:			
	Max.	Score	Comments		
Technical content (60%)					
Abstract clearly identifies purpose and summarizes	10				
principal content					
Introduction demonstrates thorough knowledge of	15				
relevant background and prior work					
Analysis and discussion demonstrate good subject	30				
mastery					
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

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

			IC	
			Information is	
			taken from	
			source(s) with	
			some	
	Information is		interpretation/	
	taken from	Information is	evaluation,	
	source(s) with	taken from	but not	
	enough	source(s) with	enough to	Information is
	interpretation/	enough	develop a	taken from
	evaluation to	interpretation/	coherent	source(s)
	develop a	evaluation to	analysis or	without any
	comprehensive	develop a	synthesis.	interpretation/
Evidence	analysis or	coherent analysis	Viewpoints of	evaluation.
Selecting and	synthesis.	or synthesis.	experts are	Viewpoints of
using information	Viewpoints of	Viewpoints of	taken as	experts are
to investigate a	experts are	experts are	mostly fact,	taken as fact,
_	questioned	subject to	with little	without
point of view or conclusion	thoroughly.		questioning.	question.
Conclusion	diorouginy.	questioning.		question.
			Questions	
			some	Charra
	The anomals lay		assumptions. Identifies	Shows an
	Thoroughly			emerging
	(systematically		several	awareness of
	and		relevant	present
	methodically)		contexts when	assumptions
	analyzes own		presenting a	(sometimes
	and others'	T.1 10	position. May	labels
	assumptions and	Identifies own	be more	assertions as
	carefully	and others'	aware of	assumptions).
	evaluates the	assumptions and	others'	Begins to
	relevance of	several relevant	assumptions	identify some
Influence of	contexts when	contexts when	than one's	contexts when
context and	presenting a	presenting a	own (or vice	presenting a
assumptions	position.	position.	versa).	position.
	Specific position			
	(perspective,	Specific position		
	thesis/	(perspective,		
	hypothesis) is	thesis/hypothesis)		
	imaginative,	takes into		
	taking into	account the	Specific	Specific
	account the	complexities of	position	position
	complexities of	an issue. Others'	(perspective,	(perspective,
	an issue. Limits	points of view	thesis/	thesis/
Student's	of position	are	hypothesis)	hypothesis) is
position	(perspective,	acknowledged	acknowledges	stated, but is
(perspective,	thesis/	within position	different sides	simplistic and
thesis/hypothesis)	hypothesis) are	(perspective,	of an issue.	obvious.
mesis/fly pottlesis)	hypomesis) are	(perspective,	or an issue.	ouvious.

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

Source: Association of American Colleges and Universities

Oral communication value rubric for evaluating presentation tasks:

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

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

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Software Architecture

Course Code: IT114IU

1. General information

Course designation	This course provides str Software Architecture.	udent methodogies ar	nd techniqu	ies in
Semester(s) in which the course is taught	7			
Person responsible for the course	Dr. Ha Viet Uyen Synh			
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: 45 (lectu Private study including hours: 120	•		fied in
Credit points	Number of credits: 4 (I Lecture: 3 Laboratory: 1	ECTS: 6.18)		
Required and recommended prerequisites for joining the course				
Course objectives	Provides the student wi methodologies and tech implementation of infor	nniques in analysis, de	esign and	varying
Course learning outcomes	CLO 1. Understand the Cycle and the technique CLO 2. Using a CASE CLO 3. Apply to a real	es for each step tool in analysis and d	esign of a	system.
	Knowledge	1,2	<u> </u>	,
	Skill	3		
	Attitude			
Content	The description of the c weighting of the conten Weight: lecture session Teaching levels: I (Intro	t and the level. (3 hours)	(Utilize)	the
	Topic		Weight	Level

	Introduction to systems analysis and design,	3	I
	Requirements.	3	T,U
	Use Case Modeling	6	T,U
	Dynamic Modeling	6	T,U
	State-Dependent Dynamic Interaction Modeling	6	T,U
	Data Modeling	6	T,U
	Normal Forms	6	T,U
	Structural Modeing	6	T,U
	Architectural Design.	3	I,T
Examination forms	Multiple-choice questions, short-answer que	estions	
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	 Kenneth E. Kendall, Julie E. Kendall, Systems Analysis and Design 7th, 2006 Gary B. Shelly, Thomas J. Cashman, Harry J. Rosenblatt, Systems Analysis and Design 4th, 2001 		

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	Introduction to systems analysis and design,	1,2	Quiz	lecture, exercises	
2	Requirements.	1,2,3	Quiz, Lab	lecture, exercises, lab	
3	Use Case Modeling	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab	

4	Midterm			
5	Dynamic Modeling	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab
6	State-Dependent Dynamic Interaction Modeling	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab
7	Data Modeling	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab
8	Normal Forms	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab
9	Structural Modeing	1,2,3	Quiz, Lab, Exam	lecture, exercises, lab
10	Architectural Design.	1,2	Quiz	lecture, exercises
11	Final exam			

4. Assessment plan

Assessment Type

Assessment Type	CLO1	CLO2	CLO3
Midterm examination (30%)	30%	30%	30%
Final examination (40%)	40%	40%	40%
Exercises/ Quiz (10%)	10%	10%	10%
Lab. Assignments (20%)	20%	20%	20%

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

5. Rubrics (optional)

principal content

5.2. Grading checklist			
Grading checklist for Writ	tten Repo	rts	
Student:	HW/A	Assignme	ent:
Date:			
	Evalu	ator:	
	Max.	Score	Comments
Technical content (60%)			
Abstract clearly identifies purpose and summarizes	10		

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

5.3. Holistic rubric

Holis	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.

5.4. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

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

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

Oral communication value rubric for evaluating presentation tasks:

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

	consistently	consistently	observable	within the
	observable and	observable	within the	presentation.
	is skillful and	within the	presentation.	
	makes the	presentation.	_	
	content of the	_		
	presentation			
	cohesive.			
	Language			
	choices are			
	imaginative,		Language	
	memorable,	Language	choices are	
	and	choices are	mundane and	Language
	compelling,	thoughtful and	commonplace	choices are
	and enhance	generally	and partially	unclear and
	the	support the	support the	minimally
	effectiveness	effectiveness	effectiveness of	support the
	of the	of the	the	effectiveness of
	presentation.	presentation.	presentation.	the presentation.
	Language in	Language in	Language in	Language in .
	presentation is	presentation is	presentation is	presentation is
_	appropriate to	appropriate to	appropriate to	not appropriate
Language	audience.	audience.	audience.	to audience.
	Delivery	Dalizzanz	Dalissams	
	techniques	Delivery	Delivery	Dolivom
	(posture,	techniques	techniques (posture,	Delivery techniques
	gesture, eye contact, and	(posture, gesture, eye	gesture, eye	(posture, gesture,
	vocal	contact, and	contact, and	eye contact, and
	expressiveness)	vocal	vocal	vocal
	make the	expressiveness)	expressiveness)	expressiveness)
	presentation	make the	make the	detract from the
	compelling,	presentation	presentation	understandability
	and speaker	interesting, and	understandable,	of the
	appears	speaker	and speaker	presentation, and
	polished and	appears	appears	speaker appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
	A variety of	Supporting	Supporting	Insufficient
	types of	materials	materials	supporting
	supporting	(explanations,	(explanations,	materials
	materials	examples,	examples,	(explanations,
	(explanations,	illustrations,	illustrations,	examples,
	examples,	statistics,	statistics,	illustrations,
	illustrations,	analogies,	analogies,	statistics,
	statistics,	quotations	quotations	analogies,
G 4	analogies,	from relevant	from relevant	quotations from
Supporting	quotations	authorities)	authorities)	relevant
Material	from relevant	make	make	authorities)

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022 **Dean of School of Computer Science and Engineering**

Assoc.Prof. Nguyen Van Sinh

Course Name: Net-centric Programming

Course Code: IT096IU

1. General information

Course designation	1	anced programming	course with focus on developing				
G ();		work application					
Semester(s) in which the course is taught	6						
Person responsible for the course	MS	MSc. Le Thanh Son					
Language	Eng	lish					
Relation to curriculum		npulsory (NE) ctive (CS)					
Teaching methods	Lec	ture					
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 (ECTS: 6.18) Lecture: 3 Laboratory: 1						
Required and recommended prerequisites for joining the course	Con	nputer Networks					
Course objectives	Advanced programming with a focus on developing software for networked systems using UNIX as a reference platform. Topics: Programming Tools, Software Design, Programming Techniques, Environment of a UNIX Process, Memory Allocation, Garbage Collection, Process Control, Process Relationships, Signals, Reliable Signals, Threads, I/O Multiplexing, Datagram and Stream Sockets, Multicasting, Device Driver and Kernel Programming, Secure Programming						
Course learning outcomes	CLO 1. Understand the structure of network applications CLO 2. Able to develop network applications using TCP and UDP sockets CLO 3. Understand and implement network applications using popular Internet protocols CLO 4. Team working						
		Competency level	Course learning outcome (CLO)				
		Knowledge	1, 2, 3				

	Skill	2, 3		
	Attitude	4		
Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)			
	Topic			Level
	Network revisions		Weight 3	Ι
	Introduction to Client/Server networking and Socket Programming		3	I, T
	TCP Socket Programming		3	T, U
	UDP Socket Programming		3	T, U
	Socket name and DNS		3	T, U
	Network Data and Network Errors			
	Caches and Message Queues		3	T, U
	HTTP Clients		3	T, U
	HTTP Server Web Socket, Web Frame Work Web Scraping		3	T, U
			3	T, U
			3	T, U
	Building and Parsing Email		3	T, U
	FTP Telnet and SSH		3	T, U
			3	T, U
	Remote Procedure	Call (RPC)	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	 Michael J.Donahoo, Kenneth L.Calvert, TCP/IP Socket in C: A Practical Guide for Programmers 2nd, 2009 W. R. Stevens, B. Fenner, A. M. Rudoff, Unix Network Programming, Vol. 1: The Sockets Networking API 3rd, 2003 Brandon Rhodes, Foundations of Python Network 			
	Programming 3rd, 2014			

2. Learning Outcomes Matrix

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

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Network revisions	1	Quiz	Lecture	2
2	Introduction to Client/Server networking and Socket Programming	2	Quiz, Lab, Midterm	Lecture	1
3	TCP Socket Programming	2	Quiz, Lab, Midterm	Lecture, Discussion	1, 2
4	UDP Socket Programming	2	Quiz, Lab, Midterm	Lecture, Discussion	1, 2
5	Socket name and DNS	2	Quiz, Lab, Midterm	Lecture, Discussion	2, 3
6	Network Data and Network Errors	2	Quiz, Lab, Midterm	Lecture, Discussion	2, 3
7	Caches and Message Queues	2	Quiz, Lab, Midterm	Lecture, Discussion	2, 3
8	HTTP Clients	3, 4	Quiz, Lab, Final	Lecture, Discussion	2, 3
Midter	rm exam				
9	HTTP Server	3, 4	Quiz, Lab, Final	Lecture, Discussion	2, 3
10	Web Socket, Web Frame Work	3, 4	Quiz, Final	Lecture, Discussion	2, 3
11	Web Scraping	3, 4	Quiz, Final	Lecture, Discussion	2, 3
12	Building and Parsing Email	3	Quiz, Final	Lecture, Discussion	2, 3
13	FTP	3	Quiz, Final	Lecture, Discussion	2, 3
14	Telnet and SSH	3	Quiz, Final	Lecture, Discussion	2, 3
15	Remote Procedure Call (RPC)	3	Quiz, Final	Lecture, Discussion	2, 3
Final e	xam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Quiz / Assigment (10%)		10%	10%	100%
Labs (20%)	30%	30%	40%	
Midterm examination (30%)	70%	40%		
Final examination (40%)		20%	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 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)

5.2. Grading checklist

Grading checklist for Written Reports				
Student:	HW/	Assignme	ent:	
Date:			••	
	Evalı	ıator:		
	Max.	Score	Comments	
Technical content (60%)				
Abstract clearly identifies purpose and summarizes	10			
principal content				
Introduction demonstrates thorough knowledge of	15			
relevant background and prior work				
Analysis and discussion demonstrate good subject	30			
mastery				
Summary and conclusions appropriate and complete	5			
Organization (10%)				
Distinct introduction, body, conclusions	5			
Content clearly and logically organized, good	5			
transitions				
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	Milest	one	Benchmark
	4	3	2	1
			Issue/ problem to be considered critically is	
	Issue/ problem to be considered critically is stated clearly	Issue/ problem to be considered	stated but description leaves some terms	
	and described comprehensivel y, delivering all relevant information necessary for	critically is stated, described, and clarified so that understanding is not seriously	undefined, ambiguities unexplored, boundaries undetermine d, and/ or	Issue/ problem to be considered critically is stated without clarification
Explanation of issues	full understanding.	impeded by omissions.	backgrounds unknown.	or description.
	Information is taken from source(s) with enough interpretation/	Information is taken from source(s) with enough interpretation/	Information is taken from source(s) with some interpretation	Information is taken from source(s) without any
Evidence Selecting and using information to investigate a	evaluation to develop a comprehensive analysis or synthesis.	evaluation to develop a coherent analysis or synthesis.	/ evaluation, but not enough to develop a coherent	interpretation/ evaluation. Viewpoints of experts are taken as fact,
point of view or conclusion	Viewpoints of experts are	Viewpoints of experts are	analysis or synthesis.	without question.

