BỘ GIÁO DỤC VÀ ĐÀO TẠO
TRƯỜNG ĐẠI HỌC CẦN THƠ

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

MÔ TẢ CHƯƠNG TRÌNH ĐÀO TẠO VÀ CHƯƠNG TRÌNH DẠY HỌC TRÌNH ĐỘ ĐẠI HỌC CHẤT LƯỢNG CAO NGÀNH KỸ THUẬT XÂY DỰNG

I. Mô tả chương trình đàotạo

Trên cơ sở Chương trình đào tạo trình độ đại học được bàn hành kèm theo Quyết định 1063/QĐ-ĐHCT ngày 29 tháng 5 năm 2020, Chương trình dạy học ngành Kỹ thuật Xây dựng chất lượng cao được mô tả như sau:

1. Thông tin chung về chương trình đào tạo

Tên chương trình (tiếng Việt)	Kỹ thuật xây dựng – Chất lượng cao
Tên chương trình (tiếng Anh)	Civil Engineering
Mã số ngành đào tạo	7580201
Trường cấp bằng	Trường Đại học Cần Thơ
Tên gọi văn bằng	Kỹ sư Kỹ thuật Xây dựng
Trình độ đào tạo	Đại học
Số tín chỉ yêu cầu	146 tín chỉ
Hình thức đào tạo	Chính quy
Thời gian đào tạo	4,5 năm
Đối tượng tuyển sinh	Học sinh tốt nghiệp Trung học phổ thông hoặc tương đương
Thang điểm đánh giá	Thang điểm 4
Điều kiện tốt nghiệp	- Tích lũy đủ các học phần và số tín chỉ của chương tình đào tạo (146 tín chỉ); - Hoàn thành các học phần điều kiện; - Điểm của các học phần được tích lũy theo quy định về điểm học phần của công tác học vụ. Điểm trung bình chung các học phần Giáo dục quốc phòng và an ninh phải đạt từ 5 trở lên (theo thang điểm 10). Điểm trung bình chung tích lũy của toàn khóa học đạt từ 2.0 trở lên (theo thang điểm 4); - Không bị truy cứu trách nhiệm hình sự, không bị kỹ luật ở mức đình chỉ học tập trong năm học cuối.
Vị trí việc làm	Kỹ sư Kỹ thuật xây dựng được đào tạo từ CTCLC có khả năng làm việc trong các lĩnh vực như tư vấn khảo sát, thiết kế, thi công và quản lý dự án xây dựng…, đặc biệt

	là có khả năng thích ứng và làm việc tốt trong môi trường quốc tế, đa văn hóa, đa quốc gia: - Cán bộ kỹ thuật tại các Sở, Phòng, Ban quản lý về xây dựng cơ bản, như: Sở xây dựng, Ban quản lý dự án công trình xây dựng các cấp; - Các trường đại học, Cao đẳng, Viện nghiên cứu, Cơ sở đào tạo kỹ thuật trong và ngoài nước; - Cán bộ quản lý trong quản lý xây dựng cơ bản tại các cơ quan, xí nghiệp sản xuất, công ty nước ngoài, tập đoàn đa quốc gia; - Cán bộ kỹ thuật/cán bộ nghiên cứu/chuyên viên tại các trung tâm, phòng thí nghiệm chuyên ngành xây dựng trong và ngoài nước; - Làm thầu xây dựng cho các công trình xây dựng trong nước và quốc tế.
Khả năng học tập, nâng cao trình độ sau khi tốt nghiệp	- Có khả năng học tiếp lên trình độ cao hơn (Thạc sĩ, Tiến sĩ) trong và ngoài nước thuộc chuyên ngành kỹ thuật xây dựng hoặc các ngành gần khác; - Học thêm các khóa bồi dưỡng ngắn hạn (cấp chứng chỉ) phục vụ chuyên ngành như: kỹ sư định giá, giám sát công trình, chỉ huy trưởng công trình, quản lý phòng thí nghiệm chuyên ngành xây dựng, quản lý dự án xây dựng, nghiệp vụ đấu thầu.
Các chương trình, tài liệu, chuẩn chương trình tham khảo khi xây dựng	- Chương trình đào tạo tiên tiến kỹ sư Kỹ thuật xây dựng của Trường Đại học GTVT Hà Nội cơ sở tại TP.HCM (Hợp tác với ĐH Leeds, Vương quốc Anh). - Chương trình đào tạo tiên tiến kỹ sư Kỹ thuật xây dựng của Trường Đại học GTVT Hà Nội cơ sở tại TP.HCM (Hợp tác với ĐH Pháp). - Chương trình đào tạo tiên tiến kỹ sư Kỹ thuật xây dựng của Trường Đại học Bách khoa TP.HCM. - Chương trình đào tạo kỹ sư Kỹ thuật xây dựng của Trường Đại học Thammasat, Thái Lan. - Chương trình đào tạo kỹ sư Kỹ thuật xây dựng của Trường Đại học Thành Đô Hồng Kông (City University of Hong Kong), Hồng Kông.
Thời gian cập nhật bản mô tả	11/2020

2. Mục tiêu đào tạo của chương trình đào tạo

2.1. Mục tiêu chung

Đào tạo kỹ sư Kỹ thuật xây dựng (KTXD) chất lượng cao, có kiến thức chuyên môn vững chắc, kỹ năng nghề nghiệp thành thạo, thái độ và tác phong làm việc chuyên nghiệp để đảm nhận những vị trí nghề nghiệp khác nhau trong lĩnh vực KTXD có khả năng giải quyết vấn đề, khả năng làm việc nhóm và kỹ năng giao tiếp tốt, năng lực sử dụng tiếng Anh cao trong các lĩnh vực thuộc chuyên ngành.

2.2. Mục tiêu cụ thể

a. Trang bị cho người học những kiến thức chuyên sâu của chuyên ngành KTXD, có khả năng khảo sát, thiết kế, thi công, quản lý và vận hành các công trình xây dựng;

b. Trang bị cho người học những kiến thức cơ bản thuộc chuyên ngành gần, chuyên ngành rộng, như: qui hoạch và quản lý đô thị và vùng, kỹ thuật xây dựng công trình giao thông, xây dựng công trình thủy, kiến trúc, cấp thoát nước, kỹ thuật tài nguyên nước và kỹ thuật môi trường;

c. Có kỹ năng làm việc chuyên nghiệp, khả năng làm việc độc lập, làm việc nhóm; khả năng tự học, tự nghiên cứu, khả năng thích ứng cao với những thay đổi trong môi trường nghề nghiệp hoặc xã hội;

d. Có khả năng giao tiếp tốt bằng cả tiếng Việt và tiếng Anh phục vụ cho công việc trong lĩnh vực xây dựng, cũng như cuộc sống hàng ngày.

3. Chuẩn đầu ra của chương trình đào tạo

3.1. Kiến thức

3.1.1. Khối kiến thức giáo dục đại cương

a. Hiểu rõ những kiến thức về khoa học chính trị, xã hội và nhân văn, pháp luật, đạo đức, rèn luyện thể chất và an ninh quốc phòng;

b. Vận dụng kiến thức cơ bản về khoa học tự nhiên nhằm tiếp thu các kiến thức chuyên nghiệp thuộc lĩnh vực KTXD;

c. Sử dụng được tiếng Anh hoặc tiếng Pháp ở mức tương đương trình độ bậc 3/6 Khung năng lực ngoại ngữ của Việt Nam (B1 theo khung tham chiếu Châu Âu);

d. Có khả năng tiếp cận và tự trang bị kiến thức về các vấn đề đương đại.

3.1.2. Khối kiến thức cơ sở ngành

a. Áp dụng thành thạo các kiến thức về nguyên lý cơ bản của kỹ thuật công trình xây dựng vào các vấn đề thuộc lĩnh vực KTXD;

b. Có khả năng phân tích, phối hợp các cơ sở lý thuyết và thiết lập các phương án thiết kế kỹ thuật; có kiến thức đủ rộng để hiểu được tác động của các giải pháp kỹ thuật lên xã hội trong bối cảnh toàn cầu.

3.1.3. Khối kiến thức chuyên ngành

Cung cấp các kiến thức trong lĩnh vực KTXD nhằm đáp ứng các nhu cầu mong muốn với các điều kiện ràng buộc trong thực tế:

a. Nắm vững kiến thức chuyên sâu về khảo sát địa chất-địa hình, thiết kế nền móng công trình; kết cấu các dạng công trình bằng bê tông cốt thép và kết cấu thép; quản lý dự án, kỹ thuật thi công, tổ chức thi công và an toàn trong xây dựng; và thiết kế cấu tạo kiến trúc các công trình dân dụng và công nghiệp;

b. Phân tích và thiết lập một cách chi tiết và chuyên sâu các phương án thiết kế hạ tầng và thượng tầng kết cấu;

c. Đánh giá tính khả thi và so sánh tối ưu về kỹ thuật và kinh tế của các phương án thiết kế; đánh giá tác động của các giải pháp kỹ thuật đến môi trường và xã hội.

3.2. Kỹ năng

3.2.1. Kỹ năng cứng

a. Thiết lập các bản vẽ kỹ thuật bằng cách vẽ tay hoặc sử dụng phần mềm;

b. Thiết kế và tiến hành thí nghiệm để thu thập, phân tích và xử lý dữ liệu; lập mô hình, phân tích, mô phỏng các kết cấu xây dựng (kể cả kết cấu phần thân công trình và nền móng);

c. Nhận biết vấn đề, lập luận, đưa ra giải pháp cho các vấn đề về kỹ thuật thi công, tổ chức thi công các công trình xây dựng;

d. Phân tích, lập luận, hệ thống các vấn đề kỹ thuật liên quan đến công tác quản lý dự án xây dựng, như: lập báo cáo khả thi, phân tích kinh tế kỹ thuật dự án, lập tiến độ dự án, tập hợp các văn bản pháp qui về quản lý xây dựng,...

đ. Vận dụng kiến thức đã học vào hoạt động thực tiễn nghề nghiệp; có khả năng làm việc độc lập, tư duy sáng tạo và có năng lực phát hiện, giải quyết những vấn đề thuộc chuyên ngành KTXD.

3.2.2. Kỹ năng mềm

a. Có kỹ năng viết tài liệu mô tả kỹ thuật, báo cáo khoa học hay viết dự án, có kỹ năng trình bày và thuyết trình; sử dụng thành thạo tiếng Anh trong giao tiếp, thuyết trình và viết báo cáo; tự đọc hiểu các tài liệu tiếng Anh chuyên ngành;

b. Có kỹ năng làm việc nhóm, kỹ năng lãnh đạo nhóm làm việc, kỹ năng đàm phán, giải quyết xung đột, sử dụng thành thạo những công cụ hỗ trợ cho việc hợp tác làm việc nhóm, kỹ năng đánh giá đóng góp của thành viên nhóm;

c. Có khả năng xác định, xây dựng và giải quyết vấn đề kỹ thuật trong lĩnh vực KTDX;

d. Có khả năng học suốt đời.

3.3. Thái độ/Mức độ tự chủ và trách nhiệm cá nhân

a. Có trách nhiệm và đạo đức nghề nghiệp;

b. Có ý thức về pháp luật, đạo đức, giữ gìn sức khỏe và quốc phòng;

c. Nhận thức được sự cần thiết của việc học suốt đời.

4. Tiêu chí tuyển sinh

Căn cứ theo Quy chế tuyển sinh của Bộ Giáo dục và Đào tạo và đề án tuyển sinh hằng năm của Trường Đại học Cần Thơ.

5. Ma trận mối quan hệ mục tiêu, chuẩn đầu ra và học phần

5.1. Ma trận mối quan hệ giữamục tiêu và chuẩn đầu ra chương trình đào tạo

Mục tiêu đào tạo (1)	Chuẩn đầu ra (2)																														
	Kiến thức (2.1)															Kỹ năng (2.2)										Thái độ/Năng lực tự chủ và trách nhiệm (2.3)				
	Khối kiến thức giáo dục đại cương (2.1.1)					Khối kiến thức cơ sở ngành (2.1.2)					Khối kiến thức chuyên ngành (2.1.3)					Kỹ năng cứng (2.2.1)					Kỹ năng mềm (2.2.2)									
	a	b	c	d		a	b				a	b	c			a	b	c	d	e	a	b	c	d		a	b	c		
1.2a	x		x																		x	x	x							
1.2b			x								x	x	x			x	x	x	x		x	x	x	x		x				
1.2c		x				x	x												x		x	x	x	x		x				
1.2d																															

5.2. Ma trận mối quan hệ giữa các học phần với chuẩn đầu ra

Học phần			Chuẩn đầu ra (2)																														
			Kiến thức (2.1)															Kỹ năng (2.2)										Thái độ/Năng lực tự chủ và trách nhiệm (2.3)				
			Khối kiến thức giáo dục đại cương (2.1.1)					Khối kiến thức cơ sở ngành (2.1.2)					Khối kiến thức chuyên ngành (2.1.3)					Kỹ năng cứng (2.2.1)					Kỹ năng mềm (2.2.2)									
TT	MSHP	Tên học phần	a	b	c	d		a	b				a	b	c			a	b	c	d	đ	a	b	c	d		a	b	c		
1	FL001H	Nghe và Nói 1		X	X																												
2	FL002H	Nghe và Nói 2		X	X																												
3	FL003H	Đọc hiểu 1		X	X																												
4	FL004H	Đọc hiểu 2		X	X																												
5	FL005H	Viết 1		X	X																												
6	FL006H	Viết 2		X	X																												
7	FL007H	Ngữ pháp ứng dụng		X	X																												
8	FL008H	Ngữ âm thực hành		X	X																												
9	FL009H	Kỹ năng thuyết trình		X	X																												
10	FL100H	Thi đánh giá năng lực tiếng Anh		X	X																												
Khối kiến thức Giáo dục đại cương																																	
11	QP010	Giáo dục quốc phòng và An ninh 1 (*)	X																														
12	QP011	Giáo dục quốc phòng và An ninh 2 (*)	X																														
13	QP012	Giáo dục quốc phòng và An ninh 3 (*)	X																														
14	QP013	Giáo dục quốc phòng và An ninh 4 (*)	X																														
15	TC100	Giáo dục thể chất 1+2+3 (*)	X																														
16	TN033H	Tin học căn bản (*)		X																													

17	TN034H	TT. Tin học căn bản (*)		X																												
18	ML014	Triết học Mác - Lênin	X																													
19	ML016	Kinh tế chính trị Mác - Lênin	X																													
20	ML018	Chủ nghĩa xã hội khoa học	X																													
21	ML019	Lịch sử Đảng Cộng sản Việt Nam	X																													
22	ML021	Tư tưởng Hồ Chí Minh	X																													
23	KL001	Pháp luật đại cương	X																													
24	ML007	Logic học đại cương	X																													
25	XH028	Xã hội học đại cương	X																													
26	XH011	Cơ sở văn hóa Việt Nam	X																													
27	XH012	Tiếng Việt thực hành	X																													
28	XH014	Văn bản và lưu trữ học đại cương	X																													
29	KN001	Kỹ năng mềm	X																													
30	KN002	Đổi mới sáng tạo và khởi nghiệp	X																													
31	TN006	Toán cao cấp A		X																												
Khối kiến thức cơ sở ngành																																
32	KC168H	Cơ lý thuyết - XD						x	x									x	x	x					x	x		x	x	x		
33	KC169H	Sức bền vật liệu - XD						x											X				x	x		x		x				
34	KC170H	Hình họa và Vẽ kỹ thuật - XD						x	x									x	x				x	x	x	x		x				
35	KC171H	Cơ học kết cấu						x	x									x	x				x					x				
36	KC172H	Địa chất công trình						x	x									x	x				x	x		x		x				
37	KC173H	Trắc địa						x											x					x				x		x		
38	CN111	TT. Trắc địa						x											x					x				x		x		
39	KC174H	Vật liệu xây dựng						x											x					x				x		x		
40	CN105	TT. Vật liệu xây dựng						x											x					x				x		x		
41	KC175H	Cơ học đất						x	x									x	x				x	x		x		x				
42	CN113	TT. Cơ học đất						x	x									x	x				x	x		x		x				
43	KC176H	Cơ học lưu chất						x	x									x	x	x					x	x		x	x	x		
44	KC177H	Thống kê ứng dụng kỹ thuật						x	x				x	x	x				x	x	x	x	x	x	x			x	x	x		
45	CN331	Tin học ứng dụng - Kỹ thuật 1		X		X		X	x									x	x					x	x			x		x		
46	CN332	Tin học ứng dụng - Kỹ thuật 2		X		X		X	x									x	x				x	x				x		x		
47	KC167H	Phương pháp nghiên cứu và viết báo cáo khoa học							X										X				X	X	X			X				
48	KC179H	Phương pháp tính - Kỹ thuật						x	x									x	x				x	x	x	x		x	x	x		
49	KC181H	Kỹ thuật điện - XD						x	x									x	x							x			x			
50	KC199H	Nguyên lý quy hoạch						X											X				X	X				X				
Khối kiến thức chuyên ngành																																
51	KC182H	Kết cấu bê-tông cơ sở										x	x				x	x	x				x	x	x			x	x	x		
52	KC248H	Kết cấu bê-tông công trình dân dụng										x	x	x			x	x	x				x	x	x			x	x	x		
53	KC183H	Đồ án kết cấu bê-tông											x	x			x	x	x				x	x	x			x	x	x		
54	KC184H	Kết cấu thép										x						x								x		x		x		
55	KC260H	Kết cấu thép nhà công nghiệp										x		x				x					x	x		x		x		x		

56	KC185H	Đồ án kết cấu thép											x	x	x			x	x				x	x		x		x		x		
57	KC186H	Máy xây dựng và Kỹ thuật thi công											x							x			x	x				x	x			
58	KC187H	Tổ chức thi công và An toàn lao động											x							x			x	x				x	x			
59	KC188H	Đồ án thi công											x										x	x				x	x			
60	KC245H	Nền móng công trình							x	x										x	x	x					x			x			
61	KC246H	Đồ án nền móng công trình											x	x				x	x	x						x			x			
62	KC178H	Nguyên lý và Cấu tạo kiến trúc	x							x								x		x						x				x		
63	CN194	Đồ án kiến trúc						x											x	x						x			x			
64	KC247H	Quản lý dự án xây dựng						x	x				x	x	x				x	x	x	x	x	x	x	x		x	x	x		
65	KC259H	Mô hình thông tin xây dựng (BIM)						x	x				x	x	x				x	x	x	x	x	x	x			x	x	x		
66	KC180H	Kinh tế xây dựng						x	x						x											x		x	x			
67	KC263H	Luật xây dựng											x								x					x			x			
68	KC196	Thí nghiệm kết cấu công trình											x						x				x	x		x		x		x		
69	KC197	Thực tập ngành nghề											x		x	x			x				x	x	x			x				
70	KC262H	Mô hình trong địa kỹ thuật											x	x				x	x	x						x			x			
71	KC250H	Ứng dụng vật liệu địa kỹ thuật												x					x				x			x	x		x			
72	KC251H	Lý thuyết thí nghiệm nền móng											x	x				x	x	x					x			x				
73	KC253H	Đánh giá tác động môi trường – XD													X						X	X	X	X	X	X		X	X	X		
74	KC254H	Seminar/Internship												X	X				X			X		X	X	X		X		X		
75	KC255H	Cấp thoát nước												x					x					x				x		x		
76	KC256H	Thủy lực và Thủy văn												x					x					x				x		x		
77	KC252H	Quy hoạch đô thị											x							x				x	x			x				
78	KC257H	Quy hoạch giao thông													x			x		x				x					x			
79	KC269H	Luận văn tốt nghiệp				X							X	X	X			X	X	X	X	X	X	X	X	X		X	X	X		
80	KC261H	Tiểu luận tốt nghiệp				X							X	X	X			X	X	X	X	X	X	X	X	X		X	X	X		
81	KC258H	Kết cấu Bê-tông nâng cao											X	X				X	X				X	X	X			X	X	X		
82	KC267H	Đàn hồi ứng dụng và Phương pháp phần tử hữu hạn											X	X	X			X	X	X			X	X	X	X		X	X	X		
83	KC266H	Công trình thủy											x	x					x					x				x		x		
84	KC264H	Công trình giao thông											X															X				
85	KC249H	Công trình trên đất yếu						X	X									X					X	X			X		X		

II. Mô tả chương trình dạyhọc

Trên cơ sở Chương trình đào tạo trình độ đại học được bàn hành kèm theo Quyết định 1063/QĐ-BGDĐT ngày 29 tháng 5 năm 2020, chương trình dạy học ngành Kỹ thuật Xây dựng chất lượng cao được mô tả như sau:

1. Cấu trúc chương trình dạy học

Khối lượng kiến thức toàn khóa : 15 tín chỉ

Khối kiến thức giáo dục đạicương : 33 tín chỉ (Bắt buộc: 28 tín chỉ; Tự chọn: 5 tín chỉ)

Khối kiến thức cơ sở ngành : 43 tín chỉ (Bắt buộc: 35 tín chỉ; Tự chọn: 8 tín chỉ)

Khối kiến thức chuyên ngành : 70 tín chỉ (Bắt buộc: 46 tín chỉ; Tự chọn: 24 tín chỉ)

Tiếng Anh tăng cường : 20 tín chỉ bắt buộc

2. Khung chương trình đào tạo

TT	Mã số học phần	Tên học phần	Số tín chỉ	Bắt buộc	Tự chọn	Số tiết LT	Số tiết TH	Học phần tiên quyết	Học phần song hành	HK thực hiện
Phần bổ sung tiếng Anh										
1	FL001H	Nghe và Nói 1	3	3		45				I,II
2	FL002H	Nghe và Nói 2	2	2		30				I,II
3	FL003H	Đọc hiểu 1	2	2		30				I,II
4	FL004H	Đọc hiểu 2	2	2		30				I,II
5	FL005H	Viết 1	2	2		30				I,II
6	FL006H	Viết 2	2	2		30				I,II
7	FL007H	Ngữ pháp ứng dụng	3	3		45				I,II
8	FL008H	Ngữ âm thực hành	2	2		30				I,II
9	FL009H	Kỹ năng thuyết trình	2	2		30				I,II
10	FL100H	Thi đánh giá năng lực tiếng Anh	2		2	30				I,II,III
Cộng: 20 TC (Bắt buộc: 20 TC; Tự chọn: 0 TC)										
Khối kiến thức Giáo dục đại cương										
11	QP010	Giáo dục quốc phòng và An ninh 1 (*)	2	2		37	8	Bố trí theo nhóm ngành		
12	QP011	Giáo dục quốc phòng và An ninh 2 (*)	2	2		22	8	Bố trí theo nhóm ngành		
13	QP012	Giáo dục quốc phòng và An ninh 3 (*)	2	2		14	16	Bố trí theo nhóm ngành		
14	QP013	Giáo dục quốc phòng và An ninh 4 (*)	2	2		4	56	Bố trí theo nhóm ngành		
15	TC100	Giáo dục thể chất 1+2+3 (*)	1+1+1		3		90			I,II,III
16	TN033H	Tin học căn bản (*)	1	1		15				I,II,III
17	TN034H	TT. Tin học căn bản (*)	2	2			60		TN033H	I,II,III
18	ML014	Triết học Mác - Lênin	3	3		45				I,II,III
19	ML016	Kinh tế chính trị Mác - Lênin	2	2		30		ML014		I,II,III
20	ML018	Chủ nghĩa xã hội khoa học	2	2		30		ML016		I,II,III
21	ML019	Lịch sử Đảng Cộng sản Việt Nam	2	2		30		ML018		I,II,III
22	ML021	Tư tưởng Hồ Chí Minh	2	2		30		ML019		I,II,III
23	KL001	Pháp luật đại cương	2	2		30				I,II,III
24	ML007	Logic học đại cương	2			30				I,II,III
25	XH028	Xã hội học đại cương	2			30				I,II,III
26	XH011	Cơ sở văn hóa Việt Nam	2			30				I,II,III
27	XH012	Tiếng Việt thực hành	2		2	30				I,II,III
28	XH014	Văn bản và lưu trữ học đại cương	2			30				I,II,III
29	KN001	Kỹ năng mềm	2			20	20			I,II,III
30	KN002	Đổi mới sáng tạo và khởi nghiệp	2			20	20			I,II,III
31	TN006	Toán cao cấp A	4	4		60				I,II,III
Cộng: 33 TC (Bắt buộc: 28 TC; Tự chọn: 5 TC)										
Khối kiến thức Cơ sở ngành										
32	KC168H	Cơ lý thuyết - XD	3	3		30	30			I,II,III
33	KC169H	Sức bền vật liệu - XD	4	4		40	40			I,II,III
34	KC170H	Hình họa và Vẽ kỹ thuật - XD	3	3		20	50			I,II,III
35	KC171H	Cơ học kết cấu	4	4		40	40	KC169H		I,II,III

TT	Mã số học phần	Tên học phần	Số tín chỉ	Bắt buộc	Tự chọn	Số tiết LT	Số tiết TH	Học phần tiên quyết	Học phần song hành	HK thực hiện
36	KC172H	Địa chất công trình	3	3		20	50			I,II,III
37	KC173H	Trắc địa	3	3		20	50			I,II,III
38	CN111	TT. Trắc địa	1	1			30		KC173H	I,II,III
39	KC174H	Vật liệu xây dựng	3	3		30	30			I,II,III
40	CN105	TT. Vật liệu xây dựng	1	1			30		KC174H	I,II,III
41	KC175H	Cơ học đất	4	4		40	40			I,II,III
42	CN113	TT. Cơ học đất	1	1			30		KC175H	I,II,III
43	KC176H	Cơ học lưu chất	2	2		20	20			I,II,III
44	KC177H	Thống kê ứng dụng kỹ thuật	3	3		30	30			I,II,III
45	CN331	Tin học ứng dụng - Kỹ thuật 1	2				60	KC170H		I,II,III
46	CN332	Tin học ứng dụng - Kỹ thuật 2	2		4		60	KC169H		I,II,III
47	KC167H	Phương pháp nghiên cứu và viết báo cáo khoa học	2			15	30			I,II,III
48	KC179H	Phương pháp tính - Kỹ thuật	2			20	20	TN006		I,II,III
49	KC181H	Kỹ thuật điện - XD	2		4	24	12			I,II,III
50	KC199H	Nguyên lý quy hoạch	2			20	20			
Cộng: 43 TC (Bắt buộc: 35 TC; Tự chọn: 8 TC)										
Khối kiến thức Chuyên ngành										
51	KC182H	Kết cấu bê-tông cơ sở	3	3		30	30	KC169H		I,II,III
52	KC248H	Kết cấu bê-tông công trình dân dụng	3	3		30	30	KC182H		I,II,III
53	KC183H	Đồ án kết cấu bê-tông	2	2			60		KC248H	I,II,III
54	KC184H	Kết cấu thép	2	2		20	20	KC169H		I,II,III
55	KC260H	Kết cấu thép nhà công nghiệp	3	3		30	30	KC184H		I,II,III
56	KC185H	Đồ án kết cấu thép	2	2			60		KC260H	I,II,III
57	KC186H	Máy xây dựng và Kỹ thuật thi công	3	3		30	30	KC182H		I,II,III
58	KC187H	Tổ chức thi công và An toàn lao động	3	3		30	30		KC186H	I,II,III
59	KC188H	Đồ án thi công	2	2			60		KC187H	I,II,III
60	KC245H	Nền móng công trình	3	3		30	30	KC175H		I,II,III
61	KC246H	Đồ án nền móng công trình	2	2			60		KC245H	I,II,III
62	KC178H	Nguyên lý và Cấu tạo kiến trúc	4	4		40	40	KC170H		I,II,III
63	CN194	Đồ án kiến trúc	2	2			60		KC178H	I,II,III
64	KC247H	Quản lý dự án xây dựng	3	3		35	20			I,II,III
65	KC259H	Mô hình thông tin xây dựng (BIM)	2	2		20	20			I,II,III
66	KC180H	Kinh tế xây dựng	2	2		20	20			I,II,III
67	KC263H	Luật xây dựng	2	2		25	10	KC247H		I,II,III
68	KC196	Thí nghiệm kết cấu công trình	1	1			30	KC182H, KC184H		I,II,III
69	KC197	Thực tập ngành nghề	2	2			60			I,II,III
70	KC262H	Mô hình trong địa kỹ thuật	3			20	50	KC175H		I,II,III
71	KC250H	Ứng dụng vật liệu địa kỹ thuật	3		6	20	50	KC175H		I,II,III
72	KC251H	Lý thuyết thí nghiệm nền móng	3			20	50	KC245H		I,II,III
73	KC253H	Đánh giá tác động môi trường – XD	2			25	10			I,II,III
74	KC254H	Seminar/Internship	2				60			I,II,III
75	KC255H	Cấp thoát nước	2		8	20	30	KC176H		I,II,III
76	KC256H	Thủy lực và Thủy văn	2			20	30	KC176H		I,II,III
77	KC252H	Quy hoạch đô thị	2			25	10			I,II,III
78	KC257H	Quy hoạch giao thông	2			25	10			I,II,III
79	KC269H	Luận văn tốt nghiệp	10				300	>105 TC		I,II
80	KC261H	Tiểu luận tốt nghiệp	4				120	>105 TC		I,II
81	KC258H	Kết cấu Bê-tông nâng cao	3			30	30	KC182H		I,II
82	KC267H	Đàn hồi ứng dụng và Phương pháp phần tử hữu hạn	3		10	30	30	KC171H		I,II
83	KC266H	Công trình thủy	3			30	30	KC176H		I,II
84	KC264H	Công trình giao thông	3			30	30	KC175H		I,II
85	KC249H	Công trình trên đất yếu	3			30	30	KC175H		I,II
Cộng: 70 TC (Bắt buộc: 46 TC; Tự chọn: 24 TC)										
Tổng cộng: 146 TC (Bắt buộc: 109 TC; Tự chọn: 37 TC) và 20 TC tiếng Anh tăng cường										

3. Kế hoạch dạy học

TT	Mã số học phần	Tên học phần	Số tín chỉ	Bắt buộc	Tự chọn	Số tiết LT	Số tiết TH	Học phần tiên quyết	Học phần song hành	HK thực hiện
Học kỳ 1										
1	FL001H	Nghe và Nói 1	3	3		45				I,II
3	FL003H	Đọc hiểu 1	2	2		30				I,II
5	FL005H	Viết 1	2	2		30				I,II
7	FL007H	Ngữ pháp ứng dụng	3	3		45				I,II
8	FL008H	Ngữ âm thực hành	2	2		30				I,II
9	FL009H	Kỹ năng thuyết trình	2	2		30				I,II
		Tổng cộng	**14**	**14**	**0**					
Học kỳ 2										
2	FL002H	Nghe và Nói 2	2	2		30				I,II
4	FL004H	Đọc hiểu 2	2	2		30				I,II
6	FL006H	Viết 2	2	2		30				I,II
16	TN033H	Tin học căn bản (*)	1	1		15				I,II,III
17	TN034H	TT. Tin học căn bản (*)	2	2			60		TN033H	I,II,III
23	KL001	Pháp luật đại cương	2	2		30				I,II,III
31	TN006	Toán cao cấp A	4	4		60				I,II,III
32	KC168H	Cơ lý thuyết - XD	3	3		30	30			I,II,III
43	KC176H	Cơ học lưu chất	2	2		20	20			I,II,III
10	FL100H	Thi đánh giá năng lực tiếng Anh (*)	2			30				I,II,III
		Tổng cộng	**20**	**20**	**0**					
Học kỳ 3										
11	QP010	Giáo dục quốc phòng và An ninh 1 (*)	2	2		37	8	Bố trí theo nhóm ngành		
12	QP011	Giáo dục quốc phòng và An ninh 2 (*)	2	2		22	8	Bố trí theo nhóm ngành		
13	QP012	Giáo dục quốc phòng và An ninh 3 (*)	2	2		14	16	Bố trí theo nhóm ngành		
14	QP013	Giáo dục quốc phòng và An ninh 4 (*)	2	2		4	56	Bố trí theo nhóm ngành		
24	ML007	Logic học đại cương	2		2	30				I,II,III
25	XH028	Xã hội học đại cương	2			30				I,II,III
26	XH011	Cơ sở văn hóa Việt Nam	2			30				I,II,III
27	XH012	Tiếng Việt thực hành	2			30				I,II,III
28	XH014	Văn bản và lưu trữ học đại cương	2			30				I,II,III
29	KN001	Kỹ năng mềm	2			20	20			I,II,III
30	KN002	Đổi mới sáng tạo và khởi nghiệp	2			20	20			I,II,III
33	KC169H	Sức bền vật liệu - XD	4	4		40	40			I,II,III
34	KC170H	Hình họa và Vẽ kỹ thuật - XD	3	3		20	50			I,II,III
36	KC172H	Địa chất công trình	3	3		20	50			I,II,III
		Tổng cộng	**20**	**18**	**2**					
Học kỳ 4										
15	TC100	Giáo dục thể chất 1 (*)	1		1		30			I,II,III
18	ML014	Triết học Mác - Lênin	3	3		45				I,II,III
35	KC171H	Cơ học kết cấu	4	4		40	40	KC169H		I,II,III
41	KC175H	Cơ học đất	4	4		40	40			I,II,III
42	CN113	TT. Cơ học đất	1	1			30		KC175H	I,II,III
44	KC177H	Thống kê ứng dụng kỹ thuật	3	3		30	30			I,II,III
45	CN331	Tin học ứng dụng - Kỹ thuật 1	2		4		60	KC170H		I,II,III
46	CN332	Tin học ứng dụng - Kỹ thuật 2	2				60	KC169H		I,II,III
47	KC167H	Phương pháp nghiên cứu và viết báo cáo khoa học	2			15	30			I,II,III
		Tổng cộng	**20**	**15**	**5**					
Học kỳ 5										
15	TC100	Giáo dục thể chất 2 (*)	1		1		30			I,II,III
19	ML016	Kinh tế chính trị Mác - Lênin	2	2		30		ML014		I,II,III
37	KC173H	Trắc địa	3	3		20	50			I,II,III
38	CN111	TT. Trắc địa	1	1			30		KC173H	I,II,III
51	KC182H	Kết cấu bê-tông cơ sở	3	3		30	30	KC169H		I,II,III
54	KC184H	Kết cấu thép	2	2		20	20	KC169H		I,II,III
60	KC245H	Nền móng công trình	3	3		30	30	KC175H		I,II,III
61	KC246H	Đồ án nền móng công trình	2	2			60		KC245H	I,II,III

66	KC180H	Kinh tế xây dựng	2	2		20	20			I,II,III
		Tổng cộng	**19**	**18**	**1**					
Học kỳ 6										
15	TC100	Giáo dục thể chất 3 (*)	1		1		30			I,II,III
20	ML018	Chủ nghĩa xã hội khoa học	2	2		30		ML016		I,II,III
39	KC174H	Vật liệu xây dựng	3	3		30	30			I,II,III
40	CN105	TT. Vật liệu xây dựng	1	1			30		KC174H	I,II,III
52	KC248H	Kết cấu bê-tông công trình dân dụng	3	3		30	30	KC182H		I,II,III
53	KC183H	Đồ án kết cấu bê-tông	2	2			60		KC248H	I,II,III
55	KC260H	Kết cấu thép nhà công nghiệp	3	3		30	30	KC184H		I,II,III
56	KC185H	Đồ án kết cấu thép	2	2			60		KC260H	I,II,III
57	KC186H	Máy xây dựng và Kỹ thuật thi công	3	3		30	30	KC182H		I,II,III
		Tổng cộng	**20**	**19**	**1**					
Học kỳ 7										
21	ML019	Lịch sử Đảng Cộng sản Việt Nam	2	2		30		ML018		I,II,III
48	KC179H	Phương pháp tính - Kỹ thuật	2		4	20	20	TN006		I,II,III
49	KC181H	Kỹ thuật điện - XD	2			24	12			I,II,III
50	KC199H	Nguyên lý quy hoạch	2			20	20			
58	KC187H	Tổ chức thi công và An toàn lao động	3	3		30	30		KC186H	I,II,III
59	KC188H	Đồ án thi công	2	2			60		KC187H	I,II,III
62	KC178H	Nguyên lý và Cấu tạo kiến trúc	4	4		40	40	KC170H		I,II,III
63	CN194	Đồ án kiến trúc	2	2			60		KC178H	I,II,III
64	KC247H	Quản lý dự án xây dựng	3	3		35	20			I,II,III
		Tổng cộng	**20**	**16**	**4**					
Học kỳ 8										
22	ML021	Tư tưởng Hồ Chí Minh	2	2		30		ML019		I,II,III
65	KC259H	Mô hình thông tin xây dựng (BIM)	2	2		20	20			I,II,III
67	KC263H	Luật xây dựng	2	2		25	10	KC247H		I,II,III
70	KC262H	Mô hình trong địa kỹ thuật	3		6	20	50	KC175H		I,II,III
71	KC250H	Ứng dụng vật liệu địa kỹ thuật	3			20	50	KC175H		I,II,III
72	KC251H	Lý thuyết thí nghiệm nền móng	3			20	50	KC245H		I,II,III
73	KC253H	Đánh giá tác động môi trường – XD	2		8	25	10			I,II,III
74	KC254H	Seminar/Internship	2				60			I,II,III
75	KC255H	Cấp thoát nước	2			20	30	KC176H		I,II,III
76	KC256H	Thủy lực và Thủy văn	2			20	30	KC176H		I,II,III
77	KC252H	Quy hoạch đô thị	2			25	10			I,II,III
78	KC257H	Quy hoạch giao thông	2			25	10			I,II,III
		Tổng cộng	**20**	**6**	**14**					
Học kỳ 9										
68	KC196	Thí nghiệm kết cấu công trình	1	1			30	KC182H, KC184H		I,II,III
69	KC197	Thực tập ngành nghề	2	2			60			I,II,III
79	KC269H	Luận văn tốt nghiệp	10		10		300	>105 TC		I,II
80	KC261H	Tiểu luận tốt nghiệp	4				120	>105 TC		I,II
81	KC258H	Kết cấu Bê-tông nâng cao	3			30	30	KC182H		I,II
82	KC267H	Đàn hồi ứng dụng và Phương pháp phần tử hữu hạn	3			30	30	KC171H		I,II
83	KC266H	Công trình thủy	3			30	30	KC176H		I,II
84	KC264H	Công trình giao thông	3			30	30	KC175H		I,II
85	KC249H	Công trình trên đất yếu	3			30	30	KC175H		I,II
		Tổng cộng	**13**	**3**	**10**					

4. Mô tả tóm tắt các học phần

TT	Mã số HP	Tên học phần	Số tín chỉ	Mô tả tóm tắt học phần	Đơn vị giảng dạy học phần
1	FL001H	Nghe và Nói 1 (*)	3	Học phần Nghe nói 1 trang bị cho sinh viên kiến thức cơ bản về các chủ đề quen thuộc trong cuộc sống, trang bị cho sinh viên vốn từ, cách phát âm và các cấu trúc cơ bản trong giao tiếp xã hội thông qua các tình huống giao tiếp thông thường bằng tiếng Anh trong lớp học. Học phần này cũng trang bị cho sinh viên kỹ năng nghe nói tương đương bậc 3 (thấp) theo Khung năng lực Ngoại ngữ Việt Nam.	Khoa Ngoại ngữ
2	FL002H	Nghe và Nói 2	2	Học phần Nghe nói 2 trang bị cho sinh viên kiến thức về các chủ đề	Khoa Ngoại