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

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

Oral communication value rubric for evaluating presentation tasks:

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

	effectiveness	Language in	presentation.	presentation is
	of the	presentation is	Language in	not appropriate
	presentation.	appropriate to	presentation is	to audience.
	Language in	audience.	appropriate to	
	presentation is		audience.	
	appropriate to			
	audience.			
	Delivery			
	techniques	Delivery	Delivery	
	(posture,	techniques	techniques	Delivery
	gesture, eye	(posture,	(posture,	techniques
	contact, and	gesture, eye	gesture, eye	(posture, gesture,
	vocal	contact, and	contact, and	eye contact, and
	expressiveness)	vocal	vocal	vocal
	make the	expressiveness)	expressiveness)	expressiveness)
	presentation	make the	make the	detract from the
	compelling,	presentation	presentation	understandability
	and speaker	interesting, and	understandable,	of the
	appears	speaker	and speaker	presentation, and
	polished and	appears	appears	speaker appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
	A variety of			
	types of			
	supporting	Supporting	Supporting	
	materials	materials	materials	Insufficient
	(explanations,	(explanations,	(explanations,	supporting
	examples,	examples,	examples,	materials
	illustrations,	illustrations,	illustrations,	(explanations,
	statistics,	statistics,	statistics,	examples,
	analogies,	analogies,	analogies,	illustrations,
	quotations	quotations	quotations	statistics,
	from relevant	from relevant	from relevant	analogies,
	authorities)	authorities)	authorities)	quotations from
	make	make	make	relevant
	appropriate	appropriate	appropriate	authorities)
	reference to	reference to	reference to	make reference
	information or	information or	information or	to information or
	analysis that	analysis that	analysis that	analysis that
	significantly	generally	partially	minimally
	supports the	supports the	supports the	supports the
	presentation or	presentation or	presentation or	presentation or
	establishes the	establishes the	establishes the	establishes the
	presenter's	presenter's	presenter's	presenter's
	İ	1*1 *1*, /	ana dilaili4**/	aradibility/
	credibility/	credibility/	credibility/	credibility/
Supporting	credibility/ authority on	authority on	authority on	authority on the

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Information System Management

Course Code: IT094IU

1. General information

Course designation	This course covers the concepts of information systems and their applications to business processes
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)	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 (ECTS: 6.18) Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	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.
	Competency level Course learning outcome (CLO)

		Knowledge	1, 2			
		Skill	3			
		Attitude				
Content	weig Wei	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)				
		Topic Weight Level				
	-	formation Systems in	Global Business;	1	I	
	-	obal E-Business and		1	I	
	1 1	ormation Systems, O ategy	rganizations and	2	T	
		nical and Social Issue stems;	s in Information	1	T	
	1 1	Telecommunications, the Internet, and Wireless Technology;			T	
	1 1	Foundations of Business Intelligence: Databases and Information Management			T,U	
	1 1	E-Commerce: Digital Markets, Digital Goods;			T,U	
	1 1	hieving Operational l stomer Intimacy: Ent	Excellence and erprise Applications;	2	T,U	
		ilding Information Sy		2	T,U	
	Ma	naging Knowledge;		1	T	
	En	hancing Decision Ma	king.	1	T	
Examination forms	Mul	tiple-choice question	s, short-answer questio	ns		
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		Information System Kenneth C. Laudon	n, Jane P. Laudon, Manns: Managing the Digital and Jane Laudon, Essemation Systems 11th, 2	al Firm 14 entials of	th, 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:

	SLO					
CLO	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	CLO1	CLO2	CLO3
Midterm examination (30%)	40%	30%	20%
Projects/Presentations/ Report (20%)		40%	60%
Final examination (40%)	30%	20%	20%
Exercises/ Quiz (20%)	30%	10%	

5. Rubrics (optional)

5.1. Grading checklist

Grading checklist for Written Reports				
Student:	HW/Assignment:			
Date:	• • • • • •		••	
	Evalu	iator:		
	• • • • • •			
	Max.	Score	Comments	
Technical content (60%)				
Abstract clearly identifies purpose and summarizes	10			
principal content				
Introduction demonstrates thorough knowledge of	15			
relevant background and prior work				
Analysis and discussion demonstrate good subject	30			
mastery				
Summary and conclusions appropriate and complete	5			
Organization (10%)				
Distinct introduction, body, conclusions	5			
Content clearly and logically organized, good	5			
transitions				
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	Milest	one	Benchmark
	4	3	2	1
			Issue/	
			problem to	
			be	
			considered	
			critically is	
	Issue/ problem		stated but	
	to be considered		description	
	critically is	Issue/ problem	leaves some	
	stated clearly	to be considered	terms	
	and described	critically is	undefined,	Issue/
	comprehensivel	stated,	ambiguities	problem to be
	y, delivering all	described, and	unexplored,	considered
	relevant	clarified so that	boundaries	critically is
	information	understanding is	undetermine	stated without
	necessary for	not seriously	d, and/ or	clarification
Explanation of	full	impeded by	backgrounds	or
issues	understanding.	omissions.	unknown.	description.

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

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

Oral communication value rubric for evaluating presentation tasks:

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

	presentation			
	presentation cohesive.			
	conesive.			
	Languaga			
	Language			
	choices are		7	
	imaginative,	T	Language	
	memorable,	Language	choices are	_
	and	choices are	mundane and	Language
	compelling,	thoughtful and	commonplace	choices are
	and enhance	generally	and partially	unclear and
	the	support the	support the	minimally
	effectiveness	effectiveness	effectiveness of	support the
	of the	of the	the	effectiveness of
	presentation.	presentation.	presentation.	the presentation.
	Language in	Language in	Language in	Language in
	presentation is	presentation is	presentation is	presentation is
	appropriate to	appropriate to	appropriate to	not appropriate
Language	audience.	audience.	audience.	to audience.
	Delivery			
	techniques	Delivery	Delivery	
	(posture,	techniques	techniques	Delivery
	gesture, eye	(posture,	(posture,	techniques
	contact, and	gesture, eye	gesture, eye	(posture, gesture,
	vocal	contact, and	contact, and	eye contact, and
	expressiveness)	vocal	vocal	vocal
	make the	expressiveness)	expressiveness)	expressiveness)
	presentation	make the	make the	detract from the
	compelling,	presentation	presentation	understandability
	and speaker	interesting, and	understandable,	of the
	appears	speaker	and speaker	presentation, and
	polished and	appears	appears	speaker appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
	A variety of	Supporting	Supporting	Insufficient
	types of	materials	materials	supporting
	supporting	(explanations,	(explanations,	materials
	materials	examples,	examples,	(explanations,
	(explanations,	illustrations,	illustrations,	examples,
	examples,	statistics,	statistics,	illustrations,
	illustrations,	analogies,	analogies,	statistics,
	statistics,	quotations	quotations	analogies,
	analogies,	from relevant	from relevant	quotations from
	quotations	authorities)	authorities)	relevant
	from relevant	make	make	authorities)
	authorities)	appropriate	appropriate	make reference
	make	reference to	reference to	to information or
Supporting	appropriate	information or	information or	analysis that
Material	reference to	analysis that	analysis that	minimally
	1010101100 10	minij bib tilut	minijoio aiat	

	information or 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.	partially 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.
Cantrol	Central message is compelling (precisely stated, appropriately repeated, memorable,	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
Central Message	and strongly supported.)	the supporting material.	repeated and is not memorable.	in the presentation.

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: IT Project Management

Course Code: IT056IU

1. General information

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.
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)	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 (ECTS: 6.18) Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	Object-Oriented Programming
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;

	T == = =				
	CLO 3. Apply techniques	appropriate for success	sful softwa	ire	
	project management; CLO 4. Communicate effectively to the team and stakeholders;				
	construct project related documentation.				
	r -3				
	Competency level	Course learning out	come (CL	0)	
	Knowledge	CLO1			
	Skill	CLO2, CLO3			
	Attitude	CLO4			
Content	The description of the cor	itents should clearly inc	dicate the		
	weighting of the content a	and the level.			
	Weight: lecture session (3		••		
	Teaching levels: I (Introd	uce); T (Teach); U (Uti			
	Topic		Weight	Level	
	Week 1: Orientation & I course	ntroduction to the	3	I,T	
	Week 2: Introduction to	IT project	3	I,T	
	management	1 0			
	Week 3: Software project	ct planning	3	I,T,U	
	Week 4: Estimation (cos	t, time, scope)	3	I,T,U	
	Week 5: Project Schedul	les	3	I,T,U	
	Week 6: Review process	S	3	I,T,U	
	Week 7: Software Requi	rement	3	I,T,U	
	Week 8: Design & Progr	ramming	3	I,T,U	
	Week 9: Review for mid	term examination	3	U	
	Week 10: Design and Pr	ogramming	3	I,T,U	
	Week 11: Software Test	ing	3	I,T,U	
	Week 12: Understanding	g Change	3	I,T,U	
	Week 13: Management a	and Leadership	3	I,T,U	
	Week 14: Managing an	Outsourced Project	3	I,T,U	
	Week 15: Process Impro	vement.	3	I,T,U	
Examination	Multiple-choice questions, short-answer questions and essay				
forms	writing				
Study and	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their				
examination requirements	class participation. Qu			of their strongly	
requirements	encouraged.	estions and comme	nis ait	suongry	
	Assignments/Examination	n: Students must have	more than	50/100	
	points overall to pass this				
Reading list	1. Kathy Schwalbe, IT	Project Management -	9th Editio	n, 2019	

- - **3.** Marchewka, J.T., Information Technology Project Management Providing Measureable Organizational Value 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:

	SLO					
CLO	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	CLO	Assessments	Learning activities	Resources
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]

16	Final examination	2,3,4			
15	Process Improvement.	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]
13	Management and Leadership	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]
11	Software Testing	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
10	Design and Programming	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
9	Review for midterm examination	1,2,3		Discussion, In-class exercises	
8	Design & Programming	2,3,4	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]
6	Review process	2,3	Quiz, Lab, Midterm exam	Lecture, Discussion, In-class exercises	[1, 2, 3]

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4

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					
HW/Assignment:					
• • • • • •	••				
Evalu					
• • • • • •	•••••				
Max.	Score	Comments			
10					
15					
30					
5					
5					
5					
10					
10					
10					
100					
	HW/A Evalu 10 15 30 5 5 5 10 10 10	HW/Assignme Evaluator: Max. Score 10 15 30 5 5 5 10 10 10 10 10			

5.2. Holistic rubric

Holi	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:

8	Capstone	Miles		Benchmark
	4	3	2	1
			Issue/ problem	
			to be	
			considered	
			critically is	
			stated but	
	Issue/ problem to		description	
	be considered	Issue/ problem	leaves some	
	critically is stated	to be considered	terms	
	clearly and	critically is	undefined,	
	described	stated,	ambiguities	Issue/ problem
	comprehensively,	described, and	unexplored,	to be
	delivering all	clarified so that	boundaries	considered
	relevant	understanding is	undetermined,	critically is
	information	not seriously	and/ or	stated without
Explanation	necessary for full	impeded by	backgrounds	clarification or
of issues	understanding.	omissions.	unknown.	description.
			Information is	
			taken from	
			source(s) with	
	Information is	Information is	some	
	taken from	taken from	interpretation/	
	source(s) with	source(s) with	evaluation, but	
	enough	enough	not enough to	Information is
	interpretation/	interpretation/	develop a	taken from
	evaluation to	evaluation to	coherent	source(s)
77.1	develop a	develop a	analysis or	without any
Evidence	comprehensive	coherent	synthesis.	interpretation/
Selecting and	analysis or	analysis or	Viewpoints of	evaluation.
using	synthesis.	synthesis.	experts are	Viewpoints of
information to	Viewpoints of	Viewpoints of	taken as	experts are
investigate a	experts are	experts are	mostly fact,	taken as fact,
point of view	questioned	subject to	with little	without
or conclusion	thoroughly.	questioning.	questioning.	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/hypothe sis)	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). Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed	Specific position (perspective, thesis/hypothesi s) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/ hypothesis). Conclusion is logically tied to a range of information, including	Specific position (perspective, thesis/ hypothesis) acknowledges different sides of an issue. Conclusion is logically tied to information (because information is chosen to fit	Specific position (perspective, thesis/ hypothesis) is stated, but is simplistic and obvious. Conclusion is inconsistently tied to some of the information discussed;
Conclusions and related	evaluation and ability to place	opposing viewpoints;	the desired conclusion);	related outcomes
outcomes	evidence and	related outcomes	some related	(consequences
(implications	perspectives	(consequences	outcomes	and
and	discussed in	and	(consequences	implications)
consequences)	priority order.	implications) are	and	are

	identified	implications)	oversimplified
	clearly.	are identified	
		clearly.	

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

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Computer Graphics

Course Code: IT024IU

1. General information

1. General infor	
Course designation	This subject introduces the students to principles and algorithms of computer graphics and requirements of creating graphical applications.
Semester(s) in which the course is taught	6
Person responsible for the course	Assoc.Prof. Nguyen Van Sinh
Language	English
Relation to curriculum	Elective course (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 (ECTS: 6.18) Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	Object-Oriented Programming
Course objectives	This course provides students the fundamentals of computer graphics concepts, methodologies, and processes. It develop an understanding of the algorithms and fundamental techniques for generating and modifying pictures/objects with a digital computer, including the handling of color, and the generation of visible-surface projections of three dimensional scenes, for applications in science, engineering, and the entertainment world (i.e. connect to the VR & AR application; Games industry and Images processing).
Course learning outcomes	CLO 1. Understand and apply the algorithms and fundamental techniques for generating and modifying pictures, 2D/3D objects with a digital computer.

CLO 2. Understand and apply the handling of color, and the generation of visible-surface projections of 3D scenes, for applications in science, engineering and the entertainment world. CLO 3. Apply knowledge of mathematics and ability in graphical programming to develop games, construct and reconstruct 2D/3D objects, process images, VR & AR, etc.

CLO 4. Work in a team to ready build a computer graphics application

Competency level	Course learning outcome (CLO)
Knowledge	CLO1
Skill	CLO2, CLO3
Attitude	CLO4

Content

The description of the contents should clearly indicate the weighting of the content and the level.