		(*)		quen thuộc trong cuộc sống, giúp sinh viên nâng cao khả năng tư duy phản biện về các vấn đề trong xã hội thông qua các tình huống giao tiếp thông thường bằng Tiếng Anh trong lớp học. Học phần cũng trang bị kiến thức và kỹ năng cần thiết cho sinh viên hướng đến mục tiêu chuẩn đầu ra bậc 3 theo Khung năng lực Ngoại ngữ Việt Nam.	ngữ
3	FL003H	Đọc hiểu 1 (*)	2	Học phần Đọc hiểu 1 giúp sinh viên phát triển các kỹ năng đọc cơ bản – đọc lướt tìm ý chính, đọc tìm các chi tiết cụ thể, đoán nghĩa của qua ngữ cảnh và tóm tắt nội dung đã đọc với các văn bản có độ dài vừa phải và có các tín hiệu ngôn ngữ rõ rang. Sinh viên sẽ tăng cường vốn từ vựng tiếng Anh và kiến thức xã hội qua các bài đọc trong chương trình. Ngoài ra, học phần cũng tập trung vào các kỹ năng cần thiết cho sinh viên các bài đọc về các hoạt động, khái niệm và kỹ năng trong đời sống thực tế ở bậc 3 dành cho người lớn theo khung năng lực ngoại ngữ 6 bậc dành cho Việt Nam	Khoa Ngoại ngữ
4	FL004H	Đọc hiểu 2 (*)	2	Học phần đọc hiểu 2 giúp sinh viên phát triển các kỹ năng đọc hiểu và làm bài theo định dạng bài thi đọc VSTEP ba bậc. Học phần này cũng giúp sinh viên phát triển kỹ năng đọc cơ bản - đọc lướt để tìm ý chính, đọc để tìm các chi tiết cụ thể, đoán nghĩa của từ qua ngữ cảnh, tìm ý hàm ngôn và đọc nhanh. Ngoài ra, sinh viên sẽ được tang cường vốn từ vựng tiếng Anh thuộc các lĩnh vực cơ bản khác nhau qua các bài đọc.	Khoa Ngoại ngữ
5	FL005H	Viết 1 (*)	2	Học phần viết 1 trang bị cho sinh viên kiến thức cơ bản về các chủ đề quan thuộc trong cuộc sống, trang bị cho sinh viên vốn từ và cấu trúc ngữ pháp cơ bản trong giao tiếp xã hội thông qua các bài giảng và bài tập được giao trong lớp học. Học phần này cũng trang bị cho sinh viên các kỹ năng viết tương đương bậc 3 (thấp) theo Khung năng lực Ngoại ngữ Việt Nam.	Khoa Ngoại ngữ
6	FL006H	Viết 2 (*)	2	Học phần Viết 2 trang bị cho sinh viên kiến thức về các chủ đề quen thuộc trong cuộc sống, giúp sinh viên nâng cao khả năng tư duy phản biện về các vấn đề trong xã hội thông qua việc viết các bài luận khác nhau. Học phần cũng trang bị kiến thức và kỹ năng cần t hiết cho sinh viên hướng đến mục tiêu chuẩn đầu ra bậc 3 theo Khung năng lực Ngoại ngữ Việt Nam	Khoa Ngoại ngữ
7	FL007H	Ngữ pháp ứng dụng (*)	3	Ở học phần Ngữ pháp ứng dụng, người học sẽ ôn tập, bổ sung, và hệ thống lại kiến thức ngữ pháp liên quan tới các từ loại chính trong tiếng Anh gồm danh từ, đại từ, động từ, tính từ, trạng từ, và giới từ. Ngoài ra, người học cũng học về các loại mệnh đề; 5 mẫu câu cơ bản; 4 loại câu phân loại theo cấu trúc; và 4 loại lỗi câu thường gặp trong khi viết gồm câu chứa cấu trúc không tương đông, cụm từ bổ nghĩa đặt sai vị trí hoặc bổ nghĩa không đúng đối tương, câu chưa hoàn chỉnh, và câu dài lê thê.	Khoa Ngoại ngữ
8	FL008H	Ngữ âm thực hành (*)	2	Học phần này dạng ngữ âm thông qua nghe và nói về các chủ đề mà sinh viên quan tâm. Các thành phần của ngữ âm tiếng Anh như âm, dấu nhấn từ, dấu nhấn câu, luyến âm và ngữ điệu được dạy cho sinh viên khi sinh viên sử dụng tiếngAAAnh để nói về bản than, kế hoạch, thành phố quê họ. Dự án cuối học kỳ tạo điều kiện cho sinh viên chứng minh sự tiến bộ trong ngữ âm của họ thông qua việc khám phá thành phố Cần Thơ.	Khoa Ngoại ngữ
9	FL009H	Kỹ năng thuyết trình (*)	2	Học phần trang bị cho sinh viên kiến thức ngôn ngữ và các kỹ năng cần thiết để phát triển và thực hiện một b ài thuyết trình theo phong cách học thuật về một chủ đề bằng Tiếng Anh. Sinh viên nhận biết và vận dụng các từ vựng, cấu trúc ngôn ngữ đặc thù để thiết kế bài thuyết trình hiệu quả. Đồng thời, sinh viên có cơ hội tiếp cận, phân tích và vận dụng các thủ thuật phát triển ý, chiến thuật thu hút khan giả và các kỹ năng cần thiết khác để có thể tự tin thuyết trình bằng Tiếng Anh. Ngoài ra, các hoạt động trong học phần cũng tạo điều kiến cho sinh viên phát triển các kỹ năng mềm khác và sự tự tin khi trình bày bằng tiếng Anh	Khoa Ngoại ngữ
10	FL100H	Thi đánh giá năng lực tiếng Anh (*)	2	Học phần giúp chuẩn bị cho người học dự thi kỳ thi kiểm tra năng lực tiếng Anh từ bậc 3 đến bậc 5 theo Khung năng lực ngoại ngữ 6 bậc dùng cho Việt Nam – VSTEP. Cụ thể, học phần cung cấp thông tin về định dạng đề thi các kỹ năng, kỹ năng làm bài thi cho mỗi kỹ năng và bài tập thực hành các kỹ năng theo định dạng đề thi VSTEP. Riêng đối với kỹ năng VIẾT và NÓI, người học sẽ được phản hồi điểm mạnh và điểm cần khắc phục để cải thiện kỹ năng đáp ứng yêu cầu của bài thi.	Khoa Ngoại ngữ
11	QP010	Giáo dục quốc phòng và An ninh 1 (*)	2	Học phần này đề cập đến lý luận cơ bản của Đảng về đường lối quân sự, bao gồm: những vấn đề cơ bản Học thuyết Mác – Lênin, tư tưởng Hồ Chí Minh về chiến tranh, quân đội và bảo vệ Tổ quốc; các quan điểm của Đảng về chiến tranh nhân dân, xây dựng lực lượng vũ trang, nền	Trung tâm GDQP&AN

				quốc phòng toàn dân, an ninh nhân dân; các quan điểm của Đảng cề kết hợp phát triển kinh tê – xã hội với tăng cường củng cố quốc phòng, an ninh. Dành thời lượng nhất định giới thiệu một số nội dung cơ bản về lịch sử nghệ thuật quân sự Việt Nam qua các thời kỳ. Xây dựng, bảo vệ chủ quyền biên giới, chủ quyền biển đảo, an ninh quốc gia và đảm bảo trật tự an toàn xã hội	
12	QP011	Giáo dục quốc phòng và An ninh 2 (*)	2	Được lựa chọn những nội dung cơ bản nhiệm vụ công tác quốc phòng và an ninh của Đảng, Nhà nước trong tình hình mới, bao gồm: xây dựng luwjac lượng dân quân, tự vệ, lực lượng dự bị động viên, tang cường tiềm lực cơ sở vật chất, kỹ thuật quốc phòng, đánh bại chiến lược "diễn biến hòa bình", bạo loạn lật đổ của các thế lực thù địch đối với các mạng Việt Nam. Học phần đề cập một số vấn đề về dân tộc, tôn giáo và đấu tranh phòng chống tội phạm và giữu gìn trật tự an toàn xã hội, đấu tranh phòng chống vi phạm pháp luật trên không gian mạng và các mối đe dọa an ninh phi truyền thống ở Việt Nam	Trung tâm GDQP&AN
13	QP012	Giáo dục quốc phòng và An ninh 3 (*)	2	Học phần này đề cập đến các nội dung quân sự chung nhằm trang bị cho người học một số kiến thức cơ bản về chế độ sinh hoạt, nề nếp chính quy, kỹ năng cơ bản thực hành các động tác Điều lệnh đội ngũ và các kỹ năng quân sự cần thiết, hiểu biết kiến thức cơ bản về bản đồ, địa hình quân sự, phòng tránh địch tiến công hỏa ực bằng vũ khí công nghệ cao, rèn luyện sức khohe qua các nội dung quân sự.	Trung tâm GDQP&AN
14	QP013	Giáo dục quốc phòng và An ninh 4 (*)	2	Học phần này đề cập đến các nội dung lý thuyết kết hợp với thực hành nhằm trang bị cho người học một số kỹ năng cơ bản thực hành kỹ thuật bắn súng tiểu liên AK, rèn luyện kỹ năng sử dụng lực đạn trong chiến đấu, kỹ năng thực hành chiến đấu trong tiến công, phòng ngự và làm nhiệm vụ canh gác, cảnh giới.	Trung tâm GDQP&AN
15	TC100	Giáo dục thể chất 1+2+3 (*)	1+1+1	Học phần Giáo dục Thể chất không chuyên 1+2+3 là học phần chung tượng trưng cho các học phần Giáo dục Thể chất sinh viên không chuyên ngành Giáo dục Thể chất phải học để hoàn thành chương trình đào tạo của ngành mình. Để thoàn thành học phần Giáo dục thể chất sinh viên không đăng kí học phần TC100 mà thay vào đó sinh viên phải đăng kí vào từng học phần cụ thể tùy theo khả năng và nhu cầu muốn học như: Học phần Taekwondo thì sinh viên đăng kí 03 học phần: Taekwondo 1(TC003),Taekwondo 2(TC004), Taekwondo 3,(TC019), các học phần Giáo dục Thể chất khác cũng tương tự…	Bộ môn Giáo dục Thể chất
16	TN033H	Tin học căn bản (*)	1	Môn học này cung cấp cho sinh viên những hiểu biết lý thuyết cơ bản về công nghệ thông tin: khái niện về thông tin, cấu trúc tổng quát của máy tính, hệ điều hành Windows, các lệnh và thao tác để soạn thảo văn bản bằng Microsoft Word, xử lý bảng tính bằng Microsoft Excel, trình bày báo cáo bằng Microsoft Powerpoint, sử dụng Internet và E-mail.	Khoa Khoa học Tự nhiên
17	TN034H	TT. Tin học căn bản (*)	2	Bằng cách thông qua thực hành trên máy tính, sinh viên được rèn luyện các kỹ năng: Sử dụng hệ điều hành Windows, soạn thảo văn bản bằng Microsoft Word, xử lý bảng tính bằng Microsoft Excel, trình bày báo cáo bằng Microsoft Powerpoint, sử 3 dụng Internet và E-mail. Trong phần thực hành cũng lồng ghép các kỹ năng viết báo cáo khoa học, kỹ năng soạn các bản trình bày trên các máy chiếu đa phương tiện.	Khoa Khoa học Tự nhiên
18	ML014	Triết học Mác - Lênin	3	Trong học phần này, sinh viên sẽ đượ cucng cấp những kiến thức cơ bản và chuyên sâu về triết học Mác Leenin bao gồm: Triết học và vai trò của triết học trong đời sống xã hội, Triết học Mác – Lênin và vai trò của triết học Mác – Leenin trong đời sống xã hội; Chủ nghiascx duy vật biện chứng: vật chất và ý thức, phép biện chứng duy vật và lý luận nhận thức; Chủ nghĩa duy vật lịch sử: Học thuyết hình that kinh tế - xã hội, giai cấp và dân tộc, Nhà nước và cách mạng xã hội, triết học về con người.	Khoa Khoa học Chính trị
19	ML016	Kinh tế chính trị Mác - Lênin	2	Trong học phần này, sinh viên sẽ được cung cấp những kiến thức cơ bản và chuyên sâu về kinh tế chính trị Mác – Leenini bao gồm: đối tượng, phương pháp nghiên cứu và chức năng của Kinh tế chính trị Mác – Lê nin; Hàng hóa, thị trường và vai trò của các chủ thể khi tham gia thị trường; Giá trị thặng dư trong nền kinh tế thị trường; Cạnh tranh và độc quyền trong nền kinh tế thị trương; Kinh tế thị trường định hướng xã hội chủ nghĩa và các quan hệ lợi ích kinh tế ở Việt Nam.	Khoa Khoa học Chính trị
20	ML018	Chủ nghĩa xã hội khoa học	2	Trong học phần này sinh viên sẽ nghiên cứu những vấn đề lý luận chung về chủ nghĩa xã hội và thực tiễn trong công cuộc xây dựng chủ nghĩa xã hội ở nước ta hiện nay. Nội dung chủ yếu của học phần taajpp trung vào một số vấn đề như: sự ra đời và phát triển của chủ nghĩa xã hội khoha học; sứ mệnh lịch sử của giai cấp công nhân, chủ nghĩa xã hội và thời	Khoa Khoa học Chính trị

				kỹ quá độ lên chủ nghĩa xã hội; dân chủ xã hội chủ nghĩa và nhà nước xã hội chủ nghĩa; liên minh giai cấp; tầng lớp; vấn đề dân tộc, tôn giáo; vấn đề về gia đình trong thời kỳ quá độ lên chủ nghĩa xã hội.	
21	ML019	Lịch sử Đảng Cộng sản Việt Nam	2	Trang bị cho sinh viên sự hiểu biết về đối tượng, mục đích, nhiệm vụ, phương pháp nghiên cứu, học tập môn lịch sử Đảng và những kiến thức cơ bản, cốt lõi, hệ thống về sự ra đời của Đảng (1920-1930); quá trình Đảng lãnh đạo cuộc đấu tranh giành chính quyền (1930-1945); lãnh đạo hai cuộc kháng chiến chống thực dân Pháp và đế quốc Mỹ xâm lược, hoàn thành giải phóng dân tộc, thống nhất đất nước (1945-1975); lãnh đạo cả nước quá độ lên chủ nghĩa xã hội và tiến hành công cuộc đổi mới (1975-2018). Qua đó khẳng định các thành công, nêu lên các hạn chế, tổng kết những kinh nghiệm về sự lãnh đạo cách mạng của Đảng để giúp người học nâng cao nhận thức, niềm tin đối với Đảng và khả năng vận dụng kiến thức đã học vào thực tiễn công tác, góp phần xây dựng và bảo vệ Tổ quốc Việt Nam xã hội chủ nghĩa	Khoa Khoa học Chính trị
22	ML021	Tư tưởng Hồ Chí Minh	2	Cùng với môn học Triết học Mác – Lê nin, Kinh tế chính trị Mác – Lê nin, Chủ nghĩa xã hội khoa học, Lịch sử Đang Cộng sản Việt Nam, Tư tưởng Hồ Chí Minh tạo lập những hiểu biết về nền tảng tư tưởng, kim chỉ nam hành fđộng của Đảng và cách mạng nước ta, tiếp tục cung cấp những kiến thức cơ bản về chủ nghĩa Mác – Lê nin, góp phần xây dựng nền tảng đọa đức con người mới. Môn học gồm 6 chowng trình bày những nội dung cơ bản Tư tưởng Hồ Chí Minh theo mục tiêu môn học, cung cấp những hiểu biết có tính hệ thống về tư tưởng, đạo đức, giá trị văn hóa Hồ Chí Minh	Khoa Khoa học Chính trị
23	KL001	Pháp luật đại cương	2	Học phần này được thiết kế giảng dạy cho sinh viên không chuyên Luật. Học phần giới thiệu những vấn đề lý luận cơ bản của học thuyết Mác-Lênin về nhà nước và pháp luật từ ngồn gốc, bản chất, hình thức, chức năng cũng như các kiểu nhà nước và pháp luật đã hình thành, tồn tại và phát triển qua các hình thái kinh tế xã hội khác nhau trong lịch sử nhân loại. Thêm vào đó, học phần cũng bao gồm việc nghiên cứu vị trí của nhà nước trong hệ thống chính trị, cấu thành Bộ máy nhà nước, các hệ thống cơ quan nhà nước. Khối lượng lớn kiến thức cơ bản thuộc các ngành luật thông dụng của Việt Nam cũng được giới thiệu như quyền và nghĩa vụ cơ bản của công dân, tội phạm, vi phạm pháp luật hành chính, quy định của pháp luật về kết hôn, ly hôn, thừa kế...	Khoa Luật
24	ML007	Logic học đại cương	2	Học phần trang bị những tri thức của logic hình thức. Cung cấp những quy tắc và các yêu cầu của các quy luật cơ bản của tư duy: Quy luật đồng nhất; Quy luật phi mâu thuẫn; Quy luật gạt bỏ cái thứ ba; Quy luật lý do đầy đủ. Và những hình thức cơ bản của tư duy như: Khái niệm; Phán đoán; Suy luận; Giả thuyết; Chứng minh; Bác bỏ và Ngụy biện	Khoa Khoa học Chính trị
25	XH028	Xã hội học đại cương	2	Môn học nghiên cứu qui luật, tính quy luật của sự hình thành, vận động biến đổi mối quan hệ, tương tác qua lại giwuax con người và xã hội. Đối tượng nghiên cứu của Xã hội học là các quan hệ xã hội, tương tác xã hội biểu hiện qua các hành vi giữa người với người trong các nhóm, các tổ chức, các hệ thống xã hội	Khoa KHXH & NV
26	XH011	Cơ sở văn hóa Việt Nam	2	Nội dung học phần bao gồm những kiến thức chung về văn hóa học và văn hóa Việt Nam, về hệ thống các thành tố, những đặc trưng và quy luật phát triển của văn hóa Việt Nam, các vùng văn hóa Việt Nam; phương pháp tiếp cận tìm hiểu và nghiên cứu những vấn đề của văn hóa Việt nam; rèn kĩ năng vận dụng kiến thức văn hóa học vào phân tích ngôn ngữ và tác phẩm văn học.	Khoa Khoa học Xã hội và Nhân văn
27	XH012	Tiếng Việt thực hành	2	Học phần được thiết kế thành 4 chương. Mỗi chương gồm hai phần chính được biên soạn đan xen vào nhau: giản yếu về lý thuyết và hệ thống bài tập thực hành. Chương 1 tập trung vào vấn đề về chữ viết và chính tả. Chương 2 tập trung rèn luyện kỹ năng dùng từ. Tương tự, nội dung chương 3 là rèn luyện kỹ năng về câu. Chương 4, rèn luyện kỹ năng tạo lập và tiếp nhận văn bản.	Khoa Khoa học Xã hội và Nhân văn
28	XH014	Văn bản và lưu trữ học đại cương	2	Môn học Văn bản – Lưu trữ học nhằm trang bị kiến thức lý luận và thực tiễn về văn bản quản lý và tài liệu lưu trữ, giúp sinh viên nhận thức rõ vai trò của văn bản hành chính và tài liệu lưu trữ đối với công tác quản lý. Bên cạnh đó, môn học này còn giúp người học nắm vững phương pháp soạn thảo và quản lý khoa học các loại văn bản hành chính, biết cách lựa chọn, phân loại văn bản để lưu trữ; biết cách tra tìm, sử dụng tài liệu lưu trữ để có thể làm tốt công tác quản lý ở trường học cũng như ở các cơ quan nói chung.	Khoa Khoa học Xã hội và Nhân văn
29	KN001	Kỹ năng mềm	2	Học phần cung cấp các kiến thức cơ bản và hướng dẫn rèn luyện các kỹ	Trung tâm

				năng cần thiết cho người học: kỹ năng giao tieeos, các nguyên lý chung về giao tiếp; cacs kỹ năng lắng nghe, nói và thuyết trình hiệu quả; kỹ năng làm việc nhóm đảm bảo sự hợp tác tốt trong học tập và làm việc; kỹ năng tư suy sáng tạo; kỹ anwng quản lý thời gian; kỹ năng quản lý cảm xúc và kỹ năng tìm việc và phỏng vấn tuyển dụng	tư vấn, Hỗ trọ Khởi nghiệp sinh viên
30	KN002	Đổi mới sáng tạo và khởi nghiệp	2	Nội dung môn học tập trung vào những kiến thức tổng quan về sáng tạo, đổi mới và hình thành ý tưởng khởi nghiệp, lựa chọn loại hình sở hữu doanh nghiệp, hiểu biết cơ bản về quyền sở hữu trí tuệ. Thêm vào đó, sinh viên còn được cung cấp kiến thức và kỹ năng cơ bản về thị trường như đnhá giá thế mạnh, cơ hội, đe dọa, rủi ro thương mại hóa sản phẩm từ ý tưởng kinh doanh, phát hiện tiềm năng kinh doanh và lập kế hoạch khởi nghiệp. Quan trong hơn, sinh viên có cơ hội được hcia dẻ kinh nghiệm khởi nghiệp từ các doanh nhân thành đạt và/ hoặc tham gia mô hình khởi nghiệp thành công	Trung tâm tư vấn, Hỗ trọ Khởi nghiệp sinh viên
31	TN006	Toán cao cấp A	4	Trang bị cho sinh viên những kiến thức căn bản cũng như ý nghĩa vận dụng pháp tính vi tích phân hàm một biến, hàm nghiều biến trong tính gần đúng bằng đạo hàm cấp cao, tối ưu hóa, khảo sát sự biến htieen… và các mô hình phương trình tuyết tính tổng quát cũng như các mô hình tổng quát trong thực tế	Khoa Khoa học Tự nhiên
32	KC168H	Cơ lý thuyết - XD	3	This subject is a basic engineering subject, which provides the learners calculating methods and analyzing the basic structures (reactions, tension, and compression) and the centroid and center of mass of plane areas and volumes.	Khoa Công Nghệ
33	KC169H	Sức bền vật liệu - XD	4	This subject is a basic engineering subject, which provides to the learners calculating methods and analyzing the basic structures, analysis of stresses and deformations, testing the strength and stiffness of the bar structure in tension, compression and bending, twisting, and general forces. Calculating the stability of the axial load bar and calculating the durability of the structure according to the limit states.	Khoa Công Nghệ
34	KC170H	Hình họa và Vẽ kỹ thuật - XD	3	The content consists of two parts: • Graphics: projections, location problems; multifaceted, and intersecting. This section is the basis for Technical Drawing. • Technical drawings: Basic concepts of technical drawing (materials and drawing tools, basic standards for technical drawings, demonstration of objects on technical drawings). Construction drawing (drawing of steel structure, reinforced concrete structure, wood structure), construction drawings (drawing houses, hydraulic works, bridges, water treatment works ...) from which students have Reading - drawing technical drawings as well as expressing - communicating design intentions, technological processes with technical drawings.	Khoa Công Nghệ
35	KC171H	Cơ học kết cấu	4	The course provides knowledge and skills in calculating internal forces, displacement, checking durability, stiffness, and stability in construction structures; equipping the students ability to calculate isostatic and hyperstatic systems as the basis for designing structures with different materials to solve practical problems and serve the study of the next specialized subject. in the field of construction.	Khoa Công Nghệ
36	KC172H	Địa chất công trình	3	The course provides the knowledge of fundamentals of geology applied in civil engineering. The course includes topics of soil and rock establishment, mineral types, soil properties, geologic structure, soil investigation procedures.	Khoa Công Nghệ
37	KC173H	Trắc địa	3	The course aims to teach students about basic knowledge of land surveying such as surveying of topographic maps, topographic profiles, and construction surveying.	Khoa Công Nghệ
38	CN111	TT. Trắc địa	1	Học phần Thực tập trắc địa truyền tải những kiến thức cũng như kỹ năng trong sử dụng các thiết bị trắc địa. Đồng thời triển khai thực hiện các qui trình đo vẽ bản đồ địa hình phục vụ thiết kế xây dựng (khảo sát địa hình) và các qui trình về công việc định vị thi công công trình xây dựng. Học phần Thực tập trắc địa trang bị cho người học khã năng về: Sử dụng máy thủy bình và máy kinh vĩ; Đo cao, đo góc ngang và đo góc đứng; Bố trí cao độ thiết kế, bố trí góc thiết kế bằng máy kinh vĩ; sử dụng máy toàn đạc điện tử và các lệnh đo thông thường (đo không lưu); Đo vẽ bản đồ bằng máy toàn đạc điện tử; và đo định vị công trình xây dựng bằng máy toàn đạc điện tử.	Khoa Công Nghệ
39	KC174H	Vật liệu xây dựng	3	The course aims to teach students about basic knowledge of construction materials such as principal properties, experimental	Khoa Công

				methods, mix proportion design. Moreover, this course provides knowledge for selecting and using construction materials to meet technical and economic requirements.	Nghệ
40	CN105	TT. Vật liệu xây dựng	1	Môn học này nhằm trang bị những kiến thức cơ bản về thí nghiệm vật liệu xây dựng như các phương pháp thí nghiệm, cách tính toán số liệu, các tiêu chuẩn thí nghiệm, và đánh giá chất lượng vật liệu xây dựng.	Khoa Công Nghệ
41	KC175H	Cơ học đất	4	The subject includes 4 mains parts: • Physical and mechanical properties of soils • Soil strength and bearing capacity of the foundation • Consolidation • Slope stability analysis	Khoa Công Nghệ
42	CN113	TT. Cơ học đất	1	Học phần Thực tập Cơ học đất gồm 6 bài, giải quyết được các vấn đề về các tính chất cơ lý của đất nền trong phòng thí nghiệm và ngoài hiện trường. Trong phòng thí nghiệm: • Xác định giới hạn Atterberg để đánh trạng thái của đất và phân loại đất, Thí nghiệm đầm chặt đất cho thông số quan trọng là độ ẩm tối thuận và γ d-max để tính toán đầm nén ngoài hiện trường; • Xác định sức chống cắt của đất được thí nghiệm bằng thí nghiệm nén đơn trục và thí nghiệm cắt trực tiếp; • Xác định các đặc trưng cơ học của đất như hệ số rỗng, hệ số nén lún, hệ số nén cố kết, chỉ số nén, chỉ số nở, mô đun biến dạng…thông qua thí nghiệm nén lún. • Ngoài hiện trường: • Thí nghiệm xuyên tĩnh; Xác định ứng suất ma sát bên RL và ứng suất chịu mũi Rp theo chiều sâu, phân loại đất; xác định sức chịu tải cho phép trung bình của từng lớp đất. và xác định sức chịu tải của cọc đơn theo chiều sâu.	Khoa Công Nghệ
43	KC176H	Cơ học lưu chất	2	Fluid Mechanics contains 2 main sections as follows: - Hydrostatics: Concentrate on hydrostatic pressure and the pressure on the plane, including Acsimet's Law. - Hydrodynamics: Mainly solving steady flow problems in one-dimensional space. The knowledge focuses on continuous equations, Bernoulli equations, momentum equations, and energy loss calculations.	Khoa Công Nghệ
44	KC177H	Thống kê ứng dụng kỹ thuật	3	The course introduces the concepts and tools of statistics, knowledge, and ability to calculate the parameters of descriptive statistics. Accordingly, guide students on how to apply statistics to solve technical problems in the construction industry. The course also provides new knowledge, techniques and tools of statistics that have been applied in general construction engineering. Specifically, equipped with the knowledge and ability to calculate the parameters of descriptive statistics, perform the whole application of deductive statistics such as estimating, testing hypotheses, establishing correlations,... in work quality assessment and construction materials inspection.	Khoa Công Nghệ
45	CN331	Tin học ứng dụng - Kỹ thuật 1	2	Giúp người học sử dụng thành thạo các tính năng vẽ cơ bản của phần mềm AutoCAD. Có khả năng tạo các bản vẽ thiết kế kỹ thuật và thiết kế thi cọng các công trình dân dụng, thủy lợi và giao thông.	Khoa Công Nghệ
46	CN332	Tin học ứng dụng - Kỹ thuật 2	2	Giúp người học hiểu biết và vận dụng được những chức năng của phần mềm ứng dụng giải kết cấu xây dựng, nhằm giải quyết nhanh các bài toán trong cơ học kết cấu bằng phương pháp số, gồm các bước: nhận diện bài toán, mô hình hóa, nhập các thuộc tính, nhập các dạng tải trọng (tĩnh và động), xuất và đọc kết quả dạng số liệu hoặc biểu đồ nội lực. Phần mềm thịnh hành và đang được giảng dạy là phần mềm SAP2000 (version 19), có thể thay đổi tùy theo nhu cầu của chuyên ngành.	Khoa Công Nghệ
47	KC167H	Phương pháp nghiên cứu và viết báo cáo khoa học	2	The course of Methodology of Scientific Research and Report Writing provides to students a few contents relating to concepts of scientific research, types of scientific research, methods and performances of scientific research, and presenting method of scientific research in viewpoints of overall report or summarizing report as well journal paper. In addition, this course trains the students some hard skills for performing the scientific research, and some soft skills used to present the scientific research. The course also introduces some format, standard form of scientific research syllabus or scientific research report.	Khoa Công Nghệ
48	KC179H	Phương pháp tính - Kỹ thuật	2	- Helping students become familiar to deployment of architectural, structural, electrical and water design drawings in the project. Practical	Khoa Công Nghệ

				calculation of structural engineering, cost estimation, construction organization, construction supervision and monitoring. - Help students use the learned knowledge reality production. Discover theoretical ideas to practical works. - Self-equiped with practical knowledge upon graduation, they are not surprised at the work assigned.	
49	KC181H	Kỹ thuật điện - XD	2	The subject includes 3 main parts: - Knowledge of electric circuits and electrical safety; - Knowledge of indoor lighting techniques; - Design an electric power supply system for building projects.	Khoa Công Nghệ
50	KC199H	Nguyên lý quy hoạch	2	The course provides knowledge of transportation engineering, analyzes orienting development of transport. It also introduces design methods and principles of planning, construction and assessment of transportation engineering.	Khoa Công Nghệ
51	KC182H	Kết cấu bê-tông cơ sở	3	Concrete Structure Course provides knowledge of principles of reinforced concrete structure for bending, compressive, tensile, twisting elements; calculate deformation of structure according to Vietnamese standards, and apply into the design of concrete structures.	Khoa Công Nghệ
52	KC248H	Kết cấu bê-tông công trình dân dụng	3	The course provides the knowledge of analysis of the main load bearing system of a structure including slab, beam, column, foundation, and other elements (stair, pool). The learners can solve the internal force components of the structure and integrate the knowledge of concrete structure to design in details including steel bars analysis, and technical drawings.	Khoa Công Nghệ
53	KC183H	Đồ án kết cấu bê-tông	2	This subject provides the learners knowledge about choosing concrete bearing for structure, calculate the load, analyze the inertial force, and design beam, column, wall, and frame of concrete structures. The learners are able to design these above structures combined with the knowledge of subjects: concrete structures, structural mechanics,technical applied informatics for designing and complete a technical drawing of a concrete structure.	Khoa Công Nghệ
54	KC184H	Kết cấu thép	2	The subject equips the learners with the knowledge of: steel materials in construction, to be able to design the steel components (steel floor, steel beams, steel columns, steel frames), the steel connections (welding and bolt). In addition, the subject enhances the ability to analyze and select steel structure diagrams.	Khoa Công Nghệ
55	KC260H	Kết cấu thép nhà công nghiệp	3	This course aims to provide learners with knowledge of the types of industrial steel structures and other steel structures. Components and loads acting on industrial steel structures. After completing the course, learners are able to design the industrial steel structures and other steel structures.	Khoa Công Nghệ
56	KC185H	Đồ án kết cấu thép	2	This module helps learners practice selecting structure diagrams, load design, calculating internal strength of frame of industrial streel structures. Learners are able to apply the formulas and standards to design the columns, crossbeams and connections of industrial steel structures. Learners be able to solve the above problems with the combination of the knowledge of steel structure, industrial steel structures and using specialized software for steel structure design.	Khoa Công Nghệ
57	KC186H	Máy xây dựng và Kỹ thuật thi công	3	This course is a specialized module in the program of civil engineering to provide undergraduated students with knowledge of construction machines and construction techniques. Students are introduced methods for selecting effectively construction machines, construction techniques for earthwork, foundation work, formwork; scaffold work, reinforced concrete work, plastering work and finishing work.	Khoa Công Nghệ
58	KC187H	Tổ chức thi công và An toàn lao động	3	This course is a specialized module in the program of civil engineering to provide undergraduated students with knowledge of construction organization in construction site including organization and plan of construction, labor organization; management of construction progress, management of resource supply (materials, machines, labor), organization of construction site and labor safety issues in construction site.	Khoa Công Nghệ
59	KC188H	Đồ án thi công	2	This module helps undergraduated students consolidate the knowledge of the module of Construction Machines & Construction Engineering, Construction Organization and Labor Safety. The students must	Khoa Công Nghệ

				implement a construction design with the calculation of work volume, the proposal of effective construction; the organization of labor and machines; the presentation of construction schedule based on a technical design and practical conditions of a project.	
60	KC245H	Nền móng công trình	3	Foundation Engineering Course provides knowledge of design methods of shallow and deep foundation.	Khoa Công Nghệ
61	KC246H	Đồ án nền móng công trình	2	Môn học này cung cấp cho người học kiến thức về tính toán và thiết kế móng nông và móng sâu. Người học có thể thiết kế phần nền móng kết hợp với kiến thức của các môn học: kết cấu bê tông, cơ học kết cấu, cơ học đất và tin học ứng dụng kỹ thuật để thiết kế và hoàn thành bản vẽ kỹ thuật của một giải pháp nền móng được đề xuất cho một dự án cụ thể.	Khoa Công Nghệ
62	KC178H	Nguyên lý và Cấu tạo kiến trúc	4	The subject includes 3 mains parts: - Construction standards (codes) requirement, regulations and norms related all building elements. - Name, position and functions of all components of a building. - rules and conventions of detailed design drawings of all building elements	Khoa Công Nghệ
63	CN194	Đồ án kiến trúc	2	Môn học giới thiệu các nguyên lý cơ bản và phương pháp thiết kế công trình dân dụng, áp dụng những kiến thức, kỹ năng từ các môn học liên quan vào việc thực hành một đồ án thiết kế kiến trúc cụ thể. Các kiến thức, kỹ năng được xây dựng theo từng giai đoạn thành một tổng thể các kỹ năng cần thiết. Sinh viên được yêu cầu lập một hồ sơ thiết kế cho một công trình dân dụng. Thông qua việc làm nhóm sinh viên nắm được cách thức áp dụng các quy định và quy trình liên quan đến việc lập một đồ án thiết kế. Sinh viên áp dụng các kỹ năng và phương pháp nghiên cứu để phân tích, đánh giá và xây dựng những cơ sở lý luận từ đó đưa ra giải pháp thiết kế tối ưu.	Khoa Công Nghệ
64	KC247H	Quản lý dự án xây dựng	3	This module introduces the construction project management body of knowledge including construction quality management, construction progress management, construction work volume management, cost management, personnel management and management of labor safety & environmental protection in the construction site. Content of the module presents the management principles of a construction project starting from the preparation stage, through the design and construction phase, to the project completion stage. The course also requires learners to have basic knowledge about construction engineering and technical design.	Khoa Công Nghệ
65	KC259H	Mô hình thông tin xây dựng (BIM)	2	The module introduces the process related to reation and management of digital features (BIM) in the stages of design, construction and construction conceptualization. Students are provided with the knowledge of combining information between components in the building with other information such as norms, unit prices, construction progress ... to create a virtual reality model of works, with the aim of optimizing the design, construction and operation management of works. Introduce some commonly used BIM software.	Khoa Công Nghệ
66	KC180H	Kinh tế xây dựng	2	The subject includes 4 mains parts: • Fundamental knowledge of engineering economy • Knowledge of basis analysis tools of a project of a design alternative • Rounding out the study: inflation, cost estimation, uncertainty analysis and sensitivity analysis. • Decision making to select a project or a design alternative	Khoa Công Nghệ
67	KC263H	Luật xây dựng	2	The subject includes 4 mains parts: - Fundamental knowledge construction law-a branch of law. - Knowledge of construction project: participants, finance, contract, claims, time, insurance, etc. - Understanding and applying regulations, norms and standards relate to all aspects of construction industry and planning process. - Understanding roles and rights of each participants in different stages of a construction project in order to protect themselves, environment and occupancies of the projects.	Khoa Công Nghệ
68	KC196	Thí nghiệm kết cấu công trình	1	Introduce to the learners the experimental equipments and the safety in doing experiment. The learners practice to calculate concrete beam, steel beam, steel frame from the calculating theory. Practicing to make	Khoa Công Nghệ

				the samples and to do experiment. Learners analyze, evaluate experiment results and write reports.	
69	KC197	Thực tập ngành nghề	2	- Helping students become familiar to deployment of architectural, structural, electrical and water design drawings in the project. Practical calculation of structural engineering, cost estimation, construction organization, construction supervision and monitoring. - Help students use the learned knowledge reality production. Discover theoritical ideas to practical works. - Self-equiped with practical knowledge upon graduation, they are not surprised at the work assigned.	Khoa Công Nghệ
70	KC262H	Mô hình trong địa kỹ thuật	3	The subject is designed for students in civil, transportation and marine engineering. It interests students who are eager to apply test results for foundation simulation.	Khoa Công Nghệ
71	KC250H	Ứng dụng vật liệu địa kỹ thuật	3	Geosynthetics is used as construction materials. The course introduces the concept of geosynthetics. It also includes manufacture, behavior and properties, application of geosynthetics in civil engineering.	Khoa Công Nghệ
72	KC251H	Lý thuyết thí nghiệm nền móng	3	The subject is designed for students in civil, transportation and marine engineering. It mainly shows foundation testing and analysis on testing results for foundation design.	Khoa Công Nghệ
73	KC253H	Đánh giá tác động môi trường – XD	2	The course provides students with basic knowledge and skills in preparing an EIA for a project, including knowledge and skills on site survey, group discussions to evaluate the effect of one project to environment (water, air, solid waste). In addition, the course also provides writing skills for an EIA report for a specific project in the construction phase.	
74	KC254H	Seminar/Internship	2	- The internship course is designed for undergraduate students provide an academic framework and career research, and an opportunity for students to work/learn/research in international environment. It will integrate knowledge derived from academic studies with the experiences gained from real-world work settings and professional development. This course will support work experiences by fostering analytical, interpersonal, and communications skills. - Students will spend 1-2 weeks in the oversea universities or industries or companies.	Khoa Công Nghệ
75	KC255H	Cấp thoát nước	2	Watre Supply and Drainage contains 2 main sections as follows: - Water supply: Analysis of water resources data (water demand, water sources) to optimize the selection of water sources for a water supply project. Application of the standards of the water supply in planning and designing the construction of water supply for a residential area. Design the pipeline networks and systems for water supply. - Dainage: Analysis of water water quality/pollutionto optimize the selection of discharge locations for a drainage project. Application of the standards of drainage in planning and designing the construction of drainage for a residential area. Design the pipeline networks and systems for drainage.	Khoa Công Nghệ
76	KC256H	Thủy lực và Thủy văn	2	Hydraulics and Hydrology contains 2 main sections as follows: - Hydraulics: steady and un-steady flow calculations in open chanel, hydraulic jumping (concept, classification and formulae) and the spillway (classification and calculation); - Hydrology:Hydrological cycle and hydrological measurement and hydrological analysis (Precipitation, evaporation, river flow, catchment modelling and stochastic hydrology).	Khoa Công Nghệ
77	KC252H	Quy hoạch đô thị	2	-This subject will provide basic knowledge of process of urban planning and development. In addition, it includes basic knowledge of urban planning: conetnt, tasks, implementation methods and products. -Furthermore, students are also provided with the skills to analyze and evaluate urban issues and to perform some stages in urban planning.	Khoa Công Nghệ
78	KC257H	Quy hoạch giao thông	2	- The course will provide knowledge and skills on traffic system research: concepts, content, the role of traffic in urban areas, planning tasks, process and traffic planning products. - The course will develop skills for students to coordinate with interdisciplinary planning and methods: meta-analysis, survey, evaluation, forecast, comparison, selection and design.	Khoa Công Nghệ
79	KC269H	Luận văn tốt nghiệp	10	The course helps students to synthesize the entire body of knowledge they have learned to solve issues of technical design, materials, construction, and project management of a civil and industrial project;	Khoa Công Nghệ

				or study depth specialization of construction field.	
80	KC261H	Tiểu luận tốt nghiệp	4	The course helps students to synthesize the entire knowledge they have learned to solve issues of technical design, materials, construction, and project management of a civil and industrial project; or study depth specialization of construction field.	Khoa Công Nghệ
81	KC258H	Kết cấu Bê-tông nâng cao	3	The course provides the knowledge of analysis of the main load bearing system of a structure including slab, beam, column, foundation, and other elements (stair, pool). The learners can solve out the internal force components of the structure and integrate the knowledge of concrete structure to design in details including steel bars analysis, and technical drawings.	Khoa Công Nghệ
82	KC267H	Đàn hồi ứng dụng và Phương pháp phần tử hữu hạn	3	The subject "Applied elasticity and Finite element methods" contains 2 main sections as follows: - Theory of Elasticity: Concentrate on stress analysis, strain and stress-strain relation in elasticity. This part is the basis of calculation for strength of materials, stiffness and stability in mechanical engineering and civil engineering problems, ect. - Finite element methods: Mainly solving structural analysis problems in one or two-dimensional problems. The knowledge focuses on elastic strain energy methods, together with stiffness matrices and the direct stiffness method. The students will be provided the numerical algorithms (finite element method) to do the structural analysis for either some of one-dimensional structures such as plane truss elements, beam elements, plane frame elements or two-dimensional problems in elasticity such as plane stress and plane strain problems.	Khoa Công Nghệ
83	KC266H	Công trình thủy	3	Hydraulics structures subject specialized in combining water sources with construction/structural measure solutions: water works, water flow adjustment works, sluices, irrigation canals, dams, dikes, etc.	Khoa Công Nghệ
84	KC264H	Công trình giao thông	3	The course provides knowledge of transportation engineering, analyzes orienting development of transport. It also introduces design methods and principles of planning, construction and assessment of transportation engineering.	Khoa Công Nghệ
85	KC249H	Công trình trên đất yếu	3	The course helps students to synthesize the entire body of knowledge they have learned to solve issues of technical design, materials, construction, and project management of a civil and industrial project; or study depth specialization of construction field.	Khoa Công Nghệ

Đề cương chi tiết các học phần được đính kèm ở phần Phụ lục.

Cần Thơ, ngày 19 tháng 11 năm 2020

TL. HIỆU TRƯỞNG
TRƯỞNG KHOA

Nguyễn Chí Ngôn

TRƯỞNG BỘ MÔN

Đặng Thế Gia

PHỤ LỤC

ĐỀ CƯƠNG CHI TIẾT CÁC HỌC PHẦN

(Bổ sung kèm theo các Đề cương chi tiết học phần của CTĐT)

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

1. Course: Theoretical Mechanics (Cơ lý thuyết - XD)
- **Code number:** KC168H
- **Credits:** 03 credits
- **Hours:** 30 theory hours, 30 practice hours.

2. Management Unit:
- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:
- **Prerequisites:** None
- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Knowledge of basic concepts of force and moments, equations of equilibrium and reactions, the centroid and center of mass of plane areas and volumes. Knowledge of the reactions of beam(s) using equilibrium equations; the reactions and stress (tension, compression) in truss using equilibrium equations.	2.1.2.a,b
4.2	Ability to develop analytical skills to determine reactions to the real cases.	2.2.1.a,b,c
4.3	Having teamwork skills and presentation.	2.2.2.c,d
4.4	Having responsibility and the correct vision of the application of mechanics in civil engineering field.	2.3.a,b,c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	To understand and apply basic concepts of force and moments, equations of equilibrium and reactions	4.1	2.1.2.a
CO2	To develop analytical skills to determine reactions to the real cases	4.1	2.1.2.b
	Skills		
CO3	To analyze, calculate, and examine the reactions of beam(s) using equilibrium equations and free body diagrams. To analyze, calculate, and examine the reactions and stress	4.2	2.2.1.a,b,c

	(tension, compression) in truss using equilibrium equations and free body diagrams. To determine the centroid and center of mass of plane areas and volumes.		
CO4	Having teamwork skills, team leadership skills, negotiating skills, conflict resolution, proficient use of tools to support teamwork cooperation, skills to evaluate contributions of the group members	4.3	2.2.2.c,d
	Attitudes/Autonomy/Responsibilities		
CO5	Having the correct vision of the application of mechanics in the civil engineering field. Positive and proactive self-studying and practicing. Honesty in the learning process and examination.	4.4	2.3.a,b,c

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

This subject is a basic engineering subject, which provides the learners calculating methods and analyzing the basic structures (reactions, tension, and compression) and the centroid and center of mass of plane areas and volumes.

7. Course structure:

7.1. Theory

	Content	Hours	COs
Chapter 1.	**Basic concepts of mechanics**	**4**	CO1
1.1.	Fundamental concepts in theoretical mechanics		
1.2.	Connections and reactions		
1.3.	Concept of moment		
1.4.	Concept of couple moments		
Chapter 2.	**Systems of rigid bodies and equations of equilibrium**	**12**	CO1
2.1.	Introduction		
2.2.	Equivalent force system		
2.3.	Equilibrium theorems and equations of equilibrium		
Chapter 3.	**Truss**	**10**	CO1, CO2, CO3, CO4, CO5
3.1.	Introduction		
3.2.	Simplifying assumptions		
3.3.	Statically determination of the truss		
3.4.	Method of joints		
3.5.	Method of sections		
Chapter 4.	**Geometric properties of an area**	**4**	CO2, CO3, CO4, CO5
4.1.	Introduction		
4.2.	Centroids of an area		
4.3.	Centroids of a composite area		4.1; 4.2

7.2. Practice: Assignment (30 hours)

8. Teaching methods:

- Lecture associated with slideshow, discussion, and sample observation in class.
- Personal assignment.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Finish the course assignment.
- Attend the final examination of the subject.
- Perform actively self-study hours.

10. Assessment of student learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1	Point of overall attendance	- Attend at least 80% of theory hours	10%	CO3, CO4, CO5
2	Point of assignments	- Finish assignments/ all assignments	30%	CO1, CO2, CO3, CO4, CO5
3	Point of the final examination	- Multiple-choice test (60 minutes)	60%	CO1, CO2, CO5

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
1] Cơ lý thuyết / Vũ Duy Cường.- 3rd.- Thành phố Hồ Chí Minh: Đại Học Quốc GIa Thành phố Hồ Chí Minh, 2004.- 303tr., 24cm.- 531/ C561	CN.011341 CN.011339 CN.011337
2] Cơ ứng dụng trong kỹ thuật / Đặng Việt Cương.- In lần hai có chỉnh sửa.- Hà Nội: Khoa học và kỹ thuật, 2008.- 372 tr., 24 cm.- 620.1/ C561	MOL.050620 MOL.050619 MOL.052613
[3] Mechanics of materials/ Stamford, CT: Cengage Learning, 2013	620.112/ G367

11. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' Tasks
1-2	**Chapter 1. Basic concepts of mechanics** 1.1. Fundamental concepts in theoretical	4	2	- Previous study: - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3]. + Solve the problems or assignments

	mechanics 1.2. Connections and reactions 1.3. Concept of moment 1.4. Concept of couple moments			required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
3-9	**Chapter 2. Systems of rigid bodies and equations of equilibrium** 2.1. Introduction 2.2. Equivalent force system 2.3. Equilibrium theorems and equations of equilibrium	12	12	- Previous study: [1], [2], [3]. - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3].+ Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
10-14	**Chapter 3. Truss** 3.1. Introduction 3.2. Simplifying assumptions 3.3. Statically determination of the truss 3.4. Method of joints 3.5. Method of sections	10	10	- Previous study: [1], [2], [3]. - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3].+ Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
14-15	**Chapter 4. Geometric properties of an area** 4.1. Introduction 4.2. Centroids of an area 4.3. Centroids of a composite area	4	6	- Previous study: [1], [2], [3]. - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3].+ Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.

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ON BEHALF OF RECTOR
DEAN OF COLLEGE/SCHOOL

Nguyễn Chí Ngôn

HEAD OF DEPARTMENT

Đặng Thế Gia

COURSE OUTLINE DETAILS

1. Course: Strength of Materials (Sức bền vật liệu - XD)

- **Code number:** KC169H
- **Credits:** 04 credits
- **Hours:** 40 theory hours, 40 practice hours (do the assignment)

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** None
- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	This subject provides the learners' ability to solve the real problem related to the design and manufacture of structures and to support the knowledge related to other major subjects in civil engineering.	2.1.2.a
4.2	After completing this module, learners are able to analyze, calculate, and check the durability - the stiffness of the axial load bar, the bending bar, the twisting bar and the bar with general force. Calculating the stability of the axial load bar and the durability of the structure according to the limit states.	2.2.1.b
4.3	This subject also equips the learners with study and research skills in the field of strength of materials, teamwork skills, writing scientific reports or writing project skills.	2.2.2.a,b,d
4.4	Learners love and interest in the subject of strength of the material. They also have a serious and progressive attitude in the learning process.	2.3.a,b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	To equip the learners' ability to solve the real problem related to the design and manufacture of structures and to support the knowledge related to other major subjects in civil engineering.	4.1	2.1.2.a
CO2	To equip the learners' ability to analyze, calculate and check the durability - the stiffness of the axial load bar, bending bar, the twisting bar and the bar with general force. Calculating the stability of the axial load bar and the durability of the structure	4.2	2.2.1.b

	according to the limit states.		
	Skills		
CO3	To equip learners the ability to self-study and research in the field of strength of materials, teamwork skills, writing scientific reports or writing project skills.	4.3	2.2.2.a,b,d
	Attitudes/Autonomy/Responsibilities		
CO4	Learners love and interest in the subject of strength of materials. They also have a serious and progressive attitude in the learning process.	4.4	2.3.a,b

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

This subject is a basic engineering subject, which provides to the learners calculating methods and analyzing the basic structures, analysis of stresses and deformations, testing the strength and stiffness of the bar structure in tension, compression and bending, twisting, and general forces. Calculating the stability of the axial load bar and calculating the durability of the structure according to the limit states.