Weight: lecture session (3 teaching hours)

Teaching levels: I (Introduce); T (Teach); U (Utilize)

Week 1: Introduction to Computer Graphics, Mathematics Foundation Week 2: Bessenham algorithms Week 3: Line clipping	3	I,T
	3	
Week 3: Line clipping	1	I,T,U
	3	I,T,U
Week 4: Polygon clipping	3	I,T,U
Week 5: Transformation and Perspective	3	I,T
Week 6: Transformation (cont.)	3	I,T,U
Week 7: Introduction to OpenGL programing	3	I,T,U
Week 8: View Transformation + Midterm	3	I,T,U
Week 9: 3D clipping	3	I,T,U
Week 10: Visual Surface Determination	3	I,T,U
Week 11: Color Models	3	I,T,U
Week 12: Image Rendering and Generation	3	I,T,U
Week 13: Ray Tracing & Texture Mapping	3	I,T,U
Week 14: Bezier Curve and Surface processing	3	I,T,U
Week 15: Building graphics application; final review	3	I,T,U

Examination forms

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. Steve Marschner and Peter Shirley, Fundamentals of Computer Graphics 5 th , by A K Peters/CRC Press ISBN: 9780367505035, 2021.
	2. Frank Klawonn, Introduction to Computer Graphics Using Java 2D and 3D, 2nd Edition, Springer 2012.
	3. Sumanta Guha, Computer Graphics Through OpenGL From Theory to Experiments Third Edition (AIT), CRC Press, 2019.
	4. John Vince, Mathematics for Computer Graphics, 5th Edition, Springer 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	X				
3		X				X
4					X	

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Computer Graphics, Mathematics Foundation	1	Quiz	Lecture,	[1, 4]
2	Bessenham algorithms	1, 2	Quiz, Lab, Midterm exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
3	Line clipping	1, 2	Quiz, Lab, Midterm exam	Lecture, Discussion, In-class exercises	[1, 2, 3]

4	Polygon clipping	1, 2	Quiz, Lab, Midterm exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
5	Transformation and Perspective	2, 3	Quiz, Lab, Midterm exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
6	Transformation (cont.)	2, 3	Quiz, Lab, Midterm exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
7	Introduction to OpenGL	2,3,4	Quiz, Lab, Midterm exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
8	Midterm				
9	View Transformation	2, 3	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
10	3D clipping	2, 3	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
11	Visual Surface Determination	2, 3	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
12	Color Models	2, 3	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
13	Image Rendering and Generation	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
14	Ray Tracing & Texture Mapping	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]
15	Bezier Curve and Surface processing	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion, In-class exercises	[1, 2, 3]

16	Building graphics application; final review	2,3,4	Quiz, Lab, Final exam	Lecture, Discussion, Homework	[1, 2, 3]
17	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Labs (20%)		30%	30%	40%
Midterm examination (30%)	40%	60%		
Final examination (40%)		50%	50%	
Exercises/ Quiz (10%)	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:				
	Evalu	ıator:		
	Max.	Score	Comments	
Technical content (60%)				
Abstract clearly identifies purpose and summarizes	10			
principal content				
Introduction demonstrates thorough knowledge of	15			
relevant background and prior work				
Analysis and discussion demonstrate good subject	30			
mastery				
Summary and conclusions appropriate and complete	5			
Organization (10%)				
Distinct introduction, body, conclusions	5			
Content clearly and logically organized, good	5			
transitions				
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
			Issue/	
			problem to	
			be	
			considered	
			critically is	
	Issue/ problem		stated but	
	to be considered		description	
	critically is	Issue/ problem	leaves some	
	stated clearly	to be considered	terms	
	and described	critically is	undefined,	Issue/
	comprehensivel	stated,	ambiguities	problem to be
	y, delivering all	described, and	unexplored,	considered
	relevant	clarified so that	boundaries	critically is
	information	understanding is	undetermine	stated without
	necessary for	not seriously	d, and/ or	clarification
Explanation of	full	impeded by	backgrounds	or
issues	understanding.	omissions.	unknown.	description.
	Information is	Information is	Information	Information is
Evidence	taken from	taken from	is taken from	taken from
Selecting and	source(s) with	source(s) with	source(s)	source(s)
using	enough	enough	with some	without any
information to	interpretation/	interpretation/	interpretation	interpretation/
investigate a	evaluation to	evaluation to	/ evaluation,	evaluation.
point of view or	develop a	develop a	but not	Viewpoints of
conclusion	comprehensive	coherent	enough to	experts are

	analysis or	analysis or	develop a	taken as fact,
	•	synthesis.	coherent	without
	synthesis.	•		
	Viewpoints of	Viewpoints of	analysis or	question.
	experts are	experts are	synthesis.	
	questioned	subject to	Viewpoints	
	thoroughly.	questioning.	of experts are	
			taken as	
			mostly fact,	
			with little	
			questioning.	
			Questions	
			some	
			assumptions.	Shows an
			Identifies	emerging
	Thoroughly		several	awareness of
	(systematically		relevant	present
	and		contexts	assumptions
			when	(sometimes
	methodically)			`
	analyzes own		presenting a	labels
	and others'	T 1	position.	assertions as
	assumptions	Identifies own	May be more	assumptions).
	and carefully	and others'	aware of	Begins to
	evaluates the	assumptions and	others'	identify some
	relevance of	several relevant	assumptions	contexts
Influence of	contexts when	contexts when	than one's	when
context and	presenting a	presenting a	own (or vice	presenting a
assumptions	position.	position.	versa).	position.
	Specific			
	position			
	(perspective,			
	thesis/			
	hypothesis) is			
	imaginative,	Specific		
	taking into	position		
	account the	(perspective,		
	complexities of	thesis/hypothesi		
	an issue. Limits	s) takes into		
	of position	account the		
	(perspective,	complexities of	Specific	
	thesis/	an issue. Others'	position	Specific
	hypothesis) are	points of view	(perspective,	position
	acknowledged.	are	thesis/	(perspective,
Student's	Others' points of	acknowledged	hypothesis)	thesis/
position	view are	within position	acknowledge	hypothesis) is
(perspective,	synthesized	(perspective,	s different	stated, but is
thesis/hypothesi	•	thesis/	sides of an	· ·
T -	within position			simplistic and
s)	(perspective,	hypothesis).	issue.	obvious.

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

Oral communication value rubric for evaluating presentation tasks:

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

	a a 11!	offo o4:	arram a4 41.	offooti
	compelling,	effectiveness	support the	effectiveness of
	and enhance	of the	effectiveness of	the presentation.
	the	presentation.	the .	Language in .
	effectiveness	Language in	presentation.	presentation is
	of the	presentation is	Language in	not appropriate
	presentation.	appropriate to	presentation is	to audience.
	Language in	audience.	appropriate to	
	presentation is		audience.	
	appropriate to			
	audience.			
	Delivery			
	techniques	Delivery	Delivery	
	(posture,	techniques	techniques	Delivery
	gesture, eye	(posture,	(posture,	techniques
	contact, and	gesture, eye	gesture, eye	(posture, gesture,
	vocal	contact, and	contact, and	eye contact, and
	expressiveness)	vocal	vocal	vocal
	make the	expressiveness)	expressiveness)	expressiveness)
	presentation	make the	make the	detract from the
	compelling,	presentation	presentation	understandability
	and speaker	interesting, and	understandable,	of the
	and speaker	speaker	and speaker	presentation, and
	~ ~	*	_	_
Dolimowy	polished and	appears	appears	speaker appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
	A variety of	Supporting	Supporting	I
	types of	materials	materials	Insufficient
	supporting	(explanations,	(explanations,	supporting
	materials	examples,	examples,	materials
	(explanations,	illustrations,	illustrations,	(explanations,
	examples,	statistics,	statistics,	examples,
	illustrations,	analogies,	analogies,	illustrations,
	statistics,	quotations	quotations	statistics,
	analogies,	from relevant	from relevant	analogies,
	quotations	authorities)	authorities)	quotations from
	from relevant	make .	make .	relevant
	authorities)	appropriate	appropriate	authorities)
	make .	reference to	reference to	make reference
	appropriate	information or	information or	to information or
	reference to	analysis that	analysis that	analysis that
	information or	generally	partially	minimally
	analysis that	supports the	supports the	supports the
	significantly	presentation or	presentation or	presentation or
	supports the	establishes the	establishes the	establishes the
	presentation or	presenter's	presenter's	presenter's
	establishes the	credibility/	credibility/	credibility/
Supporting	presenter's	authority on	authority on	authority on the
Material	credibility/	the topic.	the topic.	topic.

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Deep Learning

Course Code: IT157IU

1. General information

1. General infor	
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
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)	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 (ECTS: 6.18) Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	none
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.

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

The description of the contents should clearly indicate the weighting of the content and the level.

Weight: lecture session (3 hours)

Teaching levels: I (Introduce); T (Teach); U (Utilize)

Topic	Weight	Level
Introduction to Deep Learning	1	I, U
Some demos on the applications of Deep		
Learning		
Linear Classifiers, Optimization and	1	I, T
Gradient Descent		
Backpropagation Algorithm		
Introduction to PyTorch library		
Linear Neural Networks for Regression	1	T, U
Linear Neural Networks for Classification		
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:	2	T, U
Gated Recurrent Units (GRU)		
Long Short-Term Memory (LSTM)		
Bidirectional RNN		
Encoder-Decoder Architecture		

	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 questions	, program	ming			
Study and	Attendance: A minimum attendance of 80 perce	ent is comp	oulsory			
examination	for the class sessions. Students will be assessed	for the class sessions. Students will be assessed on the basis of				
requirements	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.					

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		X
4				X		X

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning activities	Resources
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	1	Exercises	Lecture, In-class exercises	[1, 2] Chapter 2

	Backpropagation Algorithm Introduction to PyTorch library				
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,	[2] Chapter 14

				Student presentaion	
16	Deep Learning in Natural Language Processing	4	Seminar	Lecture, Student presentaion	[2] Chapter 15
17	Final exam				

4. Assessment plan

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

5. Rubrics (optional)5.1. Grading checklist

Grading checklist for Written Reports						
Student:	HW/	Assignme	ent:			
Date:						
	Evalu	ıator:				
	Max.	Score	Comments			
Technical content (60%)						
Abstract clearly identifies purpose and summarizes	10					
principal content						
Introduction demonstrates thorough knowledge of	15					
relevant background and prior work						
Analysis and discussion demonstrate good subject	30					
mastery						
Summary and conclusions appropriate and complete	5					
Organization (10%)						
Distinct introduction, body, conclusions	5					
Content clearly and logically organized, good	5					
transitions						
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

Holis	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:

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

	,	,	.1 •	
	experts are	experts are	synthesis.	
	questioned	subject to	Viewpoints	
	thoroughly.	questioning.	of experts are	
			taken as	
			mostly fact,	
			with little	
			questioning.	
			Questions	
			some	
			assumptions.	Shows an
			Identifies	emerging
	Thoroughly		several	awareness of
	(systematically		relevant	present
	and		contexts	assumptions
	methodically)		when	(sometimes
	analyzes own			labels
	and others'		presenting a position.	assertions as
		Identifies own		
	assumptions		May be more	assumptions).
	and carefully	and others'	aware of	Begins to
	evaluates the	assumptions and	others'	identify some
T (%)	relevance of	several relevant	assumptions	contexts
Influence of	contexts when	contexts when	than one's	when
context and	presenting a	presenting a	own (or vice	presenting a
assumptions	position.	position.	versa).	position.
	Specific			
	position			
	(perspective,			
	thesis/			
	hypothesis) is			
	imaginative,			
	taking into			
	account the	Specific		
	complexities of	position		
	an issue. Limits	(perspective,		
	of position	thesis/hypothesi		
	(perspective,	s) takes into		
	thesis/	account the		
	hypothesis) are	complexities of	Specific	
	acknowledged.	an issue. Others'	position	Specific
	Others' points of	points of view	(perspective,	position
	view are	are	thesis/	(perspective,
Student's	synthesized	acknowledged	hypothesis)	thesis/
position	within position	within position	acknowledge	hypothesis) is
(perspective,	(perspective,	(perspective,	s different	stated, but is
thesis/hypothesi	thesis/	thesis/	sides of an	simplistic and
s)	hypothesis).	hypothesis).	issue.	obvious.
3)	nypomesis).	nypomesis).	155UC.	ouvious.