7. Course structure:

7.1. Theory (40 hours)

	Content	Hours	COs
Chapter 1.	**General conceptions**	**2**	
1.1.	Tasks and subjects of study		CO1,CO4
1.2.	Inertial force – stress – deformation – displacement		CO1,CO4
1.3.	The assumptions		CO1,CO4
Chapter 2.	**Inertial force**	**3**	
2.1.	Concept of inertial force		CO1,CO4
2.2.	Calculate the inertial force for in-plane problems – Section method		CO1,CO2,CO3,CO4
2.3.	Inertial force diagram		CO1,CO2,CO3,CO4
Chapter 3.	**Axial load bar**	**3**	
3.1.	Concepts		CO1,CO4
3.2.	Stress, deformation, and displacement of the axial load bar.		CO1,CO2,CO3,CO4
3.3.	Elastic deformation potential		CO1,CO2,CO3,CO4
3.4.	Mechanical characteristics of the material		CO1,CO2,CO3,CO4
3.5.	The factor of safety, the factor of stiffness, three basic problems.		CO1,CO2,CO3,CO4
3.6.	Indeterminate structures		CO1,CO2,CO3,CO4
Chapter 4.	**Stressed-strained state – theory of limit states**	**3**	
4.1.	Point state of stress		CO1,CO2,CO3,CO4
4.2.	Biaxial state of stress		CO1,CO2,CO3,CO4
4.3.	Stress-strain relationship		CO1,CO2,CO3,CO4

4.4.	Elastic strain potential energy		CO1,CO2,CO3,CO4
4.5.	Theory of limit states		CO1,CO2,CO3,CO4
Chapter 5.	**Geometric characteristic of the cross-section**	**4**	
5.1.	Concept		CO1,CO4
5.2.	Area moment		CO1,CO2,CO3,CO4
5.3.	Moment of inertial		CO1,CO2,CO3,CO4
5.4.	Parallel axis theorem for the moment of inertial		CO1,CO2,CO3,CO4
5.5.	Rotation of axis		CO1,CO2,CO3,CO4
5.6.	Principal Axes and Principal Moments of Inertia		CO1,CO2,CO3,CO4
Chapter 6.	**Beam in bending**	**3**	
6.1.	Concept		CO1,CO4
6.2.	Pure Bending beam		CO1,CO2,CO3,CO4
6.3.	Horizontal bending beam		CO1,CO2,CO3,CO4
Chapter 7.	**Deflections of Beams**	**4**	
7.1.	Concept		CO1,CO4
7.2.	Deflections by Integration method		CO1,CO2,CO3,CO4
7.3.	Maxwell's theorem		CO1,CO2,CO3,CO4
7.4.	Deflections by Initial parameter method		CO1,CO2,CO3,CO4
7.5.	Indeterminate structures		CO1,CO2,CO3,CO4
Chapter 8.	**Beam in twisting**	**3**	
8.1.	Concept		CO1,CO4
8.2.	Twisting of the beam with circular cross-section		CO1,CO2,CO3,CO4
8.3.	Twisting of the beam with circle rectangular cross-section		CO1,CO2,CO3,CO4
8.4.	Indeterminate structures		CO1,CO2,CO3,CO4
Chapter 9.	**Beam with general load**	**3**	
9.1.	Concept		CO1,CO4
9.2.	Beam with oblique bending		CO1,CO2,CO3,CO4
9.3.	Beam with axial load		CO1,CO2,CO3,CO4
9.4.	Elastic strain potential energy		CO1,CO2,CO3,CO4
9.5.	Beam with bending and twisting		CO1,CO2,CO3,CO4
9.6.	Beam with general loads		CO1,CO2,CO3,CO4
Chapter 10.	**Stability of axial load bar**	**4**	
10.1.	Concept		CO1,CO4
10.2.	The critical force of the bar under compression		CO1,CO2,CO3,CO4
10.3.	Limit of application of Euler formula. Stability of the work bar outside the elastic limit		CO1,CO2,CO3,CO4
10.4.	A practical method to determine the stability of the bar with a compression		CO1,CO2,CO3,CO4
Chapter 11.	**Beam with dynamic loads**	**4**	
11.1.	Concept		CO1,CO4
11.2.	Beam with moving load		CO1,CO2,CO3,CO4

11.3.	Vibration of structure		CO1,CO2,CO3,CO4
11.4.	Indeterminate structures		CO1,CO2,CO3,CO4
Chapter 12.	**The durability of the structure according to the limit states**	**4**	
12.1.	Concept		CO1,CO4
12.2.	The durability of the structure according to the limit loads		CO1,CO2,CO3,CO4
12.3.	Bar with tensile (compression)		CO1,CO2,CO3,CO4
12.4.	Bar with pure bending		CO1,CO2,CO3,CO4
12.5.	Bar with bending		CO1,CO2,CO3,CO4

7.2. Practice (40 hours)

	Content	Hours	COs
Chapter 1.	**General conceptions**	**0**	
Chapter 2.	**Inertial force**	**2**	
Unit 1.	Practicing to chart the beam's internal force		CO1,CO4
Unit 2.	Practicing to chart the frame's internal force		CO1,CO2,CO3,CO4
Chapter 3.	**Axial load bar**	**3**	
Unit 1.	Practicing to determine the durable conditions, hard conditions, three basic form problems		CO1,CO4
Unit 2.	Practicing to calculate the indeterminate structures		CO1,CO2,CO3,CO4
Chapter 4.	**Stressed-strained state – theory of limit states**	**3**	
Unit 1.	Practice determining stress at a point		CO1,CO2,CO3,CO4
Unit 2.	Practicing to calculate according to persistent theory		CO1,CO2,CO3,CO4
Chapter 5.	**Geometric characteristic of a cross-section**	**4**	
Unit 1.	Practicing to determine the static moments of a cross-section		CO1,CO4
Unit 2.	Practicing to determine the moment of inertia of the cross-section		CO1,CO2,CO3,CO4
Chapter 6.	**Beam in bending**	**4**	
Unit 1.	Practicing to calculate beam with pure bending		CO1,CO4
Unit 2.	Practicing to calculate beam with bending		CO1,CO2,CO3,CO4
Chapter 7.	**Deflections of Beams**	**4**	
Unit 1.	Practicing to calculate the deflection using artificial beam method		CO1,CO4
Unit 2.	Practicing to calculate the deflection using the original parameter method		CO1,CO2,CO3,CO4
Unit 3.	Practicing to calculate the hyperstatic problems		CO1,CO2,CO3,CO4
Chapter 8.	**Beam in twisting**	**4**	
Unit 1.	Practicing to calculate the twisting of the bar with circular cross-section		CO1,CO4

Unit 2.	Practicing to calculate the twisting of the bar with a rectangular cross-section		CO1,CO2,CO3,CO4
Unit 3.	Practicing to calculate the hyperstatic problems		CO1,CO2,CO3,CO4
Chapter 9.	**Beam with general load**	**4**	
Unit 1.	Practicing to calculate beam with oblique bending		CO1,CO4
Unit 2.	Practicing to calculate beam with bending and tensile (compression)		CO1,CO2,CO3,CO4
Unit 3.	Practicing to calculate beam with bending and twisting		CO1,CO2,CO3,CO4
Unit 4.	Practicing to calculate beam with general load		CO1,CO2,CO3,CO4
Chapter 10.	**Stability of axial load bar**	**4**	
Unit 1.	Practicing to determine the critical load of the bar with a compression		CO1,CO4
Unit 2.	Practicing to determine the stability of the bar with a compression		CO1,CO2,CO3,CO4
Chapter 11.	**Beam with dynamic loads**	**4**	
Unit 1.	Practicing to determine the inertial force of beam with moving load		CO1,CO4
Unit 2.	Practicing to determine the oscillation frequency		CO1,CO2,CO3,CO4
Chapter 12.	**The durability of the structure according to the limit states**	**4**	
Unit 1.	Practicing to determine the durability of tensile(compression) bar according to the limit state		CO1,CO4
Unit 2.	Practicing to determine the durability of the bending bar according to the limit state		CO1,CO2,CO3,CO4

8. Teaching methods:

- Lecture associated with slideshow, discussion, and sample observation in class (40 hours). Instruction and editing exercises according to each group of students, each group has 6 sessions (equivalent to 40 hours of practice).
- Discussion with the lecturer.
- Group discussion.
-Group assignment

9. Duties of student:

Students have to do the following duties:

- Read before the lecture and related references
-Attend at least 80% of theory hours.
- Finish the course assignment.
- Attend mid-term examination of the subject.
- Attend the final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours/theory hours	10%	CO4

2	Point of assignments	- All chapter assignments/group assignments	10%	CO1, CO2, CO3,CO4
3	Point of mid-term examination	- Writing test - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1, CO2, CO3, CO4
4	Point of the final examination	- Writing test - Attend at least 80% of theory hours. - Compulsory attendance exam	55%	CO1, CO2, CO3, CO4

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- The subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Learning materials:

Learning materials information	Barcode number
1] Bài giảng Sức bền vật liệu	
2] Sức bền vật liệu- Tập 1 / Lê Hoàng Tuấn, Bùi Công Thành.- Thành phố Hồ Chí Minh: Trường Đại học Bách khoa Tp. HCM, 1994.- 201 tr. ; minh họa, 21 cm.- 620.1/ T502/T.1	CN.016792
3] Bài tập sức bền vật liệu : Tóm tắt lý thuyết, các bài giải mẫu, bài tập tự giải: Đề thi tuyển sinh sau đại học và Olympic / Thái Thế Hùng (chủ biên) ... [et al.].- Hà Nội: Khoa học và Kỹ thuật, 2005.- 334 tr. ; Minh họa, 24 cm.- 620.112076/ H513	CN.016749 MOL.037685 MOL.037684 MON.019964
4]Sức bền vật liệu : Những bài tập nâng cao / Nguyễn Xuân Lựu (chủ biên).- Hà Nội: Đại học giao thông vận tải, 2000.- 144 tr., 27 cm - Đầu trang tên sách ghi: Bộ môn Sức bền vật liệu.- 620.112076/ L566	CN.012606 CN.012608 MOL.044256 MOL.044257 MOL.044258

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1: General conceptions** 1.1.Tasks and subjects of study 1.2.Inertial force – stress – deformation – displacement 1.3.The assumptions	2	0	- Previous study: [1],[2] chapter 1 - Solve the problems or assignments of chapter 1. - Submit assignments + Group discussion + Summarize the core content of the study.

				+ Prepare the content for discussion on the coming class.
2	**Chapter 2: Inertial force** 2.1.Concept of inertial force 2.2.Calculate the inertial force for in-plane problems -Section method 2.4.Inertial force diagram 1.	3	2	- Previous study: [1],[2] chapter 2 - Solve the problems or assignments of chapter 2. - Submit assignments + Group discussion + Summarize the core content of the study. + Prepare the content for discussion on the coming class.
3	**Chapter 3: Axial load bar** 3.1.Concepts 3.2.Stress, deformation, and displacement of the axial load bar 3.3.Elastic deformation potential 3.4.Mechanical characteristics of the material 3.5.The factor of safety, the factor of stiffness, three basic problems. 3.6.Hyperstatic problems	3	3	- Previous study: [1],[2] chapter 3 - Solve the problems or assignments of chapter 3. - Submit assignments + Group discussion + Summarize the core content of the study. + Prepare the content for discussion on the coming class.
4	**Chapter 4: Stressed-strained state – theory of limit states** 4.1.Point state of stress 4.2.Biaxial state of stress 4.3.Stress-strain relationship 4.4.Elastic strain potential energy 4.5.Theory of limit states	3	3	- Previous study: [1],[2] chapter 4 - Solve the problems or assignments of chapter 4. - Submit assignments + Group discussion + Summarize the core content of the study. + Prepare the content for discussion on the coming class.
5	**Chapter 5: Geometric characteristic of a cross-section** 5.1.Concept 5.2.Area moment 5.3.Moment of inertial 5.4.Parallel axis theorem for the moment of inertial 5.5.Rotation of axis 5.6. Principal Axes and Principal Moments of inertia	4	4	- Previous study: [1],[2] chapter 5 - Solve the problems or assignments of chapter 5. - Submit assignments + Group discussion + Summarize the core content of the study. + Prepare the content for discussion on the coming class.
6	**Chapter 6: Beam in bending**	3	4	- Previous study: [1],[2]

	6.1.Concept 6.2.Pure Bending beam 6.3.Horizontal bending beam			chapter 6 - Solve the problems or assignments of chapter 6. - Submit assignments + Group discussion + Summarize the core content of the study. + Prepare the content for discussion on the coming class.
7	**Chapter 7: Deflections of Beams** 7.1.Concept 7.2.Deflections by 7.3.Integration method 7.4.Maxwell's theorem 7.5.Deflections by initial parameter method 7.6.Indeterminate structures	4	4	- Previous study: [1],[2] chapter 7 - Solve the problems or assignments of chapter 7. - Submit assignments + Group discussion + Summarize the core content of the study. + Prepare the content for discussion on the coming class.
8	**Mid-term exam**			Review: Chapter 1 to chapter 7
9-10	**Chapter 8: Beam in twisting** 8.1.Concept 8.2.Twisting of the beam with circular cross-section 8.3.Twisting of the beam with circle rectangular cross-section 8.4.Twisting of the beam with circle rectangular cross-section 8.5.Indeterminate structures	3	4	- Previous study: [1],[2] chapter 8 - Solve the problems or assignments of chapter 8. - Submit assignments + Group discussion + Summarize the core content of the study. + Prepare the content for discussion on the coming class.
11-12	**Chapter 9: Beam with general load** 9.1.Concept 9.2.Beam with oblique bending 9.3.Beam with axial load 9.4.Elastic strain potential energy 9.5.Beam with bending and twisting 9.6.Beam with general loads 1. 2.	3	4	- Previous study: [1],[2] chapter 9 - Solve the problems or assignments of chapter 9. - Submit assignments + Group discussion + Summarize the core content of the study. + Prepare the content for discussion on the coming class.
13	**Chapter 10: Stability of axial load bar** 10.1.Concept 10.2.The critical force of the bar under	4	4	- Previous study: [1],[2] chapter 10 - Solve the problems or

	compression 10.3.Limit of application of Euler formula. Stability of the work bar outside the elastic limit 10.4.A practical method to determine the stability of the bar with a compression 3. 4.			assignments of chapter 10. - Submit assignments + Group discussion + Summarize the core content of the study. + Prepare the content for discussion on the coming class.
14	**Chapter 11: Beam with dynamic loads** 11.1.Concept 11.2.Beam with moving load 11.3.Vibration of structure 11.4.Indeterminate structures 1. 2. 3. 4. 5.	4	4	- Previous study: [1],[2] chapter 11 - Solve the problems or assignments of chapter 11. - Submit assignments + Group discussion + Summarize the core content of the study. + Prepare the content for discussion on the coming class.
15	**Chapter 12: The durability of the structure according to the limit states** 12.1.Concept 12.2The durability of the structure according to the limit loads 12.3.Bar with tensile (compression) 12.4.Bar with tensile (compression) 12.5.Bar with pure bending 12.6.Bar with bending	4	4	- Previous study: [1],[2] chapter 12 - Solve the problems or assignments of chapter 12. - Submit assignments + Group discussion + Summarize the core content of the study. + Prepare the content for discussion on the coming class.

	Can Tho, ……/……../20…
ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **Nguyễn Chí Ngôn**	**HEAD OF DEPARTMENT** **Đặng Thế Gia**

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

1. Course: Descriptive geometry and engineering drawing (Hình họa và Vẽ kỹ thuật - XD)

- **Code number:** KC170H

- **Credits: 3**

- **Hours:** 20 theory hours, 50 practice hours (works the assignment).

2. Management Unit:

- **Department:** Civil Engineering.

- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** None

- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	The methods to project geometrical form on to planes. Description technique of spatial figures and basic engineering drafting; The course provides basic knowledge of engineering drawings; Knowledge of professional drawings such as steel structure drawings, drawings of reinforced concrete structures project drawings…	2.1.2.a 2.1.3.a
4.2	Be able to read and draw engineering drawings correctly, completely and precisely according to regulations before applying drawing software;	2.1.2.a 2.1.3.a
4.3	Having soft skills: presentation; observation skills, analysis, teamwork, communication	2.2.2.a,b,c,d
4.4	This is a practice, training for learners with high community, meticulousness, prudence and perseverance, ..., the qualities that designers need. Positive and proactive self-studying and practicing; Hardworking, Share with friends.	2.3.a

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	The methods to project geometrical form on to planes. Description technique of spatial figures and basic engineering drafting; The course provides basic knowledge of engineering drawings;	4.1	2.1.2.a
CO2	Knowledge of professional drawings such as steel structure drawings, drawings of reinforced concrete structures project drawings…	4.1	2.1.2.a 2.1.3.a
	Skills		

CO3	Skills of reading comprehension and making technical drawings are correct, complete, and accurate according to regulations before applying for drawing on specialized computer software: Autocad, Photoshop, 3D MAX, ...	4.2	2.2.2.a,b
CO4	Having soft skills: presentation; observation skills, analysis, teamwork, communication deducing logic and imagining space; proactive in work, listening skills, teamwork skills, job management skills, communication skills; discovery skills, creative skills, lifelong learning skills ...	4.3	2.2.2.c,d
	Attitudes/Autonomy/Responsibilities		
CO5	This is a practice, training for learners with high community, meticulousness, prudence and perseverance, ..., the qualities that designers need. Having the correct vision of the role of engineering drawings in the civil field; Positive and proactive self-studying and practicing. Honesty in the learning process and examination.	4.4	2.3.a

6. Brief description of the course:

The content consists of two parts:

- Graphics: projections, location problems; multifaceted, and intersecting. This section is the basis for Technical Drawing.
- Technical drawings: Basic concepts of technical drawing (materials and drawing tools, basic standards for technical drawings, demonstration of objects on technical drawings). Construction drawing (drawing of steel structure, reinforced concrete structure, wood structure), construction drawings (drawing houses, hydraulic works, bridges, water treatment works ...) from which students have Reading - drawing technical drawings as well as expressing - communicating design intentions, technological processes with technical drawings.

7. Course structure:

7.1. Theory: 20 hours

	Content	**Hours**	**COs**
DESCRIPTIVE GEOMETRY PART			
Chapter 1.	Projections	2	CO1
1.1.	Projections		
1.2.	Show point, line, plane		
Chapter 2.	Show of objects	2	CO1
2.1.	Rules and methods of surface analysis		
2.2.	Show of objects		
2.3.	Problems of locations		

ENGINEERING DRAWING PART			
Chapter 3.	Materials and tools	2	CO1,CO3, CO4,CO5
3.1.	Materials		
3.2.	Instruments		
Chapter 4.	Basic standards for engineering drawing	2	CO1,CO3, CO4,CO5
4.1.	Paper size		
4.2.	Ratio		
4.3.	Strokes		
4.4.	Word and number		
4.5.	Write size		
4.6.	Some other symbols		
4.7.	Special case		
4.8.	Material notation		
Chapter 5.	Show of objects on engineering drawings	2	CO2,CO3, CO4,CO5
5.1.	Straight projection method		
5.2.	Section and section		
5.3.	Split drawing		
5.4.	Axis projection		
Chapter 6.	Steel structure drawing	3	CO2,CO3, CO4,CO5
6.1.	General concept		
6.2.	Performance of steel shapes		
6.3.	The form of fitting of steel structure		
6.4.	Characteristics of steel structure drawing		
6.5.	Types of steel structure drawings		
6.6.	The sequence draws the representation of a button		
Chapter 7.	Drawings of reinforced concrete structures	3	CO2,CO3, CO4,CO5
7.1.	General concept		
7.2.	Reinforces in reinforced concrete structures		
7.3.	Conventional regulations and symbols used on reinforced concrete structure drawings		
7.4.	Reading and drawing reinforced concrete		
Chapter 8.	**Drawings of wood structure**	2	CO2,CO3, CO4,CO5

8.1.	General concept		
8.2.	Forms of connection of wood structure		
8.3.	Content and characteristics of wood texture drawings		
8.4.	The sequence of wood structure drawing		
Chapter 9.	**Project drawings**	2	CO2,CO3, CO4,CO5
9.1.	House drawings		
9.2.	Drawings of hydraulic works		
9.3.	Bridge drawing		
9.4.	Drawings of water treatment works		

7.2. Practice: 50 hours

	Content	**Hours**	**COs**
Unit 1.	Practice Exercises in Chapter 1 & 2	10	CO1,CO3, CO4,CO5
Unit 2.	Practice Exercises in Chapter 4,5	10	CO1, CO2,CO3, CO4,CO5
Unit 3.	Practice Exercises in Chapter 6	10	CO2,CO3, CO4,CO5
Unit 4.	Practice Exercises in Chapter 7	10	CO2,CO3, CO4,CO5
Unit 5.	Practice Exercises in Chapter 9	10	CO2,CO3, CO4,CO5

8. Teaching methods:

- Lecture associated with slideshow, discussion, and sample observation in class.
- Discussion with the lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination of the subject.
- Finish the course assignment.
- Attend the final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	**Point components**	**Rules and Requirement**	**Weights**	**COs**
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours/ theory hours	10%	CO1, CO2
2	Point of mid-term examination	- The test shows the drawing. - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	30%	CO1, CO2 CO3, CO4, CO5
3	Point of the final examination	- The test shows the drawing. - Attend at least 80% of theory hours. - Compulsory attendance exam	60%	CO1, CO2 CO3,

				CO4, CO5

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- The course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Materials information	Code number
1] Hình học họa hình/ Hình chiếu thẳng góc, hình chiếu trục đo ; Tập 1 / Nguyễn Mạnh Dũng chủ biên ; Nguyễn Văn Điểm - Hà Nội : Giáo dục Việt Nam , 2010	MOL.068640; MOL.068639; N.017674; CN.017675; CN.017676
2] Vẽ kỹ thuật xây dựng – NXB GD 2001/ Nguyễn Quang Cự, Đoàn Như Kim, Dương Tiến Thọ	CN.017217; MOL.047039; CN.017216; MOL.047040
3] Bài tập Vẽ kỹ thuật kiến trúc Tập 1&2 / Nguyễn Hữu Trí chủ biên.- Tái bản.- NXBGD, 2011	MOL.068621; MOL.068622
4] Bài tập Vẽ kỹ thuật Xây dựng Tập 1&2 / Nguyễn Quang Cự, Đoàn Như Kim, Đoàn Như Kim - NXB GD 2001	CN.012725; CN.012722
5] Tuyển tập các tiêu chuẩn xây dựng – Bộ xây dựng	CN.001663; MOL.021758; MOL.021759
6] Drawing workbook for engineering drawing and design/ Jensen, Cecil Howard /New York: Glencoe/McGwaw-Hill, 1997 / 604.2 / J54	MOL.001676; MON.024072

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1-2	**Chapter 1 & 2**	6	6	- Previous study: [1]
3-12	**Chapter 3, 4, 5, 6, 7 & 8.**	3x6	3x6	- Previous study: [2], [3], [4] , [5] &[6] - After hours of theory, group study (a group of 3 to 5 students): [2], [3], [4], [5] &[6] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
13-15	**Chapter 9**	6	6	- Previous study: [2], [3], [4] , [5] &[6] - After hours of theory, group study (a group of 3 to 5 students): [2], [3], [4], [5] &[6] + Solve the problems or assignments required by

				the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.

Cần Thơ, ngày tháng năm 20

ON BEHALF OF RECTOR
DEAN OF COLLEGE/SCHOOL

Nguyễn Chí Ngôn

HEAD OF DEPARTMENT

Đặng Thế Gia

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

1. Course: Structural Mechanics (Cơ học kết cấu)

- **Code number:** KC171H
- **Credits: 4**
- **Hours:** 40 lecture hours, 40 exercise hours

2. Management Unit:

- **Department:** Civil Engineering

- Faculty/School/Institute/Center/Department: College of Engineering Technology

3. Requisites:

- Prerequisites: KC169H

- Corequisites: None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Provide mechanics knowledge such as forming of structures, internal force, deformation, and displacement in construction.	2.1
4.2	Ability to analyze, explain, and solve structural problems.	2.1
4.3	Equip teamwork skill, communication skill, and reading comprehension skill of professional documents in English	2.2
4.4	Develop personal and corporate responsibility and professional ethics for high quality, safe and sustainable construction	2.3

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		

CO1	Perceive basic concepts of kinematic analysis, analysis such as (un)changeable structures and instantaneously changeable structures, connection of rigid discs, load and impact, element forces, reactions,…	4.1	2.1.2a; 2.1.2b
CO2	Analyze the geometric structures of the building	4.1	2.1.2a; 2.1.2b
CO3	Calculate internal forces and displacements in isostatic and hyperstatic structures	4.1	2.1.2a; 2.1.2b
CO4	Draw the influence lines for beams, trusses, frames and identify critical positions under loads	4.1	2.1.2a; 2.1.2b
	Skills		
CO5	Ability to represent real structure into the analytical model	4.2	
CO6	Ability to calculate internal forces, deformations, reaction forces, and displacements of structures with different materials	4.2	2.2.1.a,b
CO7	Ability to work in groups to discuss and solve issues related to the structure of a building	4.3	2.2.1.a,b
C08	Understand the English terminology used in the field of construction mechanics	4.3	2.2.2a
C09	Successive applications of specialized subjects.	4.3	2.2.2a
	Attitudes/Autonomy/Responsibilities		
C010	Regularly observe existing building components and identify their functions and technical properties. With this attitude, learners can build their own practical knowledge for the process of selecting building parts for specific designs.	4.4	2.3a
C011	Understanding the role of designers not only creates high-value and sustainable constructions but also has the responsibility to save local materials and protect the environment for the community.	4.4	2.3a

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

The course provides knowledge and skills in calculating internal forces, displacement, checking durability, stiffness, and stability in construction structures; equipping the students ability to calculate isostatic and hyperstatic systems as the basis for designing structures with different materials to solve practical problems and serve the study of the next specialized subject. in the field of construction.

7. Course structure:

7.1. Theory (40 hours)

Chapter	Content	Hours	COs
Chapter 1	**Basic concepts**	4	**C01**
1.1.	Subjects and tasks of studies		
1.2.	Structural diagramation		
1.3.	Structural classification		

1.4.	Causes of internal forces, strains and displacements		
1.5.	Assumptions and superposition principle		
Chapter 2	**Geometric analysis of two-dimensional structures**	5	**C01; C02; C05; C07; C09; CO10**
2.1.	Concepts		
2.2.	Types of supports		
2.3.	Connections of rigid bodies		
Chapter 3	**Internal forces in determinate structures**	5	**C03; C07; C08; C09; CO10**
3.1.	Calculus methods for Internal forces		
3.2.	Internal force diagrams		
3.3.	Analyzing determinate structures		
Chapter 4	**Internal forces under unit load in in two-dimensional structures**	5	**C04; C07; C08; C09; CO10**
4.1.	Theory of influence line		
4.2.	Influence line in beams		
4.3.	Influence line in frames		
4.4.	Influence line in trusses		
4.5.	Influence line in articlated structures		
4.6.	Influence line in suported structures		
4.7.	Influence line method for calculation of internal forces		
4.8.	Alternate loading cases		
Chapter 5	**Deformations of linear elastic structures**	5	**C03; C07; C08; C09**
5.1.	Concepts of deformation and displacement		
5.2.	Energy principles of linear elastic structures		
5.3.	Deformations in Maxwell-Mohr’s theorem		
5.4.	Vereschagin’s rule		
Chapter 6	**Force method in indeterminate structures**	5	**C03; C07; C08; C09; CO10**
6.1.	Concept		
6.2.	Content of force method		
6.3.	Displacements in indeterminate structures		
Chapter 7	**Direct stiffness method in indeterminate structures**	5	**C03; C07; C08; CO10**
7.1.	Concept		
7.2.	Content of direct stifness method		
Chapter 8	**Combination method**	6	**C03; C07; C08; C09; CO10**
8.1.	Concept		
8.2.	Content of combination method		

7.2. Practice (40 hours)

Chapter	Content	Hours	COs
Chapter 2	**Geometric analysis of two-dimensional structures**	4	**C01; C02; C05; C07; C09; CO10**

2.1.	Concepts		
2.2.	Types of supports		
2.3.	Connections of rigid bodies		
Chapter 3	**Internal forces in determinate structures**	6	**C03; C07; C08; C09; CO10**
3.1.	Calculus methods for Internal forces		
3.2.	Internal force diagrams		
3.3.	Analyzing determinate structures		
Chapter 4	**Internal forces under unit load in in two-dimensional structures**	6	**C04; C07; C08; C09; CO10**
4.1.	Theory of influence line		
4.2.	Influence line in beams		
4.3.	Influence line in frames		
4.4.	Influence line in trusses		
4.5.	Influence line in articlated structures		
4.6.	Influence line in suported structures		
4.7.	Influence line method for calculation of internal forces		
4.8.	Alternate loading cases		
Chapter 5	**Deformations of linear elastic structures**	6	**C03; C07; C08; C09**
5.1.	Concepts of deformation and displacement		
5.2.	Energy principles of linear elastic structures		
5.3.	Deformations in Maxwell-Mohr’s theorem		
5.4.	Vereschagin’s rule		
Chapter 6	**Force method in indeterminate structures**	6	**C03; C07; C08; C09; CO10**
6.1.	Concept		
6.2.	Content of force method		
6.3.	Displacements in indeterminate structures		
Chapter 7	**Direct stiffness method in indeterminate structures**	6	**C03; C07; C08; CO10**
7.1.	Concept		
7.2.	Content of direct stifness method		
Chapter 8	**Combination method**	6	**C03; C07; C08; C09; CO10**
8.1.	Concept		
8.2.	Content of combination method		

8. Teaching methods:

Students are required to read the supplied documents before classes, complete assignments from the previous session and discuss in class. The sessions will be a combination of lectures, group exercises and discussion questions.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Finish the course assignment.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	Cos
1	Overall attendance	-Attend at least 75% of theory hours and exercise/assisgment hours	10%	CO2; CO3; CO5; CO6
2	Group assignments	- All chapter assignments - Complete at least 80% of exercise/assisgment hours up to exam day.	30%	CO6; CO7; CO8; CO9; CO10
3	Final examination	- Compulsory attendance writing exam (90-120 mins)	60%	CO1; CO2; CO3; CO4; CO7; CO8

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- The course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Thông tin về tài liệu	Số đăng ký cá biệt
] Cơ học kết cấu / Đặng Thế Gia, Nguyễn Anh Duy, Lê Tuấn Tú	
[2] Bài tập cơ học kết cấu / Nguyễn Tài Trung.- Hà Nội: Xây Dựng, 2003.- 249 tr. ; Minh họa, 27 cm.- 624.171076/ Tr513/2003	CN.001390, CN.001391 CN.001392, CN.001393 IOL.002312, IOL.013163, IOL.013164
[3] Bài tập cơ học kết cấu- Tập 1- Hệ tĩnh định / Lều Thọ Trình, Nguyễn Mạnh Yên.- Hà Nội: Khoa học và Kỹ thuật, 2003.- 183 tr. ; Minh họa, 25 cm.- 624.171076/ Tr312/T.1	MOL.013895,MOL.013899 MOL.040193,MOL.040194
[4] Bài tập cơ học kết cấu- Tập 2- Hệ siêu tĩnh / Lều Thọ Trình, Nguyễn Mạnh Yên.- Hà Nội: Khoa học kỹ thuật, 2004.- 231 tr., 24 cm.- 624.171076/ Tr312/T.2	CN.003378,CN.003379 CN.003380,CN.003381 CN.003382

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1	**Chapter 1: Basic concepts** 1.1. Subjects and tasks of studies 1.2. Structural diagramation 1.3. Structural classification 1.4. Causes of internal forces, strains and displacements 1.5. Assumptions and superposition principle	3	0	- Self-studies in advance: + Ref [1]: Chapter 1: Sec 1.1 to 1.5 + Review the Theories of Mechanics (CN101) and Strength of Materials (XD1)

	Chapter 1 exercises			
2	**Chapter 2: Geometric analysis of two-dimensional structures** 2.1. Concepts 2.2. Types of supports 2.3. Connections of rigid bodies Chapter 2 exercises	3	0	- Self-studies in advance: + Rf [1]: Chapter 2: Sec 2.1 to 2.3 - Chapter 2 exercises, ref [1]
3	**Chapter 3: Internal forces in determinate structures** 3.1. Calculus methods for internal forces 3.2. Internal force diagrams	3	0	- Self-studies in advance: + Ref [1]: Chapter 3: Sec 3.1 to 3.3
4	**Chapter 3: Internal forces in determinate structures** 3.3. Analyzing determinate structures	3	0	- Self-studies in advance: + Ref [1]: Chapter 3: Sec 3.3
5	Chapter 3 exercises			- Chapter 3 exercises, ref [1]
6	**Chapter 4: Internal forces under unit load in in two-dimensional structures** 4.1. Theory of influence line 4.2. Influence line in beams 4.3. Influence line in frames 4.4. Influence line in trusses	3	0	- Self-studies in advance: + Ref [1]: Chapter 4: Sec 4.1 to 4.4
7	**Chapter 4: Internal forces under unit load in in two-dimensional structures** 4.5. Influence line in articlated structures 4.6. Influence line in suported structures 4.7. Influence line method for calculation of internal forces 4.8. Alternate loading cases	3	0	- Self-studies in advance: + Ref [1]: Chapter 4: Sec 4.5 to 4.8
8	Chapter 4 exercises	3	0	- Chapter 4 exercises, ref [1]
9 & 10	**Chapter 5: Deformations of linear elastic structures** 5.1. Concepts of deformation and displacement 5.2. Energy principles of linear elastic structures 5.3. Deformations in Maxwell-Mohr's theorem 5.4. Vereschagin's rule Chapter 5 exercises	3	0	- Self-studies in advance: + Ref [1]: Chapter 5: Sec 5.1 to 5.4
11	**Chapter 6: Force method in indeterminate structures** 6.1. Concept 6.2. Content of force method	3	0	- Self-studies in advance: + Ref [1]: Chapter 6: Sec 6.1 to 6.2
12	**Chapter 6: Force method in**	3	0	- Self-studies in advance:

	indeterminate structures 6.3. Displacements in indeterminate structures Chapter 6 exercises			+ Ref [1]: Chapter 6: Sec 6.3 - Chapter 6 exercises, ref [1]
13	**Chapter 7: Direct stiffness method in indeterminate structures** 7.1. Concept 7.2. Content of direct stifness method	3	0	- Self-studies in advance: +Tài liệu [1]: nội dung từ mục 7.1 to 7.2 của Chapter 7.
14	**Chapter 7: Direct stiffness method in indeterminate structures** 7.2. Content of direct stifness method (cont.) Chapter 7 exercises	3	0	- Self-studies in advance: + Ref [1]: Chapter 7: Sec 7.2 (cont.) - Chapter 7 exercises, ref [1]
15	**Chapter 8: Combination method** 8.1. Concept 8.2. Content of combination method Chapter 8 exercises	3	0	- Self-studies in advance: + Ref [1]: Chapter 8: Sec 8.1 to 8.2 - Chapter 8 exercises, ref [1]

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ON BEHALF OF RECTOR
DEAN OF COLLEGE/SCHOOL

Nguyễn Chí Ngôn

HEAD OF DEPARTMENT

Đặng Thế Gia

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom – Happiness

COURSE OUTLINE DETAILS

1. Course: Engineering Geology (Địa chất công trình)

- **Code**: KC172H
- **Credits**: 3
- **Hours**: 20 theory hours, 50 practice hours.

2. Management Unit:

- **Department**: Civil Engineering.
- **Faculty/School/Institute/Center/Department**: College of Engineering Technology

3. Requisites:

- **Prerequisites:** None
- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Understanding geology and engineering principles in civil engineering	2.1.3.b
4.2	Applying the training knowledge for soil investigation and foundation design	2.2.1.b
4.3	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	2.2.2.a,d,e
4.4	Improving the capacities in terms of self-study, practice, and knowledge expansion for the final examination, term papers, and future work.	2.3.b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
1.	Knowledge of soil, rock establishment Properties and minerals of the soil	4.1	2.1.3.b
2.	Principles of soil investigation	4.1	2.1.3.b
	Skills		
3.	Making soil investigation procedures	4.2	2.2.1.b
4.	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	4.3	2.2.2.a,d,e
	Attitudes/Autonomy/Responsibilities		
5.	Being positively and prospectively enhancing capacities for self-study and practice.	4.4	2.3.b
6.	Being honest during the learning process and in the examination.	4.4	2.3.b

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

The course provides the knowledge of fundamentals of geology applied in civil engineering. The course includes topics of soil and rock establishment, mineral types, soil properties, geologic structure, soil investigation procedures.

7. Course structure:

7.1. Theory (20 hrs.)

Chapter	Content	Hours	COs
1.	Introduction to Engineering Geology	2	CO1
2.	Introduction to the Earth structure and Phenomenon	2	CO1
3.	Minerals and subsoil structure	2	CO1

4.	Establishment of soil and rock	2	CO1
5.	Underground water and permeability	4	CO1
6.	Principles of soil investigation procedures	4	CO2; CO3; CO4; CO5; CO6
7.	Soil investigation consulting	4	CO2; CO3; CO4; CO5; CO6

7.2. Practice (50 hrs.)

Assignment	Content	Hours	COs
1.	Soil investigation procedure	10	CO3; CO4
2.	Determine of soil properties	10	CO1; CO2
3.	Data analysis	10	CO1; CO2
4.	Making a report	10	CO3; CO4; CO5; CO6
5.	Geology assessment and application for foundation engineering	10	CO3; CO4; CO5; CO6

8. Teaching method:

- Lecture associated with slideshow, discussion, and sample observation in class.
- Discussion with the lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination of the subject.
- Finish the course assignment.
- Attend the final examination of the subject.
- Perform actively self-study hours.

10. Assessment of student learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1.	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours/theory hours	10%	CO5;CO6
2.	Point of group assignments	- All chapter assignments /(3 – 5 students /group)	15%	CO1 to CO3
3.	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1 to CO3
4.	Point of the final examination	- Writing test (90 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO1 to CO6

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- The course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Materials:

Thông tin về tài liệu	Số đăng ký cá biệt
1. Địa chất công trình/ Nguyễn Uyên...[et al.].- Tái bản.- Hà Nội: Xây dựng, 2004.- 287 tr. ; Hình vẽ, 27 cm.- 624.151/ Đ301,	MOL.055351, MOL.055327, DIG.000073, MON.032138
2. Địa chất đại cương/ Trần Anh Châu.- Hà Nội: Giáo dục, 1984 .- 551/ Ch125	MON.012758
3. Địa chất đại cương / Phùng Ngọc Đĩnh, Lương Hông Hược.- Hà Nội: Đại học Sư phạm Hà Nội, 2005.- 183 tr., 21 cm.- 551/ Đ312	MOL.045686, MOL.045687, MON.023538
4. Alan E. Kehew – địa chất học cho kỹ sư xây dựng và cán bộ kỹ thuật môi trường, tập 1 và 2 - nhà xuất bản giáo dục 1998.	…

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1-2	**Chapter 1.** Introduction to Engineering Geology **Assignment 1** Soil investigation procedure	2	10	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
3-4	**Chapter 2.** Soil properties. **Assignment 2** Determine of soil properties	2	5	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
5-6	**Chapter 3.** Minerals and subsoil structure **Assignment 2** Determine of soil	2	5	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] + Solve the problems or assignments

	properties			required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
7-8	**Chapter 4.** Establishment of soil and rock **Assignment 3** Data analysis	2	5	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
9-10	**Chapter 5.** Underground water and permeability **Assignment 3** Data analysis	4	5	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
11-12	**Chapter 6.** Principles of soil investigation procedures **Assignment 4** Making report	4	10	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
13-15	**Chapter 7.** Soil investigation consulting **Assignment 5** Geology assessment and application for foundation engineering	4	10	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.

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Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

1. Course: Land Surveying (Trắc địa)

- **Code number:** KC173H
- **Credits: 3**
- **Hours:** 20 theory hours, 50 practice hours (do the assignment)

2. Management Unit:

- **Department:** Civil Engineering

- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** None

- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	To understand basic concepts of land surveying, surveying of topographic maps and profile, surveying for construction	2.1.2.a
4.2	To conduct the topographic surveying and construction surveying	2.2.1.b
4.3	Writing and presenting reports in the field of Civil Engineering	2.2.2.b
4.4	Having responsibility and the correct vision of the land surveying field.	2.3.a,b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	To understand basic concepts of land surveying	4.1	2.1.2.a
CO2	To understand the knowledge of topographic surveying and construction surveying.	4.1	2.1.2.a
	Skills		

CO3	To conduct the topographic surveying	4.2	2.2.1.b
CO4	To carry out construction surveying	4.2	2.2.1.b
CO5	Writing and presenting reports in the field of Civil Engineering	4.3	2.2.2.b
	Attitudes/Autonomy/Responsibilities		
CO6	Positive and proactive self-studying and practicing.	4.4	2.3.a
CO7	Having a correct vision of the land surveying field.	4.4	2.3.b

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

The course aims to teach students about basic knowledge of land surveying such as surveying of topographic maps, topographic profiles, and construction surveying.

7. Course structure:

7.1. Theory (20 hours)

	Content	Hours	COs
Chapter 1.	**Basic concepts**	**2**	CO1; CO2; CO3; CO6; CO7
1.1.	Earth shape and size		
1.2.	Spatial coordinates and elevation		
1.3.	Projection and coordinate plane		
1.4.	WGS84 and VN2000 coordinate system		
1.5.	Global Positioning System		
1.6.	Line orientation and basic computing		
1.7.	Topographic map		
Chapter 2.	**Basic knowledge of errors**	**2**	CO1; CO2
2.1.	Concept of measurements		
2.2.	Error of measurement		
2.3.	Evaluation of measurement results		
Chapter 3.	**Topographic control**	**2**	CO1; CO2; CO3
3.1.	General concept		
3.2.	Control of nation		
3.3.	Control of region		
3.4.	Control of measurement		
Chapter 4.	**Horizontal control**	**3**	CO1; CO2; CO3
4.1.	General concept		
4.2.	Establishment of traverses		
Chapter 5.	**Vertical control**	**3**	CO1; CO2; CO3
5.1.	Concept and method of leveling		
5.2.	Establishment of vertical control		
Chapter	**Topographic surveying**	**4**	CO1; CO2; CO3; CO5; CO6; CO7

6.			
6.1.	General concept		
6.3.	Mapping with total station surveying		
6.4.	Topographic profile		
Chapter 7.	Surveying for construction	**4**	CO1; CO2; CO4; CO5; CO6; CO7
7.1.	Construction positioning		
7.2.	Construction monitoring		

7.2. Assignment of group

	Content	**Hours**	**COs**
Unit 1.	Assignment in topographic surveying of group (3-5 students /group)	25	CO1; CO2; CO3; CO4; CO5; CO6; CO7
Unit 2.	Assignment in construction surveying of group (3-5 students /group)	25	CO1; CO2; CO3; CO4; CO5; CO6; CO7

8. Teaching methods:

- Lecture associated with slideshow, discussion, and sample observation in class.
- Discussion with the lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination.
- Finish the course assignment.
- Attend the final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	**Point components**	**Rules and Requirement**	**Weights**	**COs**
1	Point of overall attendance	- Attend at least 80% of theory hours - Attendance hours/theory hours	10%	CO1; CO2; CO3; CO4; CO5; CO6; CO7
2	- Point of course assignment - Point of term report	- Assignment of a group (3-5 students /group) - Writing test (90 minutes)	40%	CO1; CO2; CO3; CO4; CO5; CO6; CO7
3	Point of the final examination	- Writing test (90 minutes)	50%	CO1; CO2; CO3; CO4; CO5; CO6; CO7

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- The course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal

place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Trắc địa đại cương / Phạm Văn Chuyên .− Hà Nội: Xây dựng, 2010 .− 268 tr., 27 cm .− 526.1/ Ch527.	MOL.068477 MOL.068478 MON.044398
[2] Trắc địa đại cương / Nguyễn Tấn Lộc .− Thành phố Hồ Chí Minh: Trường Đại Học Bách Khoa, 1996 .− 274 tr.	MOL.012594 MOL.012595 MOL.076184
[3] Surveying. Volume 1 / Duggal, S. K. / New Delhi: Tata McGraw-Hill, 2004.− 630p., 25cm. − 526.9/ D866/Vol.1	MON.020701
[4] Surveying. Volume 2 / Duggal, S. K. / New Delhi: Tata McGraw-Hill, 2004.− 440p., 25cm. − 526.9/ D866/Vol.2	MON.020775

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1. Basic concepts** 1.1. Earth shape and size 1.2. Spatial coordinates and elevation 1.3. Projection and coordinate plane 1.4. WGS84 and VN2000 coordinate system 1.5. Global Positioning System 1.6. Line orientation and basic computing 1.7. Topographic map	4	0	+ Previous study: lecture, [1], [2], [3], [4] + After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
2	**Chapter 2. Basic knowledge of errors** 2.1. Concept of measurements 2.2. Error of measurement 2.3. Evaluation of measurement results	2	0	+ Previous study: lecture, [1], [2], [3], [4] + After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
3	**Chapter 3. Topographic control** 3.1. General concept 3.2. Control of nation 3.3. Control of region 3.4. Control of measurement	2	0	+ Previous study: lecture, [1], [2], [3], [4] + After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
4	**Chapter 4. Horizontal**	6	0	+ Previous study: lecture, [1], [2], [3], [4]

	control 4.1. General concept 4.2. Establishment of traverses			+ After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
5	**Chapter 5. Vertical control** 5.1. Concept and method of leveling 5.2. Establishment of vertical control	4	0	+ Previous study: lecture, [1], [2], [3], [4] + After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
6	**Chapter 6. Topographic surveying** 6.1. General concept 6.3. Mapping with total station surveying 6.4. Topographic profile	6	0	+ Previous study: lecture, [1], [2], [3], [4] + After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
7	**Chapter 7.** Surveying for construction 7.1. Construction positioning 7.2. Construction monitoring	6	0	+ Previous study: lecture, [1], [2], [3], [4] + After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
8-15	Assignment of group	0	30	+ Solve the problems in the assignment of group + Group study - Discussing assignment in topographic surveying - Discussing assignment in construction surveying

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COURSE OUTLINE DETAILS

1. Course: Land Surveying Practice (Thực tập trắc địa)

- **Code number:** CN111
- **Credits: 1**
- **Hours:** 30 practice hours

2. Management Unit:

- **Department:** Civil Engineering

- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** None

- **Corequisites:** KC173H

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	To understand the basic knowledge of measurement in land surveying, the procedure in topographic surveying and construction layout	2.1.2.a
4.2	To conduct the basic measurements and to carry out the topographic surveying and construction surveying	2.2.1.b
4.3	Writing reports in the field of Civil Engineering	2.2.2.b,c
4.4	Having responsibility and the correct vision of the land surveying field.	2.3.a,b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	To understand the basic knowledge of measurement in land surveying	4.1	2.1.2.a
CO2	To understand the procedure in topographic surveying and construction layout	4.1	2.1.2.a
	Skills		
CO3	To conduct the basic measurements	4.2	2.2.1.b
CO4	To carry out the topographic surveying and construction surveying	4.2	2.2.1.b
CO5	Writing and presenting reports in the field of Civil Engineering	4.3	2.2.2.b
CO6	Be able to work in teams.	4.3	2.2.2.c
	Attitudes/Autonomy/Responsibilities		
CO7	Positive and proactive self-studying and practicing.	4.4	2.3.a,b

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

The course aims to teach students about basic knowledge of measurement in land surveying such as angle, distance, and leveling. Moreover, this course provides methods and procedures for topographic surveying and construction layout.

7. Course structure:

Practice (30 hours)

	Content	Hours	COs
Unit 1.	**Leveling and automatic level**	5	CO1; CO2; CO3; CO4; CO5; CO6; CO7
1.1.	Principle of leveling		
1.2.	Automatic level		
1.3.	Method and procedure of leveling		
1.4.	Applications of leveling		
Unit 2.	Theodolite and total station	5	CO1; CO2; CO3; CO4; CO5; CO6; CO7
2.1.	Introduction		
2.2.	Theodolite		
2.3.	Total station		
2.4.	Basic applications		
Unit 3.	**Establishment of horizontal control**	5	CO1; CO2; CO3; CO4; CO5; CO6; CO7
3.1.	Introduction		
3.2.	Field-work		
3.3.	Office-work		
Unit 4.	**Establishment of vertical control**	5	CO1; CO2; CO3; CO4; CO5; CO6; CO7
4.1.	Introduction		
4.2.	Field-work		
4.3.	Office-work		
Unit 5.	**Topographic surveying**	5	CO1; CO2; CO3; CO4; CO5; CO6; CO7
5.1.	Introduction		
5.2.	Field-work		
5.3.	Office-work		
Unit 6.	**Layout of construction**	5	CO1; CO2; CO3; CO4; CO5; CO6; CO7
6.1.	Introduction		
6.2.	construction layout		

8. Teaching methods:

- The lecture provides students the instruction of equipment, method of measurements, procedure, and calculation.
- Discussion with the lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend 100% of practice hours on time.
- Finish the group report.
- Attend the final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1	Finish the group	- Attend 100% of practice hours	50%	CO1; CO2; CO3;

	report	- Group report		CO4; CO5; CO6; CO7
2	Point of the final examination	- Attend 100% of practice hours - to practice with equipment and conduct the basic measurements	50%	CO1; CO2; CO3; CO4; CO5; CO6; CO7

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- The course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Hướng dẫn thực hành trắc địa đại cương/ Phạm Văn Chuyên .− Hà Nội: Xây dựng, 2005 .− 128 tr., 27 cm .− 526.1/ Ch527.	MOL.040845 MOL.040848 MON.022204
[3] Surveying. Volume 1 / Duggal, S. K. / New Delhi: Tata McGraw-Hill, 2004.− 630p., 25cm. − 526.9/ D866/Vol.1	MON.020701
[4] Surveying. Volume 2 / Duggal, S. K. / New Delhi: Tata McGraw-Hill, 2004.− 440p., 25cm. − 526.9/ D866/Vol.2	MON.020775

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Unit 1: Levelling and automatic level**	0	5	+ Previous study: - Lecture, [1], [2], [3] - Relevant standard + Group study + Writing the report
2	**Unit 2: Theodolite and total station**	0	5	+ Previous study: - Lecture, [1], [2], [3] - Relevant standard + Group study + Writing the report
3	**Unit 3: Establishment of horizontal control**	0	5	+ Previous study: - Lecture, [1], [2], [3] - Relevant standard + Group study + Writing the report
4	**Unit 4: Establishment of vertical control**	0	5	+ Previous study: - Lecture, [1], [2], [3] - Relevant standard + Group study

				+ Writing the report
5	**Unit 5: Topographic surveying**	0	5	+ Previous study: - Lecture, [1], [2], [3] - Relevant standard + Group study + Writing the report
6	**Unit 6: Layout of construction**	0	5	+ Previous study: - Lecture, [1], [2], [3] - Relevant standard + Group study + Writing the report

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COURSE OUTLINE DETAILS

1. Course: Construction Materials **(**Vật liệu xây dựng**)**

- **Code number:** KC174H
- **Credits:** 3
- **Hours:** 30 theory hours, 30 project hours.

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** None
- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	To understand the basic knowledge of construction materials and assess the performance of popular construction materials.	2.1.2.a
4.2	Calculating and analyzing the principle properties, designing mix proportions of construction materials	2.2.1.b
4.3	Writing and presenting reports in the field of Civil Engineering	2.2.2.b

4.4	Having responsibility and the correct vision of the construction materials field.	2.3.a,b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	To understand the basic knowledge of construction materials	4.1	2.1.2.a
CO2	To assess the performance of popular construction materials	4.1	2.1.2.a
	Skills		
CO3	Calculating and analyzing the principle properties	4.2	2.2.1.b
CO4	Designing mix proportions of construction materials	4.2	2.2.1.b
CO5	Writing and presenting reports in the field of Civil Engineering	4.3	2.2.2.b
	Attitudes/Autonomy/Responsibilities		
CO6	Positive and proactive self-studying and practicing.	4.4	2.3.a
CO7	Having a correct vision of the construction materials field.	4.4	2.3.b

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

The course aims to teach students about basic knowledge of construction materials such as principal properties, experimental methods, mix proportion design. Moreover, this course provides knowledge for selecting and using construction materials to meet technical and economic requirements.

7. Course structure:

7.1. Theory (30 hours)

	Content	Hours	COs
Chapter 1.	**Principal properties of construction materials**		
1.1.	Physical properties	3	CO1; CO3
1.2.	Mechanical properties	3	CO1; CO3
Chapter 2.	**Ceramic in construction**		
2.1.	Concept and classification	1	CO1
2.2.	Types of ceramic in construction	3	CO1; CO2; CO7
Chapter 3.	**Binders**		
3.1	Concept and classification	1	CO1
3.2	Portland cement	3	CO1; CO2; CO3; CO7
3.3	Pozzolanic materials	1	CO1; CO8
Chapter 4.	**Aggregate**		
4.1	Fine aggregate	2	CO1; CO2; CO3; CO7
4.2	Coarse aggregate	2	CO1; CO2; CO3; CO7
Chapter 5.	**Mortar**		
5.1	Concept and classification	1	CO1
5.2	Mix proportion	1	CO4
5.3	Properties of mortar	1	CO1; CO2; CO3; CO7
Chapter 6.	**Concrete**		
6.1.	Concept and classification	1	CO1
6.2.	Mix proportion of conventional concrete	3	CO4
6.3.	Properties of conventional concrete	1	CO1; CO2; CO3; CO7
6.4.	Other types of concrete	1	CO1; CO2; CO8
Chapter 7.	**Steel**		
7.1	Concept and classification	1	CO1

7.2	Properties	1	CO1; CO2; CO3; CO7

7.2. Project on construction materials (30 hours)

	Content	Hours	COs
Unit 1.	Writing and presenting reports of a group (3-5 students /group)	10	CO5; CO7
Unit 2.	Presentation of groups of a group (3-5 students /group)	20	CO5; CO7

8. Teaching methods:

- Lecture associated with slideshow, discussion, and sample observation in class.
- Discussion with the lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Presentation of project on construction materials
- Attend the final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1	Point of overall attendance	- Attend at least 80% of theory hours	10%	CO1; CO2; CO3; CO4; CO6; CO8
2	Presentation of project on construction materials	- Group report (3-5 students /group) - Attend all reports	40%	CO5; CO7
3	Point of the final examination	- Writing test (60 minutes)	50%	CO1; CO2; CO3; CO4

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- The course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Vật liệu xây dựng / Phùng Văn Lự, Phạm Duy Hữu, Phan Khắc Trí .− Hà Nội: Giao thông vận tải, 2006 .− 348 tr., 21 cm .− 691 / L550	CN.011824; CN.011825; MOL.045854; MOL.045855; MON.025149
[2] Thiết kế thành phần bê tông/ Phạm Huy Chính .− Hà Nội: Xây dựng, 2007 .− 232 tr., 24 cm .− 666.893/ Ch312	CN.014493; CN.014494; MOL.050221; MON.028255
[3] Civil engineering materials/Claisse, Peter A /Boston: Elsevier, 2016 .− 495p., 24cm . − 624.18/ C585	CN.018787

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1. Principal properties of construction materials** 1.1. Physical properties 1.2. Mechanical properties	6	0	+ Previous study: lecture, [1], [2], [3] + After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
2	**Chapter 2. Ceramic in construction** 2.1. Concept and classification 2.2. Types of ceramic in construction	4	0	+ Previous study: lecture, [1], [2], [3] + After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
3	**Chapter 3. Binders** 3.1 Concept and classification 3.2 Portland cement 3.3 Pozzolanic materials	5	0	+ Previous study: lecture, [1], [2], [3] + After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
4	**Chapter 4. Aggregate** 4.1 Fine aggregate 4.2 Coarse aggregate	4	0	+ Previous study: lecture, [1], [2], [3] + After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
5	**Chapter 5. Mortar** 5.1 Concept and classification 5.2 Mix proportion 5.3 Properties of mortar	3	0	+ Previous study: lecture, [1], [2], [3] + After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
6	**Chapter 6. Concrete** 6.1. Concept and classification 6.2. Mix proportion of conventional concrete 6.3. Properties of conventional concrete 6.4. Other types of concrete	6	0	+ Previous study: lecture, [1], [2], [3] + After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
7	**Chapter 7. Steel** 7.1 Concept and classification 7.2 Properties	2	0	+ Previous study: lecture, [1], [2], [3] + After hours of theory, group study: - Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. - Summarize the core content of the study.
8-15	**Project on construction materials**	0	30	+ Reading the papers of construction materials field + Group study - Writing the report

				- Presenting the report

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COURSE OUTLINE DETAILS

1. Course: Construction Materials Testing **(**TT. Vật liệu xây dựng**)**

- **Code number:** CN105
- **Credits:** 1
- **Hours:** 30 practice hours

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** None
- **Corequisites:** KC174H

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	To understand the method of testing, calculation, and assessment on the principle properties of common construction materials	2.1.2.a
4.2	Testing, calculating, and analyzing the physical and mechanical properties under the relevant standard	2.2.1.b
4.3	Writing and presenting reports in the field of Civil Engineering	2.2.2.b
4.4	Having responsibility and the correct vision of the construction materials field.	2.3.a,b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	To understand the method and calculation of tested results the principle properties	4.1	2.1.2.a

CO2	To understand the standard of testing to assess the performance of construction materials	4.1	2.1.2.a
	Skills		
CO3	Testing and calculating the physical and mechanical properties	4.2	2.2.1.b
CO4	Assessing the performance of construction materials	4.2	2.2.1.b
CO5	Writing and presenting reports in the field of Civil Engineering	4.3	2.2.2.b
CO6	Be able to work in teams.	4.3	2.2.2.c
	Attitudes/Autonomy/Responsibilities		
CO7	Positive and proactive self-studying and practicing.	4.4	2.3.a

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

The course aims to teach students about basic knowledge of construction materials testing such as experimental methods, testing standards, and procedure of testing. Moreover, this course provides knowledge for the assessment of construction materials qualify.

7. Course structure:

Practice (30 hours)

	Content	Hours	COs
Unit 1.	**Binders**	5	CO1; CO2; CO3; CO4; CO5; CO6; CO7
1.1.	Concept and objective		
1.2.	Standards		
1.3.	Apparatus		
1.4.	Procedure for testing		
1.5.	Discussion		
Unit 2.	**Fine aggregate**	5	CO1; CO2; CO3; CO4; CO5; CO6; CO7
2.1.	Concept and objective		
2.2.	Standards		
2.3.	Apparatus		
2.4.	Procedure for testing		
2.5.	Discussion		
Unit 3.	**Coarse aggregate**	5	CO1; CO2; CO3; CO4; CO5; CO6; CO7
3.1.	Concept and objective		
3.2.	Standards		
3.3.	Apparatus		
3.4.	Procedure for testing		
3.5.	Discussion		
Unit 4.	**Concrete**	5	CO1; CO2; CO3; CO4; CO5; CO6; CO7
4.1.	Concept and objective		
4.2.	Standards		
4.3.	Apparatus		
4.4.	Procedure for testing		
4.5.	Discussion		
Unit 5.	**Bricks**	5	CO1; CO2; CO3; CO4; CO5; CO6; CO7

5.1.	Concept and objective		
5.2.	Standards		
5.3.	Apparatus		
5.4.	Procedure for testing		
5.5.	Discussion		
Unit 6.	**Steel in construction**	5	CO1; CO2; CO3; CO4; CO5; CO6; CO7
6.1.	Concept and objective		
6.2.	Standards		
6.3.	Apparatus		
6.4.	Procedure for testing		
6.5.	Discussion		

8. Teaching methods:

- The lecture provides students the instruction of equipment, experimental methods, procedures for testing, and calculation.
- Discussion with the lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend 100% of practice hours on time.
- Finish the group report.
- Attend the final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1	Finish the group report	- Attend 100% of practice hours - Group report	50%	CO1; CO2; CO3; CO4; CO5; CO6; CO7
2	Point of the final examination	- Attend 100% of practice hours - to practice with equipment and conduct the basic measurements	50%	CO1; CO2; CO3; CO4; CO5; CO6; CO7

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- The course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Giáo trình thí nghiệm vật liệu xây dựng / Nguyễn Cao Đức, Trịnh Hồng Tùng; Phạm Hữu Hanh .− Hà Nội: Xây dựng, 2006 .− 98 tr., 27 cm .− 620.110287 / Gi108	IOL.044781 IOL.044782 IOL.044783 ION.117214

	MON.117215
[2] Vật liệu xây dựng / Phùng Văn Lự, Phạm Duy Hữu; Phan Khắc Trí .− Hà Nội: Giao thông vận tải, 2013 .− 348 tr., 20 cm .− 691 / L550	IOL.079551 IOL.079552 ION.053445
[3] Civil engineering materials and their testing / Hasan, Syed Danish − Oxford, UK.: Alpha Science International Ltd., 2006, − 124 p.,25cm. − 624.18/ H344	ION.027889

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Unit 1: Binders**	0	5	+ Previous study: - Lecture, [1], [2], [3] - Relevant standard + Group study + Writing the report
2	**Unit 2: Fine aggregate**	0	5	+ Previous study: - Lecture, [1], [2], [3] - Relevant standard + Group study + Writing the report
3	**Unit 3: Coarse aggregate**	0	5	+ Previous study: - Lecture, [1], [2], [3] - Relevant standard + Group study + Writing the report
4	**Unit 4: Concrete**	0	5	+ Previous study: - Lecture, [1], [2], [3] - Relevant standard + Group study + Writing the report
5	**Unit 5: Bricks**	0	5	+ Previous study: - Lecture, [1], [2], [3] - Relevant standard + Group study + Writing the report
6	**Unit 6: Steel in construction**	0	5	+ Previous study: - Lecture, [1], [2], [3] - Relevant standard + Group study + Writing the report

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COURSE OUTLINE DETAILS

1. Course: Soil Mechanics (Cơ học đất)

- **Code number:** KC175H
- **Credits:** 4
- **Hours:** 40 theory hours, 40 practice hours (do the assignment)

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** None
- **Corequisites:** None

4. Course objectives:

- The learners have knowledge of soil mechanics that include soil properties and classification, groundwater flow, shear strength of soil, bearing capacity of the foundation, lateral earth pressure, and slope stability.
- The learners are able to combine with knowledge of other courses to solve problems in geotechnical engineering.

Objectives	Descriptions	Program Outcomes
4.1	Analyzing physical and mechanical properties of soil, determine the flow of groundwater, soil strength, ground and foundation settlement, lateral earth pressure, and analyze slope stability.	2.1.2.b
4.2	Combining theory and knowledge from other courses to apply in practice	2.2.1.b,e
4.3	Developing working skills in teams and groups.	2.2.1.c,e
4.4	Sharing knowledge and creating self-study ability	2.3.b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	The learners are able to analyse soil properties and classify soil types	4.1	2.1.2.b
CO2	The learners can analyze the flow of groundwater and determine the strength of the soil and bearing capacity of the foundation	4.1	2.1.2.b
CO3	The learners can determine the settlement of ground and foundation	4.1	2.1.2.b
CO4	The learners can analyze lateral earth pressure and slope stability	4.1	2.1.2.b
	Skills		
CO5	Combining academic knowledge to solve practical engineering	4.2	2.2.1.c,e

	problems		
CO6	Adapting the working environment in the team.	4.3	2.2.1.c,e
	Attitudes/Autonomy/Responsibilities		
CO7	Sharing knowledge	4.4	2.3.b
CO8	Creating a good attitude in study and work	4.4	2.3.b

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

The subject includes 4 mains parts:

- Physical and mechanical properties of soils
- Soil strength and bearing capacity of the foundation
- Consolidation
- Slope stability analysis

7. Course structure:

7.1. Theory (40 hours)

	Content	Hours	COs
Chapter 1.	**Physical Properties of Soil**	**5**	CO1; CO5; CO6; CO7; CO8
1.1.	Soil Formations		
1.2.	Soil Components		
1.3.	Soil Structures		
1.4.	Physical Properties and States		
1.5.	Soil Classification		
Chapter 2.	**Principle Laws of Soil**	5	CO2; CO5; CO6; CO7; CO8
2.1.	Permeability of Soil		
2.2.	Deformation of Soil		
2.3.	Shear Strength of Soil		
2.4.	Compaction of Soil		
Chapter 3.	**Stresses in Soil**	6	CO2; CO5; CO6; CO7; CO8
3.1.	Stresses in Elastic Materials		
3.2.	Stresses in Soil		
Chapter 4.	**Consolidation**	6	CO3; CO5; CO6; CO7; CO8
4.1.	Theory of Consolidation		
4.2.	Determining the Coefficient of Consolidation		
4.3.	Second Settlements		
4.4.	Calculating Settlement of Foundation		
Chapter 5.	**Bearing Capacity of Soil**	6	CO2; CO5; CO6; CO7; CO8
5.1.	Shear Strength of Soil		
5.2.	Ultimate Bearing Capacity		
5.3.	Allowable Bearing Capacity		
Chapter 6.	**Earth Pressure-Retaining Wall**	6	CO4; CO5; CO6; CO7; CO8

6.1.	Lateral Earth Pressure		
6.2.	Coulomb's Theory		
6.3.	Theory of Equilibrium		
6.4.	Retaining Wall		
Chapter 7.	**Slope Stability**	6	CO4; CO5; CO6; CO7; CO8
7.1.	Introduction		
7.2.	Conditions of Slope Stability		
7.3.	Analyzing Slope Stability		

7.2. Practice (40 hours)

	Content	Hours	COs
Unit 1.	Determine soil properties and classify soil types	8	CO1; CO2; CO3; CO4; CO5; CO6; CO7; CO8
Unit 2.	Determine pore water pressure, overburden stress, and increased stress in soil	8	
Unit 3.	Estimate settlement and degree of consolidation	8	
Unit 4.	Determine the ultimate and allowable bearing capacity	8	
Unit 5.	Analyze lateral earth pressure and slope stability	8	

8. Teaching methods:

- Learner – Centred; Project Based Learning; Group-based Learning.
- Discussion with instructors.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Finish the course assignment.
- Attend the final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours/theory hours	5%	CO7, CO8
2	Point of group assignments	- All chapter assignments /(3 – 5 students /group)	30%	CO1, CO2, CO3, CO4, CO5, CO6
3	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1, CO2
4	Point of the final	- Multiple-choice test (90 minutes)	40%	CO1, CO2, CO3,

	examination	- Attend at least 80% of theory hours. - Compulsory attendance exam		CO4

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- The course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Materials information	Code number
Cơ học đất / Châu Ngọc Ẩn- HCM: ĐHQG.HCM 2009.- 593 tr. ; - 92-12/ĐHQGTPHCM	CN.GT.610-09(T)
Bài tập cơ học đất / Vũ Công Ngữ, Nguyễ Văn Thông- Hà Nội: Giáo dục, 2000.- 387 tr., - 425/52-00	DYK07B0
3] Theory of soil mechanics / Karl Terzaghi – New York: John Wiley & Sons, 1943, - 510 tr	

12. Self-study Guide:

- After hours of theory, group study (a group of 3 to 5 students)
- Solve the problems or assignments and prepare the content for discussion on coming class
- Summarize the core content of the study.

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1-2	**Chapter 1. Physical and Mechanical Properties of Soil** 1. Soil Formations 2. Soil Components 3. Soil Structures 4. Physical Properties and States 5 Soil Classification	5	2	- Previous study: [1], [2], [3] - After hours of theory, group study (a group of 3 to 5 students): [1], [2], [3] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
3-4	**Chapter 2. inciple Law of Soil** 1. Permeability of Soil 2. Deformation of Soil 3. Shear Strength of Soil 4. Compaction of Soil	5	3	- Previous study: [1], [2], [3] - After hours of theory, group study (a group of 3 to 5 students): [1], [2], [3] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.

5-6	**Chapter 3. Stresses in Soil** 1. Stresses in Elastic Materials 2. Stresses in Soil	5	3	- Previous study: [1], [2], [3] - After hours of theory, group study (a group of 3 to 5 students): [1], [2], [3] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
7-9	**Chapter 4. Consolidation** 1. Theory of Consolidation 2. Determining the Coefficient of Consolidation 3. Second Settlements 4.4. Calculating Settlement of Foundation	5	3	- Previous study: [1], [2], [3] - After hours of theory, group study (a group of 3 to 5 students): [1], [2], [3] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
10-11	**Chapter 5. Bearing Capacity of Soil** 1. Shear Strength of Soil 2. Ultimate Bearing Capacity 3. Allowable Bearing Capacity	5	3	- Previous study: [1], [2], [3] - After hours of theory, group study (a group of 3 to 5 students): [1], [2], [3] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
12-13	**Chapter 6. Earth Pressure-Retaining Wall** 1. Lateral Earth Pressure 2. Coulomb's Theory 3. Theory of Equilibrium 4. Retaining Wall	5	3	- Previous study: [1], [2], [3] - After hours of theory, group study (a group of 3 to 5 students): [1], [2], [3] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.
14-15	**Chapter 7. Slope Stability** 1. Introduction 2. Conditions of Slope Stability 3. Analyzing Slope Stability	5	3	- Previous study: [1], [2], [3] - After hours of theory, group study (a group of 3 to 5 students): [1], [2], [3] + Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. + Summarize the core content of the study.

Note: Instructors can adapt a new assignment based on current lecture notes.

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COURSE OUTLINE DETAILS

1. Course: Soil Mechanics Testing (TT. Cơ học đất**)**

- **Code**: CN113
- **Credits**: 1
- **Hours**: 30 practice hours

2. Management Unit:

- **Department**: Civil Engineering

- **Faculty/School/Institute/Center/Department**: College of Engineering Technology.

3. Requisites:

- **Prerequisites:** None

- **Corequisites**: KC175H

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Determining physical and mechanical soil properties Analyzing data and soil investigation	2.1.3.b
4.2	Selecting testing methods	2.2.1.b
4.3	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	2.2.2.a,d,e
4.4	Improving the capacities in terms of self-study, practice, and knowledge expansion for final examination, term papers, and future work.	2.3.b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
1.	Knowledge of methods and procedures for soil testing	4.1	2.1.3.b
2.	Calculation and report of soil testing	4.1	2.1.3.b

	Skills		
3.	Choosing standard specification for soil testing and investigation	4.2	2.2.1.b
4.	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	4.3	2.2.2.a,d,e
	Attitudes/Autonomy/Responsibilities		
5.	Being positively and prospectively enhancing capacities for self-study and practice.	4.4	2.3.b
6.	Being honest during the learning process and in the examination.	4.4	2.3.b

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

The course introduces methods, procedures, and practices for soil testing. The tests include practices for determining the physical, mechanical properties of soil in lab and field.

7. Course structure:

7.1. Practice (30 hrs.)

Practice	Content	Hours	COs
1.	Determining Atterberg Limits	5	CO1; CO2; CO3; CO4; CO5; CO6
2.	Compaction Testing	5	CO1; CO2; CO3; CO4; CO5; CO6
3.	Unconfined Compression Test	5	CO1; CO2; CO3; CO4; CO5; CO6
4.	Direct Shear Test	5	CO1; CO2; CO3; CO4; CO5; CO6
5.	Oedometer Test	5	CO1; CO2; CO3; CO4; CO5; CO6
6.	Penetration Cone Test	5	

8. Teaching method:

- Teaching in classes and laboratory
- Guiding at site
- Following the Lab regulation and instructor
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend 100% of practice hours on time.
- Finish report
- Attend final examination
- Perform actively self-study hours.

10. Assessment of student learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1.	Point of Report	-Attend 100% of practice hours - Report	50%	CO1; CO2; CO3; CO4; CO5; CO6
2.	Point of final examniation	- Attend 100% of practice hours. - Overal exmination	50%	CO1; CO2; CO3; CO4; CO5; CO6

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Materials:

Thông tin về tài liệu	Số đăng ký cá biệt
1] Giáo trình thực tập thí nghiệm Cơ học Đất/Hoàng Vĩ Minh- Tài liệu lưu hành nội bộ.-624.15136/M312	MON.05448
2] Cơ học đất – Châu Ngọc Ẩn – NXB Đại học Quốc gia TP HCM. - 621.15136 / Â121	MOL.040352; MOL.040353; MOL.076534; MON.021779
3] Principles of geotechnical engineering – Das Braja M.-Mason, CT.: Cengage Learning, 2014.- 624.15136 / D229	MON.049140

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1	**Practice 1.** Determining Atterberg Limits		5	- Previous study: [1], [2], [3]
2	**Practice 2.** Compaction test		5	- Previous study: [1], [2], [3]
3	**Practice 3.** Unconfined compression test		5	- Previous study: [1], [2], [3]
4	**Practice 4.** Direct shear test		5	- Previous study: [1], [2], [3]
5	**Practice 5.** Oedometer test		5	- Previous study: [1], [2], [3]
6	**Practice 6.** Cone penetration test		5	- Previous study: [1], [2], [3]

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COURSE OUTLINE DETAILS

1. Course: Fluid Mechanics (Cơ học lưu chất)

- **Code number:** KC176H
- **Credits:** 2
- **Hours:** 20 theory hours, 20 practice hours (do the assignment)

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** None
- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Knowledge of the physical properties of fluids, equilibrium equations, hydrostatic pressure equations; the concepts of flow, loses, pipelines; equations of continuous, Bernoulli, momentum;	2.1.2.a,b
4.2	Be able to demonstrate, interpret the formula; Be able to combine two or more learned knowledge; Be able to solve in-depth problems; Be able to synthesize learned knowledge; Be able to answer multiple-choice questions.	2.2.1.a,b,c
4.3	Having teamwork skills and presentation.	2.2.2.c,d
4.4	Having responsibility and the correct vision of the application of mechanics in the civil engineering field.	2.3.a,b,c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	To understand and apply the physical properties of fluids,	4.1	2.1.2.a

	equilibrium equations, hydrostatic pressure equations, concepts of flow; understand and apply 3 equations: continuous, Bernoulli, momentum		
CO2	Understand and apply the formula for losses; Distinguish between short and long pipelines; and calculation of simple problems of serial, parallel and branching pipe systems	4.1	2.1.2.b
	Skills		
CO3	To analyze, calculate and examine the forces, loses and pipelines; and calculation of simple problems of serial, parallel and branching pipe systems	4.2	2.2.1.a,b,c
CO4	Having teamwork skills, team leadership skills, negotiating skills, conflict resolution, proficient use of tools to support teamwork cooperation, skills to evaluate contributions of the group members	4.3	2.2.2.c,d
	Attitudes/Autonomy/Responsibilities		
CO5	Having the correct vision of the application of fluid mechanics in the civil engineering field. Positive and proactive self-studying and practicing. Honesty in the learning process and examination.	4.4	2.3.a,b,c

6. Brief description of the course:

Fluid Mechanics contains 2 main sections as follows:

- Hydrostatics: Concentrate on hydrostatic pressure and the pressure on the plane, including Acsimet's Law.
- Hydrodynamics: Mainly solving steady flow problems in one-dimensional space. The knowledge focuses on continuous equations, Bernoulli equations, momentum equations, and energy loss calculations.

7. Course structure:

7.1. Theory (20 hours)

	Content	Hours	COs
Chapter 1.	**Properties of Fluids**	**4**	CO1
1.1.	Introduction		
1.2.	Engineering units		
1.3.	Properties of Fluids		
Chapter 2.	**Fluid Statics**	**5**	CO1
2.1.	Pressure and Pressure Gradient		
2.2.	Equilibrium of a Fluid Element		
2.3.	Hydrostatic Pressure Distributions		
2.4.	Hydrostatic Forces on Plane Surface, Curved Surfaces and in Layered Fluids		
2.5.	Buoyancy and Stability		
2.6.	Pressure Measurement		
Chapter	**Fluid Flow Concepts and Measurements**	**5**	CO1, CO3, CO4,

3.			CO5
3.1.	Fluid Flow Concepts		
3.2.	Continuity equation and application		
3.3.	Energy equation and application		
3.4.	Momentum equation and application		
3.5.	Flow measurement		
Chapter 4.	**The flow of Incompressible Fluids in Pipelines**	**6**	CO1, CO2, CO3, CO4, CO5
4.1.	Reynolds Number Regimes		
4.2.	Head Loss—The Friction Factor		
4.3.	Local losses		
4.4.	Applications		

7.2. Practice: Assignment (20 hours)

8. Teaching method:

- Lecture associated with slideshow, discussion, and sample observation in class.
- Discussion with the lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination of the subject.
- Finish the course assignment.
- Attend the final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours/theory hours	10%	CO5
	Point of group assignments	- All chapter assignments /(3 – 5 students /group)	15%	CO1, CO2, CO3, CO4, CO5
2	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1, CO2, CO3, CO5
3	Point of the final examination	- Multiple-choice test (60 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO1, CO2, CO3, CO5

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- The course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then itis converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
Thủy lực- T.1 / Vũ Văn Tảo, Nguyễn Cảnh Cầm.- Lần 4.- Hà Nội: Giáo dục, 1994.- 267 tr., 24 cm.- 627/ T108/T.1	MOL.018868, MOL.030618, CN.013871
Thủy lực; T1 / I I Agroskin, F I Pikalov, G C Dmitriev; Dịch giả: Thái Văn Lễ.- 3rt.- Hà Nội: Năng lượng, 1963, 823tr..- 627/ A281/T1	TQ011216, M019148
Giáo trình thủy lực học Dùng trong các trường Trung học xây dựng / Bộ Xây dựng.- Hà Nội: Xây dựng, 1979, 181tr..- 532.107/ B450	MOL.013856, SP.006908
4] Fluid Mechanics with engineering applications/McGrawHill/E. John Finnemore & Joseph B. Franzini/Mc Graw Hill/620.106 F514	CN.010830

11. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' Task
1-3	**Chapter 1.** **Properties of Fluids** 1. Introduction 2. Engineering units 3. Properties of Fluids	5	5	- Previous study: [1], [2], [3] - After hours of theory, group study (a group of 3 to 5 students): [1], [2], [3] +Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of the study.
4-7	**Chapter 2.** **Fluid Statics** 1. Pressure and Pressure Gradient 2. Equilibrium of a Fluid Element 3. Hydrostatic Pressure Distributions 4. Hydrostatic Forces on Plane Surface, Curved Surfaces and in Layered Fluids 5. Buoyancy and Stability 6. Pressure Measurement	5	5	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] +Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of the study.
8-11	**Chapter 3.** **Fluid Flow Concepts and Measurements** 1. Fluid Flow Concepts	5	5	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4]

	2. Continuity equation and application 3. Energy equation and application 4. Momentum equation and application 5. Flow measurement			+Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of the study.
12-15	**Chapter 4. Flow of Incompressible Fluids in Pipelines** 1. Reynolds Number Regimes 2. Head Loss—The Friction Factor 3. Local losses 4. Applications	5	5	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] +Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of the study.

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COURSE OUTLINE DETAILS

1. Course: Applied Statistics - Engineering (Thống kê ứng dụng kỹ thuật)

- **Code number:** KC177H
- **Credits: 3**
- **Hours:** 30 lecture hours, 30 exercise hours

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** None
- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Understand the concepts of statistics	2.1.2.a,b 2.3.a,b,c
4.2	Master the tools and methods commonly used in statistics	2.1.3.a 2.2.1.b
4.3	Use tools and methods in statistical analysis and data processing in construction works	2.1.2.b 2.2.1.c,d,e 2.2.2.b
4.4	Analyze and evaluate empirical results, establish correlation between specifications	2.1.3.b,c 2.2.2.a,c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Master the concepts in statistics	4.1	2.1.2.a,b
CO2	Understand the tools and methods commonly used in statistics	4.1	2.1.2.a,b
CO3	Use statistical tools and methods to analyze and process data in the construction field	4.3	2.1.2.a
	Skills		
CO4	Know how to use appropriate statistical data, establish a statistical process suitable to each specific application problem in the construction field.	4.2	2.2.1.b,c
CO5	Fluent calculations of estimation problems	4.3	2.2.1.d,e 2.2.2.a,b,c
CO6	Fluent calculation of hypothesis testing problems	4.3	2.2.1.d,e 2.2.2.a,b,c
CO7	Establish correlation model and regression of technical parameters / indicators	4.4	2.2.1.d,e 2.2.2.a,b,c
	Attitudes/Autonomy/Responsibilities		
CO8	Equipping teamwork skills and the ability to work with partners from other specializations	4.4	2.3.a,b,c

6. Mô tả tóm tắt nội dung học phần:

The course introduces the concepts and tools of statistics, knowledge, and ability to calculate the parameters of descriptive statistics. Accordingly, guide students on how to apply statistics to solve technical problems in the construction industry. The course also provides new knowledge, techniques and tools of statistics that have been applied in general construction engineering. Specifically, equipped with the knowledge and ability to calculate the parameters of descriptive statistics, perform the whole application of deductive statistics such as estimating, testing hypotheses, establishing correlations,... in work quality assessment and construction materials inspection.

7. Course structure:

7.1. Theory (30 hours)

	Content	Hours	COs
Chapter 1.	**Introduction**	**3**	CO1
1.1.	Defines		
1.2.	Statistics & probabality		
1.3.	Statistical method & process		

1.4.	Data & scale of measurement		
Chapter 2.	**Graphical descriptive techniques**	**3**	CO2; CO3
2.1.	Introduction		
2.2.	Data types		
2.3.	Graphical qualitative data		
2.4.	Graphs and charts		
2.5.	Scattered chart		
Chapter 3.	**Graphical presentation**	**3**	CO2; CO3
3.1.	Graphical excellent		
3.2.	Graphical deception		
Chapter 4.	**Technica descriptions**	**3**	CO2; CO3
4.1.	Measurements of central		
4.2.	Measurements of deviation		
4.3.	Empirical practice		
4.4.	Percentile – Relative standing		
4.5.	Box plot		
4.6.	Grouped data		
4.7.	Measurement of association		
Chapter 5.	**Data collection and sampling**	**3**	CO4
5.1.	Introduction		
5.2.	Data sources		
5.3.	Sampling		
5.4.	Method & sampling plan		
5.5.	Errors in sampling		
Chapter 6.	**Random & Discrete probability model**	**3**	CO4
6.1.	Random variable		
6.2.	Probability distribution		
6.3.	Properties of Discrete probability distribution		
6.4.	Typical discrete probability distribution		
Chapter 7.	**Continuous probability model**	**3**	CO4
7.1.	Properties of Continuous probability distribution		
7.2.	Typical continuous probability distribution		
7.3.	Tables		
Chapter 8.	**Estimation**	**3**	CO5
8.1.	Introduction		
8.2.	Point estimation		
8.3.	Interval estimation of mean		
8.4.	Interval estimation of the proportion		
8.5.	Interval estimation of variance		
Chapter 9.	**Hypothesis testing**	**3**	CO6
9.1.	Introduction		
9.2.	Concepts & principles		
9.3.	Testing the mean		
9.4.	Testing the proportion		
9.5.	Compare two proporttions		
9.6.	Compare many proportions		

Chapter 10.	**Linear regression**	**3**	CO7
10.1.	Concepts		
10.2.	Mathematical models		
10.3.	Compute parameters		
10.4.	Use of regression		

7.2. Practice (30 hours)

	Content	Hours	COs
Unit 1.	**Introduction**		
1.1.	Defines		
1.2.	Statistics & probabality		
1.3.	Statistical method & process		
1.4.	Data & scale of measurement		
Unit 2.	**Graphical descriptive techniques**		
2.1.	Introduction		
2.2.	Data types		
2.3.	Graphical qualitative data		
2.4.	Graphs and charts		
2.5.	Scattered chart		
Unit 3.	**Graphical presentation**	**2**	
3.1.	Graphical excellent		
3.2.	Graphical deception		
Unit 4.	**Technica descriptions**	6	CO2; CO3
4.1.	Measurements of central		
4.2.	Measurements of deviation		
4.3.	Empirical practice		
4.4.	Percentile – Relative standing		
4.5.	Box plot		
4.6.	Grouped data		
4.7.	Measurement of association		CO4
Unit 5.	**Data collection and sampling**	**3**	
5.1.	Introduction		
5.2.	Data sources		
5.3.	Sampling		
5.4.	Method & sampling plan		
5.5.	Errors in sampling		
Unit 6.	**Random & Discrete probability model**	3	CO4
6.1.	Random variable		
6.2.	Probability distribution		
6.3.	Properties of Discrete probability distribution		
6.4.	Typical discrete probability distribution		
Unit 7.	**Continuous probability model**	3	CO4
7.1.	Properties of Continuous probability distribution		
7.2.	Typical continuous probability distribution		
7.3.	Tables		
Unit 8.	**Estimation**	3	CO5; CO8

8.1.	Introduction		
8.2.	Point estimation		
8.3.	Interval estimation of mean		
8.4.	Interval estimation of the proportion		
8.5.	Interval estimation of variance		
Unit 9.	**Hypothesis testing**	6	CO6; CO8
9.1.	Introduction		
9.2.	Concepts & principles		
9.3.	Testing the mean		
9.4.	Testing the proportion		
9.5.	Compare two proporttions		
9.6.	Compare many proportions		
Unit 10.	**Linear regression**	4	CO7; CO8
10.1.	Concepts		
10.2.	Mathematical models		
10.3.	Compute parameters		
10.4.	Use of regression		

8. Teaching methods:

Students are required to read the supplied documents, complete assignments from the previous session in class. The sessions will be a combination of lectures, quick group exercises, and discussion questions.

9. Duties of student:

Students must perform the following tasks:

- Attend at least 80% of theoretical lessons.
- Complete individual and group exercises.
- Take the final exam for the module.
- Actively organize self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	Objectives
1	Overall attendance	Tham dự 75% tổng số tiết lý thuyết & 75% số tiết bài tập	10%	CO8
2	Exercise	- Each student will be assigned individual assignments for each chapter of the program. Students must complete and submit to teachers on time. - Complete 80% of the exercises	15%	CO3; CO4; CO5; CO6; CO7
3	Group exercise	- Group exercise: the number of students for each group will be decided depending on the class size. The workload must be equally divided among each member. - Complete 80% of the total exercise - Confirmation of participation by the group	15%	CO3; CO4; CO5; CO6; CO7; CO8
4	Final examination	- Written test (90 - 120 minutes) - Required to take the final exam	60%	CO3; CO4; CO5; CO6; CO7; CO8

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- The subject score is the sum of all the components of the evaluation and multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded up to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Learning materials:

Materials information	Code number
[1] **De Veaux, R. D., Velleman, P. F., and Bock, D. E.**, *Intro Stats*, 3rd Edition, Pearson Education Inc., USA, 2009	
[2] **Roxy Peck, Chris Olsen, Jay L Devore**, **Introduction to statistics and data analysis,** 4th *Edition Brooks Cole Cengage Learning,* 2012	
[3] **Võ Văn Tài, Dương Thị Tuyền**, *Giáo trình xác suất thống kê*, 2015	

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1. Introduction** 1.1. Defines 1.2. Statistics & probability 1.3. Statistical method & process 1.4. Data & scale of measurement	2		Students preview the chapter in advance
2	**Chapter 2. Graphical descriptive techniques** 2.1. Introduction 2.2. Data types 2.3. Graphical qualitative data 2.4. Graphs and charts 2.5. Scattered charts	2		Students preview the chapter in advance
3	**Chapter 3. Graphical presentation** 3.1. Graphical excellent 3.2. Graphical deception	2		Students preview the chapter in advance
4 & 5	**Chapter 4. Technica descriptions** 4.1. Measurements of central 4.2. Measurements of deviation 4.3. Empirical practice 4.4. Percentile – Relative standing 4.5. Box plot 4.6. Grouped data 4.7. Measurement of	2	4	Students preview the chapter in advance and complete the assigned tasks before class

	association			
6	**Chapter 5. Data collection and sampling** 5.1. Introduction 5.2. Data sources 5.3. Sampling 5.4. Method & sampling plan 5.5. Errors in sampling	2	2	Students preview the chapter in advance and complete the assigned tasks before class
7 & 8	**Chapter 6. Random & Discrete probability model** 6.1. Random variable 6.2. Probability distribution 6.3. Properties of Discrete probability distribution 6.4. Typical discrete probability distribution	2	2	Students preview the chapter in advance and complete the assigned tasks before class
9 & 10	**Chapter 7. Continuous probability model** 7.1. Properties of Continuous probability distribution 7.2. Typical continuous probability distribution 7.3. Tables	2	2	Students preview the chapter in advance and complete the assigned tasks before class
11 & 12	**Chapter 8. Estimation** 8.1. Introduction 8.2. Point estimation 8.3. Interval estimation of mean 8.4. Interval estimation of the proportion 8.5. Interval estimation of variance	2	4	Students preview the chapter in advance and complete the assigned tasks before class
13 & 14	**Chapter 9. Hypothesis testing** 9.1. Introduction 9.2. Concepts & principles 9.3. Testing the mean 9.4. Testing the proportion 9.5. Compare two proportions 9.6. Compare many proportions	2	2	Students preview the chapter in advance and complete the assigned tasks before class
15	**Chapter 10. Linear regression** 10.1. Concepts 10.2. Mathematical models 10.3. Compute parameters 10.4. Use of regression	2	2	Students preview the chapter in advance and complete the assigned tasks before class

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ON BEHALF OF RECTOR **HEAD OF DEPARTMENT**

DEAN OF COLLEGE/SCHOOL

Nguyễn Chí Ngôn

Đặng Thế Gia

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

1. Course: Applied Informatics – KT1 (Tin học ứng dụng – Kỹ thuật 1)

- **Code number:** CN331
- **Credits:** 2
- **Hours:** 60 practice hours

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** KC170H
- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Leaning utilization of AutoCAD software for drawing establishment	2.1.1.a; 2.1.2.d
4.2	Applying AutoCAD software for term papers such as architectural engineering, concrete and steel structural designs, foundation engineering, graduation thesis, etc. and for future professional works.	2.2.1.a,c
4.3	Adapting the learning method of AutoCAD software to efficiently self-leaning other common software developed for civil engineers.	2.2.2.d
4.4	Improving the capacities in terms of self-study, practice, and knowledge expansion for the final examination, term papers, and future work.	2.3.b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Introduction and utilization of AutoCAD software in architecture and construction.	4.1	2.1.1; 2.1.2
CO2	Installation guide for different versions of AutoCAD from 2007 to 2014.	4.1	2.1.1; 2.1.2

CO3	Basic AutoCAD using	4.1	2.1.1; 2.1.2
CO4	Advanced AutoCAD using	4.1	2.1.1; 2.1.2
CO5	Fast drawing tutorial in AutoCAD	4.1	2.1.1; 2.1.2
CO6	Application of AutoCAD software in architecture and construction	4.1	2.1.1; 2.1.2
CO7	Management of line thickness and layers in engineering drawings	4.1	2.1.1; 2.1.2
CO8	Basic exercise practice: geometry drawing, graphical projection, etc.	4.1	2.1.1; 2.1.2
CO9	Advanced exercises in architecture and construction: Layout of plans, facades, sections, architectural and structural details.	4.1	2.1.1; 2.1.2
CO10	Exporting drawings and printing in AutoCAD.	4.1	2.1.1; 2.1.2
	Skills		
CO11	Applying AutoCAD software for professional construction drawings.	4.2	2.2.1
CO12	Efficiently boosting technical drawings with low consumptions of time and working labor.	4.2	2.2.1
CO13	Enhancing the capacity to connect with other specialized software such as Sketchup, 3DsMax, Revit, etc.	4.3	2.2.2
	Attitudes/Autonomy/Responsibilities		
CO14	Visualizing utilization of AutoCAD software for civil construction design.	4.4	2.3
CO15	Being positively and prospectively enhancing capacities for self-study and practice.	4.4	2.3
CO16	Being honest during the learning process and in the examination.	4.4	2.3

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

The module consists of 3 parts:

Part 1: Introduction of AutoCAD software, its application features in the build.

Part 2: Basic AutoCAD.

Part 3: Advanced AutoCAD.

7. Course structure:

7.1. Theory

Introduce to studends during practice hours

7.2. Practice (60 hours)

Chapter	Content	Hours	COs
Chapter 1	**Introduction**	**20**	**CO1, CO11, CO14, CO16**

1.1.	AutoCAD utilities		CO1, CO2, CO11, CO14, CO16
1.2.	AutoCAD interface		CO1, CO2, CO11, CO14, CO16
1.3.	Menu & Toolbar		CO1, CO2, CO16
1.4.	Drawing establishing commands		CO1, CO2, CO16
Chapter 2	**Basic**	**20**	**CO3, CO4, CO5, CO6, CO7, CO12, CO13, CO16**
2.1.	Popular commands		CO3, CO4, CO5, CO6, CO7, CO12, CO15, CO16
2.2.	Modify, Draw and Format commands		CO3, CO4, CO5, CO6, CO7, CO12, CO15, CO16
2.3.	Material properties, text and edit subjects		CO3, CO4, CO5, CO6, CO7, CO13, CO15, CO16
2.4.	Dimensions		CO3, CO4, CO5, CO6, CO7, CO13,
2.5.	Block		CO3, CO4, CO5, CO6, CO7, CO13, CO15, CO16
2.6.	Practice		CO3, CO4, CO5, CO6, CO7, CO13, CO15, CO16
2.7.	Layout and printing		CO3, CO4, CO5, CO6, CO7, CO13, CO15, CO16
Chapter 3	**Advance**	**20**	**CO8, CO9, CO12, CO13, CO15, CO16**
3.1.	Hotkeys		CO8, CO9, CO12, CO13, CO15, CO16
3.2.	Practice in structural drawings		CO8, CO9, CO12, CO13, CO15, CO16
3.3.	Practice in architectural drawings		CO8, CO9, CO12, CO13, CO15, CO16
3.4.	3D AutoCAD		CO8, CO9, CO12, CO13, CO15, CO16

Exercises (60 hours): students self-study at home

	Content	Hours	COs
Unit 1.	**Basic AutoCAD exercises**	**30**	**CO1, CO3, CO4, CO5, CO6, CO7, CO11, CO12, CO13, CO14, CO16, CO16**
1.1	Basic geometric drawings		CO1, CO2, CO11, CO14, CO16
1.2	Advanced geometric drawings		CO1, CO2, CO11, CO14, CO16
1.3	Architectural plans		CO1, CO2, CO16
1.4	Structural plans		CO3, CO4, CO5, CO6, CO7, CO13, CO15, CO16
1.5	Foot & foundation plans		CO3, CO4, CO5, CO6, CO7, CO13,
1.6	Walls		CO3, CO4, CO5, CO6, CO7, CO13, CO15, CO16
1.7	Roofs		CO3, CO4, CO5, CO6, CO7, CO13, CO15, CO16
1.8	Windows and doors		CO3, CO4, CO5, CO6, CO7, CO13, CO15, CO16
Unit 2.	**Advanced exercises**	**30**	**CO8, CO9, CO12, CO13, CO15, CO16**
2.1.	Foot & foundation details		CO8, CO9, CO12, CO13, CO15, CO16
2.2.	Details of stairs details, windows and doors		CO8, CO9, CO12, CO13, CO15, CO16
2.3.	Structural drawings of floor and roof		CO8, CO9, CO12, CO13, CO15, CO16

2.4.	Frame details		CO8, CO9, CO12, CO13, CO15, CO16
2.5.	Panel structures		CO8, CO9, CO12, CO13, CO15, CO16
2.6.	Decoration details		CO8, CO9, CO12, CO13, CO15, CO16
2.7.	Special architectural details		CO8, CO9, CO12, CO13, CO15, CO16
2.8.	Industrial architectural details		CO8, CO9, CO12, CO13, CO15, CO16

8. Teaching methods:

Directly teaching using a computer. Each student will practice 12 sessions with a computer (60 practicing hours).