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

Oral communication value rubric for evaluating presentation tasks:

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

	offo otivor one	T		anagantation is
	effectiveness	Language in	presentation.	presentation is
	of the	presentation is	Language in	not appropriate
	presentation.	appropriate to	presentation is	to audience.
	Language in	audience.	appropriate to	
	presentation is		audience.	
	appropriate to			
	audience.			
	Delivery			
	techniques	Delivery	Delivery	
	(posture,	techniques	techniques	Delivery
	gesture, eye	(posture,	(posture,	techniques
	contact, and	gesture, eye	gesture, eye	(posture, gesture,
	vocal	contact, and	contact, and	eye contact, and
	expressiveness)	vocal	vocal	vocal
	make the	expressiveness)	expressiveness)	expressiveness)
	presentation	make the	make the	detract from the
	compelling,	presentation	presentation	understandability
	and speaker	interesting, and	understandable,	of the
	appears	speaker	and speaker	presentation, and
	polished and	appears	appears	speaker appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
	A variety of			
	types of			
	supporting	Supporting	Supporting	
	materials	materials	materials	Insufficient
	(explanations,	(explanations,	(explanations,	supporting
	examples,	examples,	examples,	materials
	illustrations,	illustrations,	illustrations,	(explanations,
	statistics,	statistics,	statistics,	examples,
	analogies,	analogies,	analogies,	illustrations,
	quotations	quotations	quotations	statistics,
	from relevant	from relevant	from relevant	analogies,
	authorities)	authorities)	authorities)	quotations from
	make	make	make	relevant
	appropriate	appropriate	appropriate	authorities)
	reference to	reference to	reference to	make reference
	information or	information or	information or	to information or
	analysis that	analysis that	analysis that	analysis that
	significantly	generally	partially	minimally
	supports the	supports the	supports the	supports the
	presentation or	presentation or	presentation or	presentation or
	establishes the	establishes the	establishes the	establishes the
	presenter's	presenter's	presenter's	presenter's
	credibility/	credibility/	credibility/	credibility/
Supporting			l • •	1 4 4 4
	authority on	authority on	authority on	authority on the

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Internet of Things

Course Code: IT134IU

1. General information

The course explains the Thing networks.	architecture, components of Internet of		
Dr. Le Duy Tan			
English			
Elective (All programs)			
Lecture, lesson, project,	seminar.		
Contact hours (please sp laboratory session, etc.):	oad: 195 ecify whether lecture, exercise, 45 (lecture) + 30 (laboratory) examination preparation, specified in		
Number of credits: 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1			
Computer Networks			
the components from she Bluetooth, Zigbee, Wi-fi	the communication techniques between ort range to long range such as i, Lora, NB-IoT, Moreover, the data d analytics are also studied in this		
CLO 1. The ability of designing and implementing some Internet of Thing systems; CLO 2. The ability of collecting data then applying some data mining techniques to analyze the data in some IoT applications.			
	CLO 1		
	CLO 1 and CLO 2		
	CLO 1		
The description of the coweighting of the content	ontents should clearly indicate the		
	Thing networks. Dr. Le Duy Tan English Elective (All programs) Lecture, lesson, project, (Estimated) Total workle Contact hours (please splaboratory session, etc.): Private study including elements in the students will study the components from she Bluetooth, Zigbee, Wiffstorage, organization and course. CLO 1. The ability of definitement of Thing system CLO 2. The ability of comining techniques to and Competency level Knowledge Skill Attitude The description of the contact the contact in t		

	Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (U	Itilize)			
	Topic	Weight	Level		
	Week 1: Introduction to Internet of Things	1	I		
	Week 2 : IoT applications (1st presentation from industry)	1	U		
	Week 3: Sensors and actuators in IoTs	1	T		
	Week 4-8: Communication technologies in IoTs: PAN (Bluetooth, Zigbee), LAN (IEEE 802.11), WAN (LoRa, LTE)	5	T		
	Week 9: Data collection in IoT	1	T, U		
	Week 10: IoT applications (cont.) (2nd presentation from industry)	1	U		
	Week 11-14: Data analytics	4	T, U		
	Week 15: Review	1	U		
Examination forms	Multiple-choice questions, short-answer quest	ions			
Study and	Attendance: A minimum attendance of 80 per		-		
examination	for the class sessions. Students will be assesse				
requirements	their class participation. Questions and comme	ents are str	ongry		
	encouraged. Assignments/Examination: Students must have more than				
	50/100 points overall to pass this course.	e more ma	.11		
Reading list	[1] Raj Kamal, Internet of Things				
	Architecture and Design Principles, Mc Gra	aw Hill Inc	lia, 2017		
	[2] Hanes, David, et al. IoT fundamen				
	technologies, protocols, and use cases for	or the int	ernet of		
	things. Cisco Press, 2017.				
	[3] Singh, Rajesh, et al. Internet of things	with Rasp	berry Pi		
	and Arduino. CRC Press, 2019.		• .		
	[4] Dow, Colin. Internet of things programmed by ideas and the programmed by ideas and				
	build modern IoT solutions with the Ra	ispoerry P	1 3 and		
	Python. Packt Publishing Ltd, 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		$\checkmark\checkmark\checkmark$			//	
2						√

3. Planned learning activities and teaching methods

	lanned learning activities a		ı		
Week	Topic	CLO	Assessments	Learning activities	Resources
1	Introduction to Internet of Things	1, 2	Homework	Lecture, Discussion, Inclass-Quiz	[1]
2	IoT applications (1st presentation from industry)	1	Homework	Lecture, Group work	[2]
3	Sensors and actuators in IoTs	1	Homework	Lecture, Discussion, Inclass-Quiz	[1]
4	Midterm		Written exam		
5 - 9	Communication technologies in IoTs: PAN (Bluetooth, Zigbee), LAN (IEEE 802.11), WAN (LoRa, LTE)	1	Homework	Lecture, Discussion, Inclass-Quiz	[1]
10	Data collection in IoT	2	Homework	Lecture, Discussion, Inclass-Quiz	[1]
11	IoT applications (cont.) (2nd presentation from industry)	1, 2	Homework	Lecture, Group work	[2]
12 - 14	Data analytics	2	Homework	Lecture, Discussion, Inclass-Quiz, Presentation	[1]
15	Week 15: Review		Homework	Review-Test	
	Final exam		Written		
			exam		

4. Assessment plan

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

5. Rubrics (optional)

5.4. Grading checklist

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

5.5. Holistic rubric

Holis	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				

TOTAL SCORE

100

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:

J	Capstone	Milest	one	Benchmark
	4	3	2	1

T ,	
Issue/	
problem to	
be	
considered	
critically is	
Issue/ problem stated but	
to be considered description	
critically is Issue/ problem leaves some	<u>,</u>
stated clearly to be considered terms	
and described critically is undefined,	Issue/
comprehensivel stated, ambiguities	
	_
	′
	critically is
information understanding is undetermine	
necessary for not seriously d, and/ or	clarification
Explanation of full impeded by background	
issues understanding. omissions. unknown.	description.
Information	
is taken from	m
source(s)	
with some	
Information is Information is interpretation	on
taken from taken from / evaluation	,
source(s) with source(s) with but not	
enough enough to	Information is
interpretation/ interpretation/ develop a	taken from
evaluation to evaluation to coherent	source(s)
develop a develop a analysis or	without any
Evidence comprehensive coherent synthesis.	interpretation/
Selecting and analysis or analysis or Viewpoints	
using synthesis. synthesis. of experts a	
	*
	experts are taken as fact,
investigate a experts are experts are mostly fact,	·
point of view or questioned subject to with little	without
conclusion thoroughly. questioning. questioning	
Questions	Shows an
Thoroughly some	emerging
(systematically assumption	
and Identifies	present
methodically) several	assumptions
analyzes own Identifies own relevant	(sometimes
and others' and others' contexts	labels
assumptions assumptions and when	assertions as
and carefully several relevant presenting a	a assumptions).
Influence of evaluates the contexts when position.	Begins to
context and relevance of presenting a May be more	re identify some
assumptions contexts when position. aware of	contexts

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

Oral communication value rubric for evaluating presentation tasks:

	ation value rubrio Capstone		stone	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.

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

stated, appropriately repeated, memorable, and strongly	the supporting material.	but is not often repeated and is not memorable.	in the presentation.
supported.)			

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Mobile Application Development

Course Code: IT133IU

1. General information

1. General inform	
Course designation	Advanced programming course with focus on mobile environment
Semester(s) in which the course is taught	7
Person responsible for the course	MSc. Le Thanh Son
Language	English
Relation to curriculum	Elective (All programs)
Teaching methods	Lecture
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 (ECTS: 6.18) Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	Object-oriented analysis and design
Course objectives	This course is designed to introduce and familiarize students with programming in the mobile environment: Android platform will be used throughout the course. The course starts with introductions to basic components, concepts, structures of Android applications then move on with common user interface elements, persistent storage, database for mobile etc. Introduction to most common tools and techniques for writing Android application is also included with hands on experience in form of lab exercise programming project.
Course learning outcomes	CLO 1. Understand the structure of mobile application, especially Android application CLO 2. Understand most common mobile platform user interface, database, services CLO 3. Able to develop mobile application CLO 4. Team working

	Competency level	Course learning out	tcome (Cl	LO)
	Knowledge	1		
	Skill	2, 3		
	Attitude	4		
Content	The description of the co	ntents should clearly i	indicate th	e
	weighting of the content			
	Weight: lecture session (Teaching levels: I (Introd		Itiliza)	
	Topic	auce), I (Teach), O (C	Weight	Level
	Introduction to mobile	nrogramming	3	I
	Android and Modal Vi	1 0	3	I, T
		ew Controller	3	I, T
	Activity Lifecycle	and Compathility	3	I, T
	Adroid SDK Versions		3	T, U
	Creating UI: Layout an	id widgets	3	1,0
	ListFragment		3	T, U
	ViewPager		3	T, U
	Dialogs		3	
	MediaPlayer		3	T, U
	Action Bar	1.70		T, U
	Saving and Loading Lo		3	T, U
	Context Menu and Con		3	T, U
	Taking Pictures and Ha	andling Images	3	T, U
	Intents		3	T, U
	Browsing the Web & V		3	T, U
Examination forms	Multiple-choice question			1
Study and examination	Attendance: A minimum for the class sessions. Stu	-		-
requirements	their class participation.			
•	encouraged.			
	Assignments/Examination		more tha	n 50/100
Reading list	points overall to pass this			The
Reading list	3. C. Stewart, K. Mar Big Nerd Ranch G	_	grainming:	ine
	4. D. Griffiths, Head		ment: A I	Brain-
	Friendly Guide 1st	_		

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
1	X					
2	X					
3		XX				XXX
4			X			XXX

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning	Resources
	_			activities	
1	Introduction to mobile programming	1	Quiz	Lecture	2
2	Android and Modal View Controller	1	Quiz	Lecture	2
3	Activity Lifecycle	1	Quiz	Lecture	2
4	Adroid SDK Versions and Compatbility	1	Quiz, Lab, Midterm	Lecture, Discussion	2
5	Creating UI: Layout and Widgets	2, 3,	Quiz, Lab, Midterm	Lecture, Discussion, Inclass Exercise	1
6	ListFragment	2, 3,	Quiz, Lab, Midterm	Lecture, Discussion, Inclass Exercise	1
7	ViewPager	2, 3,	Quiz, Lab, Midterm	Lecture, Discussion, Inclass Exercise	1
8	Dialogs	2, 3,	Quiz, Lab, Midterm	Lecture, Discussion, In- class Exercise	1
	Midterm				
9	MediaPlayer	2, 3,	Quiz, Lab, Final	Lecture, Discussion, In- class Exercise	1
10	Action Bar	2, 3,	Quiz, Lab, Final	Lecture, Discussion, Inclass Exercise	1
11	Saving and Loading Local Files	2, 3,	Quiz, Lab, Final	Lecture, Discussion, Inclass Exercise	1

12	Context Menu and Contextual Action Mode	2, 3,	Quiz, Lab, Final	Lecture, Discussion, In- class Exercise	1
13	Taking Pictures and Handling Images	2, 3, 4	Quiz, Lab, Final	Lecture, Discussion, In- class Exercise	1
14	Intents	2, 3, 4	Quiz, Lab, Final	Lecture, Discussion, In- class Exercise	1
15	Browsing the Web & WebView	2, 3, 4	Quiz, Lab, Final	Lecture, Discussion, Inclass Exercise	1
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4
Quiz / Assigment (10%)	50%	10%	10%	70%
Labs (20%)	10%	30%	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.

5. Rubrics (optional)

5.4. Grading checklist

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

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

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

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

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

Oral communication value rubric for evaluating presentation tasks:

Orai communic	unon vanae rabric	Jor evatuating pr	esemunon tusks.	
	Capstone	Mile	stone	Benchmark
	4	3	2	1
	Organizational			
	pattern	Organizational		
	(specific pattern		Organizational	
	introduction	(specific	pattern	
	and conclusion,	introduction	(specific	Organizational
	sequenced	and conclusion,	introduction	pattern (specific
	material within	sequenced	and conclusion,	introduction and
	the body, and	material within	sequenced	conclusion,
	transitions) is	the body, and	material within	sequenced
	clearly and	transitions) is	the body, and	material within
	consistently	clearly and	transitions) is	the body, and
	observable and	consistently	intermittently	transitions) is not
	is skillful and	observable	observable	observable
	makes the	within the	within the	within the
Organization	content of the	presentation.	presentation.	presentation.

	presentation			
	cohesive.			
	conesive.			
	Language			
	choices are			
	imaginative,		Language	
	memorable,	Language	choices are	
	and		mundane and	Language
	compelling,	thoughtful and	commonplace	choices are
	and enhance	generally	and partially	unclear and
	the	support the	support the	minimally
	effectiveness	effectiveness	effectiveness of	support the
	of the	of the	the	effectiveness of
	presentation.	presentation.	presentation.	the presentation.
	Language in	Language in	Language in	Language in
	presentation is	presentation is	presentation is	presentation is
	appropriate to	appropriate to	appropriate to	not appropriate
Language	audience.	audience.	audience.	to audience.
	Delivery			
	techniques	Delivery	Delivery	
	(posture,	techniques	techniques	Delivery
	gesture, eye	(posture,	(posture,	techniques
	contact, and	gesture, eye	gesture, eye	(posture, gesture,
	vocal	contact, and	contact, and	eye contact, and
	expressiveness)	vocal	vocal	vocal
	make the expressiveness) expressiveness)		expressiveness)	
	presentation	make the	make the	detract from the
	compelling,	presentation	presentation	understandability
	and speaker	interesting, and	understandable,	of the
	appears	speaker	and speaker	presentation, and
	polished and	appears	appears	speaker appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
Benvery	A variety of	Supporting	Supporting	Insufficient
	types of	materials	materials	supporting
	supporting	(explanations,	(explanations,	materials
	materials	examples,	examples,	(explanations,
	(explanations,	illustrations,	illustrations,	examples,
	examples,	statistics,	statistics,	illustrations,
	illustrations,	analogies,	analogies,	statistics,
	statistics,	quotations	quotations	analogies,
	analogies,	from relevant	from relevant	quotations from
	quotations	authorities)	authorities)	relevant
	from relevant	make	make	authorities)
	authorities)	appropriate	appropriate	make reference
	make	reference to	reference to	to information or
Supporting	appropriate	information or	information or	analysis that
Material	reference to	analysis that	analysis that	minimally
	1010101100 10	many ord critic	many bib mut	

	information or 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.	partially 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.
	Central message is compelling (precisely stated, appropriately repeated, memorable,	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
Central	and strongly	the supporting	repeated and is	in the
Message	supported.)	material.	not memorable.	presentation.