9. Duties of student:

Students have to do the following duties:

- Complete personal and group assignments.
- Complete (midterm and) final exams.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Attendance	At least 80% of lecturing hours	10%	4.1, 4.2, 4.3
2	Assignments	Complete all assignments	40%	4.1, 4.2, 4.3
3	Final exam	On-computer test	50%	4.1, 4.2, 4.3

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- The course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Sử dụng AutoCAD 2000, 2002, 2004, 2006, 2007,2009,2010,2013,2014. Phần 2D / TS. NGUYỄN HỮU LỘC - Nhà xuất bản Thành phố Hồ Chí Minh	MOL.048350, MOL.048349
[2] Sử dụng AutoCAD 2006: Cơ sở vẽ thiết kế hai chiều (2D). Tập 1 / TS. NGUYỄN HỮU LỘC - Nhà xuất bản Thành phố Hồ Chí Minh	CN.001644, CN.001643, CN.001645, 2c_394071, MT.000494
[3] Sử dụng AutoCAD 2000, 2002, 2004, 2006, 2007. Phần 2D / TS. NGUYỄN HỮU LỘC - Nhà xuất bản Thành phố Hồ Chí Minh	MOL.048350, MOL.048349

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
	Basic AutoCAD exercises			
1.	Unit 1.1, Unit 1.2	0	4	Redo assignments Unit 1.1 and 1.2.
2.	Unit 1.3	0	4	Redo assignments Unit 1.3.
3.	Unit 1.4	0	4	Redo assignments Unit 1.4.

4.	Unit 1.5	0	4	Redo assignments Unit 1.5.
5.	Unit 1.6	0	4	Redo assignments Unit 1.6.
6.	Unit 1.7	0	4	Redo assignments Unit 1.7.
7.	Unit 1.8	0	4	Redo assignments Unit 1.8.
	Advanced exercises			
8.	Unit 2.1	0	4	Redo assignments Unit 2.1.
9.	Unit 2.2	0	4	Redo assignments Unit 2.2.
10.	Unit 2.3	0	4	Redo assignments Unit 2.3.
11.	Unit 2.4	0	4	Redo assignments Unit 2.4.
12.	Unit 2.5	0	4	Redo assignments Unit 2.5.
13.	Unit 2.6	0	4	Redo assignments Unit 2.6.
14.	Unit 2.7	0	4	Redo assignments Unit 2.7.
15.	Unit 2.8	0	4	Redo assignments Unit 2.8.

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ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **Nguyễn Chí Ngôn**	**HEAD OF DEPARTMENT** **Đặng Thế Gia**

MINISTRY OF EDUCATION AND TRAINING **CAN THO UNIVERSITY**	**SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom - Happiness**

COURSE OUTLINE DETAILS

1. Course: Applied informatics - Engineering 2 (Tin học ứng dụng - kỹ thuật 2)

- **Code number:** CN332
- **Credits:** 02
- **Hours:** 60 practice hours

2. Management Unit:

- **Department:** Civil Engineering

- **Faculty/School/Institute/Center/Department:** College of Eng. & Technology

3. Requisites:

- **Prerequisites:** KC169H

- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Acquire knowledge in the application of structural analysis software such as SAP, ETABS to model, analyze and calculate internal resources for civil and industrial construction works.	2.1.2 a, 2.1.2.b
4.2	The ability to model, analyze and solve problems related to calculation diagrams, load capacity, ... Identify and export calculation results about internal force, displacement and other necessary parameters to serve structural design calculations.	2.2.1.a, 2.2.1.b
4.3	Teamwork skills, flexible, effective communication and the ability to read and understand structured software documents in English.	2.2.1.a, 2.2.1.b
4.4	Responsibility and professional ethics to reach the design of construction structures of sustainability, high quality and safety.	2.3a

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Explain the concepts and terms used in SAP and ETABS software such as the global coordinate system, the local coordinate system. Presentation of conventions on dimensional dimensions of elements, materials, load, etc.	4.1	2.1.2.a, 2.1.2.b
CO2	Identify, analyze and read structural math problems with specialized application software	4.1	2.1.2 a, 2.1.2.b
	Skills		
CO3	Ability to model and analyze the behavior of structural systems from simple to complex when subjected to different types of loads.	4.2	2.2.1.a, 2.2.1.b
CO4	The ability to analyze and identify internal force values, displacements and other necessary parameters for the calculation and design of structural structures.	4.2	2.2.1.a, 2.2.1.b
CO5	Ability to work in groups to discuss and solve	4.3	2.2.1.a, 2.2.1.b
CO6	issues related to the use of software such as SAP, ETABS.	4.3	2.2.1.a, 2.2.1.b
C07	Selecting the forms of information expression such as words, text, images, graphics, ... suitable when presenting personal opinions Understand the English terminology used in SAP software field, ETABS	4.3	2.2.1.a, 2.2.1.b
CO8	Successive applications of specialized subjects.	4.3	2.2.1.a, 2.2.1.b
	Attitudes/Autonomy/Responsibilities		
C09	Regularly observing and understanding structure types in construction works, self-study, and seeking information about specialized applied software software from sources (Books, magazines, Internet, ...) to build knowledge of specialized applied computer software to quickly solve problems in construction structure.	4.4	2.3a

6. Brief description of the course:

Help learners understand and apply the functions of structural structural application software, in order to quickly solve problems in structural mechanics using numerical methods, including steps:

identifying problems and tissues. visualize, import attributes, import payloads (static and dynamic), export and read the results as data or internal force graphs.

The prevailing and currently taught software is SAP2000 software (version 19), which can vary according to industry needs.

7. Course structure:

7.1. Theory

	Content	Hours	COs
Chapter 1.	**Brief introduction to software and features - Coordinate system**	**3**	CO1
1.1.	Overview of method of mathematical communication		
1.2.	Introducing the process of modeling, calculating and designing structural structures		
1.3.	Overview of specialized software such as SAP, ETABS, ...		
1.4.	Some small examples of material strength and structural mechanics. Compare available results and software results		
1.5.	Familiarize yourself with the SAP software interface		
1.6	Local coordinate system - The total coordinate system in SAP software		
1.7	The local coordinate system of the node		
1.8	The local coordinate system of the bar		
1.9	The local coordinate system of the plate		
Chapter 2.	**Tools to support modeling**	**3**	CO3; CO7; CO8
2.1.	Tools for drawing		
2.2.	Tools to observe, move, select and remove objects		
2.3.	Element cloning tool		
2.4.	Element splitting - joining elements		
2.5.	Model building from the library		
2.6.	Special features		
Chapter 3.	**Declare characteristics for structures**	**3**	CO3; CO7; CO8
3.1.	Material characteristics		
3.2.	Geometric characteristics		
3.3.	Declare steel parameters		
Chapter 4.	**Define load types and combinations**	**3**	CO4; CO7; CO8
4.1.	Define the types of downloads		
4.2.	Combination of load		
4.3.	Assign load types		
4.4.	Assign a load due to fluid pressure		
4.5.	Check the assigned load values		
Chapter 5.	**Marginal conditions and internal force results**	**3**	CO4; CO7; CO8
5.1.	Boundary conditions		
5.2.	Internal force results		
5.3.	Meaning of the results table		

7.2. Practice

	Content	Hours	COs
Unit 1.	**Continuous beam**	**5**	CO1; CO2; CO3; CO4; CO7; CO8
1.1.	Concept, classification, diagram calculator		
1.2.	Calculate the load, how to set the load according to the load case		
1.3.	Combination of load		
1.4.	Calculating internal force beams		
1.5	Handling internal force and reaction results for calculations of reinforcement design for beams		

Unit 2.	**2D-frame system**	**5**	CO1; CO2; CO3; CO4; CO7; CO8
2.1.	Concept, classification, diagram calculator		
2.2.	Calculate the load, how to set the load according to the load case		
2.3.	Combination of load and internal force		
2.4.	Calculation of internal force of flat frame system		
2.5.	Handling internal and jet results for the calculation of reinforcement design for the flat frame system		
Unit 3.	**3D-frame system**	**5**	CO1; CO2; CO3; CO4; CO7; CO8
3.1.	Concept, classification, diagram calculator		
3.2.	Calculate the load, how to set the load according to the load case		
3.3.	Combination of load and internal force		
3.4	Calculation of internal force of space frame system		
3.5	Handling internal and jet results for the calculation of reinforcement design for the 3D-frame system		
Unit 4.	**Stairs**	**5**	CO1; CO2; CO3; CO4; CO7; CO8
4.1.	Concept, classification, diagram calculator		
4.2.	Calculate the load, how to set the load according to the load case		
4.3.	Combination of load and internal force		
4.4.	Calculating internal force stairs		
4.5.	Handling internal force and reaction results for calculations of reinforcement design for stairs		
Unit 5.	**Liquid tank**	**5**	CO1; CO2; CO3; CO4; CO7; CO8
5.1.	Concept, classification, diagram calculator		
5.2.	Calculate the load, how to set the load according to the load case		
5.3.	Combination of load and internal force		
5.4.	Calculating internal force of water tank on roof		
5.5.	Handling internal and jet results for calculation of reinforcement design for roof water tanks		
Unit 6.	**Industrial steel structure**	**5**	CO1; CO2; CO3; CO4; CO7; CO8
6.1.	Concept, classification, diagram calculator		
6.2.	Calculate the load, how to set the load according to the load case		
6.3.	Combination of load and internal force		
6.4.	Calculating internal force of a one-floor industrial house with crane		
6.5.	Calculation of internal force of a single-story industrial house without a crane (Zamil)		
6.6	Handling internal force and reaction results for the selected cross section test for industrial steel frame		
Unit 7.	**Steel roof structure**	**5**	CO1; CO2; CO3; CO4; CO7; CO8
7.1.	Concept, classification, diagram calculator		
7.2.	Calculate the load, how to set the load according to the load case		
7.3.	Combination of load and internal force		
7.4.	Calculating internal force of steel roof frame		
7.5	Handling internal force and reaction results for the selected section test for steel roof frames		
Unit 8	**Skyscraper**	**10**	CO1; CO2; CO3; CO4; CO7; CO8
8.1.	Concept, classification, diagram calculator		
8.2.	Calculate the load, how to set the load according to the load case		
8.3.	Calculation of oscillation patterns		
8.4.	Calculate the static composition of wind		
8.5	Calculate the dynamic component of the wind		
8.6	Calculating earthquake load		

8.7	Calculating internal force of high-rise buildings		
8.8	Handling internal and jet results for calculation of reinforcement design for high-rise buildings		
8.9	Big exercise: Teamwork - model of high-rise buildings, determination of load, analysis model, export of necessary parameters to calculate dynamic components of wind load, earthquake load, export internal results force, displacement.		

8. Teaching methods:

- Presentation based on available lectures.
- For exercises, students practice on computers with the guidance of teachers.

9. Duties of student:

Students must perform the following tasks:
- Read the lecture and related references in advance.
- Attend at least 80% of theoretical lessons.
- Complete individual and group exercises.
- Take the final exam for the module.
- Actively organize self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	Objectives
1	Overall attendance	Attend 80% of lecture hours	10%	CO1; CO2; C03; C04
2	Exercise	- Each student will be assigned individual assignments for each chapter of the program. Students must complete and submit to teachers on time. - Complete 80% of the exercises	30%	CO1; CO2; C03; C04; C05; C06; C07;C08
3	Final examination	- Written test (90 - 120 minutes) - Required to take the final exam	60%	CO1; CO2; C03; C04

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Subject score is the sum of all the components of the evaluation and multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded up to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Learning materials:

Materials information	Code number
[1] Sap 2000 V10 thực hành phân tích và thiết kế kết cấu / Nguyễn Hữu Anh Tuấn, Đào Đình Nhân.- Xuất bản lần thứ 2.- Hà Nội: Khoa học Kỹ thuật, 2008.- 446 tr. ; Minh họa, 24 cm.- 005.3/ T502	MOL.054118 MOL.054119 MON.117706 MON.117707
[2] Hướng dẫn tính toán kết cấu theo chuyên đề SAP 2000 / Hồ Đình Thái Hoà.- Hà Nội: Thống kê, 2003.- 938tr. ; minh họa màu, cm.- 620.0285H401	MOL.016880 MOL.016881 MON.107800
[3] Tính toán kết cấu (Phần nâng cao): Tự học SAP 2000 bằng hình ảnh (Phiên bản 7.42) / Phùng Thị Nguyệt.- 1st.- Hà Nội: Giao thông vận tải, 2005.- 238tr., 28cm+ 01 CD-ROM.- 624.10285/ Ng528	CN.012170 CN.012171 CN.012308 CN.012309 CN.012310

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1-3	**Chapter 1. Brief introduction to software and features - Coordinate system** 1.1. Overview of method of mathematical communication 1.2. Introducing the process of modeling, calculating and designing structural structures 1.3. Overview of specialized software such as SAP, ETABS, ... 1.4. Some small examples of material strength and structural mechanics. Compare available results and software results 1.5. Familiarize yourself with the SAP software interface 1.6. Local coordinate system - The total coordinate system in SAP software 1.7. The local coordinate system of the node 1.8. The local coordinate system of the bar 1.9. The local coordinate system of the plate		12	- Review knowledges from the subjects of material strength, structural mechanics, finite element. - Familiarize yourself with the specialized SAP software interface - Familiarize yourself with the local coordinate system, the overall coordinate system in SAP software
4-6	**Chapter 2. Tools to support modeling** 2.1. Tools for drawing 2.2. Tools to observe, move, select and remove objects 2.3. Element cloning tool 2.4. Element splitting - joining elements 2.5. Model building from the library 2.6. Special features		12	- Self-study before the lecture and reference materials, practice The tools to support additional modeling at home, note the questions to ask in the next lesson.
7-9	**Chapter 3. Declare characteristics for structures** 3.1. Material characteristics 3.2. Geometric characteristics 3.3. Declare steel parameters		12	- Self-study before the lecture and reference materials, practice The tools to support additional modeling at home, note the questions to ask in the next lesson.
10-12	**Chapter 4. Define load types and combinations** 4.1. Define the types of downloads 4.2. Combination of load 4.3. Assign load types 4.4. Assign a load due to fluid pressure 4.5. Check the assigned load values		12	- Self-study before the lecture and reference materials, practice The tools to support additional modeling at home, note the questions to ask in the next lesson.
13-15	**Chapter 5. Marginal conditions and internal force results** 5.1. Boundary conditions 5.2. Internal force results 5.3. Meaning of the results table		12	- Self-study before the lecture and reference materials, practice The tools to support additional modeling at home, note the questions to ask in the next lesson.

	Can Tho, ……/……../20…
ON BEHALF OF RECTOR **DEAN OF COLLEGE** **Nguyễn Chí Ngôn**	**HEAD OF DEPARTMENT** **Đặng Thế Gia**

MINISTRY OF EDUCATION AND TRAINNING
CAN THO UNVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence – Freedom – Happiness

COURSE SYLLABUS

1. Title of course: Methodology of Scientific Research and Report Writing

- **Course code: KC167H**
- **Credict: 2**
- **Structure of course:** 15 hours for class time, 30 hours for practices and assignments, 30 hours for self-studying.

2. Inquiry by college:

- **Department:** Mechanical Engineering
- **College:** Technology and Engineering

3. Requirements:

- **Previous requirement:** None
- **Paralell requirement:** None

4. Objectives of course:

Objectives	Contents	Learning outcomes of educational program
4.1	• Understanding the steps and methods to prepare a research topic • Understanding, determining and building the content of scientific research • Understanding the related knowledge towards the design a research. • Understanding the problems relating to write a scientific report with different forms such as research article, review paper and short communication. • Understanding to report a scientific report by using powerpoint and skills of report.	2.2.1d
4.2	• Analyzing and reviewing the references and research articles • Designing a plan, procedures, and organization of a scientific research • Manipulating the knowledge to build and design the proposal of a scientific research • Manipulating knowledge and methods to write and report a scientific research with different forms such as research article, review paper and short communication. • Analyzing and evaluating the problems relating to the content of a scientific research	2.2.1d; 2.2.1f

4.3	• Obtaining some skills such as team building, communication, report, inofrmation analysis and evaluation, planning and organization. • Obtaining the skills such as wirting and report	2.2.2a; 2.2.2b
4.4	• Consciousness and right attitude in scientific research • Having ethical, legal and scientific responsibilities when citing in scientific research and the future work. • Responsibility and ethics in future work	2.3a; 2.3b; 2.3c

5. Course learning outcomes (CLO):

CLO	The content of outcomes	Objectives	Learning outcomes of educational program
	Knowledge		
CO1	Be able to present structures and methods performed in the scientific research article.	4.1	2.2.1d
CO2	Recognizing the science research article, determining and establishing the contents of the scientific research article.	4.1	2.2.1d
CO3	Understanding involving knowleages to arrange and perform necessary works for the scientific research article.	4.1	2.2.1d
CO4	Be able to write a scientific report with some forms such as general report, summarizing report and journal paper.	4.1	2.2.1d
CO5	Be able to present a journal paper as seminar through using powerpoint.	4.1	2.2.1d
	Skills		
CO6	Be able to analyze and synthesize references supported for the scientific research article.	4.2	2.2.1d; 2.2.1f
CO7	Be able to make plans, procedures, and perform the scientific research article.	4.2	2.2.1d; 2.2.1f
CO8	Be able to establish and design science research syllabus with necessary contents for the scientific research article.	4.2	2.2.1d; 2.2.1f
CO9	Be able to write and present a scientific report with some forms such as general report, summarizing report and journal paper.	4.2	2.2.1d; 2.2.1f
CO10	Be able to analyze and evaluate the issues relating to the content of a scientific research article.	4.2	2.2.1d; 2.2.1f
CO11	Establishing skills in teamwork, communication, behavior, presentation, information analysis and evaluation, planing, and performing.	4.3	2.2.2a; 2.2.2b
CO12	Be able to write and present report through using language used in manuscript of journal paper.	4.3	2.2.2a; 2.2.2b
	Attitude/ degree of autonomy and responsibility		

CO13	Showing consciousness and respectable attitude in the scientific research.	4.4	2.3a; 2.3b; 2.3c
CO14	Showing ethic, juridical and scientific responsibilities as using references in the scientific research and career.	4.4	2.3a; 2.3b; 2.3c
CO15	Showing industrial behavior, responsibility and ethic career.	4.4	2.3a; 2.3b; 2.3c

6. Summerizing the contents of the course:

The course of Methodology of Scientific Research and Report Writing provides to students a few contents relating to concepts of scientific research, types of scientific research, methods and performances of scientific research, and presenting method of scientific research in viewpoints of overall report or summarizing report as well journal paper. In addition, this course trains the students some hard skills for performing the scientific research, and some soft skills used to present the scientific research. The course also introduces some format, standard form of scientific research syllabus or scientific research report.

7. Structural contents of the course:

7.1. Lecture

	Content	Hours	CLO
Chapter 1.	**Introduction for scientific research**	**2**	
1.1.	Concepts, classify, results of scientific research		
1.2.	Procedures in scientific research		
1.3.	Scientific research theory		
Chapter 2.	**Performing methodology in scientific research**	**5**	
2.1.	Selecting article	0.5	
2.2.	Establishing scientific statement	2	
2.3.	Verifying scientific statement	2	
2.4.	Performing article	0.5	
Chapter 3.	**Methodology for presenting a scientific research**	**5**	
3.1.	Kinds of scientific research	1	
3.2.	General structures of scientific research	2	
3.3.	Used languages, and ways for citation in scientific research	1	
3.4.	Methodology for presenting a scientific research	1	
Chapter 4.	**Skills for presenting a scientific research**	**3**	
4.1.	Structure of the scientific report by using Powerpoint	0.5	
4.2.	Skills in preparing the scientific report by using Powerpoint	2	
4.3.	Other skills in presenting the scientific report	0.5	

7.2. Practice

	Content	Hours	Objectives
Lesson 1.	**Literature review**	**4**	
1.1.	Colecting data		
1.2.	Analyzing and synthesizing data		
1.3.	Presenting data in the scientific report or thesis		
Lesson	**Establishing the outline of scientific research/thesis**	**8**	

2.

2.1. Determing scientific issues, name of article
2.2. Establishing targets, obligations of article
2.3. Establishing contents of article
2.4. Planing for article

Lesson 3. Writing an abstract of a scientific research/thesis 4

Lesson 4. How to write the citation, acknowlegement, table of content of a scientific research 4

4.1. Writing sources of article, references
4.2. Writing abstract, acknowledgments, contents, ...

Lesson 5. Report a scientific research/thesis by using powerpoint 10

5.1. Preparing structures, contents for report
5.2. Presenting contents slide by slide
5.3. Presentation in class

8. Teaching methods:

- Lecturing
- Group discussion: think – pair – share, group based learning
- Discussing according to the situation: case study, concept mapping.

9. Students responsibility:

Students have to work the following tasks:
- Firstly read the instruction, then discuss together in the class.
- Particpating at least 80% of lectures
- Fully participating 100% of pratice/problems and reporting the results
- Fully Performing all personal or group homework and short reports which have been assigned
- Performing the mid-term and final exam of course.
- Actively organizing the self-learning.

10. Evaluation of results of studentds

10.1. Evaluation method

Students have been evaluated the accumulated grades as follows:

No.	Scores	Rules	Grades	Learning outcomes of educational program
1	Assignment and homework	- Attendce in class: 100% - Report, skills in assignments - Amount of submitted homeworks per assignments	30%	
2	Mid-term examination	- Muptiple choices	20%	
3	Final examination	- Muptiple choices Requirements: - Attendence in class: At least 80% - Assignments: 100% - Attendence in final examination has been required.	50%	

10.2. Grades

- Scores for each parts including assignment and homework, mid-term examination, and final examination will be graded in range of 0 to 10 points (the scores will be rounded to 1 decimal place).

- Final score of the course is total scores come from each above parts (based on the grade for each parts). The final score will be firstly graded in range of 0 to 10 points (the scores will be rounded to 1 decimal place), then transfered to standard scale of 4 points based on the rules of academic affair at Can Tho Univeristy.

11. References for studying

Information of references	Special registration number
1] Giao trinh phuong phap luan nghien cuu khoa hoc/Vu Cao Dam – Ha Noi: Education in Viet Nam, 2014 – 207 tr, 24 cm – 001.42/ Đ10.	KH.004607, KH.004608
2] Phuong phap luan nghien cuu khoa hoc/Vu Cao Dam – Ha Noi: Technology, 2005 – 208 tr, 20 cm – 001.42/ Đ104/2005.	CN010624; MOL.039859; MON.022122

12. Self-studying of student

Week	Content	Lecture (hr)	Practice (tiết)	Duties of students
1 - 2	**Chapter 1: Introduction for scientific research** 1.1. Concepts, classify, results of scientific research 1.2. Procedures in scientific research 1.3. Scientific research theory	2	4	- Before attending lecture: + References [1] and [2]. + Searching contens relating to review references. - Learning about structure of journal paper published in journal of Can Tho University. - Learning about tools (softwares) to cite references.
3 - 6	**Chapter 2: Performing methodology in scientific research** 2.1. Selecting the article 2.2. Establishing scientific statement 2.3. Verifying scientific statement 2.4. Performing the article	5	8	- Before attending lecture: + References [1] and [2]: Reading suitable contents. + Searching contents relating to write the scientific research syllabus/thesis. - Finishing homeworks. - Working in arranged group (based on list of groups): Writing group report for assignment 1. - Searching contents for assignment 2 mentioned in lecture.
7 - 10	**Chapter 3: Methodology for presenting a scientific research** 3.1. Kinds of scientific research 3.2. General structures of scientific research 3.3. Used languages, and ways for citation in scientific research	5	8	- Before attending lecture: + References [1] and [2] with suitable contents. + Reread contents of chapter 1 and 2. + Searching journal papers relating to major of students. - Finishing assignments 3 and 4. - Working, discussing in group to search the contents for

	3.4. Methodology for presenting a scientific research			assignment 3 and 4 guided in class and lecture. - Writing report for assignment 2.
11 - 15	**Chapter 4: Skills for presenting a scientific research** 4.1. Structure of the scientific report by using Powerpoint 4.2. Skills in preparing the scientific report by using Powerpoint 4.3. Other skills in presenting the scientific report	3	10	- Before attending lecture: + References [1] and [2] with suitable contents. + Reread contents of chapter 3. + Learning about PowerPoint software. - Working, discussing in group to search the contents for assignment 5 guided in class and lecture. - Writing report of assignment 3 and 4. - Finishing assignment 5 and writing reprot.

Can Tho, / / 2020

REPRESENTATION OF PRESIDENT
DEAN OF COLLEGE/PRINCIPAL OF INSTITUTION/ CENTER MANAGER

HEAD OF DEPARTMENT

MINISTRY OF EDUCATION AND TRAINING **CAN THO UNIVERSITY**	**SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom - Happiness**

COURSE OUTLINE DETAILS

1. Course: Electrical Engineering for Civil Engineering (Kỹ thuật điện - XD)

- **Code number: KC181H**

- **Credits: 2**

- **Hours:** 24 theory hours, 12 project hours, and 60 self-study hours.

2. Management Unit:

- **Department:** Electrical Engineering

- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** None

- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Knowledge of electric circuits, lighting design and electrical safety in construction works	2.2.1a
4.2	Having skills in analyzing and applying knowledge into practice	2.2.1.a, b
4.3	Having skills of indentification, solving technical problem, and teamwork	2.2.2d
4.4	Responsibility and professional ethics	2.3b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Understanding the basic concepts of electric circuit	4.1	2.1.1a
CO2	Presenting the operating principle of single-phase circuit and three-phase circuit	4.1	2.1.1a
CO3	Presenting the method of indoor lighting design	4.1	2.1.1a
CO4	Presenting the steps to calculate and design electric power supply system for buildings, schools, ...	4.1	2.1.1a
CO5	Understanding the electrical safety in construction works	4.1	2.1.1a
	Skills		
CO6	Be able to calculate simple electric circuits	4.2	2.2.1.a, c
CO7	Having skill of design lighting systems and electric power supply systems for buildings, schools, ...	4.2	2.2.1.a, c
CO8	Having skill of teamwork	4.3	2.2.2d
	Attitudes/Autonomy/Responsibilities		
CO9	Responsibility of a forward engineer in multi-disciplinary working, clearly understanding the expectation of society of their academic performance and their personal conduct	4.4	2.3b
CO10	Understanding insightfully the role of designers who create not only high valuable and stable architecture projects for the occupants but also have responsibility to save local material and to protect environment for the community	4.4	2.3b

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

The subject includes 3 main parts:
- Knowledge of electric circuits and electrical safety;
- Knowledge of indoor lighting techniques;
- Design an electric power supply system for building projects.

7. Course structure:

7.1. Theory

	Content	Hours	COs
Chapter 1.	**Basic concepts on electric circuits**	**2**	**CO1; CO9; CO10**
1.1.	Electric circuit, geometrical structure of electric circuit		
1.2.	Characteristic quantities for energy process in electric circuit		
1.3.	Model of electric circuit, parameters		
1.4.	Classification and working modes of electric circuit		
1.5.	Kirchhoff laws		
Chapter 2.	**Sinusoidal currents**	**4**	**CO2; CO6; CO9; CO10**
2.1.	Characteristic quantities		
2.2.	Root mean square		
2.3.	Vector diagram		
2.4.	Sinusoidal current in purely resistive circuit		
2.5.	Sinusoidal current in purely inductive circuit		
2.6.	Sinusoidal current in purely capacitive circuit		
2.7.	Sinusoidal current in R - L - C circuit		
2.8.	Powers in sinusoidal circuits		
Chapter 3.	**Three-phase circuits**	**4**	**CO2; CO6; CO9; CO10**
3.1.	General concepts		
3.2.	Wye connection		
3.3.	Delta connection		
3.4.	Powers in three-phase circuit		
3.5.	Power measurement in three-phase circuit		
3.6.	Solution in symmetrical three-phase circuit		
3.7.	Source and load connection		
Chapter 4.	**Lighting techniques**	**4**	**CO3; CO7; CO9; CO10**
4.1.	Lighting quantities		
4.2.	Vietnam standards for indoor lighting techniques		
4.3.	Lighting design methods		
4.4.	Evaluation of lighting design place		
4.5.	Selection of lamp type and light color		
4.6.	Selection of lighting type and luminaire		
4.7.	Selection of height for hanging lamp		
4.8.	Total luminous flux and number of luminaires		
4.9.	Selection of lamp position and determination of lighting load		
Chapter 5.	**Electric power supply system**	**6**	**CO4; CO7; CO9; CO10**
5.1.	Electrical devices		
5.2.	Determination of electrical loads		
5.3.	Selections of conductor and electrical devices		
5.4.	Voltage losses		
5.5.	Test of short-circuit current		
5.6.	Grounded connection system		
5.7.	Anti-lightning system		

Chapter 6.	**Electrical safety**	**4**	**CO5; CO9; CO10**
6.1.	Introduction		
6.2.	Effects of current on body		
6.3.	Conditions affected to electric shock		
6.4.	Arc flash - Arc Blast		
6.5.	Aware of potential dangers from electricity		
6.6.	Methods for safe protection		
6.7.	Processes of electrical safety		

7.2. Practice

	Content	Hours	COs
	Project on electric power supply system	**12**	**CO4; CO7; CO8; CO9; CO10**

8. Teaching methods:

- Lecture;
- Discussion with instructors;
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours;
- Finish the course assignment;
- Attend mid-term examination;
- Attend final examination;
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	Attendance hours/theory hours: 80%	5%	CO9; CO10
2	Point of group assignments	- Report/Description - Confirmed by group	20%	CO4; CO7; CO8
3	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1; CO2; CO3; CO6; CO7
4	Point of final examination	- Writing test (60 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO1; CO2; CO3; CO4; CO5; CO6; CO7

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Kỹ thuật điện – 14th/ Lê Văn Doanh và Đặng Văn Đào, NXB Khoa học kỹ thuật, 2008, 332tr.	CN.014931
[2] Kỹ thuật chiếu sáng/ Dương Lan Hương, NXB ĐH QG TP. HCM, 2005, 236tr.	CN.011299, CN.011300
[3] Cung cấp điện/ Nguyễn Xuân Phú, Nguyễn Bội Khuê, Nguyễn Công Hiền, NXB Khoa học kỹ thuật, 2007, 792tr.	MOL.018141
[4] Electrical safety handbook/ John Cadick, Mary Capelli-Schellpfeffer, Dennis K. Neitzel, Al Winfield, McGraw-Hill, 2012.	Online pdf
[5] Electrical circuit theory and technology/ John Bird, Elsevier, 2010.	Online pdf

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1**	4	0	Review reference [1], [5]
2-3	**Chapter 2**	8	0	Review reference [1], [5]
4-5	**Chapter 3**	8	0	Review reference [1], [5]
6-7	**Chapter 4**	8	0	Review reference [2]
8-10	**Chapter 5**	12	0	Review reference [2], [3]
11-12	**Chapter 6**	8	0	Review reference [4]
13-15	**Project on electric power supply system**	0	12	Review reference [2], [3]

	Can Tho, ……./……../20…
ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **(or DIRECTOR OF INSTITUTE)** **Nguyễn Chí Ngôn**	**HEAD OF DEPARTMENT** **Nguyễn Đỗ Duy Phương**

MINISTRY OF EDUCATION AND TRAINING **SOCIALIST REPUBLIC OF VIETNAM**
CAN THO UNIVERSITY **Independence - Freedom – Happiness**

COURSE OUTLINE DETAILS

Course: Principles of planning (Nguyên lý quy hoạch)

- **Code**: KC199H

- **Credits**: 02

- **Hours**: 20 theory hours, 20 practice hours.

gement Unit:

- **Department**: Civil Engineering

- **Faculty/School/Institute/Center/Department**: College of Technology.

3. Requisites:

- **Prerequisites:** No

- **Corequisites:** No

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Understanding basic planning concepts and tools used for planning	2.1.3.b
4.2	Analyzing, assessing and making prediction and predicting planning development	2.2.1.b
4.3	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	2.2.2.a,d,e
4.4	Improving the capacities in terms of self-study, practice, and knowledge expansion for final examination, term papers, and future work.	2.3b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
1.	Understanding planning concepts and using planning tools.	4.1	2.1.3.b
2.	Using planning tools and orienting planning development	4.1	2.1.3.b
	Skills		
3.	Predicting planning devlopoment and seclect planning toolts	4.2	2.2.1.b
4.	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	4.3	2.2.2.a,d,e
	Attitudes/Autonomy/Responsibilities		
5.	Being positively and prospectively enhancing capacities for self-study and practice.	4.4	2.3b
6.	Being honest during the learning process and in the examination.	4.4	2.3b

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

The course provides knowledge of transportation engineering, analyzes orienting development of transport. It also introduces design methods and principles of planning, construction and assessment of transportation engineering.

7. Course structure:

7.1. Theory (20 hrs.)

	Content	Hours	COs
Chapter 1.	**Basics of Physical planning**	**4**	CO1, CO3, CO5
1.1.	Introduction		
1.2.	Defination		
1.3.	The planning process		
1.4.	General notions regading the planning process		
1.5.	Role of planning in the creating project		
1.6.	The planning period		
1.7.	Determination of object		
1.9.	Multi-criteria evaluation		
Chapter 2.	**SWOT - Analysis**	**2**	CO1,CO4, CO5
2.1.	Introduction		
2.2.	Description		
2.3.	Implementation		
2.4.	For example		
2.5.	Dilemmas		
2.6.	When to use the SWOT - Analysis		
2.7.	When not to use the SWOT - Analysis		
Chapter 3.	**Forecasting techniques**	**5**	CO1, CO2,CO4, CO5
3.1.	Demand forecasting		
3.2.	Forecasting methods		
Chapter 4.	**Collection and use of data in spatial planning**	**3**	CO1, CO2, CO3, CO4, CO5
4.1.	Introduction		
4.2.	The need for data in each phase of the planning process		

4.3.	Practical notions on the use of data		
4.4.	The use of Geographic Information Systems		
Chapter 5.	**Cost benefit analysis**	**6**	CO1, CO2, CO3, CO4, CO5
5.1.	Introduction		
5.2.	Streams of money in a project		
5.3.	Net Present value		
5.4.	Annuity and Discount factor		
5.5.	Sensitivity cost-benefit analysis for time and discount rate		
5.6.	Selecting alternatives with the cost-benefit analysis		
5.7.	Sensitivity discount rate selecting alternatives		
5.8.	Social cost – benefit analysis		

7.2. Practice

	Content	**Hours**	**COs**
Unit 1.	Homework chapter 1	4	CO2, CO3, CO4, CO5
Unit 2.	Homework chapter 3 & 4	4	CO2, CO3, CO4, CO5
Unit 3.	Homework chapter 5	4	CO2, CO3, CO4, CO5
Unit 4.	Group reporting.	8	CO2, CO3, CO4, CO5

8. Teaching method:

- Lecture associated with slideshow, discussion and sample observation in class.
- Discussion with lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination of the subject.
- Finish the course assignment.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of student learning outcomes:

10.1. Assessment

No.	**Point components**	**Rules and Requirement**	**Weights**	**COs**

1.	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	10%	CO5;CO6
2.	Point of group assignments	- All chapter assignments /(3 – 5 students /group)	15%	CO1 to CO6
3.	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1 to CO3
4.	Point of final examination	- Writing test (90 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO1 to CO6

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Materials:

Learning materials information	Barcode number
Quy hoạch tuyến tính /Đặng Hấn.- 1st.- Tp. HCM: Trường Đại học Kinh tế Tp. HCM, 1995.- 184 tr..- 512.5/ H121	MOL.012200, MOL.012201, MOL.012202
Bài giảng quy hoạch phát triển nông thôn / Lê Quang Minh.- Cần Thơ: Trường Đại học Cần Thơ, 2000.- 139 tr., 28 cm.- 330.91724/ M312	MOL.007106 MOL. 007105 MOL.052071
Toán tối ưu kinh tế kỹ thuật phân tích và lựa chọn dự án đầu tư / Phạm Phụ, 1991.- 238 tr. ; minh họa, 24 cm/ Ph500	MFN: 144347
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12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1-2	**Chapter 1**	2	4	-Nghiên cứu trước: +Tài liệu [1] tìm hiểu bài toán quy hoạch tuyến tính
3-6	**Chapter 2-4**	2	4	-Nghiên cứu trước: +Tài liệu [2] nguyên cứu phương pháp SWOT, các kỹ thuật dự báo, thu thập và sử dụng dữ liệu trong quy hoạch không gian
7-15	**Chapter 5**	3	12	Nghiên cứu trước: +Tài liệu [3] tìm hiểu trước các bài toán tối ưu kinh tế kỹ thuật

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ON BEHALF OF RECTOR
DEAN OF COLLEGE/SCHOOL
(or DIRECTOR OF INSTITUTE)

Nguyễn Chí Ngôn

HEAD OF DEPARTMENT

Đặng Thế Gia

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom – Happiness

COURSE OUTLINE DETAILS

1. Course: Concrete Structure (Kết cấu bê-tông cơ sở)
- Code: KC182H
- Credits: 3 credits
- Hours: 30 theory hours, 30 practice hours (assignment)

2. Management Unit:
- Department: Civil Engineering
- Faculty/School/Institute/Center/Department: College of Engineering Technology

3. Prerequisites: KC169H-Structural Mechanics

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Know and understand mechanical and physical properties of concrete and steel materials, calculation and components of reinforced structure.	2.1.2a
4.2	Be able to apply technology into the calculation of concrete structure and to work in a team environment and solve a problem.	2.2.1.b,d
4.3	Having the correct vision of necessity and importance of concrete structures in civil engineering.	2.3a,b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Introduce principles of reinforced concrete structure	4.1	2.1.2a
CO2	Know mechanical and physical properties of concrete and steel materials	4.1	2.1.2a
CO3	Know calculation and components of reinforced structure dealing with bending, bending-twisting, and compressing	4.1	2.1.2a
CO4	Understand calculation of deformation of reinforced concrete	4.1	2.1.2a

	elements		
	Skills		
CO5	Be able to analyze the mechanism of concrete structure dealing with load	4.2	2.2.1.b, d
CO6	Be able to design a concrete element suffering an external load	4.2	2.2.1.b, d
CO7	Be able to apply information technology into the calculation of concrete structure	4.2	2.2.1.b, d
CO8	Be able to synthesize learned knowledge	4.2	2.2.1.b, d
CO9	Be able to work in team environment and solve a problem	4.2	2.2.1.b, d
	Attitudes/Autonomy/Responsibilities		
CO10	Having the correct vision of necessity and importance of concrete structures in civil engineering	4.3	2.3a,b
CO11	Positive and proactive self-studying and practicing	4.3	2.3a,b
CO12	Honesty in the learning process and examination	4.3	2.3a,b

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

Concrete Structure Course provides knowledge of principles of reinforced concrete structure for bending, compressive, tensile, twisting elements; calculate deformation of structure according to Vietnamese standards, and apply into the design of concrete structures.

7. Course structure:

7.1. Theory

	Content	**Hours**	**COs**
Chapter 1.	**Introduction to reinforced concrete**	2	CO1; CO10
1.1.	Characteristics of concrete		
1.2.	Classification		
1.3.	Advantages and Disadvantages of Reinforced Concrete		
1.4.	Application Scope		
Chapter 2.	**Physical and Mechanical Properties**	3	CO2; CO5
2.1.	Physical and Mechanical Properties of Concrete		
2.2.	Physical and Mechanical Properties of Steel		
Chapter 3.	**Principles of Calculation and Composition**	3	CO3; CO7
3.1.	History of Theory of Reinforced Concrete		
3.2.	Stress-Train Relation of A Bending Element		

3.3.	Calculation of Reinforced Concrete by Ultimate Method		
3.4.	Standard Strength and Calculated Strength		
3.5.	General Requirements of Composition		
Chapter 4.	**Calculation of A Bending Element**	8	CO3; CO8; CO9;CO11; CO12
4.1.	Characteristics of Composition		
4.2.	Mechanism of A Bending Element		
4.3.	Calculation for A Perpendicular Section		
4.4.	Calculation for A Inclined Section		
Chapter 5.	**Calculation of A Bending-Twisting Element**	4	CO3; CO8; CO9;CO11; CO12
5.1.	Introduction to Bending-Twisting Element		
5.2.	Calculation by Model 1 (M_t và M)		
5.3.	Calculation by Model 2 (M_t và Q)		
5.4.	Calculation by Model 3 (M_t và M)		
Chapter 6.	**Calculation of A Compressive Element**	7	CO3; CO6; CO8; CO9;CO11; CO12
6.1.	Composition		
6.2.	Calculation of an Centric Compression Element		
6.3.	Calculation of an Centric Compression Element		
6.4.	Interaction Curve		
Chapter 7.	**Calculating Deformation and Crack of A Tensile Element**	3	CO4; CO8; CO9;CO11; CO12
7.1.	Calculation of Crack Development		
7.2.	Calculation of Concrete Element Based on Crack Development		
7.3.	Calculation of Deformation for Concrete Element		

7.2. Practice

	Content	Hours	COs
Chapter 1.	**Introduction to reinforced concrete**	2	CO1; CO10
1.1.	Characteristics of concrete		
1.2.	Classification		
1.3.	Advantages and Disadvantages of Reinforced Concrete		
1.4.	Application Scope		
Chapter 2.	**Physical and Mechanical Properties**	3	CO2; CO5
2.1.	Physical and Mechanical Properties of Concrete		
2.2.	Physical and Mechanical Properties of Steel		

Chapter 3.	**Principles of Calculation and Composition**	3	CO3; CO7
3.1.	History of Theory of Reinforced Concrete		
3.2.	Stress-Train Relation of A Bending Element		
3.3.	Calculation of Reinforced Concrete by Ultimate Method		
3.4.	Standard Strength and Calculated Strength		
3.5.	General Requirements of Composition		
Chapter 4.	**Calculation of A Bending Element**	8	CO3; CO8; CO9;CO11; CO12
4.1.	Characteristics of Composition		
4.2.	Mechanism of A Bending Element		
4.3.	Calculation for A Perpendicular Section		
4.4.	Calculation for A Inclined Section		
Chapter 5.	**Calculation of A Bending-Twisting Element**	4	CO3; CO8; CO9;CO11; CO12
5.1.	Introduction to Bending-Twisting Element		
5.2.	Calculation by Model 1 (M_t và M)		
5.3.	Calculation by Model 2 (M_t và Q)		
5.4.	Calculation by Model 3 (M_t và M)		
Chapter 6.	**Calculation of A Compressive Element**	7	CO3; CO6; CO8; CO9;CO11; CO12
6.1.	Composition		
6.2.	Calculation of an Centric Compression Element		
6.3.	Calculation of an Centric Compression Element		
6.4.	Interaction Curve		
Chapter 7.	**Calculating Deformation and Crack of A Tensile Element**	3	CO4; CO8; CO9;CO11; CO12
7.1.	Calculation of Crack Development		
7.2.	Calculation of Concrete Element Based on Crack Development		
7.3.	Calculation of Deformation for Concrete Element		

8. Teaching method:

- Lecture associated with slideshow, discussion and sample observation in class.
- Discussion with the lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination of the subject.
- Finish the course assignment.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	10%	CO10; CO11; CO12
	Point of group assignments	- All chapter assignments /(3 – 5 students /group)	15%	CO9
2	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO5-CO12
3	Point of final examination	- Writing test (90 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO5-CO12

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Steel-reinforced concrete structures / El-Reedy, Mohamed - Boca Raton: CRC Press, 2008.- 200 tr. ; - 624.1834/ E37	MON.029977
[2] Kết cấu bêtông cốt thép : Phần cấu kiện cơ bản / Phan Quang Minh (Chủ biên) ; Ngô Thế Phong, Nguyễn Đình Cống.- Hà Nội: Khoa học và Kỹ thuật, 2008.- 399 tr. ; minh họa, 24 cm.- 624.1834/ M312	CN.015451; CN.015450; MOL.054167; MOL.054168
[3] Sổ tay thực hành kết cấu công trình (Tái bản) / Vũ Mạnh Hùng.- Hà Nội: Xây dựng, 2013.- 178 tr., 27 cm.- 624.1834/ H513	CN.001644, CN.001643, CN.001645, 2c_394071, MT.000494

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1	**Chapter 1. Introduction to reinforced concrete** 1.1. Characteristics of concrete 1.2. Classification 1.3. Advantages and Disadvantages of Reinforced Concrete 1.4. Application Scope	2	1	- After hours of theory, group study (group of 3 to 5 students). +Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of study.
2-3	**Chapter 2. Physical and Mechanical Properties**	3	2	- After hours of theory, group study (group of 3 to 5 students).

	2.1. Physical and Mechanical Properties of Concrete 2.2. Physical and Mechanical Properties of Steel			+Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of study.
4-5	**Chapter 3. Principles of Calculation and Composition** 3.1. History of Theory of Reinforced Concrete 3.2. Stress-Train Relation of A Bending Element 3.3. Calculation of Reinforced Concrete by Ultimate Method 3.4. Standard Strength and Calculated Strength 3.5. General Requirements of Composition	3	3	- After hours of theory, group study (group of 3 to 5 students). +Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of study.
6-8	**Chapter 4. Calculation of A Bending Element** 4.1. Characteristics of Composition 4.2. Mechanism of A Bending Element 4.3. Calculation for A Perpendicular Section 4.4. Calculation for A Inclined Section	10	4	- After hours of theory, group study (group of 3 to 5 students). +Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of study.
9-10	**Chapter 5. Calculation of A Bending-Twisting Element** 5.1. Introduction to Bending-Twisting Element 5.2. Calculation by Model 1 (M_t và M) 5.3. Calculation by Model 2 (M_t và Q) **5.4.** Calculation by Model 3 (M_t và M)	4	3	- After hours of theory, group study (group of 3 to 5 students). +Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of study.
11-13	**Chapter 6. Calculation of A Compressive Element** 6.1. Composition 6.2. Calculation of an Centric Compression Element 6.3. Calculation of an Centric Compression Element	8	4	- After hours of theory, group study (group of 3 to 5 students). +Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of study.

	6.4. Interaction Curve			
14-15	**Chapter 7. Calculating Deformation and Crack of A Tensile Element** 7.1. Calculation of Crack Development 7.2.Calculation of Concrete Element Based on Crack Development 7.3. Calculation of Deformation for Concrete Element	5	3	- After hours of theory, group study (group of 3 to 5 students). +Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of study.

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ON BEHALF OF RECTOR
DEAN/DIRECTOR

HEAD OF DEPARTMENT

Nguyễn Chí Ngôn

Đặng Thế Gia

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

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COURSE OUTLINE DETAILS

1. Course: Concrete structures for Buildings (Kết cấu bêtông-công trình dân dụng)

- **Code**: KC248H
- **Credits**: 03
- **Hours**: 30 theory hours, 30 practice hours.

2. Management Unit:

- **Department**: Civil Engineering.
- **Faculty/School/Institute/Center/Department**: College of Engineering Technology.

3. Requisites:

- **Prerequisites:** KC182H
- **Corequisites:** No

4. Course objectives:

Objectives	Descriptions	Program

		Outcomes
4.1	Leaning the crucial behaviors of the typical concrete structures under the various loads applied.	2.1.3.b
4.2	Applying the training knowledge for modeling, analyzing, and designing the typical concrete structure.	2.2.1.b
4.3	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	2.2.2.a,d
4.4	Improving the capacities in terms of self-study, practice, and knowledge expansion for final examination, term papers, and future work.	2.3b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
	Chapter 1. Concrete slab		
1.	Definition	4.1	2.1.3.b
2.	Analysis for a slab on 4 supporters	4.1	2.1.3.b
3.	Analysis for a slab on fixed supporters	4.1	2.1.3.b
4.	Analysis for a slab without beams	4.1	2.1.3.b
	Chapter 2. Concrete frame structure		
5.	Definition	4.1	2.1.3.b
6.	Characteristics and Components	4.1	2.1.3.b
7.	Analysis Model	4.1	2.1.3.b
8.	Load Analysis	4.1	2.1.3.b
9.	Internal Force Analysis	4.1	2.1.3.b
10.	Steel Bar Analysis	4.1	2.1.3.b
	Chapter 3. Concrete Stair		
11.	Slab Stair	4.1	2.1.3.b
12.	Beam Support Stair	4.1	2.1.3.b
13	Twisted Stair	4.1	2.1.3.b
14	Fishbone Stair	4.1	2.1.3.b
	Chapter 4. Concrete Foundation		
15.	Spread Footing	4.1	2.1.3.b
16.	Strip Footing	4.1	2.1.3.b

17.	Mat Footing	4.1	2.1.3.b
	Chapter 5. Concrete Pool		
18	Pool on Roof	4.1	2.1.3.b
19.	Underground Pool	4.1	2.1.3.b
20.	Circular Pool	4.1	2.1.3.b
	Skills		
21.	Modeling, analyzing, and designing the typical concrete structures including slap, frame, stair, foundation, and pool.	4.2	2.2.1.b
22.	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	4.3	2.2.2.a,d,e
	Attitudes/Autonomy/Responsibilities		
23.	Being positively and prospectively enhancing capacities for self-study and practice.	4.4	2.3b
24.	Being honest during the learning process and in the examination.	4.4	2.3b

6. Brief description of the course:

The course provides the knowledge of analysis of the main load bearing system of a structure including slab, beam, column, foundation, and other elements (stair, pool). The learners can solve the internal force components of the structure and integrate the knowledge of concrete structure to design in details including steel bars analysis, and technical drawings.

7. Course structure:

7.1. Theory

Chapter	Content	Hours	COs
1.	**Concrete slab**	**8**	
1.	Definition		1.
2.	Ananlysis for a slab on 4 supporters		2.
3.	Analysis for a slab on fixed supporters		3.
4.	Analysis for a slab without beams		4.
2.	**Concrete frame structure**	**7**	
1.	Definition		5.
2.	Characteristics and Components		6.
3.	Analysis Model		7.
4.	Load Analysis		8.
5.	Internal Force Analysis		9.

6.	Steel Bar Analysis		10.
3.	**Concrete Stair**	**5**	
1.	Slab Stair		11.
2.	Beam Support Stair		12.
3.	Twisted Stair		13.
4.	Fishbone Stair		14.
4.	**Concrete Foundation**	**5**	
1.	Spread Footing		15.
2.	Strip Footing		16.
3.	Mat Footing		17.
5.	**Concrete Pool**	**5**	
1.	Pool on Roof		18.
2.	Underground Pool		19.
3.	Circular Pool		20.

7.2. Practice

Chapter	Content	Hours	COs
1.	**Concrete slab**	**15**	
	Analysis and steel reinforce design for slab structure	15	CO1 to CO4
3.	**Concrete Stair**	**15**	
	Analysis and steel reinforce design for stair structure	15	CO11 to CO14

8. Teaching method:

- Lecture associated with slideshow, discussion and sample observation in class.
- Discussion with lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination of the subject.
- Finish the course assignment.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of student learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1.	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	10%	CO23;CO24
2.	Point of group assignments	- All chapter assignments /(3 – 5 students /group)	15%	CO1 to CO4; CO11 to CO14
3.	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1 to CO10
4.	Point of final examination	- Writing test (90 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO1 to CO20

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Materials:

Learning materials information	Barcode number
[1] Kết cấu bê-tông cốt thép : Phần kết cấu nhà cửa / Ngô Thế Phong (chủ biên) ... [et al.].- Hà Nội: Khoa học và Kỹ thuật, 1996.- 315 tr., 24 cm.- 693.54/ Ph431	CN.013592; CN.013593 MOL.021782 MON.113602
[2]] Kết cấu bê-tông cốt thép- T2- Cấu kiện nhà cửa / Võ Bá Tầm.- 1st.- Thành phố Hồ Chí Minh: Đại học Quốc gia Thành phố Hồ Chí Minh, 2003.- 393p., 23cm.- 624.1834/ T120/T2	MON.105492
[3] TCVN 2737-1995 - Tiêu chuẩn tải trọng và tác động/ Bộ xây dựng	

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1-4	**Chapter 1. Concrete slab**	8	8	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] +Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. +Summarize the core content of study.
	1.1. Definition 1.2. Ananlysis for a slab on 4 supporters 1.3. Analysis for a slab on fixed supporters 1.4. Analysis for a slab			

	without beams			
5-9	**Chapter 2. Concrete frame structure** 2.1. Definition 2.2. Characteristics and Components 2.3. Analysis Model 2.4. Load Analysis 2.5. Internal Force Analysis 2.6. Steel Bar Analysis	7	7	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] +Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of study.
10-11	**Chapter 3. Concrete Stair** 3.1. Slab Stair 3.2. Beam Support Stair 3.3. Twisted Stair 3.4. Fishbone Stair	5	5	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] +Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of study.
12-13	**Chapter 4. Concrete Foundation** 4.1.Spread Footing 4.2.Strip Footing 4.3.Mat Footing	5	5	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] +Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of study.
14-15	**Chapter 5. Concrete Pool** 5.1. Pool on Roof 5.2. Underground Pool 5.3. Circular Pool	5	5	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] +Solve the problems or assignments required by the lecturer and prepare the content for discussion in the coming class. +Summarize the core content of study.

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ON BEHALF OF RECTOR
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MINISTRY OF EDUCATION AND TRAINING
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Independence - Freedom – Happiness

COURSE OUTLINE DETAILS

1. Course: Term paper of Concrete Structures (Đồ án kết cấu bê-tông)

- Code: KC183H
- Credits: 02 credits
- Hours: 0(theory hours), 60(practice hours).

2. Management Unit:

- Department: Civil Engineering
- Faculty/School/Institute/Center/Department: College of Engineering Technology

3. Prerequisites/Parallels: KC248H -Concrete Structure (Parallel subject)

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Apply the knowledge about the reinforced concrete structure to design a specific concrete structure.	2.1.2b; 2.1.3a,b
4.2	Be able to calculate and design concrete structures	2.2.1.b
4.3	Be able to solve in-depth problems and to synthesize learned knowledge	2.2.2b
4.4	Having the correct vision of necessity and importance of concrete structures in civil engineering	2.3a

5. Course learning outcomes

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Understand and apply the knowledge about the reinforced concrete structure to design a specific concrete structure.	4.1	2.1.2b;2.1.3a,b
CO2	Have knowledge about reinforced concrete models, calculate the load, analyze inertial force, and design concrete beams, columns, walls, and frames.	4.1	2.1.2b; 2.1.3a,b
	Skills		
CO3	Be able to calculate and design concrete structures	4.2	2.2.1.b; 2.1.3a,b
CO4	Be able to work in groups for discussing and solving the problems related to concrete structures.	4.2	2.2.1.b; 2.1.3a,b
CO5	Be able to solve in-depth problems;	4.3	2.2.2b
CO6	Be able to synthesize learned knowledge;	4.3	2.2.2b
	Attitudes/Autonomy/Responsibilities		
CO7	Having the correct vision of necessity and importance of concrete structures in civil engineering.	4.4	2.3a
CO8	Positive and proactive self-studying and practicing.	4.4	2.3a

6. Brief description of the course:

This subject provides the learners knowledge about choosing concrete bearing for a structure, calculate the load, analyze the inertial force, and design beam, column, wall, and frame of concrete structures. The learners are able to design these above structures combined with the

knowledge of subjects: concrete structures, structural mechanics,technical applied informatics for designing and complete a technical drawing of a concrete structure.

7. Course structure:

7.1. Theory (0 hours)

7.2. Practice (60 hours)

	Content	Hours	COs
1.2.3.4.5.	To synthesize the calculated data Calculate and design concrete slab Calculate and design concrete frame Complete a technical drawing Final check and correction	5 hours (1 week) 15 hours (3 weeks) 25 hours (5 weeks) 10 hours (2 weeks) 5 hours (1 weeks)	CO1 to CO8

8. Teaching methods:

- The learners do the term paper under the instruction of the lecturers, checking and correction every week. The term paper must be approved to be submitted and to be defended.

9. Duties of students:

- Attend at least 80% of practice hours.
- Perform actively self-study hours.
- Finish the term paper.
- Attend final examination (Defend the term paper with the lecturer).

10. Assessment of student learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	20%	CO7; CO8
4	Point of final examination	Defence the term paper with the lecturer	80%	CO1 to CO6

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Learning materials:

Material informations	Code numbers

[1] Steel-reinforced concrete structures / El-Reedy, Mohamed - Boca Raton: CRC Press, 2008.- 200 tr. ; - 624.1834/ E37	MON.029977
[2] Kết cấu bêtông cốt thép : Phần cấu kiện cơ bản / Phan Quang Minh (Chủ biên) ; Ngô Thế Phong, Nguyễn Đình Cống.- Hà Nội: Khoa học và Kỹ thuật, 2008.- 399 tr. ; minh họa, 24 cm.- 624.1834/ M312	CN.015451; CN.015450; MOL.054167; MOL.054168
[3] Sổ tay thực hành kết cấu công trình (Tái bản) / Vũ Mạnh Hùng.- Hà Nội: Xây dựng, 2013.- 178 tr., 27 cm.- 624.1834/ H513	CN.001644, CN.001643, CN.001645, 2c_394071, MT.000494

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1	To synthesize the calculated data		5	Solve the assignments required by the lecturer and prepare the content for discussion in the coming class.
2-4	Calculate and design concrete slab		15	
5-10	Calculate and design concrete frame		25	
11-13	Complete a technical drawing		10	
14	Final check and correction		5	
15	Defend the term paper with the lecturer.			

Cantho, .../...../2020

ON BEHALF OF RECTOR
DEAN/DIRECTOR

HEAD OF DEPARTMENT

Nguyễn Chí Ngôn

Đặng Thế Gia

MINISTRY OF EDUCATION AND TRAINING **CAN THO UNIVERSITY**	**SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom - Happiness**

COURSE OUTLINE DETAILS

1. Course: Steel structures (Kết cấu thép)

- **Code number:** KC184H

- **Credits: 02** credits

- **Hours:** 20 theory hours, 20 practice hours (do assignment)

2. Management Unit:

- **Department:** Civil Engineering

- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** KC169H (Strength of Materials)

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Learners understand the basic characteristics and the application of steel structures. Understand the terminology and the design standards of steel constructions in Vietnam.	2.1.2a
4.2	Learners understand and be able to design the components of steel structures: steel floor, column, beam, roof and connections.	2.1.3.b
4.3	This subject also equips the learners with study and research skills in the field of steel structures, the teamwork skills, the writing scientific reports or writing projects skills.	2.2.1.a,b 2.2.2b,d
4.4	Learners love and interest in the subject of steel structures. They also have a serious and progressive attitude in the learning process.	2.3a,b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	To equip the learners with concepts and materials used in steel structures. The design standards of steel constructions in Vietnam.	4.1	2.1.2a
CO2	To equip the learners ability to analyze and design the components of steel structures: steel floor, column, beam, roof and connections.	4.2	2.1.3.b
	Skills		
CO3	To equip learners with the ability to self-study and research in the field of steel structures, the teamwork skills, the writing scientific reports or writing projects skills.	4.3	2.2.1.a,b 2.2.2b,d
	Attitudes/Autonomy/Responsibilities		
CO4	Learners love and interest in the subject of steel structures. They also have a serious and progressive attitude in the learning process.	4.4	2.3a,b

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

The subject equips the learners with the knowledge of: steel materials in construction, to be able to design the steel components (steel floor, steel beams, steel columns, steel frames), the steel connections (welding and bolt). In addition, the subject enhances the ability to analyze and select steel structure diagrams.

7. Course structure:

7.1. Theory (20 hours)

	Content	Hours	COs
Chapter 1.	**Materials and properties of steel**	**2**	
1.1.	Manufacturing of steel structures		CO1,CO4
1.2.	Steel in construction		CO1,CO4
1.3.	Steel specifications in construction		CO1,CO4
1.4.	Steel properties as the structure subjected to load		CO1,CO4
1.5.	Limit state design		CO1,CO4
1.6.	Steel structure design standard		CO1,CO4
1.7.	Standard strength and calculated strength of steel		CO1,CO4
1.8.	Loads on steel structures		
Chapter 2.	**Connections in steel structures**	**4**	
2.1.	Introduction and concepts of steel connection		CO1,CO4
2.2.	Welded connection		CO2,CO3,CO4
2.3.	Bolted connection		CO2,CO3,CO4
Chapter 3.	**Steel beams**	**5**	
3.1.	Introduction of steel floor beam		CO1,CO4
3.2.	Form and calculating of steel floor		CO2,CO3,CO4
3.3.	Calculate steel beam		CO2,CO3,CO4
3.4.	Calculate split steel beam		CO2,CO3,CO4
Chapter 4.	**Steel column**	**5**	
4.1.	Introduction of steel column		CO2,CO3,CO4
4.2.	Calculate column with axial load		CO2,CO3,CO4
4.3.	Calculate column with axial load and moment		CO2,CO3,CO4
4.4.	Calculate connection for column		CO2,CO3,CO4
Chapter 5.	**Steel truss**	**4**	
5.1.	Introduction and classification of steel truss		CO1,CO4
5.2.	Calculate purlin		CO2,CO3,CO4
5.3.	Calculate and design steel truss		CO2,CO3,CO4
5.4.	Calculate connection details		CO2,CO3,CO4

7.2. Practice (20 hours)

	Content	Hours	COs
Chapter 1.	**Materials and properties of steel**	**2**	
Unit 1	Practicing to determine the strength of steel according to standards		CO1,CO4
Chapter 2.	**Connections in steel structures**	**4**	
Unit 1.	Practicing to calculate of confrontation welding connection		CO2,CO4

Unit 2.	Practicing to calculate the angle welding connection		CO2,CO3,CO4
Unit 3.	Practicing to calculate bolt connection		CO2,CO3,CO4
Chapter 3.	**Steel beam**	**5**	
Unit 1.	Practicing to design steel beam		CO2,CO3, CO4
Unit 2.	Practicing to design the combinational steel beam		CO2,CO3,CO4
Unit 3.	Practicing to calculate the connection of beam		CO2,CO3,CO4
Chapter 4.	**Steel column**	**5**	
Unit 1.	Practicing to design the steel column with axial force		CO2,CO3,CO4
Unit 2.	Practicing to design the steel column with axial force and moment		CO2,CO3,CO4
Chapter 5.	**Steel truss**	**4**	
Unit 1	Practicing to design the section of bar in the truss		CO2,,CO3,CO4
Bài 2.	Practicing to design the connection in the truss		CO2,CO3,CO4

8. Teaching methods:

- Lecture associated with slideshow, discussion and sample observation in class (20 hours). Instruction and editing exercises according to each group of students, each group has 4 sessions (equivalent to 20 hours of practice)
- Discussion with the lecturer.
- Group discussion.
-Group assignment

9. Duties of student:

Students have to do the following duties:
- Read before the lecture and related references
-Attend at least 80% of theory hours.
- Finish the course assignment.
- Attend mid-term examination of the subject.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	10%	CO4
2	Point of assignments	- All chapter assignments / group assignments	10%	CO1, CO2, CO3,CO4
3	Point of mid-term examination	- Writing test - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1, CO2, CO3, CO4
4	Point of final examination	- Writing test - Attend at least 80% of theory hours.	55%	CO1, CO2, CO3, CO4

		- Compulsory attendance exam		

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Bài giảng Kết cấu thép	
[2] Kết cấu thép Tập 1-Cấu Kiện Cơ Bản / Phạm Văn Hội. –Hà Nội: Khoa học và Kỹ Thuật 2013 - 318 tr., 27 cm.- 624.1821 / H452/T.1	MOL.078021 MOL.078022 MON.051657
[3] Thiết kế kết cấu thép/ Đoàn Định Kiến. –Hà Nội: Xây dựng 2010 - 237 tr., 27 cm - 624.1834 / K305	MOL.068483 MOL.068484 MON.044410
[4]] Bài tập thiết kế kết cấu thép / Trần Thị Thôn.- Thành phố Hồ Chí Minh: Đại học Quốc gia Thành phố Hồ Chí Minh, 2002.- 267tr., 24cm, 624.182076/ Th454	CN.000872 MOL.042697 MON.001137

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1: Materials and properties of steel** 1.1.Manufacturing of steel structures 1.2.Steel in construction 1.3.Steel specifications in construction 1.4.Steel properties as the structure subjeted to load 1.5.Limit state design 1.6.Steel structure design standard 1.7.Standard strength and calculated strength of steel 1.8.Loads on steel structures	2	2	- Previous study: [1],[2] chapter 1 - Solve the problems or assignments of chapter 1. -Submit assignments +Group discussion + Summarize the core content of study. +Prepare the content for discussion in the coming class.

2	**Chapter 2: Connections in steel structures** 2.1.Introduction and concepts of steel connection 2.2.Welded connection 2.3.Bolted connection	4	4	- Previous study: [1],[2] chapter 2 - Solve the problems or assignments of chapter 2. -Submit assignments +Group discussion + Summarize the core content of study. +Prepare the content for discussion in the coming class.
3	**Chapter 3: Steel beams** 3.1.Introduction of steel floor beam 3.2.Form and calculating of steel floor 3.3.Calculate steel beam 3.4.Calculate split steel beam	5	5	- Previous study: [1],[2] chapter 3 - Solve the problems or assignments of chapter 3. -Submit assignments +Group discussion + Summarize the core content of study. +Prepare the content for discussion in the coming class.
4	**Chapter 4: Steel column** 4.1.Introduction of steel column 4.2.Calculate column with axial load 4.3.Calculate column with axial load and moment 4.4 Calculate connection for column	5	5	- Previous study: [1],[2] chapter 4 - Solve the problems or assignments of chapter 4. -Submit assignments +Group discussion + Summarize the core content of study. +Prepare the content for discussion in the coming class.
5	**Chapter 5: Steel truss** 5.1.Introduction and classification of steel truss 5.2.Calculate purlin 5.3.Calculate and design steel truss 5.4.Calculate connection details	4	4	- Previous study: [1],[2] chapter 5 - Solve the problems or assignments of chapter 5. -Submit assignments +Group discussion + Summarize the core content of study. +Prepare the content for discussion in the coming class.

	Can Tho, ……/……../20…
ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **Nguyễn Chí Ngôn**	**HEAD OF DEPARTMENT** **Đặng Thế Gia**

CAN THO UNIVERSITY	Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

1. Course: Industrial steel structures (Kết cấu thép nhà công nghiệp)

- **Code number:** KC260H
- **Credits:** 3 credits
- **Hours:** 30 theory hours, 30 practice hours (do assignment)

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** KC184H (Steel structure)

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Learners have the knowledge about the types of industrial steel structures. Structural components of industrial steel structures and other steel structures	2.1.2a; 2.1.3b
4.2	Learners are able to understand and apply calculation formulas, standards for the design of industrial steel structures and other steel structures.	2.2.1.a,b
4.3	This subject also equips the learners with study and research skills in the field of steel structures, the teamwork skills, the writing scientific reports or writing projects skills.	2.2.2.a,b,d
4.4	Learners love and interest in the subject of industrial steel structures. They also have a serious and progressive attitude in the learning process.	2.3a,b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	To equip with basic knowledge and concepts of industrial steel structures	4.1	2.1.2a
CO2	To equipp with the knowledge of the requirements of material and structure of industrial steel structures	4.1	2.1.2a
CO3	To have a thorough grasp of design standards, principles of calculating the industrial steel structures and other steel structures	4.2	2.1.3b 2.2.1a
	Skills		
CO4	To be able to calculate and to use specialized software for steel	4.2	2.2.1

	structure design		a,b
CO5	To be able to work in groups, write scientific reports	4.3	2.2.2a,b
CO6	To be able to self-study and research in the field of steel structure	4.3	2.2.2d
	Attitudes/Autonomy/Responsibilities		
CO7	Learners love and interest in the subject of industrial steel structures. They also have a serious and progressive attitude in the learning process.	4.4	2.3a,b

6. Brief description of the course:

This course aims to provide learners with knowledge of the types of industrial steel structures and other steel structures. Components and loads acting on industrial steel structures. After completing the course, learners are able to design the industrial steel structures and other steel structures.

7. Course structure:

7.1. Theory (30 hours)

	Content	Hours	COs
Chapter 1.	**One-storey industrial steel structure**	**18**	
1.1.	Overview industrial steel structures		CO1
1.2.	Construction of industrial steel structures		CO1,CO2
1.3.	Calculate the horizontal frame		CO3,CO4,CO5, CO6,CO7
1.4.	Composition of roof of industrial steel structures		CO3,CO4,CO5, CO6,CO7
1.5.	Design of column		CO3,CO4,CO5, CO6,CO7
1.6.	Design of cross-beam		CO3,CO4,CO5, CO6,CO7
1.7.	Design of connection		CO3,CO4,CO5, CO6,CO7
Chapter 2.	**Large span steel structures**	**6**	
2.1.	Scope of use and characteristics of large span steel structures		CO1,CO2
2.2.	Bearing structure of large span steel structures (characteristic and calculation)		CO1,CO2, CO3,CO4,CO5, CO6,CO7
2.3.	Structure of roof space with large span		CO1,CO2, CO3,CO4,CO5, CO6,CO7
2.4.	Large suspension roof system (characteristic and calculation)		CO1,CO2, CO3,CO4,CO5, CO6,CO7
Chapter 3.	**High-rise steel buildings**	**6**	
3.1.	Overview about high-rise steel buildings		CO1,CO2
3.2.	Types of high-rise steel buildings and methods of calculation		CO1,CO2, CO3,CO4,CO5,

			CO6,CO7

7.2. Practice (30 hours)

	Content	Hours	COs
Chapter 1.	**One-storey industrial steel structure**	**16**	
Unit 1.	Practical instructions to determine the type and horizontal frame of industrial steel structure		CO3,CO4,CO5,CO6,CO7
Unit 2.	Practical instructions to determine the internal force of horizontal frame of industrial steel structure		CO3,CO4,CO5,CO6,CO7
Unit 3.	Practical instructions to design the steel column		CO3,CO4,CO5,CO6,CO7
Unit 4.	Practical instructions to design the cross beam		CO3,CO4,CO5,CO6,CO7
Unit 5.	Practical instructions to design the connections		CO3,CO4,CO5,CO6,CO7
Chapter 2.	**Large span steel structures**	**8**	
Unit 1.	Practical instructions to determine the type of large span steel structure		CO3,CO4,CO5,CO6,CO7
Unit 2.	Practical instructions to design the roof of large span steel structure		CO3,CO4,CO5,CO6,CO7
Unit 3.	Practical instructions to design the large suspension roof system		CO3,CO4,CO5,CO6,CO7
Chapter 3.	**High-rise steel buildings**	**6**	
Unit 1	Practical instructions to determine the type and design the high-rise steel buildings		CO3,CO4,CO5,CO6,CO7

8. Teaching methods:

- Lecture associated with slideshow, discussion and sample observation in class.
- Discussion with the lecturer.
- Group discussion.
-Group assignment

9. Duties of student:

Students have to do the following duties:

- Read before the lecture and related references
-Attend at least 80% of theory hours.
- Finish the course assignment.
- Attend mid-term examination of the subject.
-Attend the final presentation examination.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	10%	CO7
2	Point of assignments	- All chapter assignments / group	10%	CO3,CO4,

		assignments		CO5,CO6,CO7
3	Point of mid-term examination	- Writing test - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	15%	CO1, CO2, CO3,CO4,CO5
4	Point of presentation examination	- Oral test - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	15%	CO1, CO2, CO5,CO6
4	Point of final examination	- Writing test - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO1, CO2, CO3, CO4,CO5

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Thiết kế khung thép nhà công nghiệp một tầng, một nhịp/ Phạm Minh Hà-Hà Nội: Xây dựng 2010.-103tr.,27cm-624.1821/H100	PTNT.000263, PTNT.0002634 CN.015354, CN.015355, MOL.055015 MOL.055027
[2] Thiết kế kết cấu thép nhà công nghiệp / Đoàn Định Kiến (chủ biên), Phạm Văn Tư, Nguyễn Quang Viên.- Hà Nội: Khoa học và Kỹ thuật, 2008.- 139 tr., 27 cm.- 624.1821/ K305	CN.016879; CN.016882;
[3] Kết cấu thép : Công trình dân dụng và công nghiệp / Phạm Văn Hội.- Hà Nội: Khoa học Kỹ thuật, 2006.- 359 tr., 27 cm.- 624.1821/ H452	CN.000872 MOL.042697 MON.001137
[4] Bài tập thiết kế kết cấu thép / Trần Thị Thôn.- Thành phố Hồ Chí Minh: Đại học Quốc gia Thành phố Hồ Chí Minh, 2002.- 267tr., 24cm, 624.182076/ Th454	

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1: One-storey industrial steel structure** 1.1. Overview industrial steel	**12**	**10**	- Previous study: [1] ,[2], [3] -Before study assignments

	structures 1.2. Construction of industrial steel structures 1.3. Calculate the horizontal frame 1.4. Composition of roof of industrial steel structures 1.5. Design of column 1.6. Design of cross beam 1.7. Design of connections			1,2,3,4,5 chapter 1 -Solve the assignments 1,2,3,4,5 chapter 1 -Submit assignments + Summarize the core content of study. +Prepare the content for discussion in the coming class. +Instructions for the content of the presentation report
2	**Chapter 2: Large span steel structures** 2.1. Scope of use and characteristics of large span steel structures 2.2. Bearing structure of large span steel structures (characteristic and calculation) 2.3. Structure of roof space with large span 2.4. Large suspension roof system (characteristic and calculation)	**4**	**6**	- Previous study: [1] ,[2], [3] -Before study assignments 1,2,3 chapter 2 -Solve the assignments 1,2,3 chapter 2 -Submit assignments + Summarize the core content of study. +Prepare the content for discussion in the coming class. +Instructions for the content of the presentation report
3	**Chapter 3: High-rise steel buildings** 3.1. Overview about high-rise steel buildings 3.2. Types of high-rise steel buildings and methods of calculation	**4**	**4**	- Previous study: [1] ,[2], [3] -Before study assignments 1 chapter 3 -Solve the assignments 1 chapter 3 -Submit assignments + Summarize the core content of study. +Prepare the content for discussion in the coming class. +Instructions for the content of the presentation report +Presentation examination

	Can Tho, ……/……/20…
ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **Nguyễn Chí Ngôn**	**HEAD OF DEPARTMENT** **Đặng Thế Gia**

MINISTRY OF EDUCATION AND TRAINING **CAN THO UNIVERSITY**	**SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom - Happiness**

COURSE OUTLINE DETAILS

1. Course: Term paper of steel Structures (Đồ án kết cấu thép)

- **Code number:** KC185H
- **Credits:** 2 credits
- **Hours:** 0 theory hours, 60 practice hours (do term paper)

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Engineering Technology

3. Requisites:

- **Prerequisites:**
- **Corequisites:** KC260H

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Learners have knowledge of modeling, analysis of load and internal strength of industrial steel structures.	2.1.3b;2.2.1b
4.2	Learners are able to apply calculation formulas and standards for the design of industrial steel structures and other steel structures. Ability to use specialized software to design.	2.2.1.a,b
4.3	This subject also equips the learners with study and research skills in the field of steel structures, the teamwork skills, the writing scientific reports or writing projects skills.	2.2.2.a,b,d
4.4	Learners love and interest in the subject of industrial steel structures. They also have a serious and progressive attitude in the learning process.	2.3a,b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	To equip with the knowledge of parts of industrial steel structures, calculating models, load design. industrial steel structures	4.1	2.1.3b
CO2	To equipp with the knowledge of the requirements of material and structure of industrial steel structures	4.1	2.1.3b
CO3	To have a thorough grasp of design standards, principles of calculating the industrial steel structures and other steel structures	4.2	2.2.1.a
	Skills		

CO4	To be able to calculate and to use specialized software for steel structure design	4.2	2.2.1 a,b
CO5	To be able to self-study and research in the field of steel structure	4.3	2.2.2.a,b,d
	Attitudes/Autonomy/Responsibilities		
CO6	Learners love and interest in the subject of industrial steel structures. They also have a serious and progressive attitude in the learning process.	4.4	2.3a,b

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

This module helps learners practice selecting structure diagrams, load design, calculating internal strength of frame of industrial streel structures. Learners are able to apply the formulas and standards to design the columns, crossbeams and connections of industrial steel structures. Learners be able to solve the above problems with the combination of the knowledge of steel structure, industrial steel structures and using specialized software for steel structure design.

7. Course structure:

7.1. Theory (0 hours)

7.2. Practice (60 hours)

	Content	Hours	COs
Unit 1.	**Analyzing and selecting structural diagram for industrial steel frame**	**5**	
1.1.	Summary of data, selection of crane		CO1,CO2, CO6
1.2.	Analyzing and selecting the structure diagram. Determine the vertical and horizontal dimensions of the frame.		CO1,CO2, CO6
1.3.	Design the bracing		CO1,CO2, CO6
Unit 2.	**Design the roof**	**5**	
2.1.	Design the roof sheet		CO2,CO3, CO4,CO5,CO6
2.2.	Design the purlin		CO2,CO3, CO4,CO5,CO6
Unit 3.	**Determine the load**	**5**	
3.1.	Regular load (static load)		CO1,CO2
3.2.	Service load		CO1, CO2, CO3, CO4, CO5, CO6,CO7
3.3.	Crane load		CO1, CO2, CO3, CO4, CO5, CO6,CO7
Unit 4.	**Determine the internal force**	**10**	
4.1.	Load and load combination		CO3
4.2.	Using specialized software for steel structure design to determine the internal force		CO4
Unit 5.	**Design the column**	**10**	
5.1.	Determine the internal force of column		CO3,CO4

5.2.	Design the cross section of column		CO3,CO4
Unit 6.	**Design the cross beams**	**5**	
6.1.	Determine the internal force of cross beams		CO3,CO4
6.2.	Design the cross section of cross beams		CO3,CO4
Unit 7.	**Design the connections**	**10**	
7.1.	Determine the internal force		CO3,CO4
7.2.	Design the connections		CO3,CO4
Unit 8.	**Design the drawing**	**10**	
8.1.	Design the drawing by using specialized software		CO3,CO4

8. Teaching methods:

- Learners do the term paper under the instruction of lecturer (1 project/1 student)
- Lecturer edits assignment every week
-Discussion, doing and edit the term paper on class and self study.
- Group discussion.
-Doing the term paper

9. Duties of student:

Students have to do the following duties:

- Review the related subjects and related references
-Attend at least 80% of instruction hours.
- Finish the course assignment.
-Attend the final presentation examination.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	10%	CO6
2	Point of assignments	- All chapter assignments / group assignments	20%	CO2,CO3,CO4, CO5,CO6
3	Point of presentation examination	- Oral test - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	70%	CO1, CO2, CO3, CO4,CO5,CO6

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is

converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Thiết kế khung thép nhà công nghiệp một tầng, một nhịp/ Phạm Minh Hà-Hà Nội: Xây dựng 2010.-103tr.,27cm-624.1821/H100	PTNT.000263, PTNT.0002634 CN.015354, CN.015355, MOL.055015 MOL.055027
[2] Thiết kế kết cấu thép nhà công nghiệp / Đoàn Định Kiến (chủ biên), Phạm Văn Tư, Nguyễn Quang Viên.- Hà Nội: Khoa học và Kỹ thuật, 2008.- 139 tr., 27 cm.- 624.1821/ K305	CN.016879; CN.016882;
[3] Kết cấu thép : Công trình dân dụng và công nghiệp / Phạm Văn Hội.- Hà Nội: Khoa học Kỹ thuật, 2006.- 359 tr., 27 cm.- 624.1821/ H452	CN.000872 MOL.042697 MON.001137
[4] Tính toán kết cấu thép / Nguyễn Văn Yên.- Lần 2.- Thành phố Hồ Chí Minh: Đại học Bách khoa Thành phố Hồ Chí Minh.- 164 tr., 27 cm.- 624.1821/ Y254	DIG.002520 CN.014040
[5] Bài tập thiết kế kết cấu thép / Trần Thị Thôn.- Thành phố Hồ Chí Minh: Đại học Quốc gia Thành phố Hồ Chí Minh, 2002.- 267tr. ; minh hoạ, 24cm, 25000.- 624.182076/ Th454	MOL.018714 CN.000791

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Unit 1. Analyzing and selecting structural diagram for industrial steel frame** 1.1.Summary of data, selection of crane 1.2.Analyzing and selecting the structure diagram. 1.3.Determine the vertical and horizontal dimensions of the frame. 1.4.Design the bracing		**5**	- Previous study: [1],[2] - Learners do group work to prepare content for discussion in class - Lecturer instruct to solve the problems or assignments of unit 1 and content of term paper. -Submit assignments - Lecturer edits the student's assignments of unit 1 +Prepare the content for discussion on coming class.
2	**Unit 2. Design the roof** 2.1.Design the roof sheet 2.2.Design the purlin		**5**	- Previous study: [1],[2] ,[5] - Learners do group work to prepare content for discussion in class - Lecturer instruct to solve the problems or assignments

				of unit 2 and content of term paper. -Submit assignments - Lecturer edits the student's assignments of unit 2 +Prepare the content for discussion on coming class.
3,4	**Unit 3. Determine the load** 3.1.Regular load (static load) 3.2.Service load 3.3.Crane load		**5**	- Previous study: [1],[2] unit 3 - Learners do group work to prepare content for discussion in class - Lecturer instruct to solve the problems or assignments of unit 3 and content of term paper. -Submit assignments - Lecturer edits the student's assignments of unit 3 +Prepare the content for discussion on coming class.
5,6,7	**Unit 4. Determine the internal force** 4.1.Load and load combination 4.2.Using specialized software for steel structure design to determine the iternal force		**10**	- Previous study: [1],[2] - Learners do group work to prepare content for discussion in class - Lecturer instruct to solve the problems or assignments of unit 4 and content of term paper. -Submit assignments - Lecturer edits the student's assignments of unit 4 +Prepare the content for discussion on coming class.
8,9	**Unit 5. Design the column** 5.1.Determine the internal force of column 5.2.Design the cross section of column		**10**	- Previous study: [1],[2],[3], [4],[5] - Learners do group work to prepare content for discussion in class - Lecturer instruct to solve the problems or assignments of unit 5 and content of term paper. -Submit assignments - Lecturer edits the student's assignments of unit 5 +Prepare the content for

				discussion on coming class.
10	**Unit 6. Design the cross beams** 6.1.Determine the internal force of cross beams 6.2.Design the cross section of cross beams		**5**	- Previous study: [1],[2],[3], [4],[5] - Learners do group work to prepare content for discussion in class - Lecturer instruct to solve the problems or assignments of unit 6 and content of term paper. -Submit assignments - Lecturer edits the student's assignments of unit 6 +Prepare the content for discussion on coming class.
11,12	**Unit 7. Design the connections** 7.1.Determine the internal force 7.2Design the connections		**10**	- Previous study: [1],[2],[3], [4],[5] - Learners do group work to prepare content for discussion in class - Lecturer instruct to solve the problems or assignments of unit 7 and content of term paper. -Submit assignments - Lecturer edits the student's assignments of unit 7 +Prepare the content for discussion on coming class.
13,14,15	**Unit 8. Design the drawing** 8.1.Design the drawing by using specialized software		**10**	+Learners do the drawing by using the software +Lecture edits the drawing

	Can Tho, ……/……/20…
ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **Nguyễn Chí Ngôn**	**HEAD OF DEPARTMENT** **Đặng Thế Gia**

MINISTRY OF EDUCATION & TRAINING **CAN THO UNIVERSITY**	**SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom - Happiness**

COURSE OUTLINE DETAILS

1. **Course: Construction Machines & Construction Engineering (Máy xây dựng và Kỹ thuật thi công)**

- **Code number:** KC186H
- **Credits:** 03
- **Hours:** 30 theory hours, 30 practice hours.

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** KC182H
- **Corequisites:** No

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	• Knowledge of construction machines, selection and effective usage of machines; • Knowledge of calculation of earthwork, foundation work, formwork & scaffold work, reinforced concrete work, plastering work and finishing work; • Knowledge of construction techniques for earthwork, foundation work, formwork & scaffold work, reinforced concrete work, plastering work and finishing work.	2.1.3a, b, c
4.2	• Skills of analysis and evaluation and application for solving practical problems in handling construction machines and construction techniques; • Communication skills, academic exchange and teamwork.	2.2.2a, b
4.3	• Awareness, responsibility and professional ethics.	2.3a,b

5. Course learning outcomes

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	• Identifying and analyzing characteristics, classification and mobility of common construction machines in construction site.	4.1	2.1.3a, b, c;
CO2	• Presenting the steps for selecting construction machines in construction works.	4.1	2.1.3a, b, c;
CO3	• Presenting the calculation steps for earthwork, foundation work, formwork & scaffold work, reinforced concrete work, plastering work and finishing work;.	4.1	2.1.3a, b, c;
CO4	• Presenting construction techniques for earthwork, foundation work, formwork & scaffold work, reinforced concrete work, plastering work and finishing work.	4.1	2.1.3a, b, c;
	Skill		
CO5	• Presentation, group-work, discussion for solving issues related to the selection and usage of machines and construction	4.2	2.2.2a, b;

	techniques.		
CO6	• Analyzing and evaluating design options based on different construction techniques.	4.4	2.2.2a, b;
	Attitudes/Autonomy/Responsibilities		
CO7	• A sense of responsibility, good professional ethics.	4.3	2.3

6. Brief description of the course:

This course is a specialized module in the program of civil engineering to provide undergraduated students with knowledge of construction machines and construction techniques. Students are introduced methods for selecting effectively construction machines, construction techniques for earthwork, foundation work, formwork & scaffold work, reinforced concrete work, plastering work and finishing work.

7. Course structure:

7.1. Theory

Heading	Content	Hours	CĐR HP
Part 1.	Construction machines	**9**	CO1; CO2; CO5; CO6; CO7
Chapter 1.	Concept, transmission in construction machine	**1**	CO1; CO4; CO6
Chapter 2.	Lifting machines	**2**	CO1; CO2; CO5; CO6; CO7
Chapter 3.	Earth moving machines	**2**	CO1; CO2; CO5; CO6; CO7
Chapter 4.	Pile machines	**2.5**	CO1; CO2; CO5; CO6; CO7
Chapter 5.	Machines for concrete work	**1.5**	CO1; CO2; CO5; CO6; CO7
Part 2.	Construction techniques	**21**	CO3; CO4; CO5; CO6; CO7
Chapter 6.	Earthwork Calculation	**3**	CO3; CO5; CO6; CO7
Chapter 7.	Construction techniques for earthwork	**3**	CO3; CO4; CO5; CO6; CO7
Chapter 8.	Foundation work	**3**	CO3; CO4; CO5; CO6; CO7
Chapter 9.	Formwork & scaffold work	**3**	CO3; CO4; CO5; CO6; CO7
Chapter 10.	Rebar work	**3**	CO3; CO4; CO5; CO6; CO7
Chapter 11.	Concrete work	**3**	CO3; CO4; CO5; CO6; CO7
Chapter 12.	Plastering work and finishing work	**3**	CO3; CO4; CO5; CO6; CO7

7.2. Practice

Heading	Content	Hours	CĐR HP
Chapter 1.	Calculation of earthwork, foundation work, formwork & scaffold work, rebar work, concrete work.	**3**	CO1; CO2; CO3; CO4; CO5; CO6; CO7
Chapter 2.	Selection of construction machines for earthwork, foundation work and concrete work	**3**	CO1; CO2; CO5; CO6; CO7
Chapter 3.	Static driven pile construction	**3**	CO1; CO2; CO5; CO6; CO7
Chapter 4.	Driven pile construction/Bored pile construction	**3**	CO3; CO4; CO5; CO6; CO7
Chapter 5.	Pile cap foundation construction	**3**	CO3; CO4; CO5; CO6; CO7

Chapter 6.	Rebar work	**3**	CO3; CO4; CO5; CO6; CO7
Chapter 7.	Formwork & scaffold work	**3**	CO3; CO4; CO5; CO6; CO7
Chapter 8.	Concrete work	**3**	CO3; CO4; CO5; CO6; CO7
Chapter 9.	Concrete curing work	**3**	CO3; CO4; CO5; CO6; CO7
Chapter 10.	Plastering work and finishing work	**3**	CO3; CO4; CO5; CO6; CO7

8. Teaching methods:

Students are required to read the required documents, complete assignments from the previous lesson and discuss in class. The lesson will be a combination of lectures, group exercises and discussion questions.