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering $\ensuremath{\P}$

Assoc.Prof. Nguyen Van Sinh

Course Name: Human-Computer Interaction

Course Code: IT044IU

1. General information

1. General infor	1			-	
Course designation	This course provides students with fundamental interaction principles between human and computers.				
Semester(s) in which the course is taught	7,8	7,8			
Person responsible for the course	Dr. Vi C	Dr. Vi Chi Thanh			
Language	English	English			
Relation to curriculum	Elective	(CS)			
Teaching methods	Lecture,	lesson, project, ser	ninar.		
Workload (incl. contact hours, self-study hours)	Contact session,	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:			
Credit points	Number of credits: 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1				
Required and recommended prerequisites for joining the course	None				
Course objectives		urse provides studen human and compu	nts with fundamental interaction princip ters.	oles	
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.				
	Competency Course learning outcome (CLO)				
		Knowledge	2, 3, 4		
		Skill	1		
		Attitude	1		

Content	The description of the contents should clearly indicate the weighting					
	of the content and the level.					
	Weight: lecture session (3 hours)					
	Teaching levels: I (Introduce); T (Teach); U	(Utilize)				
	Topic	Weigh t	Leve l			
	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			
	Data analysis	1	T,U			
Examination forms	Short-answer questions					
Study and	Attendance: A minimum attendance of 80 pe	rcent is co	ompulsory for			
examination requirements	the class sessions. Students will be assessed of participation. Questions and comments are st Assignments/Examination: Students must have points overall to pass this course.	rongly en	couraged.			
Reading list [1] Sharp, H., Preece, J., Rogers, Y. (2019). Interaction Design: Beyond Human-Computer Interaction. United Kingdom: Wiley						
	[2] Dix, A. (2003). Human-computer Interaction. Germany: Pearson/Prentice-Hall.					
	[3] MacKenzie, I. S. (2012). Human-Computer Interaction: An Empirical Research Perspective. Netherlands: Elsevier Science.					

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	

1	37		
4	ΙX		

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessme nts	Learning activities	Resources
1	Human factors	1	Midterm	In-class activities	
2,3	Human perception and cognition principles	2	exam 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	
Midter	m 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	Data analysis	2, 4	Final exam, Project	In-class activities	
Final e	xam				

4. Assessment plan

Assessment Type	CLO 1	CLO 2	CLO 3	CLO4
Quiz (5%)	10%		20%	20%
Labs (10%)	30%	30%		
Midterm examination (30%)	50%	40%		

Projects/Presentations/ Report (15%)	10%		30%	30%
Final examination (40%)		30%	50%	50%

5. Rubrics (optional)

5.4. Grading checklist

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

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

Influenc e of context and assumpt ions	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 (perspec tive, thesis/hy pothesis)	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.
Conclusi ons and related outcome s (implica tions and consequ ences)	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)	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

	are identified clearly.	

Oral communication value rubric for evaluating presentation tasks:

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

	Delivery		Delivery	
	techniques	Delivery	techniques	Delivery
	(posture,	techniques	(posture,	techniques
	gesture, eye	(posture,	gesture, eye	(posture, gesture,
	contact, and	gesture, eye	contact, and	
	vocal	•	vocal	eye contact, and vocal
		contact, and		
	expressiveness)	vocal	expressiveness)	expressiveness)
	make the	expressiveness)	make the	detract from the
	presentation	make the	presentation	understandability
	compelling, and	presentation	understandable,	of the presentation,
	speaker appears	interesting, and	and speaker	and speaker
D 11	polished and	speaker appears	appears	appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
Supporti ng 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 .	Central .	Central message
Central	is compelling	message is	message is	can be deduced but
Message	(precisely	clear and	basically	is not explicitly

stated,	consistent with	understandable	stated in the
appropriately	the supporting	but is not often	presentation.
repeated,	material.	repeated and is	
memorable, and		not memorable.	
strongly			
supported.)			

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

TT

Assoc.Prof. Nguyen Van Sinh

Course Name: Cloud Computing

Course Code: IT164IU

1. General information

1. General III	
Course designation	The course presents a top-down view of cloud computing, from applications and administration to programming and infrastructure.
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	Number of credits: 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	Computer Networks
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.				
	Competency level Cours (CLO)				
	Knowledge 1				
	Skill 2, 3				
	Attitude 3				
	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)				
	Topic	Weigh t	Level		
	Introduction to Cloud Computing	1	I		
	Cloud Computing Platforms	3	Т		
	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, Programmin	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	 points overall to pass this course. 6. Rountree, Derrick, and Ileana Castrillo. The basics of cloud computing: Understanding the fundamentals of cloud computing in theory and practice. Newnes, 2013. 7. Patterson, Scott. Learn AWS Serverless Computing: A Beginner's Guide to Using AWS Lambda, Amazon API Gateway, and Services from Amazon Web Services. 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

	Planned learning activities and		Ĭ	1	T
We ek	Topic	CLO	Assessment s	Learning activities	Resource s
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
Midt	term				
9	Distributed Storage Systems – Part 2	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
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
Fina	1				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Quiz / Assigment (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.

5. Rubrics (optional)

5.1. Grading checklist

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

Introduction demonstrates thorough	15	
knowledge of relevant background and prior		
work		
Analysis and discussion demonstrate good	30	
subject mastery		
Summary and conclusions appropriate and	5	
complete		
Organization (10%)		
Distinct introduction, body, conclusions	5	
Content clearly and logically organized, good	5	
transitions		
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	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	Miles	Benchmark	
	4	3	2	1
	Issue/ problem to	Issue/ problem	Issue/ problem	
	be considered	to be considered	to be	
	critically is stated	critically is	considered	Issue/ problem
	clearly and	stated,	critically is	to be considered
Expla	described	described, and	stated but	critically is
natio	comprehensively,	clarified so that	description	stated without
n of	delivering all	understanding is	leaves some	clarification or
issues	relevant	not seriously	terms	description.

	information	impeded by	undefined,	
	necessary for full	omissions.	ambiguities	
	understanding.		unexplored,	
	<i>B</i> .		boundaries	
			undetermined,	
			and/ or	
			backgrounds	
			unknown.	
Evide			Information is	
nce			taken from	
Selecti			source(s) with	
ng	Information is	Information is	some	
and	taken from	taken from	interpretation/	
using	source(s) with	source(s) with	evaluation, but	
inform	enough	enough	not enough to	
ation	interpretation/	interpretation/	develop a	Information is
to	evaluation to	evaluation to	coherent	taken from
investi	develop a	develop a	analysis or	source(s)
gate a	comprehensive	coherent	synthesis.	without any
point	analysis or	analysis or	Viewpoints of	interpretation/
of	synthesis.	synthesis.	experts are	evaluation.
view	Viewpoints of	Viewpoints of	taken as	Viewpoints of
or	experts are	experts are	mostly fact,	experts are taken
conclu	questioned	subject to	with little	as fact, without
sion	thoroughly.	questioning.	questioning.	question.
			Questions	
			some	Shows an
			assumptions.	emerging
	Thoroughly		Identifies	awareness of
	(systematically and		several	present
	methodically)		relevant	assumptions
T (9	analyzes own and	T1	contexts when	(sometimes
Influe	others'	Identifies own	presenting a	labels assertions
nce of	assumptions and	and others'	position. May	as assumptions).
conte	carefully evaluates	assumptions and	be more aware	Begins to
xt	the relevance of contexts when	several relevant	of others'	identify some contexts when
and assum	presenting a	contexts when	assumptions than one's own	
ptions	position.	presenting a position.	(or vice versa).	presenting a position.
Stude	Specific position	Specific	Specific	position.
nt's	(perspective,	position	position	Specific position
positi	thesis/ hypothesis)	(perspective,	(perspective,	(perspective,
on	is imaginative,	thesis/hypothesi	thesis/	thesis/
(pers	taking into account	s) takes into	hypothesis)	hypothesis) is
pectiv	the complexities of	account the	acknowledges	stated, but is
e,	an issue. Limits of	complexities of	different sides	simplistic and
thesis/	position	an issue. Others'	of an issue.	obvious.
VIIVOIDI	Position	an issue. Onicis	or arribbac.	COTICAD.

hymot	(namana ativa	noints of views		
hypot	(perspective,	points of view		
hesis)	thesis/ hypothesis)	are		
	are acknowledged.	acknowledged		
	Others' points of	within position		
	view are	(perspective,		
	synthesized within	thesis/		
	position	hypothesis).		
	(perspective,			
	thesis/ hypothesis).			
			Conclusion is	
		Conclusion is	logically tied	
Concl		logically tied to	to information	
usions	Conclusions and	a range of	(because	
and	related outcomes	information,	information is	
relate	(consequences and	including	chosen to fit	Conclusion is
d	implications) are	opposing	the desired	inconsistently
outco	logical and reflect	viewpoints;	conclusion);	tied to some of
mes	student's informed	related	some related	the information
(impli	evaluation and	outcomes	outcomes	discussed;
cation	ability to place	(consequences	(consequences	related outcomes
s and	evidence and	and	and	(consequences
conse	perspectives	implications)	implications)	and
quenc	discussed in	are identified	are identified	implications) are
es)	priority order.	clearly.	clearly.	oversimplified.

Oral communication value rubric for evaluating presentation tasks:

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

			Language	
	T	T	Language	
	Language	Language	choices are	
	choices are	choices are	mundane and	
	imaginative,	thoughtful and	commonplace	
	memorable, and	generally	and partially	Language choices
	compelling, and	support the	support the	are unclear and
	enhance the	effectiveness of	effectiveness of	minimally support
	effectiveness of	the	the	the effectiveness of
	the presentation.	presentation.	presentation.	the presentation.
	Language in	Language in	Language in	Language in
	presentation is	presentation is	presentation is	presentation is not
Lang	appropriate to	appropriate to	appropriate to	appropriate to
uage	audience.	audience.	audience.	audience.
	Delivery		Delivery	
	techniques	Delivery	techniques	Delivery
	(posture,	techniques	(posture,	techniques
	gesture, eye	(posture,	gesture, eye	(posture, gesture,
	contact, and	gesture, eye	contact, and	eye contact, and
	vocal	contact, and	vocal	vocal
	expressiveness)	vocal	expressiveness)	expressiveness)
	make the	expressiveness)	make the	detract from the
	presentation	make the	presentation	understandability
	compelling, and	presentation	understandable,	of the presentation,
	speaker appears	interesting, and	and speaker	and speaker
Delive	polished and	speaker appears	and speaker	_
	confident.	comfortable.	tentative.	appears uncomfortable.
ry				Insufficient
	A variety of	Supporting materials	Supporting materials	
	types of			supporting materials
	supporting	(explanations,	(explanations,	
	materials	examples,	examples,	(explanations,
	(explanations,	illustrations,	illustrations,	examples,
	examples,	statistics,	statistics,	illustrations,
	illustrations,	analogies,	analogies,	statistics,
	statistics,	quotations from	quotations from	analogies,
	analogies,	relevant	relevant	quotations from
	quotations from	authorities)	authorities)	relevant
	relevant	make	make	authorities) make
	authorities)	appropriate	appropriate	reference to
	make	reference to	reference to	information or
	appropriate	information or	information or	analysis that
	reference to	analysis that	analysis that	minimally supports
	information or	generally	partially	the presentation or
	analysis that	supports the	supports the	establishes the
Supp	significantly	presentation or	presentation or	presenter's
orting	supports the	establishes the	establishes the	credibility/
Mater	presentation or	presenter's	presenter's	authority on the
ial	establishes the	credibility/	credibility/	topic.
	·	·	<u> </u>	<u> </u>

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

Date revised: August 28, 2023

Ho Chi Minh City, 28/08/2023

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Security Technology and Implementation

Course Code: IT165IU

1. General information

Course designation	The course will concentrate on security technologies that can be employed to safeguard and maintain a network. The course will also cover risk management, business continuity and recovery planning, operations security, access control systems, and software development security.
Semester(s) in which the course is taught	7,9
Person responsible for the course	Dr. Le Hai Duong
Language	English
Relation to curriculum	Compulsory
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 (ECTS: 6.18) Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	Computer Networks
Course objectives	This course introduces students to information security principles, cryptography systems (symmetric and public key encryptions), risk management, security architecture and design, business continuity operations security, access control systems, protecting TCP/IP network, firewalls, virtual private network, IPSec, software development security.