9. Duties of student:

Students must perform the following tasks::

- Attendance at least 70% of theoretical lessons.
- Completing individual/group assignments.
- Attendance at the final exam.
- Organizing the implement of self-study hours actively and effectively

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Personal exercise scores	Students have to complete and submit their assignments to lecture on time.	20%	CO1; CO2; CO3; CO5; CO6
2	Group exercise scores	The workload of the group must be planned and assigned to each member.	20%	CO1; CO2; CO3; CO4; CO5; CO6
3	Thematic report scores	The workload of the group must be planned and assigned to each member.	20%	CO1; CO2; CO3; CO4; CO5; CO6
4	Final exam scores	Written test (90 minutes) Attendance at the final exam	40%	CO1; CO2; CO3; CO5; CO6

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number

1. Bài Giảng Máy xây dựng và Kỹ thuật thi công.	
2. Bùi Đức Tiến (2000). Kỹ thuật thi công công trình xây dựng, NXB Xây dựng.	MON.017938;
3. DIG.002201;	
4. Nguyễn Đình Thuận (2001). Sử dụng máy xây dựng và làm đường, NXB Giao thông vận tải.	MT004698;
5. Nguyễn Thị Tâm (2002). Máy xây dựng, NXB Giao thông vận tải.	MOL.018436;
6. MON.108904;	
7. Bộ xây dựng (2005). Giáo trình Kỹ thuật thi công, NXB Xây dựng.	MOL.057769;
8. MON.035589;	
9. Ngô Quang Tường (2006). Hỏi đáp về Kỹ thuật thi công XD, NXB Đại học Quốc gia TP. HCM.	CN.000867;

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	Chapter 1	**1**	**0**	Students preview the chapter content
1	Chương 2	**2**	**0**	Students preview the chapter content and complete assignments
2	Chương 3	**2**	**3**	Students preview the chapter content and complete assignments
2,3	Chương 4	**2,5**	**3**	Students preview the chapter content and complete assignments
3	Chapter 5	**1,5**	**3**	Students preview the chapter content and complete assignments
4,5	Chương 6	**3**	**3**	Students preview the chapter content and complete assignments
6,7	Chương 7	**3**	**3**	Students preview the chapter content and complete assignments
8,9	Chương 8	**3**	**3**	Students preview the chapter content and complete assignments
10,11	Chapter 9	**3**	**3**	Students preview the chapter content and complete assignments
12	Chương 10	**3**	**3**	Students preview the chapter content and complete assignments
13,14	Chương 11	**3**	**3**	Students preview the chapter content and complete assignments
15	Chương 12	**3**	**3**	Students preview the chapter content and complete assignments

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ON BEHALF OF RECTOR **DEAN OF COLLEGE**	**HEAD OF DEPARTMENT** **Đặng Thế Gia**

Nguyễn Chí Ngôn	

MINISTRY OF EDUCATION & TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
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COURSE OUTLINE DETAILS

1. **Course: Construction Organization and Labor Safety (Tổ chức thi công và An toàn lao động)**
   - **Code number:** KC187H
   - **Credits:** 03
   - **Hours:** 30 theory hours, 30 practice hours.
2. **Management Unit:**
   - **Department:** Civil Engineering
   - **Faculty:** College of Engineering Technology
3. **Requisites:**
   - **Prerequisites:** No
   - **Corequisites:** KC186H
4. **Course objectives:**

Objectives	Descriptions	Program Outcomes
4.1	• Knowledge of construction planning and construction organization; • Knowledge of calculation and design of construction drawings, construction schedule, and management of machines, materials and human resources; • Knowledge of labor safety in construction and accident prevention.	2.1.3a, b, c;
4.2	• Skills of analysis, evaluation and application for solving practical problems in construction organization and labor safety; • Communication skills, academic exchange and teamwork.	2.2.2a, b;
4.3	• Awareness, responsibility and professional ethics.	2.3a,b

5. **Course learning outcomes**

COs	Descriptions	Objectives	POs

	Knowledge		
CO1	• Identifying and analyzing the role of construction organization in construction phases.	4.1	2.1.3a, b, c;
CO2	• Presenting the steps of construction organization design.	4.1	2.1.3a, b, c;
CO3	• Presenting the calculation steps in construction organization for machines, materials and human resources.	4.1	2.1.3a, b, c;
CO4	• Presenting construction schedule	4.1	2.1.3a, b, c;
CO5	• Designing construction site	4.1	2.1.3a, b, c;
CO6	• Applying labor safety for construction	4.1	2.1.3a, b, c;
	Skill		
CO7	• Presentation, group-work, discussion for solving issues related to construction organization and labor safety.	4.2	2.2.2a, b;
CO8	• Analyzing and evaluating design options according to different construction techniques.	4.2	2.2.2a, b;
	Attitudes/Autonomy/Responsibilities		
CO9	• A sense of responsibility, good professional ethics.	4.3	2.3

6. Brief description of the course:

This course is a specialized module in the program of civil engineering to provide undergraduated students with knowledge of construction organization in construction site including organization and plan of construction, labor organization; management of construction progress, management of resource supply (materials, machines, labor), organization of construction site and labor safety issues in construction site.

7. Course structure:

7.1. Theory

Heading	Content	Hours	COs
Chapter 1.	General issues about construction organization and labor organization in construction site.	**4**	CO1; CO2; CO3; CO7; CO9
Chapter 2.	Construction schedule - construction plan with horizontal diagram (Gantt chart)	**4**	CO1; CO2; CO3; CO4; CO7; CO8; CO9
Chapter 3.	Construction schedule with oblique diagram - schedule matrix	**4**	CO1; CO2; CO3; CO4; CO7; CO8; CO9
Chapter 4.	Construction plan with network diagram	**5**	CO1; CO2; CO3; CO4; CO7; CO8; CO9
Chapter 5.	Warehousing and storage yard organization	**2**	CO1; CO2; CO3; CO5; CO7;CO8, CO9
Chapter	Electricity and water supplying	**2**	CO1; CO2; CO3; CO5; CO7;CO8, CO9

6.			
Chapter 7.	Site offices	**2**	CO1; CO2; CO3; CO5; CO7;CO8, CO9
Chapter 8.	Site layout plan for construction	**2**	CO1; CO2; CO3; CO5; CO7;CO8, CO9
Chapter 9.	Labor safety and environmental sanitation	**5**	CO1; CO2; CO3; CO6; CO7;CO8, CO9

7.2. Practice

Heading	Content	Hours	COs
Chapter 1.	Site layout plan for construction	**10**	CO1; CO2; CO3;; CO5; CO7;CO8, CO9
Chapter 2.	Methods of labor organization, organization of constructional machines and methods of construction planning	**10**	CO1; CO2; CO3; CO4; CO7; CO8; CO9
Chapter 3.	Methods of labor safety at construction site	**10**	CO1; CO2; CO3; CO6; CO7;CO8, CO9

8. Teaching methods:

Students are required to read the required documents, complete assignments from the previous lesson and discuss in class. The lesson will be a combination of lectures, group exercises and discussion questions.

9. Duties of student:

Students must perform the following tasks::

- Attendance at least 70% of theoretical lessons.
- Completing individual/group assignments.
- Attendance at the final exam.
- Organizing the implement of self-study hours actively and effectively

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Practical exercises on site	• Students have to complete and submit their assignments to lecture on time.	20%	CO1 - CO9
2	Group exercise scores	• The workload of the group must be planned and assigned to each member.	20%	CO1 - CO9
3	Thematic report scores / Mid-term test scores	• The workload of the group must be planned and assigned to each member / Written test (30 minutes)	20%	CO1; CO2; CO3; CO8; CO9
4	Final exam scores	• Written test (90 minutes) • Attendance at the final exam	40%	CO1 – CO6; CO8; CO9

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
1. Nguyễn Bá Dũng, Nguyễn Đình Thâm & Lê Văn Tin (1997). Kỹ thuật An toàn và vệ sinh lao động trong xây dựng, NXB Khoa học & Kỹ thuật.	MOL.034681; MON.017943;
2. Nguyễn Đình Thám & Nguyễn Đình Thanh (2004). Lập kế hoạch tổ chức và chỉ đạo thi công, NXB Khoa học & Kỹ thuật.	MOL.063749;CN.006135 MON.015649;
3. Trịnh Quốc Thắng (2007). Thiết kế tổng mặt bằng và tổ chức công trường xây dựng, NXB Khoa học & Kỹ thuật.	MON.015698;CN.005588 MOL.033153;
4. Ngô Quang Tường (2008). Lý thuyết & hỏi đáp về Tổ chức và lập tiến độ thi công, NXB Xây dựng.	MON.042485;CN.017319 MOL.062929;
5. Nguyễn Đình Hiện (2000). Tổ chức thi công, NXB Xây dựng.	CN.013435; MT.004707;
6. Bộ xây dựng (2011). Giáo trình tổ chức thi công, Bộ xây dựng.	

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1-2	Chapter 1	3	3	Students preview the chapter content
3-4	Chapter 2	3	3	Students preview the chapter content and complete assignments
5-6	Chapter 3	3	3	Students preview the chapter content and complete assignments
7-8	Chapter 4	4	3	Students preview the chapter content and complete assignments
9	Chapter 5	3	3	Students preview the chapter content and complete assignments
10	Chapter 6	3	3	Students preview the chapter content and complete assignments
11	Chapter 7	3	3	Students preview the chapter content and complete assignments
12	Chapter 8	3	3	Students preview the chapter content and complete assignments
13-15	Chapter 9	5	6	Students preview the chapter content and complete assignments

Can Tho,....., 2020

ON BEHALF OF RECTOR
DEAN OF COLLEGE

Nguyễn Chí Ngôn

HEAD OF DEPARTMENT

Đặng Thế Gia

MINISTRY OF EDUCATION & TRAINING **CAN THO UNIVERSITY**	**SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom - Happiness**

COURSE OUTLINE DETAILS

1. Course: Term Paper of Construction Engineering (Đồ án thi công)

- **Code number:** KC188H
- **Credits:** 02
- **Hours:** 60 practice hours.

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty:** College of Engineering Technology

3. Requisites:

- **Prerequisites:** No
- **Corequisites:** KC187H

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	• Knowledge of construction machines; • Knowledge related to construction techniques for earthwork, foundation work, formwork work, reinforced work, reinforced concrete work, plastering work and finishing work; • Knowledge of construction organization, construction norms and labor safety.	2.1.3a, b, c
4.2	• Skills of analysis, evaluation and application for solving practical problems in construction organization and labor safety; • Communication skills, academic exchange and teamwork.	2.2.2a, b
4.3	• Awareness, responsibility and professional ethics.	2.3a,b

5. Course learning outcomes

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	• Identifying and analyzing site conditions related to geology, hydrology, water supply and drainage, traffic, labor, infrastructure and materials;	4.1	2.1.3a, b, c;

CO2	• Presenting construction methods of earthwork, foundation work, formwork & scaffold work, reinforced concrete work, plastering work and finishing work.	4.1	2.1.3a, b, c;
CO3	• Presenting the calculation steps for earthwork, foundation reinforcement work, formwork & scaffold work, reinforced concrete work, plastering work and finishing work;	4.1	2.1.3a, b, c;
CO4	• Presenting the calculation steps in labor organization, organization using machines in construction and installation related to the demand of labor, machines, materials and supply management.	4.1	2.1.3a, b, c;
CO5	• Presenting labor safety in construction	4.1	2.1.3a, b, c;
CO6	• Presenting construction schedule	4.1	2.1.3a, b, c;
CO7	• Designing construction drawings	4.1	
	Skill		
CO8	• Presentation, group-work, discussion for solving issues related to construction organization and labor safety.	4.2	2.2.2a, b;
CO9	• Analyzing and evaluating design options based on different construction techniques.	4.2	2.2.2a, b;
	Attitudes/Autonomy/Responsibilities		
CO10	• A sense of responsibility, good professional ethics.	4.3	2.3

6. Brief description of the course:

This module helps undergraduated students consolidate the knowledge of the module of Construction Machines & Construction Engineering, Construction Organization and Labor Safety. The students must implement a construction design with the calculation of work volume, the proposal of effective construction; the organization of labor and machines; the presentation of construction schedule based on a technical design and practical conditions of a project.

7. Course structure:

Heading	Content	Hours	COs
Chapter 1.	Overview of construction project	**5**	CO1; CO2; CO3;; CO5; CO7;CO8, CO9
Chapter 2.	Calculation of work volume	**6**	CO1; CO2; CO3; CO4; CO7; CO8; CO9
Chapter 3.	Construction of reinforced foundation and earthworks	**12**	CO1; CO2; CO3; CO6; CO7;CO8, CO9
Chapter 4.	Construction of superstructure	**11**	
Chapter 5.	Construction of plastering, roofing and finishing	**7**	
Chapter 6.	Design of construction schedule	**14**	
Chapter 7.	Design of construction site layout	**5**	

8. Teaching methods:

Guide and correction are made weekly.

9. Duties of student:

Students must perform the following tasks::

- Previewing the required contents of the term paper.
- Attendance at the weekly guide lecture.
- Organizing the implement of self-study hours actively and effectively

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Attendance scores	• Students participate in weekly guide lecture.	20%	CO1 – CO10
3	Presentation scores	• The report is clearly presented. • The drawings are made correctly to conform to the standards.	10%	CO7&; CO8
3	Defense scores	• Oral examination	70%	CO1; CO2; CO3; CO4; CO5; CO7; CO9; CO10

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
1. Nguyễn Bá Dũng, Nguyễn Đình Thâm & Lê Văn Tin (1997). Kỹ thuật An toàn và vệ sinh lao động trong xây dựng, NXB Khoa học & Kỹ thuật.	MOL.034681; MON.017943;
2. Nguyễn Đình Thám & Nguyễn Đình Thanh (2004). Lập kế hoạch tổ chức và chỉ đạo thi công, NXB Khoa học & Kỹ thuật.	MOL.063749;CN.006135 MON.015649;
3. Trịnh Quốc Thắng (2007). Thiết kế tổng mặt bằng và tổ chức công trường xây dựng, NXB Khoa học & Kỹ thuật.	MON.015698;CN.005588 MOL.033153;
4. Ngô Quang Tường (2008). Lý thuyết & hỏi đáp về Tổ chức và lập tiến độ thi công, NXB Xây dựng.	MON.042485;CN.017319 MOL.062929;
5. Nguyễn Đình Hiện (2000). Tổ chức thi công, NXB Xây dựng.	CN.013435; MT.004707;
6. Bùi Đức Tiến (2000). Kỹ thuật thi công công trình xây dựng, NXB Xây dựng.	MON.017938; DIG.002201;
7. Nguyễn Đình Thuận (2001). Sử dụng máy xây dựng và làm đường, NXB Giao thông vận tải.	MT004698;
8. Nguyễn Thị Tâm (2002). Máy xây dựng, NXB Giao thông vận tải.	MOL.018436; MON.108904;
9. Bộ xây dựng (2005). Giáo trình Kỹ thuật thi công, NXB Xây dựng.	MOL.057769; MON.035589;
10. Ngô Quang Tường (2006). Hỏi đáp về Kỹ thuật thi công XD, NXB Đại học Quốc gia TP. HCM.	CN.000867; CN000870;

11. Nguyễn Tiến Thu (2010). Sổ tay chọn máy thi công, NXB Xây dựng.	MOL.018448; DIG.002996;
12. Nguyễn Đăng Cường, Vũ Minh Khương (2010). Máy xây dựng, NXB Xây dựng	
13. Các TCVN về Thi công và nghiệm thu	

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1-2	Chapter 1	0	**5**	Students preview the chapter content
3-4	Chapter 2	0	**6**	Students preview the required contents and complete the tasks.
5-6	Chapter 3	0	**12**	Students preview the required contents and complete the tasks.
7-8	Chapter 4	0	**11**	Students preview the required contents and complete the tasks.
9-10	Chapter 5	0	**7**	Students preview the required contents and complete the tasks.
11-13	Chapter 6	0	**14**	Students preview the required contents and complete the tasks.
14-15	Chapter 7	0	**5**	Students preview the required contents and complete the tasks.

	Can Tho,..... , 2020
ON BEHALF OF RECTOR **DEAN OF COLLEGE** **Nguyễn Chí Ngôn**	**HEAD OF DEPARTMENT** **Đặng Thế Gia**

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

1. Course: Foundation Engineering (Nền móng công trình)

- **Code number:** KC245H
- **Credits:** 3 credits
- **Hours:** 30 theory hours, 30 practice hours (do assignment)

2. Management Unit:

- **Department:** Civil Engineering

- **Faculty/School/Institute/Center/Department:** College of Technology

3. Requisites:

- **Prerequisites:** KC175H

- Corequisites: ...

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Have knowledge of shallow foundation and deep foundation.	2.1.2a, b
4.2	Be able to apply of principles of foundation design; Be able to design a foundation for a construction work and synthesize learned knowledge.	2.2.1.a, b, c
4.3	Be able to work in team environment.	2.2.2c
4.4	Having the correct vision of necessity, importance of foundation engineering in civil engineering and honesty in the learning process and examination.	2.3a

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Have knowledge of shallow foundation;	4.1	2.1.2a, b
CO2	Have knowledge of deep foundation.	4.1	2.1.2a, b
	Skills		
CO3	Be able to apply of principles of foundation design;	4.2	2.2.1.a, b, c
CO4	Be able to combine two or more learned knowledge;	4.2	2.2.1.a, b, c
CO5	Be able to design a foundation for a construction work;	4.2	2.2.1.a, b, c
CO6	Be able to synthesize learned knowledge;	4.3	2.2.2c
CO7	Be able to work in team environment.	4.3	2.2.2c
	Attitudes/Autonomy/Responsibilities		
CO8	Having the correct vision of necessity and importance of foundation engineering in civil engineering.	4.4	2.3a
CO9	Positive and proactive self-studying and practicing.	4.4	2.3a
CO10	Honesty in the learning process and examination.	4.4	2.3a

6. Brief description of the course:

Foundation Engineering Course provides knowledge of design methods of shallow and deep foundation.

7. Course structure:

7.1. Theory

	Content	Hours	Cos
Chapter 1.	**Introduction**		

1.1.	Introduction to Shallow Foundation	2	CO1, CO2, CO4, CO7
1.2.	Introduction to Deep Foundation	3	CO1, CO2, CO4, CO7
Chapter 2.	**Design of Shallow Foundation**		
2.1.	Definition	1	CO1, CO2, CO3, CO7, CO8
2.2.	Types of Foundation	2	CO1, CO2, CO3, CO7, CO8
2.3.	Failure Modes of Foundation	2	CO1, CO2, CO3, CO7, CO8
2.4.	Bearing Capacity	2	CO1, CO2, CO3, CO7, CO8
2.5.	Terzaghi's Formula	2	CO1, CO2, CO3, CO7, CO8
2.6.	General Formula	2	CO1, CO2, CO3, CO7, CO8
2.7.	Factors Influencing on Bearing Capacity	2	CO1, CO2, CO3, CO7, CO8
2.8.	Ultimate and Allowable Bearing Capacity of Foundation	2	CO1, CO2, CO3, CO7, CO8
Chapter 3.	**Design of Pile Foundation**		
3.1.	Pile Types	3	CO1, CO2, CO5, CO6, CO9
3.2.	Determining Capacity of a Single Pile	2	CO1, CO2, CO5, CO6, CO9
3.3.	Static Method	2	CO1, CO2, CO5, CO6, CO9
3.4.	Negative Friction	2	CO1, CO2, CO5, CO6, CO9
3.5.	Dynamic Method	2	CO1, CO2, CO5, CO6, CO9
3.6.	Static Axial Compression Load	2	CO1, CO2, CO5, CO6, CO9
3.7.	Determining Capacity of a Pile Group	2	CO1, CO2, CO5, CO6, CO9

7.2. Practice

Content	Number	Objectives
Thematic report (project based learning)	30	CO1, CO2, CO3, CO4, CO5, CO6, CO7, CO8, CO9

8. Teaching methods:

- Lecture associated with slideshow, discussion and sample observation in class.
- Discussion with lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination of the subject.

- Finish the course assignment.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	Compulsory attendance at least 80% of theory hours		
2	Mid-term exam	Written / multiple-part examination (60 minutes)	20%	CO1; CO2; CO4; CO6
3	Group assignments and report	• Number of assignments / number of assignments • Report	40%	CO1, CO2, CO3, CO4, CO9
4	Final exam	Attend 80% of theory and 100% of practicing time Written / multiple-part examination (60 minutes)	40%	CO1, CO2, CO3, CO4, CO5, CO6, CO7, CO8, CO9

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Materials information	Code number
Budhu, M. (2007), Soil Mechanics and Foundation, 2nd edition, John Wiley & Sons	4.1 / B927
Das, B. M. (2016), Principles of Foundation Engineering, Cengage Learning	624.15 / D229; MON.054219
3] Tomlinson, M. J. (2000), Foundation Design and Construction, 7th edition, Prentice Hall	

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1	**Chapter 1: Introduction** . Introduction to Shallow Foundation . Introduction to Deep Foundation	5	10	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] + Solve the problems or assignments required by lecturer and prepare the content for discussionon coming class. + Summarize the core content of study.
5	**Chapter 2: Design of Shallow Foundation** . Definition	15	10	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4]

	. Types of Foundation . Failure Modes of Foundation . Bearing Capacity . Terzaghi's Formula . General Formula . Factors Influencing on Bearing Capacity . Ultimate and Allowable Bearing Capacity of Foundation			+ Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
10	**Chapter 3: Design of Pile Foundation** . Pile Types . Determining Capacity of a Single Pile . Static Method . Negative Friction . Dynamic Method . Static Axial Compression Load . Determining Capacity of a Pile Group	15	10	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] + Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.

Can Tho, 11/03/2020

ON BEHALF OF RECTOR
DEAN OF COLLEGE/SCHOOL
(or DIRECTOR OF INSTITUTE)

HEAD OF DEPARTMENT

MINISTRY OF EDUCATION AND TRAINING **CAN THO UNIVERSITY**	**SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom - Happiness**

COURSE OUTLINE DETAILS

1. Course: Construction Foundation Project (Đồ án nền móng công trình)

- **Code number:** KC246H
- **Credits:** 2 credits
- **Hours:** 60 practice hours

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Technology

3. Requisites:

- **Prerequisites:** KC245H
- **Corequisites:** ...

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Knowledge of building data, foundations, single pile design, pile group design and drawing design	2.1.3a, b
4.2	Knowledge of building data, foundations, single pile design, pile group design and drawing design	2.2.1.a, b, c
4.3	Public presentation skills and teamwork skills	2.2.2c
4.4	Having positive attitude, sense of responsibility and professional ethics in construction practice. Having professional working style of construction engineers	2.3a

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Knowledge of building metrics	4.1	2.1.3a, b
CO2	Knowledge of foundation options	4.1	2.1.3a, b
CO3	Knowledge of single pile design	4.1	2.1.3a, b
CO4	Knowledge of pile group design	4.1	2.1.3a, b
CO5	Knowledge of drawing design	4.1	2.1.3a, b
	Skills		
CO6	Knowledge skills on building data	4.2	2.2.1.a, b, c
CO7	Skills in understanding foundation plans	4.2	2.2.1.a, b, c
CO8	Analytical skills and design of single piles	4.2	2.2.1.a, b, c
CO9	Analytical skills and pile group design	4.2	2.2.1.a, b, c
CO10	Analytical skills and design drawings	4.2	2.2.1.a, b, c
CO11	Public presentation skills and teamwork skills	4.3	2.2.2c
	Attitudes/Autonomy/Responsibilities		
CO12	There is a positive attitude in analyzing, evaluating and solving foundation problems	4.4	2.3a
CO13	Sense of responsibility and professional ethics in construction practice	4.4	2.3a
CO14	Having professional working style of construction engineers	4.4	2.3a

6. Brief description of the course:

7. Course structure:

7.1. Theory

7.2. Practice (60 hours)

	Nội dung	Số tiết	CĐR HP
Chương 1.	**Building data**		CO1; CO6; CO12; CO13
1.1.	Metric load data	2	CO1; CO6; CO13
1.2.	Soil data	2	CO1; CO6; CO12
1.3.	Design requirements	2	CO1; CO6; CO13
1.4.	Design standards	2	CO1; CO6; CO13
Chương 2.	**Foundation options**		CO2; CO7; CO12; CO13
2.1.	Shallow foundation	2	CO2; CO7; CO12
2.2.	Deep foundation	2	CO2; CO7; CO13
2.3.	Foundation on reinforced background	2	CO2; CO7; CO13
Chương 3.	**Single pile design**		CO3; CO8; CO13
3.1.	Order of design	2	CO3; CO8; CO13
3.2.	Description of pile foundation system	2	CO3; CO8; CO13
3.3.	Choose section and reinforcement for piles	2	CO3; CO8; CO13
3.4.	Determine the bearing capacity of the pile	2	CO3; CO8; CO13
3.5.	Determine the bearing capacity of the pile	4	CO3; CO8; CO13
Chương 4.	**Design of pile groups**		CO4; CO9; CO12; CO13
4.1.	Order of design	4	CO4; CO9; CO13
4.2.	Pile foundation M1- Square foundation station (4 piles)	4	CO4; CO9; CO13
4.3.	Pile foundations M2 - Rectangular foundation (6 piles)	4	CO4; CO9; CO13
Chương 5.	**Design drawings**		CO5; CO10; CO12; CO13; CO14
5.1.	Ratios and name frames	4	CO5; CO10; CO13
5.2.	Symbols, brushstrokes, and print size	4	CO5; CO10; CO14
5.3.	Colors and writing	4	CO5; CO10; CO13

8. Teaching methods:

- Group discussion & student–lecturer interaction discussion.
- Personal and group assignment.

9. Duties of student:

Students have to do the following duties:

- Compulsory attendance at least 80% of theoretical lessons;
- Participation in full practice and reports;
- Compulsory attendance at group exercises / assignments;
- Taking the midterm and final exams.

10. Assessment of course learning outcomes:

10.1. Assessment

Students are assessed cumulatively as follows:

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	Compulsory attendance at least 80% of theory hours		
2	Mid-term exam	Written / multiple-part examination (60 minutes)	20%	CO1; CO2; CO4; CO6
3	Group assignments and report	• Number of assignments / number of assignments • Report	40%	CO1; CO2; CO4; CO5; CO6
4	Final exam	- Attend 80% of theory and 100% of practicing time - Written / multiple-part examination (60 minutes)	40%	CO1; CO2; CO3; CO4; CO5; CO6; CO7

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Nguyễn Văn Quãng, Nguyễn Hữu Kháng (1996). Hướng dẫn đồ án nền và móng. Nhà xuất bản xây dựng. Hà Nội 1996.	…
[2] Nguyễn Bá Kế và cộng sự (2008). Móng nhà cao tầng, kinh nghiệm nước ngoài. Nhà xuất bản xây dựng. Hà Nội 2008.	…
[3] Lê Đức Thắng (1998). Tính toán móng cọc. Nhà xuất bản giao thông vận tải. TPHCM.	…
[4] Nguyễn Văn Quảng (2003). Chỉ dẫn thiết kế và thi công cọc Baret, tường trong đất và neo trong đất. Nhà xuất bản xây dựng. Hà Nội 2003.	
[5] Das, B. M. (2007). Principles of foundation engineering. 6th Edition. Toronto: Thomson Learning.	
[6] Budhu, M (2011). Soil Mechanics and Foundations, 3rd edition, John Wiley & Sons.	
[7] Ken Fleming, Austin Weltman, Mark Randolph and Keith Elson (2009), Piling Engineering, 3rd edition, Taylor & Francis.	
[8] Hemsley, J. A. (2000). Design applications of raft foundations. Hemsley J. A., editor, London: Thomas Telford.	
[9] Gupta, S. C. (1997). Raft foundation: design and analysis with a practical approach. New age international (P) limited, Publishers. India.	
[10] Poulos, H. G. and Davis, E. H. (1974). Elastic solutions for soil and rock mechanics. New York: John Wiley.	
[11] Poulos, H. G. and Davis, E. H. (1980). Pile foundation analysis and design.	

New York: John Wiley.	
[12] Joseph E. Bowles, RE., S.E (1996), Foundation analysis and design, 5th edition, The McGraw-Hill Companies, Inc.	
[13] Randolph, M. F. (1994). Design methods for pile groups and piled rafts. State of the Art Rep., Proc., 13th ICSMFE 5: 61–82.	

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1. Building data** 1. Metric load data 2. Soil data 3. Design requirements 4. Design standards	0	8	- Previous research: + Document [1]; [5]; [6]; [10]: content of construction data.
4	**Chapter 2. Foundation options** 2.1. Shallow foundation 2.2. Deep foundation 2.3. Foundation on reinforced background	0	6	- Previous research: + Document [2]; [3]; [5]; [6]; [8]: content about foundation plans. + Review the content learned in chapter 1 about the construction data.
8	**Chapter 3. Single pile design** 3.1. Order of design 3.2. Description of pile foundation system 3.3. Choose section and reinforcement for piles 3.4. Determine the bearing capacity of the pile 3.5. Determine the bearing capacity of the pile	0	12	- Previous research: + Document [1]; [3]; [4]; [8]; [9]: content about single pile design. + Review the content learned in Chapter 2 on foundation options.
11	**Chapter 4. Design of pile groups** 4.1. Order of design 4.2. Pile foundation M1- Square foundation station (4 piles) 4.3. Pile foundations M2 - Rectangular foundation (6 piles)	0	6	- Previous research: + Document [1]; [4]; [8]; [9]; [13]: content about pile design. + Review the content learned in chapter 3 on designing single piles
13	**Chapter 5. Design drawings** 5.1. Ratios and name frames 5.2. Symbols, brushstrokes, and print size 5.3. Colors and writing	0	6	- Previous research: + Document [1]; [11]; [twelfth]; [13]: content about drawing design. + Review the content learned in chapter 4 on pile group design.

	Can Tho, 15/03/2020
ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **(or DIRECTOR OF INSTITUTE)**	**HEAD OF DEPARTMENT**

Nguyen Chi Ngon	**Dang The Gia**

MINISTRY OF EDUCATION AND TRAINING **CAN THO UNIVERSITY**	**SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom - Happiness**

COURSE OUTLINE DETAILS

1. Course: Architectural principles & Elements of Design (Nguyên lý & Cấu tạo kiến trúc)

- **Code number:** KC178H

- **Credits: 04**

- **Hours: 40** theory hours, **40** practice hours, no internship hours, no project hours, no thesis hours and **90** self-study hours.

2. Management Unit:

- **Department: Civil Engineering**

- **Faculty/School/Institute/Center/Department: College of Technology**

3. Requisites:

- **Prerequisites: KC170H**, Descriptive geometry and engineering drawing

- **Corequisites:** No

4. Course objectives:

This subject is a hinged subject that engineers can involve in the design process of a building project. The learners will have overall systems thinking based on knowledge of occupational functions, structural functions and connection methods of building components in the building and overall systems or flows thinking. There are three main points.

(1) Proving basic knowledge of building elements and design standards for engineers who are able to work with architects during the design process to choose appropriate building components in terms of structural solutions, material and forms.

(2)The engineers are able to identify structural components in complex building projects in order to develop a proper structural analysis process and material selection.

(3) Read and generate correctly detailed design drawings of all building elements to communicate their technical ideas during concept, detail design and construction stages.

Objectives	Descriptions	Program Outcomes
4.1	Knowledge from construction materials to building elements, structure, functional line up to external conditions of the buildings in order to design and construct the buildings.	2.1.1a;
4.2	Having skills in analysing and applying architectural engineering knowledge into design process and construction stage.	2.2.1.a,c
4.3	Having skills of identification and solving technical issues, and teamwork	2.2.2c
4.4	Responsibility and professional ethics to reach a sustainable design, high quality and safety construction projects.	2.3b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Learners have to know the whole design process, classify building types and understand insight impactions of occupants and natural factors on building elements.	4.1	2.1.1a;
CO2	Learners know exactly the name, position and functions of all components of a building. Then students master principles of connections between these components.	4.1	2.1.1a;
CO3	Learners have to master all rules and conventions of detailed design drawings to communicate their technical ideas during concept, detail design and construction stages.	4.1	2.1.1a;
	Skills		
CO4	Be able to analyse and compare different architectural and engineering alternatives that designers will select based on optimal and appropriate criteria for different design options.	4.2	2.2.1.a,c
CO5	Creating skills comprehensive thinking to find out design alternatives that building elements must be balanced between sustainable, economic, architectural functions and structural stability.	4.2	2.2.1.a,c
CO6	Creating teamwork skills in a group of architects and engineers; creating abilities to apply basic principle designs of the building elements in the design process.	4.3	2.2.2c
	Attitudes/Autonomy/Responsibilities		
CO7	Willing to observe the building elements in existing buildings and identify their functions and technical properties. By doing this way the learners can enhance knowledge of how to select different building elements of certain design alternatives.	4.4	2.3b
CO8	Understanding insight the role of designers who create not only high valuable and stable architecture projects for the occupants but also have responsibility to save local material and to protect the environment for the community.	4.4	2.3b

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

The subject includes 3 mains parts:

- Construction standards (codes) requirement, regulations and norms related all building elements.
- Name, position and functions of all components of a building.
- rules and conventions of detailed design drawings of all building elements

7. Course structure:

7.1. Theory

Chapter	Content	Hours	COs
Chapter 1.	**Classification, hierarchy of building projects and construction regulation and norms**	**2**	CO1
1.1.	Classification of building projects		
1.2.	Hierarchy building projects		
1.3.	Architecture and construction design regulations and norms		
Chapter 2.	**General introduction of role of architecture**	**2**	CO1; CO2
2.1.	Demand and purpose of architecture		
2.2.	Integration between architecture and engineering during design process		
2.3.	External impactions: occupants and natural effect		
2.4.	Main components of buildings		
2.5.	Construction materials of different building components or elements		
2.6.	Architectural principles of residential, office, industrial and public buildings		
Chapter 3.	**Design process and design documents**	**2**	CO1
3.1.	Design process (from the concept to detail design stage)		
3.2.	Design documents (drawings and technical report)		
Chapter 4.	**Structural components and prefab building**	**4**	CO2; CO3; CO4; CO5; CO7
4.1	Loads: point and distributed loads, wind load, earthquake, etc.		
4.2	Beam and slab		
4.3	Column and wall		
4.4	Cable and shell		
4.5	Truss and the space frame		
4.6	Frame and lateral stability		
Chapter 5.	**Foundations**	**3**	
5.1	Introduction and foundation classification		
5.2	Shallow foundations		
5.3	Deep foundations		

Chapter 6.	**Roof**	**2**	
6.1	Introduction and roof classification		
6.2	Water resistant		
6.3	Insulation design to reduce solar gain		
6.4	Introducing green roof (gardening on the roof)		
6.5	Materials for roofs		
Chapter 7.	**External and internal walls**	**2**	
7.1	Introduction		
7.2	External walls		
7.3	Internal walls		
7.4	Materials for walls		
Chapter 8.	**Floor**	**2**	
8.1	Introduction and floor function classification		
8.2	Floor loads		
8.3	Floor planning based on functional network		
8.4	Basement		
Chapter 9.	**Doors, windows, glass and shading devices**	**3**	
9.1	Tropical climate and thermal comfort		
9.2	Solar gain and shading devices		
9.3	Natural ventilation and opening areas		
9.4	Sustainable architecture concept and green building		
Chapter 10.	**Interior transportation components**	**3**	
10.1	Introduction and significant role of interior transportation		
10.2	Horizontal transportation		
10.3	Staircase		
10.4	Lift		
10.5	Escalator		
Chapter 11.	**Finishing works**	**2**	
11.1	Floor finishing		
11.2	Wall finishing		
11.3	Ceiling finishing		
11.4	Plastering		
11.5	Floor tiles		
Chapter 12.	**Specialities: Lighting, electrical, Interiors, HVAC and energy use**	**4**	
12.1	Lighting		
12.2	Electrical system		
12.3	Interiors		
12.4	HVAC system		

12.5	Acoustics		

7.2. Practice

	Content	Hours	COs
Unit 1.	Architectural elements of residential buildings: in urban and rural areas	8	CO4, CO5, CO6, CO7
Unit 2.	Architectural elements of industrial buildings: factory, warehouse, workshop, river sport, etc.	8	
Unit 3.	Architectural elements of office buildings	8	
Unit 4.	Architectural elements of public building: school, hospital, kindergarten, etc.	8	
Unit 5.	Architectural elements of commercial buildings: bank, supermarket, hotel, restaurant, etc.	8	

8. Teaching methods:

- Lecture;
- Problem Based Learning; Case Study
- Think – Pair – Share & Group Based Learning

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours;
- Finish the course assignment;
- Attend mid-term examination;
- Attend final examination;
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	Attendance hours/theory hours ≥ 70%	5%	CO7,CO8
2	Point of group assignments	- Report/Description of assignments - Confirmed by group	55%	CO4, CO5, CO6, CO7
3	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	20%	CO1, CO2
4	Point of final examination	- Writing test (60 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	20%	CO1, CO2, CO4, CO5, CO6, CO7

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and scored on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Kiến trúc nhà ở / Đặng Thái Hoàng.- 2nd.- Hà Nội: Xây dựng, 1996, 251tr..- 721/ H407.	MOL.021952, MOL.021951, 1c_167654, MON.011878
[2] Kiến trúc nhập môn: Nguyên lý thiết kế kiến trúc nhà dân dụng / Nguyễn Đức Thiềm.- 1st.- Hà Nội: KHKT, 1999, 302tr..- 690.1/ Th304k.	MOL.021877, MON.112439
[3] Nguyên lí cấu tạo kiến trúc / Phan Tấn Hài, Cao Xuân Lương, Võ Đình Diệp.- 5th.- Tp. HCM : Trẻ , 1997 .- 690.1/ H103/1997	MOL.021885, MON.112162
[4] Thiết kế cấu tạo kiến trúc nhà công nghiệp / Nguyễn Minh Thái.- 1st.- Hà Nội: Xây Dựng, 1999.- 200 tr..- 690.5/ Th103/1999	MOL.021845, MOL.021846
[5] Khí hậu kiến trúc / Việt Hà, Nguyễn Ngọc Giả.- 1st.- Hà Nội: Xây Dựng, 2000, 225tr..- 697.3/ V308	MOL.021820, MOL.021819, 2c_396214, MON.112535
[6] Architect's Handbook of Construction Detailing/ David Kent Ballast /John Wiley & Sons, 2009, second edition.	Online pdf
[7] The Architect's Portable Handbook/ Pat Guthrie/ McGraw-Hill, Fourth edition, 2010	Online pdf
[9] SUN, WIND & LIGHT Architectural design strategies/ Mark Dekay and G. Z. Brown/ Third edition/ John Wiley & Sons/2014, 433 pages	Online pdf
[10] The architects' data/ Ernst and Peter Neufert/ 2000/ Blackwell Science, 638 pages	Online pdf
[11] Quy chuẩn xây dựng và Tiêu chuẩn xây dựng Việt Nam.	Online pdf

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1, 2**	3	0	Read learning materials
2	**Chapter 2, 3**	3	0	Read learning materials
3, 4	**Chapter 4**	5	2	Assignment with competition: appropriate structural components
5,6	**Chapter 5**	3	2	Assignment with competition: appropriate foundation solutions
6, 7	**Chapter 6**	3	2	Assignment with competition: waterproofing or insulation solutions for the roofs
7, 8	**Chapter 7**	2	2	Assignment with competition: selecting local and low cost materials for the walls and construction methods
8, 9	**Chapter 8**	3	2	Assignment with competition: selecting materials for the floors and construction methods

10, 11	**Chapter 9**	4	4	Assignment with competition: special shading devices and special natural ventilation approaches
12, 13	**Chapter 10**	3	2	Assignment with competition: fire escaping solutions for buildings.
13, 14	**Chapter 11**	3	2	Assignment with competition: special and beautiful materials for decoration and finish works with low cost and local sources.
14, 15	**Chapter 12**	3	2	Assignment with competition: light design or low cost cooling solutions

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ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **(or DIRECTOR OF INSTITUTE)** **Nguyen Chi Ngon**	**HEAD OF DEPARTMENT** **Dang The Gia**

MINISTRY OF EDUCATION AND TRAINING **CAN THO UNIVERSITY**	**SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom - Happiness**

COURSE OUTLINE DETAILS

1. Course: Architecture Project (Đồ án kiến trúc)

- Code number: CN194

- Credits: 02

- Hours: 60 practice hours,

2. Management Unit:

- Department: Civil Engineering

- Faculty/School/Institute/Center/Department: College of Technology

3. Requisites:

- Prerequisites:

- Corequisites: KC335

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Memorize the design principles of some popular civil works in urban Vietnam	2.1.2.a
4.2	Applying architectural theory of works and architectural design	2.2.1.b

	sequences into projects to ensure functional, aesthetic, sustainable and economic requirements.	2.2.2.c
4.3	Having skills of reasoning, analyzing, questioning, solving problems, team work skills.	2.2.2.b 2.2.2.c
4.4	Responsibility and professional ethics to reach a sustainable design, high quality and safety construction projects.	2.3.a

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Point out the strengths, weaknesses, technical and economic criteria of the land.	4.1	2.1.2.a
CO2	Preparation of design tasks, look up parameters, principles	4.1	2.1.2.a
	Skills		
CO3	Analyzing and choose the best solution for an engineering design project	4.2	2.2.1.b 2.2.2.c
CO4	creating abilities to apply basic principle designs of the building elements in the design process	4.2	2.2.1.b 2.2.2.c
CO5	Creating teamwork skills in a group	4.3	2.2.2.b 2.2.2.c
	Attitudes/Autonomy/Responsibilities		
CO6	Respect and comply with standards and regulations of the Law	4.4	2.3.a
CO7	Understanding insight the role of designers who create not only high valuable and stable architecture projects for the occupants but also have responsibility to save local material and to protect the environment for the community.	4.4	2.3.a

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

The course introduces the basic principles and methods of architectural design, applying knowledge and skills from related disciplines to the practice of a specific architectural design project. The knowledge and skills are built in stages into a whole of essential skills.

7. Course structure:

7.1. Theory

7.2. Practice

Chapter	Content	Hours	COs
Lecture	Introduce about project and answer questions	2	CO1
Part 1	The planning and architecture criteria of the construction land	5	CO1; CO2
	Evaluation of traffic status, infrastructure techniques, natural factors (sunlight direction, main wind direction, terrain). hướng gió		

	Analysis of the economic value, the profitability aspects of the land		
	Presenting knowledge of principles of civil architecture design according to the topic: - Design principles, functional spatial characteristics. - Learn construction practices at home and abroad. - Analysis of factors affecting the construction design. - Regulations and standards related to the design work.	5	CO2; CO3; CO6.
Part 2	- Design of the floor plan, work facade, cross-section according to the performance chain and required dimensions. - Express the architectural ideas, project characteristics, personality of the authors through one or more optional characteristic spaces. - Deploying the complete design of the project to meet the requirements of the topic on planning the total premises, functions, aesthetics, characteristic space.	40	CO4; CO5; CO6; CO7
Submit project	Submit the architecture projectand answer the teacher's question.	8	CO5; CO6

8. Teaching methods:

- Lecture;
- Project Based Learning
- Problem Based Learning; Case Study
- Think – Pair – Share & Group Based Learning

9. Duties of student:

Students have to do the following duties:
Participate in all phases of the project, including research, group discussion and presentation.
Correct the project every week or at least every 2 weeks.
Demonstrate the project.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	Correct the project every week	10%	CO7,CO8
2	Point of group assignments	The project must have all the components required by teacher. The project must be approved at least 3 times to be submitted and protected. Student must be demonstrate the project.	90%	CO4, CO5, CO6, CO7

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is

converted to A-B-C-D score and scored on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Kiến trúc nhà ở / Đặng Thái Hoàng.- 2nd.- Hà Nội: Xây dựng, 1996, 251tr..- 721/ H407.	MOL.021952, MOL.021951, 1c_167654, MON.011878
[2] Kiến trúc nhập môn: Nguyên lý thiết kế kiến trúc nhà dân dụng / Nguyễn Đức Thiềm.- 1st.- Hà Nội: KHKT, 1999, 302tr..- 690.1/ Th304k.	MOL.021877, MON.112439
[3] Nguyên lí cấu tạo kiến trúc / Phan Tấn Hài, Cao Xuân Lương, Võ Đình Diệp.- 5th.- Tp. HCM : Trẻ , 1997 .- 690.1/ H103/1997	MOL.021885, MON.112162
[4] Architect's Handbook of Construction Detailing/ David Kent Ballast /John Wiley & Sons, 2009, second edition.	Online pdf
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[8] Quy chuẩn xây dựng và Tiêu chuẩn xây dựng Việt Nam.	Online pdf

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Lecture**	0	2	Receive the request of the project, collect the necessary information and documents.
2	**Part 1**	0	5	Read relevant regulations, regulations and documents Analyze and evaluate the current situation, design criteria for the land
3		0	5	Research on factors affecting architectural design through analysis of the performance chain and special requirements in the building.
4-13	**Part 2**	0	40	Design of the floor plan, sections and elevations; perspective, model of the project. Show an optional architectural space.
14-15		0	8	Student must be demonstrate the project.

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ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **(or DIRECTOR OF INSTITUTE)**	**HEAD OF DEPARTMENT**

Nguyen Chi Ngon	**Dang The Gia**

MINISTRY OF EDUCATION AND TRAINING **CAN THO UNIVERSITY**	**SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom - Happiness**

COURSE OUTLINE DETAILS

1. Course: Architecture Project (Đồ án kiến trúc)

- **Code number:** CN194
- **Credits: 02**
- **Hours: 60** practice hours,

2. Management Unit:

- **Department: Civil Engineering**
- **Faculty/School/Institute/Center/Department: College of Technology**

3. Requisites:

- **Prerequisites:**
- **Corequisites:** KC335

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Memorize the design principles of some popular civil works in urban Vietnam	2.1.2.a
4.2	Applying architectural theory of works and architectural design sequences into projects to ensure functional, aesthetic, sustainable and economic requirements.	2.2.1.b 2.2.2.c
4.3	Having skills of reasoning, analyzing, questioning, solving problems, team work skills.	2.2.2.b 2.2.2.c
4.4	Responsibility and professional ethics to reach a sustainable design, high quality and safety construction projects.	2.3.a

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Point out the strengths, weaknesses, technical and economic criteria of the land.	4.1	2.1.2.a
CO2	Preparation of design tasks, look up parameters, principles	4.1	2.1.2.a
	Skills		
CO3	Analyzing and choose the best solution for an engineering design	4.2	2.2.1.

	project		b 2.2.2.c
CO4	creating abilities to apply basic principle designs of the building elements in the design process	4.2	2.2.1. b 2.2.2.c
CO5	Creating teamwork skills in a group	4.3	2.2.2. b 2.2.2.c
	Attitudes/Autonomy/Responsibilities		
CO6	Respect and comply with standards and regulations of the Law	4.4	2.3.a
CO7	Understanding insight the role of designers who create not only high valuable and stable architecture projects for the occupants but also have responsibility to save local material and to protect the environment for the community.	4.4	2.3.a

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

The course introduces the basic principles and methods of architectural design, applying knowledge and skills from related disciplines to the practice of a specific architectural design project. The knowledge and skills are built in stages into a whole of essential skills.