Course learning outcomes	CLO 1. Gain understanding of information security and 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. Analyze and evaluate security risk and security design; CLO 4. Understand and apply software development security; CLO 5. Apply security technologies in operations.				
		Competency level	Course learning ou (CLO)	tcome	
		Knowledge	CLO1, CLO2, CLO	4, CLO5	
		Skill	CLO2, CLO3, CLO4		
		Attitude			
Content	weigh Weig Teacl	nting of the content ht: lecture session oning levels: I (Intro			
	То	pic		Weigh t	Leve 1
	Inf	ormation security p	principles	1	T
		vernance and risk i		1	T,U
	Sec	curity architecture a	and design;	1	T
		siness continuity anning;	nd disaster recovery	1	T,U
	Op	eration security;		2	T,U
	Ac	cess control system	as and methodology;	1	Т
	Cr	yptography;		2	T,U
		erview network and curity;	d telecommunications	1	T,U
	Ba	sic security infrastr	uctures and routers;	1	Т
	Fir	ewalls		1	T,U
		rusion detection systems	stems and intrusion	1	Т
	Vii	tual private networ	k and IPSec;	1	T
	So	ftware Developmer	nt security.	1	T,U
Examination forms	Multi	ple-choice question	ns, short-answer question	ons	
Study and examination requirements			n attendance of 80 perce udents will be assessed		

	their class participation. Questions and comments are strongly encouraged. Assignments/Examination: Students must have more than 50/100 points everall to pass this course.			
- 11 11	points overall to pass this course.			
Reading list	3. William Stallings and Lawrence Brown, Computer Security - Principles and Practice 4th edition, 2018			
	4. Mark S. Merkow and Jim Breithaupt, Information Security: Principles and Practices, 2nd edition, 2014.			

3. Learning Outcomes Matrix

The relationship between Course Learning Outcomes (CLO) (1-6) 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		
2		X				
3	X					
4	X					
5	X					
6	X					

4. Planned learning activities and teaching methods

Wee	Topic	CLO	Assessments	Learning	Resour
k				activities	ces
1	Information security principles	1	Quiz, Exam	Lecture, Exercises, Lab	[1,2]
2	Governance and risk management;	3	Quiz, Exam	Lecture, Lab	[2]
3	Security architecture and design;	3	Quiz, Exam	Lecture, Lab	[2]
4	Business continuity and disaster recovery planning;	3	Quiz, Exam	Lecture, Lab	[2]
5,6	Operation security;	5	Quiz, Exam	Lecture, Lab	[2]
7	Access control systems and methodology;	2		Lecture, Lab	
	Midterm exam				
8, 9	Cryptography;	1	Quiz, Exam	Lecture	[1]
10	Overview network and telecommunications;	5	Quiz, Exam	Lecture, Lab	[2]

11	Basic security infrastructures and routers;	5	Quiz, Exam	Lecture, Lab	[2]
12	Firewalls	5	Quiz, Exam	Lecture, Exercises,	[1,2]
13	Intrusion detection systems and intrusion protection systems	5	Quiz, Exam	Lecture, Exercises,	[1,2]
14	Virtual private network and IPSec;	5	Quiz, Exam	Lecture, Lab	[1,2]
15	Software Development security.	4	Quiz, Exam	Lecture	[2]
	Final exam				

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3	CLO4	CLO5
Midterm examination (30%)	30%	80%	55%		10%
Final examination (40%)	40%			75%	60%
Exercises/ Quiz (30%)	30%	20%	45%	25%	30%

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 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/Assignn	lent: HW/Assignment:				
Evaluator:	• • • • • • • • • • • • • • • • • • • •				
Date:					
•••••					
	Max.	Score	Comments		
Technical content (60%)					
Abstract clearly identifies purpose and	10				
summarizes principal content					
Introduction demonstrates thorough knowledge	15				
of relevant background and prior work					

Analysis and discussion demonstrate good	30	
subject mastery		
Summary and conclusions appropriate and	5	
complete		
Organization (10%)		
Distinct introduction, body, conclusions	5	
Content clearly and logically organized, good	5	
transitions		
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

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

			boundaries	
			undetermined,	
			and/ or	
			backgrounds	
			unknown.	
			Information is	
			taken from	
	T C	T C .: .	source(s) with	
T	Information is	Information is	some	
Eviden	taken from	taken from	interpretation/	
ce	source(s) with	source(s) with	evaluation, but	T 0
Selectin	enough	enough	not enough to	Information is
g and	interpretation/	interpretation/	develop a	taken from
using	evaluation to	evaluation to	coherent	source(s)
informa	develop a	develop a	analysis or	without any
tion to	comprehensive	coherent	synthesis.	interpretation/
investig	analysis or	analysis or	Viewpoints of	evaluation.
ate a	synthesis.	synthesis.	experts are	Viewpoints of
point of	Viewpoints of	Viewpoints of	taken as	experts are
view or	experts are	experts are	mostly fact,	taken as fact,
conclus	questioned	subject to	with little	without
ion	thoroughly.	questioning.	questioning.	question.
			Questions	Shows an
			some	emerging
	TD1 1.1		assumptions.	awareness of
	Thoroughly		Identifies	present
	(systematically and		several	assumptions
	methodically)		relevant	(sometimes
	analyzes own and	T 1	contexts when	labels
T (9	others'	Identifies own	presenting a	assertions as
Influen	assumptions and	and others'	position. May	assumptions).
ce of	carefully evaluates	assumptions and	be more aware	Begins to
context	the relevance of	several relevant	of others'	identify some
and	contexts when	contexts when	assumptions	contexts when
assump	presenting a	presenting a	than one's own	presenting a
tions	position.	position.	(or vice versa).	position.
	Specific position	Specific		
Studen	(perspective,	position		
t's	thesis/ hypothesis)	(perspective,	Specific	Specific
	is imaginative, taking into account	thesis/hypothesi s) takes into	Specific position	Specific position
positio	the complexities of	account the	*	
n (perspe	an issue. Limits of	complexities of	(perspective, thesis/	(perspective, thesis/
(perspe ctive,	position	an issue. Others'	hypothesis)	hypothesis) is
thesis/h	(perspective,	points of view	acknowledges	stated, but is
ypothe	thesis/ hypothesis)	are	different sides	simplistic and
sis)	are acknowledged.	acknowledged	of an issue.	obvious.
313)	are acknownedged.	acknownedged	or an issue.	ouvious.

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

Oral communication value rubric for evaluating presentation tasks:

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

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

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

T

Course Name: Software Quality Verification and Validation

Course Code: IT166IU

1. General information

2. Course designation				
Semester(s) in which the course is taught	7,9			
Person responsible for the course	Tran Tl	hanh Tung, Dr.		
Language	English	1		
Relation to curriculum	Electiv	e		
Teaching methods	Lecture	e, lesson, project,	seminar.	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Private study including examination preparation, specified in hours: Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problems and group assignment.			
Credit points	Number of credits : 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1			
Required and recommended prerequisites for joining the course	Object-Oriented Programming			
Course objectives	and test	ting. Strategies an	ware, and also for	tion,
Course learning outcomes	CLO 1. Describe and explain how testing activities involve within software development process. CLO 2. Understand and apply best practices for software testing. CLO 3. Create test cases based on system requirement			
		Competency level	Course learning outcome (CLO)	
		Knowledge	CLO1, CLO2	
		Skill	CLO2, CLO3	
		Attitude	CLO2	

Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)					
	Topic Weight Level					
	So Te	oftware esting verview	3	I		
	Te	oftware esting oundations	3	T		
	Te	oftware esting ctivities	3	T		
		odel-Driven est Design	3	T, U		
	Te Au	est utomation	3	T, U		
		esting First pproach	3	Т		
		riteria-Based est Design	3	Т		
	_	put Space artitioning	3	Т		
		raph overage	3	Т		
	Lo	ogic overage	3	Т		
		riting Test ans	3	T, U		
	Te im	est nplementation	3	T, U		
Examination forms	Short-answ	ver questions				
Study and examination	Attendance: A minimum attendance of 80 percent					
requirements	is compulsory for the class sessions. Students will					
	be assessed on the basis of their class					
	participation. Questions and comments are strongly encouraged.					
		nts/Examination	n: Student	s must h	ave	
		50/100 points of				
	course.					

4.	Paul Ammann, Jeff Offutt; Introduction to Software Testing, 2nd, 2017
5.	James A. Whittaker; Exploratory Software Testing, 2009.
6.	Glendford J. Myers, Tom Badgett, Corey Sandler; The art of Software Testing, 2012.

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessment	Learning activities	Resources
1	Software Testing Overview	1	Quiz	Lecture	
2	Software Testing Foundations	1	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
3	Software Testing Activities	2	Quiz	Lecture, Discussion	[2]
4	Model- Driven Test Design	1,2	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
5	Test Automation	2,3	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
6	Test Automation – Tools	1,2	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
7	Testing First Approach	2,3	Lab, Quiz, Midterm	Lecture, Discussion	

8	Criteria- Based Test Design	2,3	Lab, Quiz, Midterm	Lecture, Discussion, In class exercises	[1,3]
9	Midterm				
10	Input Space Partitioning – Part 1	1,2	Lab, Quiz, Final	Lecture, Discussion, In class exercises	[1,3]
11	Input Space Partitioning – Part 2	2,3	Lab, Quiz, Final	Lecture, Discussion	[1,2,3]
12	Graph Coverage	1,2	Lab, Quiz, Final	Lecture, Discussion, In class exercises	[1,3]
13	Logic Coverage	2,3	Lab, Quiz, Final	Lecture, Discussion	[1,3]
14	Writing Test Plans	1,2	Lab, Quiz, Final	Lecture, Discussion, In class exercises	[2,3]
15	Test implementat ion	2,3	Lab, Quiz, Final	Lecture, Discussion	[2,3]
16	Final exam				

4. Assessment plan

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

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 organisation of the schedule, moving from room to room, and individual

5. Rubrics (optional)

5.1. Grading checklist

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

Holis	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:

	g value rubric for evo	Miles		Benchmark
	4	3	2	1
			Issue/ problem	
			to be	
			considered	
			critically is	
			stated but	
	Issue/ problem to		description	
	be considered	Issue/ problem	leaves some	
	critically is stated	to be considered	terms	
	clearly and	critically is	undefined,	
	described	stated,	ambiguities	
	comprehensively,	described, and	unexplored,	Issue/ problem
	delivering all	clarified so that	boundaries	to be considered
	relevant	understanding is	undetermined,	critically is
Explana	information	not seriously	and/ or	stated without
tion of	necessary for full	impeded by	backgrounds	clarification or
issues	understanding.	omissions.	unknown.	description.
			Information is	
			taken from	
			source(s) with	
	Information is	Information is	some	
Evidenc	taken from	taken from	interpretation/	
e	source(s) with	source(s) with	evaluation, but	
Selecting	enough	enough	not enough to	
and	interpretation/	interpretation/	develop a	Information is
using	evaluation to	evaluation to	coherent	taken from
informati	develop a	develop a	analysis or	source(s)
on to	comprehensive	coherent	synthesis.	without any
investiga	analysis or	analysis or	Viewpoints of	interpretation/
te a	synthesis.	synthesis.	experts are	evaluation.
point of	Viewpoints of	Viewpoints of	taken as	Viewpoints of
view or	experts are	experts are	mostly fact,	experts are taken
conclusi	questioned	subject to	with little	as fact, without
on	thoroughly.	questioning.	questioning.	question.
Influenc	Thoroughly	- 1 .01	Questions	Shows an
e of	(systematically and	Identifies own	some	emerging
context	methodically)	and others'	assumptions.	awareness of
and	analyzes own and	assumptions and	Identifies	present
assumpt	others'	several relevant	several	assumptions
ions	assumptions and	contexts when	relevant	(sometimes

	carefully evaluates the relevance of contexts when presenting a position.	presenting a position.	contexts when presenting a 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 (perspec tive, thesis/hy pothesis)	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.
Conclusi ons and related outcome s (implica tions and consequ ences)	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	Mile	stone	Benchmark
4	3	2	1

	0 1 1	<u> </u>		
	Organizational			
	pattern (specific			
	introduction and	Organizational		
	conclusion,	pattern	Organizational	
	sequenced	(specific	pattern	
	material within	introduction	(specific	
	the body, and	and conclusion,	introduction	Organizational
	transitions) is	sequenced	and conclusion,	pattern (specific
	clearly and	material within	sequenced	introduction and
	consistently	the body, and	material within	conclusion,
	observable and	transitions) is	the body, and	sequenced material
	is skillful and	clearly and	transitions) is	within the body,
	makes the	consistently	intermittently	and transitions) is
	content of the	observable	observable	not observable
Organiz	presentation	within the	within the	within the
ation	cohesive.	presentation.	presentation.	presentation.
441011	Collegive	presentation.	Language	presentation
	Language	Language	choices are	
	choices are	choices are	mundane and	
	imaginative,	thoughtful and	commonplace	
	memorable, and	generally	and partially	Language choices
	compelling, and	support the	support the	are unclear and
	enhance the	effectiveness of	effectiveness of	
	effectiveness of	the	the	minimally support the effectiveness of
	the presentation.	presentation.	presentation.	the presentation.
	Language in	Language in	Language in	Language in
_	presentation is	presentation is	presentation is	presentation is not
Languag	appropriate to	appropriate to	appropriate to	appropriate to
e	audience.	audience.	audience.	audience.
	Delivery	- ·	Delivery	- ·
	techniques	Delivery	techniques	Delivery
	(posture,	techniques	(posture,	techniques
	gesture, eye	(posture,	gesture, eye	(posture, gesture,
	contact, and	gesture, eye	contact, and	eye contact, and
	vocal	contact, and	vocal	vocal
	expressiveness)	vocal	expressiveness)	expressiveness)
	make the	expressiveness)	make the	detract from the
	presentation	make the	presentation	understandability
	compelling, and	presentation	understandable,	of the presentation,
	speaker appears	interesting, and	and speaker	and speaker
	polished and	speaker appears	appears	appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.

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

Date revised: August 29th, 2023

Assoc.Prof. Nguyen Van Sinh

Course Name: Game Development

Course Code: IT167IU

1. General information

1. General inic	
Course designation	This course is an introduction to the theory and practice of the process of designing games and playful experiences.
Semester(s) in which the course is taught	7,9
Person responsible for the course	Dr. Le Duy Tan
Language	English
Relation to curriculum	Compulsory
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	Number of credits: 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1
Required and recommended prerequisites for joining the course	Object Oriented Programming
Course objectives	This course is an introduction to the theory and practice of the process of designing games and playful experiences. Students are familiarized with methods, concepts, techniques, and literature used in the design of games. The strategy is process-oriented, focusing on aspects such as: Rapid prototyping, play testing, and design iteration using a player-centered approach.
Course learning outcomes	CLO 1. Understand the emergence of the academic study of design methods and game design. CLO 2. Able to structure and conduct a game design project from conceptualization to playable prototype. CLO 3. Solve a real-world problem using game design knowledge through group collaboration.

	Competency level	Course learning o	utcome		
	Knowledge	1			
	Skill	2, 3			
	Attitude	3			
Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)				
	Topic		Weigh	Level	
			t		
	Introduction to Game Development				
	Platforms and Publishing	3	T		
	Game Development Cycle	3	T, U		
	Principles of Game Design	3	T, U		
	Trade-Offs in Game Desig	2	T, U		
	Game Engines, Game Syst Map and Level Editors	2	Т		
	Games Marketing and Dis	tribution	1	T	
Examination forms	Short-answer questions, Pro	gramming exercises			
Study and examination	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their				
requirements	class participation. Ques encouraged. Assignments/Examination: points overall to pass this co			strongly 50/100	
Reading list	8. Nystrom, Robert. Ga Benning, 2014.	2 2 2 2 2			
	9. Gregory, Jason. Gam	e engine architecture	crc Pres	s, 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:

CLO\SL	1	2	3	4	5	6
OT						
1	X					
2		XXX				
3						X

3. Planned learning activities and teaching methods

***		1	g activities and	1	
Wee	Topic	CLO	Assessment	Learning activities	Resour
k			S		ces
1	Introduction to Game Development	1	Quiz	Lecture	1
2	Platforms and Publishing – Part 1	1	Quiz	Lecture	1
3	Platforms and Publishing – Part 2	1	Quiz	Lecture, Discussion , In-class Exercise	2
4	Platforms and Publishing – Part 3	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	1
5	Game Development Cycle – Part 1	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	1
6	Game Development Cycle – Part 2	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	2
7	Game Development Cycle – Part 3	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	1
8	Principles of Game Design – Part 1	2, 3	Quiz, Lab, Midterm	Lecture, Discussion , In-class Exercise	1
Midte	rm				
9	Principles of Game Design – Part 2	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
10	Principles of Game Design – Part 3	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
11	Trade-Offs in Game Design – Part 1	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1

12	Trade-Offs in Game Design – Part 2	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
13	Game Engines, Game Systems and Elements; Map and Level Editors – Part 1	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1, 2
14	Game Engines, Game Systems and Elements; Map and Level Editors – Part 2	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
15	Games Marketing and Distribution	2, 3	Quiz, Lab, Final	Lecture, Discussion , In-class Exercise	1
Final		•			

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Quiz / Assigment (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.

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

Hol	Holistic rubric for evaluating the entire document, e.g., exercises/quizzes/HW				
Scor e	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
	Issue/ problem to		Issue/ problem	
	be considered	Issue/ problem	to be	Issue/
	critically is stated	to be considered	considered	problem to
	clearly and	critically is	critically is	be
	described	stated,	stated but	considered
	comprehensively,	described, and	description	critically is
	delivering all	clarified so that	leaves some	stated
Explanation	relevant	understanding is	terms	without
of issues	information	not seriously	undefined,	clarification

	necessary for full	impeded by	ambiguities	or
	understanding.	omissions.	unexplored,	description.
	understanding.	omissions.	boundaries	description.
			undetermined,	
			and/ or	
			backgrounds	
			unknown.	
			Information is	
			taken from	
			source(s) with	
	Information is	Information is	some	
	taken from	taken from	interpretation/	Information
	source(s) with	source(s) with	evaluation, but	is taken
	enough	enough	not enough to	from
	interpretation/	interpretation/	develop a	source(s)
	evaluation to	evaluation to	coherent	without any
Evidence	develop a	develop a	analysis or	interpretatio
Selecting and	comprehensive	coherent	synthesis.	n/
using	analysis or	analysis or	Viewpoints of	evaluation.
information	synthesis.	synthesis.	experts are	Viewpoints
to investigate	Viewpoints of	Viewpoints of	taken as	of experts
a point of	experts are	experts are	mostly fact,	are taken as
view or	questioned	subject to	with little	fact, without
conclusion	thoroughly.	questioning.	questioning.	question.
	<i>S S</i>			Shows an
				emerging
			Questions	awareness of
			some	present
			assumptions.	assumptions
	Thoroughly		Identifies	(sometimes
	(systematically and		several	labels
	methodically)		relevant	assertions as
	analyzes own and		contexts when	assumptions
	others'	Identifies own	presenting a). Begins to
	assumptions and	and others'	position. May	identify
	carefully evaluates	assumptions and	be more aware	some
	the relevance of	several relevant	of others'	contexts
Influence of	contexts when	contexts when	assumptions	when .
context and	presenting a	presenting a	than one's own	presenting a
assumptions	position.	position.	(or vice versa).	position.
	Specific position	Specific	G .c.	G .c.
C4 J4!	(perspective,	position	Specific	Specific
Student's	thesis/ hypothesis)	(perspective,	position	position
position	is imaginative,	thesis/hypothesi	(perspective,	(perspective,
(perspective,	taking into account	s) takes into account the	thesis/	thesis/
thesis/hypot	the complexities of		hypothesis)	hypothesis)
hesis)	an issue. Limits of	complexities of	acknowledges	is stated, but

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

Oral communication value rubric for evaluating presentation tasks:

	Capstone	<u> </u>	stone	Benchmark
	4	3	2	1
	Organizational			
	pattern (specific			
	introduction and	Organizational		
	conclusion,	pattern	Organizational	
	sequenced	(specific	pattern	Organizational
	material within	introduction	(specific	pattern
	the body, and	and conclusion,	introduction	(specific
	transitions) is	sequenced	and conclusion,	introduction
	clearly and	material within	sequenced	and conclusion,
	consistently	the body, and	material within	sequenced
	observable and	transitions) is	the body, and	material within
	is skillful and	clearly and	transitions) is	the body, and
	makes the	consistently	intermittently	transitions) is
	content of the	observable	observable	not observable
Organizatio	presentation	within the	within the	within the
n	cohesive.	presentation.	presentation.	presentation.

			Languaga	
	Languaga	Languaga	Language choices are	Languaga
	Language	Language		Language
	choices are	choices are	mundane and	choices are
	imaginative,	thoughtful and	commonplace	unclear and
	memorable, and	generally	and partially	minimally
	compelling, and	support the	support the	support the
	enhance the	effectiveness of	effectiveness of	effectiveness of
	effectiveness of	the	the	the
	the presentation.	presentation.	presentation.	presentation.
	Language in	Language in	Language in	Language in
	presentation is	presentation is	presentation is	presentation is
	appropriate to	appropriate to	appropriate to	not appropriate
Language	audience.	audience.	audience.	to audience.
				Delivery
				techniques
	Delivery		Delivery	(posture,
	techniques	Delivery	techniques	gesture, eye
	(posture,	techniques	(posture,	contact, and
	gesture, eye	(posture,	gesture, eye	vocal
	contact, and	gesture, eye	contact, and	expressiveness)
	vocal	contact, and	vocal	detract from
	expressiveness)	vocal	expressiveness)	the
	make the	expressiveness)	make the	understandabili
	presentation	make the	presentation	ty of the
	compelling, and	presentation	understandable,	presentation,
	speaker appears	interesting, and	and speaker	and speaker
	polished and	speaker appears	appears	appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
Denvery	A variety of	Supporting	Supporting	Insufficient
	•	materials	materials	supporting
	types of supporting	(explanations,	(explanations,	materials
	materials	` 1	_	(explanations,
	(explanations,	examples, illustrations,	examples, illustrations,	` •
	· •		statistics,	examples,
	examples,	statistics,	, , , , , , , , , , , , , , , , , , ,	illustrations,
	illustrations,	analogies,	analogies,	statistics,
	statistics,	quotations from	quotations from	analogies,
	analogies,	relevant	relevant	quotations
	quotations from	authorities)	authorities)	from relevant
	relevant	make	make	authorities)
	authorities)	appropriate	appropriate	make reference
	make	reference to	reference to	to information
	appropriate	information or	information or	or analysis that
	reference to	analysis that	analysis that	minimally
	information or	generally	partially	supports the
	analysis that	supports the	supports the	presentation or
Supporting	significantly	presentation or	presentation or	establishes the
Material	supports the	establishes the	establishes the	presenter's

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

Date revised: August 28, 2023

Ho Chi Minh City, 28/08/2023

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Blockchain

Course Code: IT150IU

1. General information

1. General information	
Course designation	Introduction to Blockchain technology
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: Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Private study including examination preparation, specified in hours: Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problems and group assignment.
Credit points	Number of credits : 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1
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	O 4. Work in a team t	o build a blockchain	application	n project.
		Competency level	Course learning ou	itcome (C	CLO)
		Knowledge	CLO1, CLO1		
		Skill	CLO3, CLO4		
		Attitude	CLO2		
Content	The	description of the co	ntents should clearly	indicate t	he
	1	ghting of the content			
		ight: lecture session (a ching levels: I (Introd		(Itiliza)	
		Top		Weight	Level
	T,	ntroduction	AC .	3	I
		Cryptography & crypt	ocurrancias	3	T
		How Bitcoin achieve of		3	I, T
	_	Mechanics of Bitcoin	iecentranzation	3	<u> </u>
			Ditasia		T, U
		Iow to store and use I	511COIII	3	T, U
	 	Bitcoin mining		3	T
	_		itcoin and Anonymity		
	 	Ethereum		3	I, T
	_	olidity		3	T, U
		Coken		3	I, T
	l —	Dracle		3	I, T
	 	Decentralized Applica		3	T, U
	Γ	Design pattern for bloo	ckchain applications	3	T
	F	Real-world application	ıs	3	I, T
Examination forms		Itiple-choice question			
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 				
		Xiwei Xu, Ingo W ckchain Applications	_	les. Archit	tecture fo

2. Learning Outcomes Matrix (optional)

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

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

3. Planned learning activities and teaching methods

Week	Topic	CLO	Assessments	Learning	Resources
VVCCK	Торіс	CLO	rissessificites	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	
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	

Week	Торіс	CLO	Assessments	Learning activities	Resources
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	CLO1	CLO2	CLO3	CLO4
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.

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

5.2. Grading checklist

0					
Grading checklist for Written Reports					
Student:	HW/Assignment:				
Date:	• • • • • •		••		
	Evalu	ıator:			
	• • • • • •				
	Max.	Score	Comments		
Technical content (60%)					
Abstract clearly identifies purpose and summarizes	10				
principal content					
Introduction demonstrates thorough knowledge of	15				
relevant background and prior work					
Analysis and discussion demonstrate good subject	30				
mastery					
Summary and conclusions appropriate and complete	5				
Organization (10%)					
Distinct introduction, body, conclusions	5				

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

5.3. Holistic rubric

Holis	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.

5.4. Analytic rubric

Critical thinking value rubric for evaluating questions in exams:

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

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

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

Oral communication value rubric for evaluating presentation tasks:

Oral communication value rubric for evaluating presentation tasks:				
	Capstone	Mile	stone	Benchmark
	4	3	2	1
	Organizational			
	pattern	Organizational		
	(specific	pattern	Organizational	
	introduction	(specific	pattern	
	and conclusion,	introduction	(specific	Organizational
	sequenced	and conclusion,	introduction	pattern (specific
	material within	sequenced	and conclusion,	introduction and
	the body, and	material within	sequenced	conclusion,
	transitions) is	the body, and	material within	sequenced
	clearly and	transitions) is	the body, and	material within
	consistently	clearly and	transitions) is	the body, and
	observable and	consistently	intermittently	transitions) is not
	is skillful and	observable	observable	observable
	makes the	within the	within the	within the
Organization	content of the	presentation.	presentation.	presentation.

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

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Development and Operations (DevOps)

Course Code: IT156IU

1. General information

1. General information				
Course designation	This course is an introduction to DevOps to help students understand its principles and practices. Key concepts and terminology will be covered with real-life case studies, examples and practical exercises. Common and popular tools to achieve DevOps models will be introduced as well.			
Semester(s) in which the course is taught	7,8			
Person responsible for the course	Tran Thanh Tung, PhD.			
Language	English			
Relation to curriculum	Elective (NE)			
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 (ECTS: 6.18) Lecture: 3 Laboratory: 1			
Required and recommended prerequisites for joining the course	Software Engineering Computer Network			
Course objectives	This course is an introduction to DevOps to help students understand its principles and practices. Key concepts and terminology will be covered with real-life case studies, example and practical exercises. Common and popular tools to achieve DevOps models will be introduced as well.			
Course learning outcomes	CLO 1. Define and discuss the key concepts and principles of DevOps CLO 2 Explain the benefit of DevOps and continuous delivery CLO 3 Understand infrastructure automation, build and deployment automation, the transformation to DevOps models CLO 4. Work with common and popular DevOps tools			

	Competency level	Course learning ou	tcome (CI	(O)	
	Knowledge	1,2			
	Skill	3,4			
	Attitude	4			
Content	The description of the contents should clearly indicate the weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (Utilize)				
	Topic	duce), I (Teach), O (Weight	Level	
	Introduction to DevOps		3	I	
			3	I	
	Introduction to Cloud C		3		
	Linux Basics and Shell		3	T,U T	
	Versioning and Build T				
	Automation: Continuou Continuous Deploymen	_	3	T	
	Configuration Manager	ment	3	I,T	
	Containers, Container v	vs Virtual Machine	3	I,T	
	Deployment pipeline	Deployment pipeline		I,T	
	Post production	Post production		I,T	
	Disaster recovery	Disaster recovery		I	
	Continuous Monitoring	Continuous Monitoring for DevOps		I,T	
	Infrastructure and deplo		3	I	
Examination forms	Short-answer questions				
Study and examination requirements	Attendance: A minimum for the class sessions. St their class participation. encouraged. Assignments/Examination 50/100 points overall to	udents will be assesse Questions and common: Students must have	d on the ba ents are stro	sis of ongly	
Reading list	[1] Jeffery D.Smith, Operations Anti-Patterns, DevOps Solutions, Manning Publications 2020			olutions,	
	[2] Nicole Forsgren, Ac and DevOps: Building a Organizations, IT Revol	nd Scaling High Perfo			
	[3] Jez Humble and Dav Software Releases the Automation, Addison-W	rough Build, Test,	and Dep		

[4] Paul M. Duvall, Steve Matyas, Andrew Glover. Continuous
Integration: Improving Software Quality and Reducing Risk,
Addison-Wesley Professional, 2007Len Bass and John Klein.
Deployment and Operations for Software Engineers, 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:

	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 to DevOps				
2,3	Introduction to Cloud Computing				
4,5	Linux Basics and Shell Scripting				
6	Versioning and Build Tool				
7	Automation: Continuous Integration, Continuous Deployment				
8	Configuration Management				
Midter	m exam				
9,10	Containers, Container vs Virtual Machine				
11	Deployment pipeline				
12	Post production				
13	Disaster recovery				
14	Continuous Monitoring for DevOps				
15	Infrastructure and deployment security				
Final e	exam				

4. Assessment plan

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

5. Rubrics (optional)5.4. Grading checklist

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

Holistic rubric 5.5.

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

			. 1	
			taken as	
			mostly fact,	
			with little	
			questioning.	
			Questions	
			some	
			assumptions.	Shows an
			Identifies	
	The amount halve			emerging
	Thoroughly		several	awareness of
	(systematically		relevant	present
	and		contexts	assumptions
	methodically)		when	(sometimes
	analyzes own		presenting a	labels
	and others'		position.	assertions as
	assumptions	Identifies own	May be more	assumptions).
	and carefully	and others'	aware of	Begins to
	evaluates the	assumptions and	others'	identify some
	relevance of	several relevant	assumptions	contexts
Influence of	contexts when	contexts when	than one's	when
context and	presenting a	presenting a	own (or vice	presenting a
assumptions	position.	position.	versa).	position.
assumptions	Specific Specific	position.	versa).	position.
	position			
	(perspective,			
	thesis/			
	hypothesis) is			
	imaginative,			
	taking into	a		
	account the	Specific		
	complexities of	position		
	an issue. Limits	(perspective,		
	of position	thesis/hypothesi		
	(perspective,	s) takes into		
	thesis/	account the		
	hypothesis) are	complexities of	Specific	
	acknowledged.	an issue. Others'	position	Specific
	Others' points of	points of view	(perspective,	position
	view are	are	thesis/	(perspective,
Student's	synthesized	acknowledged	hypothesis)	thesis/
position	within position	within position	acknowledge	hypothesis) is
(perspective,	(perspective,	(perspective,	s different	stated, but is
thesis/hypothesi	thesis/	thesis/	sides of an	simplistic and
s)	hypothesis).	hypothesis).	issue.	obvious.
<i>a)</i>	nypomesis).	nypomesis).	100UC.	ouvious.

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

Oral communication value rubric for evaluating presentation tasks:

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

	effectiveness	Languaga	progentation	progentation
	of the	Language in	presentation.	presentation is
		presentation is	Language in	not appropriate
	presentation.	appropriate to	presentation is	to audience.
	Language in	audience.	appropriate to	
	presentation is		audience.	
	appropriate to			
	audience.			
	Delivery			
	techniques	Delivery	Delivery	
	(posture,	techniques techniques		Delivery
	gesture, eye	(posture,	(posture,	techniques
	contact, and	gesture, eye	gesture, eye	(posture, gesture,
	vocal	contact, and	contact, and	eye contact, and
	expressiveness)	vocal	vocal	vocal
	make the	expressiveness)	expressiveness)	expressiveness)
	presentation	make the	make the	detract from the
	compelling,	presentation	presentation	understandability
	and speaker	interesting, and	understandable,	of the
	appears	speaker		
	polished and	appears	appears	presentation, and speaker appears
Delivery	confident.	comfortable.	tentative.	uncomfortable.
Denvery		Commontable.	tentative.	unconnortable.
	A variety of			
	types of	C	C	
	supporting	Supporting	Supporting	T 00' '
	materials	materials	materials	Insufficient
	(explanations,	(explanations,	(explanations,	supporting
	examples,	examples,	examples,	materials
	illustrations,	illustrations,	illustrations,	(explanations,
	statistics,	statistics,	statistics,	examples,
	analogies,	analogies,	analogies,	illustrations,
	quotations	quotations	quotations	statistics,
	from relevant	from relevant	from relevant	analogies,
	authorities)	authorities)	authorities)	quotations from
	make	make	make	relevant
	appropriate	appropriate	appropriate	authorities)
	reference to	reference to	reference to	make reference
	information or	information or	information or	to information or
	analysis that	analysis that	analysis that	analysis that
	significantly	generally	partially	minimally
	supports the	supports the	supports the	supports the
	presentation or	presentation or	presentation or	presentation or
	establishes the	establishes the	establishes the	establishes the
	presenter's	presenter's	presenter's	presenter's
	credibility/	credibility/	credibility/	credibility/
Supporting	authority on	authority on	authority on	authority on the
Material	the topic.	the topic.	the topic.	topic.
11111111111	are topic.	are topic.	and topic.	i copie.

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022

Dean of School of Computer Science and Engineering

Assoc.Prof. Nguyen Van Sinh

Course Name: Data Science and Visualization

Course Code: IT138IU

1. General information

1. General infor	liiatio	,11		-		
Course designation	Intro	oduction to Data Visu	alization			
Semester(s) in which the course is taught	4,6					
Person responsible for the course	Tran	Thanh Tung, Dr.				
Language	Eng	lish				
Relation to curriculum		ompulsory / elective / specialisation Names of other study ogrammes with which the module is shared				
Teaching methods	Lect	eure, lesson, project, s	seminar.			
Workload (incl. contact hours, self-study hours)	whe inclures power!	(Estimated) Total workload: Contact hours (please specify whether lecture, exercise, laboratory session, etc.): Private study including examination preparation, specified in hours: Student responsibility: Students are expected to spend at least 8 hours per week for self – studying. This time should be made up of reading, working on exercises and problems and group assignment.				
Credit points	Number of credits : 4 (ECTS: 6.18) Lecture: 3 Laboratory: 1					
Required and recommended prerequisites for joining the course	Non	e				
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.					
		Competency level				
		Knowledge	CLO1			
		Skill	CLO2, CLO3			

	Attitude CLO3				
Content	The description of the contents should clearly weighting of the content and the level. Weight: lecture session (3 hours) Teaching levels: I (Introduce); T (Teach); U (he		
	Topic	Weight	Level		
	Visualization design principles	3	I, T		
	Perception, Cognition, Color	3	Т		
	Data abstraction, data types	3	I, T		
	Visual encoding with marks and channels	3	T, U		
	Tasks and Interactivity	3	Т		
	Validation and visualization	3	Т		
	Arrange text and sets	3	Т		
	Arrange spatial data	3	Т		
	Arrange tree and graphs/networks	3	Т		
	Facets and views	3	Т		
	Focus+Context	3	Т		
	Filtering and Aggregation	3	Т		
Examination forms Study and examination requirements	Multiple-choice questions, short-answer questions 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] Edward R. Tufte, The Visual Display of Quantitative Information 2nd, 2001 [2] Tamara Munzner, Visualization Analysis and Design 1st, 2014 [3] Colin Ware, Visual Thinking for Design 1st, 2004 [4] Scott Murray, Interactive Data Visualization for the Web 1st, 2013 [5] Alberto Cairo, The Functional Art: An introduction to information graphics and visualization 1st, 2012 [6] Cole Nussbaumer Knaflic, Storytelling with Data: A Data Visualization Guide for Business Professionals 1st, 2015 				

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	X				
2		X	X			
3		X				

3. Planned learning activities and teaching methods

3. 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		
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					

4. Assessment plan

Assessment Type	CLO1	CLO2	CLO3
Labs (20%)		X	X

Assessment Type	CLO1	CLO2	CLO3
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.

- 2. When calculating contact time, each contact hour is counted as a full hour because the organisation of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted. ←
- 5. 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	10				
principal content					
Introduction demonstrates thorough knowledge of	15				
relevant background and prior work					
Analysis and discussion demonstrate good subject	30				
mastery					
Summary and conclusions appropriate and complete	5				
Organization (10%)					
Distinct introduction, body, conclusions	5				
Content clearly and logically organized, good	5				
transitions					
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
	Issue/ problem to be considered critically is stated clearly and described comprehensivel	Issue/ problem to be considered critically is stated,	Issue/ problem to be considered critically is stated but description leaves some terms undefined, ambiguities	Issue/ problem to be
	y, delivering all relevant	described, and clarified so that	unexplored, boundaries	considered critically is
	information necessary for	understanding is not seriously	undetermined, and/ or	stated without clarification
Explanation of	full	impeded by	backgrounds	or
issues	understanding.	omissions.	unknown.	description.
	Information is	Information is	Information	Information is
Evidence	taken from	taken from	is taken from	taken from
Selecting and	source(s) with	source(s) with	source(s)	source(s)
using	enough	enough	with some	without any
information to	interpretation/	interpretation/	interpretation	interpretation/
investigate a	evaluation to	evaluation to	/ evaluation,	evaluation.
point of view or	develop a	develop a	but not	Viewpoints of
conclusion	comprehensive	coherent	enough to	experts are

	analysis or synthesis. Viewpoints of experts are	analysis or synthesis. Viewpoints of experts are	develop a coherent analysis or synthesis.	taken as fact, without question.
	questioned thoroughly.	subject to questioning.	Viewpoints of experts are taken as	
			mostly fact, with little questioning.	
			Questions some assumptions.	Shows an
	Thoroughly (systematically and		Identifies several relevant contexts	emerging awareness of present assumptions
	methodically) analyzes own and others'	Identifies own	when presenting a position. May be more	(sometimes labels assertions as
	assumptions and carefully evaluates the relevance of	and others' assumptions and several relevant	aware of others' assumptions	assumptions). Begins to identify some contexts
Influence of context and assumptions	contexts when presenting a position.	contexts when presenting a position.	than one's own (or vice versa).	when presenting a position.
	Specific position (perspective, thesis/ hypothesis) is			
	imaginative, taking into account the complexities of an issue. Limits	Specific position (perspective, thesis/hypothesis) takes into		
	of position (perspective, thesis/ hypothesis) are	account the complexities of an issue. Others' points of view	Specific position (perspective,	Specific position
Student's position	acknowledged. Others' points of view are	are acknowledged within position	thesis/ hypothesis) acknowledge	(perspective, thesis/ hypothesis) is
(perspective, thesis/hypothesi s)	synthesized within position (perspective,	(perspective, thesis/ hypothesis).	s different sides of an issue.	stated, but is simplistic and obvious.

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

Oral communication value rubric for evaluating presentation tasks:

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

	T -			
	Language			
	choices are			
	imaginative,		Language	
	memorable,	Language	choices are	Language
	· ·	• •		• •
	and	choices are	mundane and	choices are
	compelling,	thoughtful	commonplace	unclear and
	and enhance	and generally	and partially	minimally
	the	support the	support the	support the
	effectiveness	effectiveness	effectiveness	effectiveness of
	of the	of the	of the	
				the
	presentation.	presentation.	presentation.	presentation.
	Language in	Language in	Language in	Language in
	presentation	presentation	presentation	presentation is
	is appropriate	is appropriate	is appropriate	not appropriate
Language	to audience.	to audience.	to audience.	to audience.
Language	to addictice.	to addictice.	to addictice.	
	D 1'			Delivery
	Delivery			techniques
	techniques	Delivery	Delivery	(posture,
	(posture,	techniques	techniques	gesture, eye
	gesture, eye	(posture,	(posture,	contact, and
	contact, and	gesture, eye	gesture, eye	vocal
	vocal	contact, and	contact, and	expressiveness)
		ĺ	•	_
	expressivenes	vocal .	vocal .	detract from
	s) make the	expressivenes	expressivenes	the
	presentation	s) make the	s) make the	understandabili
	compelling,	presentation	presentation	ty of the
	and speaker	interesting,	understandabl	presentation,
	appears	and speaker	e, and speaker	and speaker
	polished and	appears	appears	appears
Dolivowy	confident.	comfortable.	tentative.	uncomfortable.
Delivery				
	A variety of	Supporting	Supporting	Insufficient
	types of	materials	materials	supporting
	supporting	(explanations,	(explanations,	materials
	materials	examples,	examples,	(explanations,
	(explanations,	illustrations,	illustrations,	examples,
	examples,	statistics,	statistics,	illustrations,
	illustrations,	analogies,	analogies,	statistics,
	statistics,	_	_	· ·
	,	quotations	quotations	analogies,
	analogies,	from relevant	from relevant	quotations from
	quotations	authorities)	authorities)	relevant
	from relevant	make	make	authorities)
	authorities)	appropriate	appropriate	make reference
	make	reference to	reference to	to information
	appropriate	information	information	or analysis that
	reference to	or analysis	or analysis	minimally
Cumpartina		•	-	· ·
Supporting	information	that generally	that partially	supports the
Material	or analysis	supports the	supports the	presentation or

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

Date revised: February 15, 2022

Ho Chi Minh City, 15/02/2022 **Dean of School of Computer Science and Engineering**

Assoc.Prof. Nguyen Van Sinh

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