7. Course structure:

7.1. Theory

7.2. Practice

Chapter	**Content**	**Hours**	**COs**
Lecture	Introduce about project and answer questions	2	CO1
Part 1	The planning and architecture criteria of the construction land	5	CO1; CO2
	Evaluation of traffic status, infrastructure techniques, natural factors (sunlight direction, main wind direction, terrain). hướng gió		
	Analysis of the economic value, the profitability aspects of the land		
	Presenting knowledge of principles of civil architecture design according to the topic: - Design principles, functional spatial characteristics. - Learn construction practices at home and abroad. - Analysis of factors affecting the construction design. - Regulations and standards related to the design work.	5	CO2; CO3; CO6.
Part 2	- Design of the floor plan, work facade, cross-section according to the performance chain and required dimensions. - Express the architectural ideas, project characteristics, personality of the authors through one or more optional characteristic spaces. - Deploying the complete design of the project to meet the requirements of the topic on planning the total premises,	40	CO4; CO5; CO6; CO7

	functions, aesthetics, characteristic space.		
Submit project	Submit the architecture projectand answer the teacher's question.	8	CO5; CO6

8. Teaching methods:

- Lecture;
- Project Based Learning
- Problem Based Learning; Case Study
- Think – Pair – Share & Group Based Learning

9. Duties of student:

Students have to do the following duties:
Participate in all phases of the project, including research, group discussion and presentation.
Correct the project every week or at least every 2 weeks.
Demonstrate the project.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	Correct the project every week	10%	CO7,CO8
2	Point of group assignments	The project must have all the components required by teacher. The project must be approved at least 3 times to be submitted and protected. Student must be demonstrate the project.	90%	CO4, CO5, CO6, CO7

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and scored on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
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[2] Kiến trúc nhập môn: Nguyên lý thiết kế kiến trúc nhà dân dụng / Nguyễn Đức Thiềm.- 1st.- Hà Nội: KHKT, 1999, 302tr..- 690.1/ Th304k.	MOL.021877, MON.112439
[3] Nguyên lí cấu tạo kiến trúc / Phan Tấn Hài, Cao Xuân Lương, Võ Đình Diệp.- 5th.- Tp. HCM : Trẻ , 1997 .- 690.1/ H103/1997	MOL.021885, MON.112162
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[8] Quy chuẩn xây dựng và Tiêu chuẩn xây dựng Việt Nam.	Online pdf

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Lecture**	0	2	Receive the request of the project, collect the necessary information and documents.
2	**Part 1**	0	5	Read relevant regulations, regulations and documents Analyze and evaluate the current situation, design criteria for the land
3		0	5	Research on factors affecting architectural design through analysis of the performance chain and special requirements in the building.
4-13	**Part 2**	0	40	Design of the floor plan, sections and elevations; perspective, model of the project. Show an optional architectural space.
14-15		0	8	Student must be demonstrate the project.

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ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **(or DIRECTOR OF INSTITUTE)** **Nguyen Chi Ngon**	**HEAD OF DEPARTMENT** **Dang The Gia**

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

Building Informatic Modelling (Mô hình Thông tin Xây dựng)

- **Code number:** KC259H
- **Credits: 2**
- **Hours:** 20 lecture hours, 20 exercise hours, & 20 self-study hours

gement Unit:

- **Department:** Civil Engineering

- **Faculty/School/Institute/Center/Department:** College of Eng. & Technology

3. Requisites:

- **Prerequisites:** None

- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Understand the concepts of construction information model (BIM); Recognizing the role of BIM in building construction.	2.1.2a; 2.1.2b; 2.3a; 2.3b; 2.3c
4.2	Master the tools and methods commonly used BIM	2.1.3a; 2.2.1b;
4.3	Application of tools and methods in BIM practice	2.1.2b; 2.2.1c; 2.2.1d; 2.2.1e; 2.2.2b
4.4	Analyze, evaluate and make decisions based on optimized exploitation on BIM	2.1.3b; 2.1.3c; 2.2.2a; 2.2.2c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Understand defines of BIM	4.1	2.1.2a; 2.1.2b
CO2	Understand the tools and methods commonly used BIM	4.1	2.1.2a; 2.1.2b
CO3	Deploy tools and methods in BIM; select the optimal plan in the construction project phases	4.3	2.1.2a
	Skills		
CO4	Know how to use appropriate data, understand the principles of applying common BIM software	4.2	2.2.1b; 2.2.1c
CO5	Analyze and evaluate through BIM applications; decision making in project management.	4.4	2.2.1d; 2.2.1e; 2.2.2a; 2.2.2b; 2.2.2c
	Attitudes/Autonomy/Responsibilities		
CO6	Equip teamwork skills and the ability to work with other specialized partners	4.4	2.3a; 2.3b; 2.3c
CO7	Having a professional sense and professional working style; responsible citizenship and professional ethics	4.1	2.1.2a; 2.1.2b; 2.1.3a; 2.1.3b; 2.2.1b; 2.3a; 2.3b; 2.3c

6. Brief description of subject content:

The module introduces the process related to creation and management of digital features (BIM) in the stages of design, construction and construction conceptualization. Students are provided with the knowledge of combining information between components in the building with other

information such as norms, unit prices, construction progress ... to create a virtual reality model of works, with the aim of optimizing the design, construction and operation management of works. Introduce some commonly used BIM software.

7. Course structure:

7.1. Theory

Chapter	Content	Hours	COs
Chapter 1.	**BIM Introduction**	**2**	CO1; CO7
1.1.	Introduction		
1.2.	History		
1.3.	Process and tools		
1.4.	Benefits of BIM		
Chapter 2.	**BIM Design Tools and Parametric Modeling**	**2**	CO2; CO4
2.1.	Evolution to Object-Based Parametric Modeling		
2.2.	Key paramenters		
2.3.	BIM Environments, Platforms, and Tools		
2.4.	BIM Platforms		
Chapter 3.	**Interoperability**	**2**	CO2; CO4
3.1.	Different Kinds of Exchange Formats		
3.2.	Background of Product Data Models		
3.3.	Other Efforts Supporting Standardization		
3.4.	Evolution from File-Based Exchange to Building Model Repositories		
Chapter 4.	**BIM for Owners and Facility Managers**	**2**	CO3; CO5; CO6
4.1.	Necessarity		
4.2.	BIM Application Areas for Owners		
4.3.	BIM Tool Guide for Owners		
4.4.	Leading the BIM Implementation on a Project		
4.5.	Risks and Common Myths		
Chapter 5.	**BIM for Architects and Engineers**	**4**	CO3; CO5; CO6
5.1.	Scope of Design Services		
5.2.	BIM Use in Design Processes		
5.3.	Building Object Models and Libraries		
Chapter 6.	**BIM for Contractors**	**4**	CO3; CO5; CO6
6.1.	Types of Construction Firms		
6.2.	Information Contractors Want from BIM		
6.3.	BIM Processes to Develop a Contractor Building Information Model		
6.4.	Reduction of Design Errors Using Clash Detection		
6.5.	Quantity Takeoff and Cost Estimating		
6.6.	Construction Analysis and Planning		

Chapter 7.	**BIM for Subcontractors and Fabricators**	**2**	CO3; CO5; CO6
7.1.	Types of Subcontractors and Fabricators		
7.2.	Benefits of a BIM Process for Subcontractor Fabricators		
Chapter 8.	**Future perspective**	**2**	CO2; CO4; CO7
8.1.	Development of BIM up to 21th Century		
8.2.	Current Trends		
8.3.	Drivers of Change and BIM Impacts		

7.2. Practice

Chapter	Content	Hours	COs
Chapter 1.	**BIM Introduction**	**2**	CO1; CO7
1.1.	Introduction		
1.2.	History		
1.3.	Process and tools		
1.4.	Benefits of BIM		
Chapter 2.	**BIM Design Tools and Parametric Modeling**	**2**	CO2; CO4
2.1.	Evolution to Object-Based Parametric Modeling		
2.2.	Key paramenters		
2.3.	BIM Environments, Platforms, and Tools		
2.4.	BIM Platforms		
Chapter 3.	**Interoperability**	**2**	CO2; CO4
3.1.	Different Kinds of Exchange Formats		
3.2.	Background of Product Data Models		
3.3.	Other Efforts Supporting Standardization		
3.4.	Evolution from File-Based Exchange to Building Model Repositories		
Chapter 4.	**BIM for Owners and Facility Managers**	**2**	CO3; CO5; CO6
4.1.	Necessarity		
4.2.	BIM Application Areas for Owners		
4.3.	BIM Tool Guide for Owners		
4.4.	Leading the BIM Implementation on a Project		
4.5.	Risks and Common Myths		
Chapter 5.	**BIM for Architects and Engineers**	**4**	CO3; CO5; CO6
5.1.	Scope of Design Services		
5.2.	BIM Use in Design Processes		
5.3.	Building Object Models and Libraries		
Chapter 6.	**BIM for Contractors**	**4**	CO3; CO5; CO6
6.1.	Types of Construction Firms		
6.2.	Information Contractors Want from BIM		

6.3.	BIM Processes to Develop a Contractor Building Information Model		
6.4.	Reduction of Design Errors Using Clash Detection		
6.5.	Quantity Takeoff and Cost Estimating		
6.6.	Construction Analysis and Planning		
Chapter 7.	**BIM for Subcontractors and Fabricators**	**2**	CO3; CO5; CO6
7.1.	Types of Subcontractors and Fabricators		
7.2.	Benefits of a BIM Process for Subcontractor Fabricators		
Chapter 8.	**Future perspective**	**2**	CO2; CO4; CO7
8.1.	Development of BIM up to 21th Century		
8.2.	Current Trends		
8.3.	Drivers of Change and BIM Impacts		

8. Teaching methods:

Students are required to read the supplied documents before classes, complete assignments from the previous session and discuss in class. The sessions will be a combination of lectures, group exercises and discussion questions.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Finish the course assignment.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1	Overall attendance	-Attend at least 75% of theory hours and exercise/assisgment hours	10%	CO6; CO7
2	Group assignments	- All chapter assignments /(3 – 5 students /group) - Complete at least 80% of exercise/assisgment hours up to exam day. - Attendancy must be approved by group memebrs.	10%	CO2; CO3; CO4; CO5
3	Final examination	- Writing test - Compulsory attendance exam	80%	CO1; CO2; CO3; CO4; CO5; CO6; CO7

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Subject score is the sum of all the components of the evaluation and multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded up to one

decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Learning materials:

Materials information	Code number
] Brad Hardin, Dave McCool, BIM and Construction Management: Proven tools, methods, and workflows, 2nd edition; John Wiley & Sons, Inc., 2015	
] Chuck Eastman, Paul Teicholz, Rafael Sacks, Kathleen Liston, BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors; John Wiley & Sons, 2011	
] Dana K. Smith, Michael Tardif, Building Information Modeling: A Strategic Implementation Guide for Architects, Engineers, Constructors, and Real Estate Asset Managers; John Wiley & Sons, Inc., 2009	

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1. BIM Introduction** 1.1. Introduction 1.2. History 1.3. Process and tools 1.4. Benefits of BIM	2	2	Students review the chapter in advance and complete the assigned tasks before class
2 & 3	**Chapter 2. BIM Design Tools and Parametric Modeling** 2.1. Evolution to Object-Based Parametric Modeling 2.2. Key paramenters 2.3. BIM Environments, Platforms, and Tools 2.4. BIM Platforms	2	2	Students review the chapter in advance and complete the assigned tasks before class
4 & 5	**Chapter 3. Interoperability** 3.1. Different Kinds of Exchange Formats 3.2. Background of Product Data Models 3.3. Other Efforts Supporting Standardization 3.4. Evolution from File-Based Exchange to Building Model Repositories	2	2	Students review the chapter in advance and complete the assigned tasks before class
7 & 6	**Chapter 4. BIM for Owners and Facility Managers** 4.1. Necessarity 4.2. BIM Application Areas for Owners	2	2	Students review the chapter in advance and complete the assigned tasks before class

	4.3. BIM Tool Guide for Owners 4.4. Leading the BIM Implementation on a Project 4.5. Risks and Common Myths			
8 & 9	**Chapter 5. BIM for Architects and Engineers** 5.1. Scope of Design Services 5.2. BIM Use in Design Processes 5.3. Building Object Models and Libraries	4	4	Students review the chapter in advance and complete the assigned tasks before class
10 & 11	**Chapter 6. BIM for Contractors** 6.1. Types of Construction Firms 6.2. Information Contractors Want from BIM 6.3. BIM Processes to Develop a Contractor Building Information Model 6.4. Reduction of Design Errors Using Clash Detection 6.5. Quantity Takeoff and Cost Estimating 6.6. Construction Analysis and Planning	4	4	Students review the chapter in advance and complete the assigned tasks before class
12 & 13	**Chapter 7. BIM for Subcontractors and Fabricators** 7.1. Types of Subcontractors and Fabricators 7.2. Benefits of a BIM Process for Subcontractor Fabricators	2	2	Students review the chapter in advance and complete the assigned tasks before class
14 & 15	**Chapter 8. Future perspective** 8.1. Development of BIM up to 21th Century 8.2. Current Trends 8.3. Drivers of Change and BIM Impacts	2	2	Students review the chapter in advance and complete the assigned tasks before class

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ON BEHALF OF RECTOR
DEAN OF COLLEGE

Nguyen Chi Ngon

HEAD OF DEPARTMENT

Dang The Gia

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

Engineering Economics (Kinh tế kỹ thuật)

- **Code number:** KC180H

- **Credits: 2**

- **Hours:** 20 lecture hours, 20 exercise hours

gement Unit:

- **Department:** Civil Engineering

- **Faculty/School/Institute/Center/Department:** College of Eng. & Technology

3. Requisites:

- **Prerequisites:** None

- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Understand basic concepts of engineering economics, especially in the field of construction	2.1.2a; 2.1.2b; 2.3a; 2.3b; 2.3c
4.2	Master the tools and methods commonly used in technical economics	2.1.3a; 2.2.1b;
4.3	Applying tools and methods to calculate the economic value of alternatives or projects; processing economic data in construction works	2.1.2b; 2.2.1c; 2.2.1d; 2.2.1e; 2.2.2b
4.4	Analyze, evaluate and propose options to the economic advantages of projects or construction projects	2.1.3b; 2.1.3c; 2.2.2a; 2.2.2c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Fundamental knowledge of engineering economy	4.1	2.1.1.b, 2.1.1.c, 2.3.a, 2.3.b
CO2	Knowledge of basis analysis tools of a project of a design alternative	4.1	2.1.1.b, 2.1.1.c, 2.3.a, 2.3.b
CO3	Rounding out the study: inflation, cost estimation, uncertainty analysis and sensitivity analysis.	4.2	2.1.2.a, 2.1.2.b, 2.2.1.b, 2.1.2.d, 2.2.2.b
	Skills		
CO4	Be able to select the basic analysis tool	4.3	2.1.2.a, 2.1.2.b,

			2.2.1.b, 2.1.2.d, 2.2.2.b
CO5	Making a better decision among several projects or design alternatives based on profit analysis of these alternatives.	4.4	2.1.2.a, 2.1.2.b, 2.2.1.b, 2.1.2.d, 2.2.2.b
	Attitudes/Autonomy/Responsibilities		
CO6	Willing to evaluate different solutions and techniques in an construction buildings. By doing this way the leaners can enhance knowledge of how to select different alternatives of certain design.	4.2	2.1.1.d, 2.1.2.a, 2.1.2.b, 2.1.3.c, 2.2.2.b
CO7	Understanding insight the role of each partners in a construction project.	4.3	2.1.2.a, 2.1.2.b, 2.2.1.b, 2.1.2.d, 2.2.2.b

6. Brief description of subject content:

The subject includes 4 mains parts:

- Fundamental knowledge of engineering economy
- Knowledge of basis analysis tools of a project of a design alternative
- Rounding out the study: inflation, cost estimation, uncertainty analysis and sensitivity analysis.
- Decision making to select a project or a design alternative

7. Course structure:

7.1. Theory

	Content	Hours	COs
Chapter 1.	BASIC CONCEPTS AND TOOLS	5	CO1; CO2; CO3; CO4; CO6
1.1	Foundations of Engineering Economy and Making Economic Decisions		
1.2	The time value of money		
1.3	Nominal and Effective Interest Rates		
Chapter 2.	ANALYZING A PROJECT	5	CO1; CO2; CO3; CO4; CO5; CO6
2.1	Present and Annual Worth Analysis		
2.2	Internal Rate of Return Analysis		
2.3	Benefit/Cost Ratios Analysis		
2.4	Breakeven and Payback Analysis		
Chapter 3.	COMPARING DESIGN ALTERNATIVES AND PROJECTS	5	CO2; CO3; CO4; CO5; CO6
3.1	Mutually Exclusive Alternatives		
3.2	Replacement Analysis		

3.3	Constrained Project Selection		
3.4	Depreciation		
3.5	Income Taxes		
3.6	Inflation		
Chapter 4.	DECISION-MAKING TOOLS	5	CO2; CO3; CO4; CO5; CO6
4.1	Cost estimation and Indirect Cost Allocation		
4.2	Sensitivity Analysis		
4.3	Decision Making Under Risk		
4.4	Multiple Objectives		

7.2. Practice

	Content	**Hours**	**COs**
Chapter 1.	BASIC CONCEPTS AND TOOLS	5	CO1; CO2; CO3; CO4; CO6
1.1	Foundations of Engineering Economy and Making Economic Decisions		
1.2	The time value of money		
1.3	Nominal and Effective Interest Rates		
Chapter 2.	ANALYZING A PROJECT	5	CO1; CO2; CO3; CO4; CO5; CO6
2.1	Present and Annual Worth Analysis		
2.2	Internal Rate of Return Analysis		
2.3	Benefit/Cost Ratios Analysis		
2.4	Breakeven and Payback Analysis		
Chapter 3.	COMPARING DESIGN ALTERNATIVES AND PROJECTS	5	CO2; CO3; CO4; CO5; CO6
3.1	Mutually Exclusive Alternatives		
3.2	Replacement Analysis		
3.3	Constrained Project Selection		
3.4	Depreciation		
3.5	Income Taxes		
3.6	Inflation		
Chapter 4.	DECISION-MAKING TOOLS	5	CO2; CO3; CO4; CO5; CO6
4.1	Cost estimation and Indirect Cost Allocation		
4.2	Sensitivity Analysis		
4.3	Decision Making Under Risk		
4.4	Multiple Objectives		

8. Teaching methods:

Students are required to read the required documents, complete assignments from the previous session and discuss in class. The sessions will be a combination of lectures, quick group exercises and discussion questions.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours
- Complete all individual and group assisgment
- Attend final examination

- Perform actively self-study hours

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	Objectives
1	Overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	5%	4.3
2	Group assignments	- All chapter assignments /(3 – 5 students /group)	10%	4.2.3
3	Mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	4.1; 4.2; 4.3
4	Final examination	- Final exam (90 -120 min)	60%	4.1; 4.2; 4.3

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Subject score is the sum of all the components of the evaluation and multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded up to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Learning materials:

Materials information	Code number
] Engineering Economy: Applying Theory to Practice/ Ted G. Eschenbach/ New York Oxford, 2011	
] Kinh tế xây dựng / Nguyễn Công Thạnh. - Thành phố Hồ Chí Minh: Nxb. Đại học quốc gia Thành phố Hồ Chí Minh, 2005 - 624.068/ Th107	MOL.040408 MOL.040391 MON.021819
] Kinh tế xây dựng / Bộ Xây dựng. - Hà Nội : Xây dựng, 1995 - 624.068/ Tr561k	M017584 MON.113542 MON.113546
] Kinh tế - Kĩ thuật phân tích và lựa chọn dự án đầu tư / Phạm Phụ. - Thành phố Hồ Chí Minh : Trường Đại học Bách khoa Tp. HCM, 1991 - 658.1554/ Ph500	01562-239231 KT.014135
] Giáo trình kinh tế xây dựng / Bùi Mạnh Hùng, Nguyễn Tuyết Dung, Nguyễn Thị Mai. - Hà Nội : Xây dựng, 2012 - 624.068/ H513	MOL.069897 MOL.069898 MON.046043
] Giáo trình kinh tế xây dựng / Bộ xây dựng. - Hà Nội : Xây dựng, 2011 - 624.068/ Gi108	CN.018041 CN.018042 CN.018043
] Cẩm nang kinh tế xây dựng : Định mức và đơn giá xây dựng cơ bản - Lập dự toán công trình xây dựng - Quản lý dự án và thanh quyết toán vốn đầu tư / . - Hà Nội : Xây Dựng, 2001 - 692.5/ C120	REF.000269
] Bài tập kinh tế xây dựng / Lưu Trường Văn. - Thành phố Hồ Chí Minh : Nxb. Đại học Quốc gia Thành phố Hồ Chí Minh, 2005 - 624.068/ V115	MOL.039064 MOL.039060 MON.021574

	MON.021577
] Engineering ECONOMY / Gerald J Thuesen, W J Fbrycky. - Upper Saddle River, New Jersey : Prentice-Hall, 2001 - 658.155/ T532	1c-422581
0] Engineering Economy/ Leland Blank and Anthony Tarquin. - Boston, MA : McGraw-Hill Higher Education, 2005 - 658.152/ B642	CN.012637 CN.012636 MOL.044326 MON.116623

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	Objects and tasks of technical economy			Students preview the chapter in advance
2&3	Time value of money			Students preview the chapter in advance
4&5	Shifted series			Students preview the chapter in advance
6&7	Nominal and Effective interests			Students preview the chapter in advance and complete the assigned tasks before class
8&9	Present method Annual method			Students preview the chapter in advance and complete the assigned tasks before class
10&11	Internal Rate of Return Analysis Benefit/Cost Ratios Analysis			Students preview the chapter in advance and complete the assigned tasks before class
12&13	Cost estimation and Indirect Cost Allocation			Students preview the chapter in advance and complete the assigned tasks before class
14	Sensitivity Analysis			Students preview the chapter in advance and complete the assigned tasks before class
15	Decision Making Under Risk Multiple Objectives			Students preview the chapter in advance and complete the assigned tasks before class

	Can Tho, ……/……../20…
ON BEHALF OF RECTOR **DEAN OF COLLEGE**	**HEAD OF DEPARTMENT**

MINISTRY OF EDUCATION AND TRAINING **CAN THO UNIVERSITY**	**SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom - Happiness**

COURSE OUTLINE DETAILS

1. Course: Construction Law (Luật Xây dựng)

- **Code number:** KC263H

- **Credits: 2** credits

- **Hours:** 25 theory hours, 10 practice hours (assignment) and 60 self-study hours

2. Management Unit:

- **Department:** Civil Engineering

- **Faculty/School/Institute/Center/Department:** College of Technology

3. Requisites:

- **Prerequisites:** Construction Project Management (KC247H)

- **Corequisites:**

4. Course objectives:

- The learners have knowledge of construction law (a branch of law) that deals with matters relating to construction, architecture design and planning design.
- The learners can manage many issues: contract, negligence, guarantees, tendering, construction claims, and related consultancy contracts.

Objectives	Descriptions	Program Outcomes
4.1	The learners understand relationship many participants in the construction industry: financial institutions, surveyors, architects, builders, engineers, construction workers, and planners. Construction law provides knowledge of legal and non-legal aspects during design stage, construction stage and operation stage regarding financial, environmental, safe issues and claim issues. This knowledge helps designers and developers to have appropriate construction projects that are in line with norm, regulation or standard codes of construction industry. With good knowledge of construction law, the stakeholders can protect themselves, their employers and their works. They are aware of their rights, obligations and liabilities when they enter into contractual relations either as individuals or on behalf of their employers.	2.1.1a; 2.1.2d
4.2	Having skills to protect the designers and the owners in a construction project.	2.2.1.a,c
4.3	Creating teamwork skills in a group engineers; creating abilities to read and apply construction law in different real situations through scenarios during the study perio.	2.2.2d
4.4	Willing to read careful law articles, regulations or norms related design, construction, architecture, planning and environment aspects. Create good attitude to work in line with construction law, responsibility and professional ethics.	2.3b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	The learners are able to apply different law articles for different certain issues in the construction industry.	4.1	2.1.1a; 2.1.2c
CO2	The learners know and understand insight roles and rights of different participants in all stages of a construction project or a planning project in order to have responsibilities and to be careful for their decision-makings.	4.1	2.1.1a; 2.1.2c
	Skills		
CO3	Applying construction law into all activities of construction, design and operation stages of a construction projects.	4.2	2.2.1.a,c
CO4	Teamwork and negotiate among parties in a construction project.	4.3	2.2.1.a,c
	Attitudes/Autonomy/Responsibilities		
CO5	Willing to read careful law articles, regulations or norms related design, construction, architecture, planning and environment aspects.	4.4	2.3b
CO6	Create good attitude to work in line with construction law, responsibility and professional ethics.	4.4	2.3b

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

The subject includes 4 mains parts:

- Fundamental knowledge construction law-a branch of law.
- Knowledge of construction project: participants, finance, contract, claims, time, insurance, etc.
- Understanding and applying regulations, norms and standards relate to all aspects of construction industry and planning process.
- Understanding roles and rights of each participants in different stages of a construction project in order to protect themselves, environment and occupancies of the projects.

7. Course structure:

7.1. Theory

	Content	Hours	COs
Chapter 1	General Provisions	**2**	**CO1, CO2**
Chapter 2	Construction Planning	**2**	
Chapter 3	Construction Investment Projects	2	
Chapter 4	Construction Survey and Construction Design	2	
Chapter 5	Construction Permits	2	
Chapter 6	Construction of Works	2	
Chapter 7	The Procurement Process	2	
Chapter 8	Construction Investment Costs and Construction Contracts	2	
Chapter 9	Construction Operation Capability Conditions	2	
Chapter 10	Responsibilities of State Agencies To Manage Construction Investment Activities	1	

Chapter 11	Implementation Provisions	2	
Chapter 12	Claims and Claim Management	2	
Chapter 13	Construction Insurance	1	
Chapter 14	Time for Performance	1	

7.2. Practice

	Content	Hours	COs
Unit 1.	Development a process from concept design to construction and operation a selected construction project	2	**CO3, CO4, CO5, CO6**
Unit 2.	Procedure of construction permits for a selected construction project	2	
Unit 3.	Procedure to allow to use a construction project	2	
Unit 4.	Procedure to solve claim in a construction project	2	
Unit 5.	Construction insurance to protect workers and facilities during construction stage	2	

8. Teaching methods:

- Learner – Centred; Project Based Learning; Group based Learning.
- Discussion with instructors.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Finish the course assignment.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	5%	CO4
	Point of group assignments	- All chapter assignments /(3 – 5 students /group)	30%	CO3, CO4, CO5, CO6
2	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1, CO2
3	Point of final	- Multiple-choice test (60 minutes)	40%	CO1, CO2

	examination	- Attend at least 80% of theory hours. - Compulsory attendance exam		

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
[1]. Luật xây dựng.- Hà Nội: Chính trị quốc gia, 2004.- 112tr., 19cm.- 343.597078/ L504	MOL.008352, MOL.008353, CN.001462, MON.009539, MON001049, MON001048, MON001047, MON001046
[2]. Luật xây dựng và các văn bản hướng dẫn thi hành.- Hà Nội: GIao thông Vận tải, 2005.- 923 tr., 20 cm.- 343.597078/ L504	MOL000539, MON002115
[3]. Hệ thống văn bản hướng dẫn thực hiện Luật Xây dựng và các định mức dự toán xây dựng mới: Định mức dự toán xây dựng công trình, định mức dự tóan khảo sát xây dựng	MOL.040806, MOL.040803, MON.022364
[4]. Luật số 38:2009/QH12 Quốc hội ban hành Luật sửa đổi, bổ sung một số điều liên quan đến đầu tư xây dựng.	
[5]. Giáo trình Luật Xây Dựng – LS. Lương Xuân Hùng, Nhà xuất bản: Tổng hợp TP.HCM, Năm xuất bản: 2004	
[6]. Construction Contracts: Law and management, Fourth Edition, John Murdoch and Will Hughes, Taylor & Francis, 2008	
[7]. Construction Law, Gail S. Kelley, John Wiley & Sons, 2013	
Dictionary Of Property and Construction Law, Jack Rostron, Laura Tatham, Linda Wright, London and New York, 2002.	
[8]. http://www.vietnamlawdata.com/law-50-2014-qh13-on-construction	

12. Self-study Guide:

- After hours of theory, group study (group of 3 to 5 students)
- Solve the problems or assignments and prepare the content for discussion on coming class
- Summarize the core content of study.

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
Chapter 1	General Provisions	**2**	0	Read lecture notes and learning materials. Then work on assignments
Chapter 2	Construction Planning	**2**	0	
Chapter 3	Construction Investment Projects	2	0	Assignment: Development a process from concept design to construction and operation a selected construction project

Chapter 4	Construction Survey and Construction Design	2	2	Assignment: Development a process from concept design to construction and operation a selected construction project
Chapter 5	Construction Permits	2	2	Procedure of construction permits for a selected construction project
Chapter 6	Construction of Works	2	0	
Chapter 7	The Procurement Process	2	0	
Chapter 8	Construction Investment Costs and Construction Contracts	2	0	
Chapter 9	Construction Operation Capability Conditions	2	2	Assignment: Procedure to allow to use a construction project
Chapter 10	Responsibilities of State Agencies To Manage Construction Investment Activities	1	0	
Chapter 11	Implementation Provisions	2	0	
Chapter 12	Claims and Claim Management	2	2	Assignment: Procedure to solve claim in a construction project
Chapter 13	Construction Insurance	1	2	Construction insurance to protect workers and facilities during construction stage
Chapter 14	Time for Performance	1	0	

Note: Instructors can adapt new assignment based on current lecture notes.

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ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **(or DIRECTOR OF INSTITUTE)** **Nguyen Chi Ngon**	**HEAD OF DEPARTMENT** **Dang The Gia**

MINISTRY OF EDUCATION AND TRAINING **CAN THO UNIVERSITY**	**SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom - Happiness**

COURSE OUTLINE DETAILS

1. Course: Structural Testing (Thí nghiệm kết cấu công trình)

- **Code number:** KC196

- **Credits:** 1 credits

- **Hours:** 30 practice hours

2. Management Unit:

- **Department:** Civil Engineering

- **Faculty/School/Institute/Center/Department:** College of Technology

3. Requisites:

- **Prerequisites:** KC182H (Concrete structure), KC184H (Steel structure)

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Have a thorough knowledge of concrete and steel structures	2.1.3b
4.2	Have ability to conduct experiments, analysis data in the field of civil engineering	2.2.1.a
4.3	Have ability to work in group. Be able to identify and solve problems in construction engineering. Be able to learn for lifelong	2.2.2.a,b,d
4.4	Have the responsibility, aware of the need for lifelong learning	2.3a,c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	The learners learn the working of real structures. To check the theory of steel structures and concrete structures	4.1	2.1.3b
CO2	Be able to use the experimental equipments and the methods of doing the experiments	4.2	2.2.1a
	Skills		
CO3	Be able to analyze and to solve technical problems in civil engineering	4.3	2.2.2.b
CO4	Be able to work in groups, write scientific reports	4.3	2.2.2a
CO5	Be able to self-study, to write and to present scientific reports	4.3	2.2.2b, d
	Attitudes/Autonomy/Responsibilities		
CO6	To have the responsibility, aware of the need for lifelong learning	4.4	2.3a,c

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

To introduce to the learners the experimental equipments and the safety in doing experiment. The learners practice to calculate concrete beam, steel beam, steel frame from the calculating theory. Practicing to make the samples and to do experiment. Learners analyze, evaluate experiment results and write reports.

7. Course structure:

7.1. Theory (0 Hours)

7.2. Practice (30 Hours)

	Content	Hours	COs
Unit 1.	**Introduce laboratory equipment and safety in experiments**	**5**	

1.1.	Load test frame, hydraulic jack, displacement meter, straingause, clamp ...		CO2
Unit 2.	**Making reinforced concrete beams**	**7**	
2.1.	Calculating the work of reinforced concrete beam by using the theory, deflection and the deformation of crack; instructions on how to conduct experiments and write report of results		CO1
2.2.	Learners practice to make reinforced concrete beam		CO2,CO4
Unit 3.	**Experiment the steel beams**	**6**	
3.1.	Practicing to calculate the work of steel beams, the deflection; how to csonduct experiments, how to write reports and results		CO1
3.2.	Learners practice to do experiment the steel beam, to measure the stress and deflection, collect data, write report results		CO2,CO3,CO4,CO5,CO6
Unit 4.	**Experiment the steel frame**	**6**	
4.1.	Practicing to calculate the work of steel frames, the deflection; how to csonduct experiments, how to write reports and results		CO1
4.2.	Learners practice to do experiment the steel frames, to measure the stress and deflection, collect data, write report results		CO2,CO3,CO4,CO5,CO6
Unit 5.	**Experiment the concrete beam**	**6**	
5.1.	Practicing to calculate the work of reinforcement concrete beam, the deflection; the crack, how to csonduct experiments, how to write reports and results		CO1
5.2.	Learners practice to do experiment the reinforcement concrete beam, to measure the deflection and crack, collect data, write report results		CO2,CO3,CO4,CO5,CO6

8. Teaching methods:

- Thereory : Lecture associated with slideshow, discussion in class
- Practice: Doing experiment (Learners devide to group 5 members/1 group)
- Group discussion.
-Group assignment

9. Duties of student:

Students have to do the following duties:

- Read before the lecture and related references
-Attend 100% of theory hours and practice hours
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	10%	CO6
2	Point of practice	-Reports / skills, practical skills -Attend 100% of theory hours and practice hours	20%	CO2, CO6
3	Point of final examination	- Oral test - Form and content of the report -Presentation and answer questions - Attend 100% of theory hours and practice hours. - Compulsory attendance exam	70%	CO1, CO2, CO3, CO4, CO5,CO6

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Kết cấu bêtông cốt thép : Phần cấu kiện cơ bản / Phan Quang Minh, Ngô Thế Phong, Nguyễn Đình Cống.- 1st.- Hà Nội: Khoa học kỹ thuật, 2006.- 395 tr., 25 cm.- 624.1834/ M312	MOL.076117, MOL.048349, MON.027487
[2] Sổ tay thực hành kết cấu công trình / Vũ Mạnh Hùng.- Hà Nội: Xây dựng, 1999.- 178 tr., 24 cm.- 624.1834/ H513	CN.001644, CN.001643, CN.001645, MT.000494
[3]Tính toán kết cấu thép / Nguyễn Văn Yên.- Lần 2.- Thành phố Hồ Chí Minh: Đại học Bách khoa Thành phố Hồ Chí Minh.- 164 tr., 27 cm.- 624.1821/ Y254	CN.014040, CN.013299 MOL.076151

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	Unit 1: Introduce laboratory equipment and safety in experiments		5	
2	Unit 2: Making reinforced concrete beams		7	- Previous study: [1],[2] - Summarize the core content of study -Prepare the content for discussion on coming class.
3	Unit 3: Experiment the steel beams		6	- Previous study: [2], [3]

				- Summarize the core content of study -Prepare the content for discussion on coming class.
4	Unit 4: Experiment the steel frame		6	- Previous study: [2], [3] - Summarize the core content of study -Prepare the content for discussion on coming class.
5	Unit 5: Experiment the concrete beam		6	- Previous study: [1], [2] - Summarize the core content of study -Prepare the content for discussion on coming class.

	Can Tho, ……/……/20…
ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **Nguyen Chi Ngon**	**HEAD OF DEPARTMENT** **Dang The Gia**

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

1. Course: Excursion (Thực tập ngành nghề)

- Code number: KC197

- Credits: 2

- Hours: 60 practice hours

2. Management Unit:

- Department: Department of Civil Engineering

- Faculty/School/Institute/Center/Department: College of Engineering Technology

3. Requisites:

- Prerequisites:

- Corequisites: None

4. Course objectives:

Objectives	**Descriptions**	**Program Outcomes**

4.1	Helping students gain practical knowledge about kinds of projects being developed, designed and managed. Students are assigned to companies, construction sites are being built for practice, and after this time, students are allowed to practice practical jobs.	2.1.3a; 2.1.3c; 2.1.3d
4.2	Synthesize the learned body of knowledge	2.2.1b
4.3	Integrating specilized courses during practical excursion internship process Applying the ability to cope with careers and communicate with colleagues	2.2.2a; 2.2.2b; 2.2.2c
4.4	Ability to meet career requirements and communicate with colleagues.	2.3a

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Collect on the technical design documents, estimates and construction engineering measures of the project.	4.1	2.1.3a; 2.1.3c; 2.1.3d
CO2	Record, analyze and report the results of the field trip.	4.1	2.1.3a; 2.1.3c; 2.1.3d
	Skills		
CO3	Helping students solve problems in their speciality from design to construct of civil and industrial infrastructures. Ability of constructing and supervising construction works.	4.2	2.2.1b
CO4	Students must understand the shares and guides from their future co-workers. Practical observation and learning will help students progress in later career.	4.3	2.2.2a; 2.2.2b; 2.2.2c
	Attitudes/Autonomy/Responsibilities		
CO5	Students have the right attitude in their field of expertise.	4.4	2.3a
CO6	Students must be responsible and passinated in their career.	4.4	2.3a

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

- Helping students become familiar to deployment of architectural, structural, electrical and water design drawings in the project. Practical calculation of structural engineering, cost estimation, construction organization, construction supervision and monitoring.
- Help students use the learned knowledge reality production. Discover theoritical ideas to practical works.
- Self-equiped with practical knowledge upon graduation, they are not surprised at the work assigned.

7. Course structure:

7.1. Theory

7.2. Practice

	Content	Hours	COs
Unit 1.	**Data collection**		
1.1.	Profile Design	4	CO1; CO2
1.2.	Progress of construction works	4	CO1; CO2
1.3.	Construction site layout	4	CO1; CO2
1.4.	Construction Equipment	4	CO1; CO2
1.5.	Labor	2	CO1; CO2
Unit 2.	**Works in practice**		
2.1.	Construction phase plan	4	CO1; CO2; CO4; CO5; CO6
2.2.	Soil construction	6	CO1; CO2; CO4; CO5; CO6
2.3.	Construction of Reinforced Concrete Structures	6	CO1; CO2; CO4; CO5; CO6
2.4.	Construction and Assembly	6	CO1; CO2; CO4; CO5; CO6
2.5.	Completion Phase	6	CO1; CO2; CO4; CO5; CO6
Unit 3.	**Making field trips**		
3.1.	The most modern buildings in Ho Chi Minh city	7	CO1; CO2; CO3; CO4; CO5; CO6
3.2.	The architectural work in Southeast and South Central Coastal Vietnam.	7	CO1; CO2; CO3; CO4; CO5; CO6

8. Teaching methods:

Fieldwork in construction sites around Mekong Delta and excursion trip to and along central part of Viet Nam.

9. Duties of student:

Students have to do the following duties:

- Fully participate (100%) in practice / experiment / practice hours and result report.
- Attend final exam

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Final exam scores	Attend 100% of practice hours Required to test	100%	...

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] TCVN 5574:2012 Concrete and reinforced concrete structures - Design standard	.
[2]TCVN 4055:2012 Organization of construction activities	…
3] TCVN 9377:2012 Finish works in construction - Execution and acceptance	…
4] TCVN 4453:1995 Monolithic concrete and reinforced concrete structures - Codes for construction, check and acceptance	.

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	Data collection..	...	10	[1], [4]
2	Works in practice	...	10	[2], [3]
3	Making field trips	...	20	[1], [2], [3], [4]

Can Tho, ……/……../20…

ON BEHALF OF RECTOR
DEAN OF COLLEGE/SCHOOL

Nguyễn Chí Ngôn

HEAD OF DEPARTMENT

Đặng Thế Gia

MINISTRY OF EDUCATION AND TRAINING **CAN THO UNIVERSITY**	**SOCIALIST REPUBLIC OF VIETNAM** **Independence - Freedom - Happiness**

COURSE OUTLINE DETAILS

1. Course: Geotechnical Modelling (Mô hình trong địa kỹ thuật)

- Code number: KC262H

- Credits: 3 credits

- Hours: 20 theory hours, 50 practice hours

2. Management Unit:

- Department: Civil Engineering

- Faculty/School/Institute/Center/Department: College of Technology

3. Requisites:

- **Prerequisites:** KC175H

- **Corequisites:** ...

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Understanding theory, identifying, analyzing, and making reasonable assumptions for geotechnical modelling	2.1.3a, b
4.2	Analyzing, assessing and developing technical issues related to geotechnical modelling	2.2.1.a, b, c
4.3	Problem solving, group working, critical analysis and communication	2.2.2c
4.4	Having the spirit of learning and sharing	2.3a

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Understanding theory of geotechnical modelling	4.1	2.1.3a, b
CO2	Identifying, analyzing, and making reasonable assumptions for geotechnical modelling	4.1	2.1.3a, b
CO3	Developing theoretical, constitutive, numerical, physical, and modelling and applying test results for foundation simulation	4.1	2.1.3a, b
	Skills		
CO4	Analyzing, assessing and developing technical issues related to geotechnical modelling.	4.2	2.2.1.a, b, c
CO5	Problem solving, group working, critical analysis and communication	4.2	2.2.2c
	Attitudes/Autonomy/Responsibilities		
CO6	Having the spirit of learning and sharing	4.3	2.3a

6. Brief description of the course:

The subject is designed for students in civil, transportation and marine engineering. It interests students who are eager to apply test results for foundation simulation.

7. Course structure:

7.1. Theory

Headings	Content	Hours	Objectives
Chapter 1.	**Introduction to modelling**		
1.1.	Introduction	1	CO1; CO4; CO5; CO6
1.2.	Soil parameters used in geotechnical modelling	1	CO1; CO4; CO5; CO6

Chapter 2.	**Theoretical, constitutive, numerical, and physical modelling**		
2.1.	Introduction	1	CO3; CO4; CO5; CO6
2.2.	Theoretical models	1	CO3; CO4; CO5; CO6
2.3.	Constitutive models	1	CO3; CO4; CO5; CO6
2.4.	Numerical models	1	CO3; CO4; CO5; CO6
2.5.	Physical models	1	CO3; CO4; CO5; CO6
2.6.	Modelling effects	1	CO3; CO4; CO5; CO6
Chapter 3.	**Centrifuge modelling**		
3.1.	Introduction	2	CO2; CO4; CO5; CO6
3.2.	Mechanics of centrifuge modelling	2	CO2; CO4; CO5; CO6
3.3.	Modelling and testing	2	CO2; CO4; CO5; CO6
Chapter 4.	**Soil-structure interaction**		
4.1.	Introduction	2	CO2; CO4; CO5; CO6
4.2.	Elastic analyses	2	CO2; CO4; CO5; CO6
4.3.	Examples of soil-structure interaction	2	CO2; CO4; CO5; CO6

7.2. Practice

Content	Number	Objectives
Thematic report (project based learning)	50	CO1; CO2; CO3; CO4; CO5; CO6

8. Teaching methods:

- Group discussion & student–lecturer interaction discussion.
- Personal and group assignment.

9. Duties of student:

Students have to do the following duties:

- Compulsory attendance at least 80% of theoretical lessons;
- Participation in full practice and reports;
- Compulsory attendance at group exercises / assignments;
- Taking the midterm and final exams.

10. Assessment of course learning outcomes:

10.1. Assessment

Students are assessed cumulatively as follows:

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	Compulsory attendance at least 80% of theory hours		
2	Mid-term exam	Written / multiple-part examination (60 minutes)	20%	CO1; CO2; CO4; CO6
3	Group assignments and report	• Number of assignments / number of assignments • Report	40%	CO1; CO2; CO4; CO5; CO6
4	Final exam	- Attend 80% of theory and 100% of practicing time - Written / multiple-part examination (60 minutes)	40%	CO1; CO2; CO3; CO4; CO6

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.

- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Geotechnical modelling. David Muir (ed.). Copyright© 2004 by SOFTbank E-Book Center Tehran.	…
[2] Lecture Notes in Applied and Computational Mechanics - Holistic Simulation of Geotechnical Installation Processes (Numerical and Physical Modelling). Th. Triantafyllidis (ed.). Copyright © 2015 by Springer International Publishing Switzerland, ISBN: 978-3-319-18170-7.	…
[3] Numerical modelling of construction processes in geotechnical engineering for urban environment. Th. Triantafyllidis (ed.). Copyright © 2006 by Taylor & Francis Group plc, London - UK, ISBN: 0-415-39748-0.	…

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1. Introduction to modelling** 1. Introduction 2. Soil parameters used in geotechnical modelling	2	10	- Read lectures and materials on internet. - Solve assignments required by lecturer and prepare the content for the next lesson.
5	**Chapter 2. Theoretical, constitutive, numerical, physical, and modelling** 2.1. Introduction 2.2. Theoretical models 2.3. Constitutive models 2.4. Numerical models	6	10	- Read lectures and materials on internet. - Solve assignments required by lecturer and prepare the content for the next lesson.

	2.5. Physical models 2.6. Modelling effects			
8	**Chapter 3. Centrifuge modelling** **Thematic report (project-based learning)** 3.1. Introduction 3.2. Mechanics of centrifuge modelling 3.3. Modelling and testing	6	15	- Read lectures and materials on internet. - Solve assignments required by lecturer and prepare the content for the next lesson.
12	**Chapter 4. Soil-structure interaction** **Thematic report (project-based learning)** 4.1. Introduction 4.2. Elastic analyses 4.3. Examples of soil-structure interaction	6	15	- Read lectures and materials on internet. - Solve assignments required by lecturer and prepare the content for the next lesson.

	Can Tho, ……/……/20…
ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **Nguyen Chi Ngon**	**HEAD OF DEPARTMENT** **Dang The Gia**

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom – Happiness

COURSE OUTLINE DETAILS

1. Course: Geosynthetics (Ứng dụng vật liệu địa kỹ thuật)

- **Code**: KC250H
- **Credits**: 03
- **Hours**: 20 theory hours, 50 practice hours.

2. Management Unit:

- **Department**: Civil Engineering.
- **Faculty/School/Institute/Center/Department**: College of Technology.

3. Requisites:

- **Prerequisites:** KC175H
- **Corequisites:** No

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Understanding functions and analysis of geosynthetics	2.1.3.b
4.2	Selecting geosynthetics to reinforce ground	2.2.1.b

4.3	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	2.2.2.a,d,e
4.4	Improving the capacities in terms of self-study, practice, and knowledge expansion for final examination, term papers, and future work.	2.3b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
1.	Knowledge of geosynthetics properties	4.1	2.1.3.b
2.	Calculation of ground reinforced by geosynthetics	4.1	2.1.3.b
	Skills		
3.	Choosing suitable goesynthics for ground improvement	4.2	2.2.1.b
4.	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	4.3	2.2.2.a,d,e
	Attitudes/Autonomy/Responsibilities		
5.	Being positively and prospectively enhancing capacities for self-study and practice.	4.4	2.3b
6.	Being honest during the learning process and in the examination.	4.4	2.3b

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

Geosynthetics is used as construction materials. The course introduce the concept of geosynthetics. It also includes manufacture, behavior and properties, application of geosynthetics in civil engineering.

7. Course structure:

7.1. Theory (20 hrs.)

Chapter	Content	Hours	COs
1.	Introduction to geosynthetics	2	CO1
2.	Properties of geosynthetics and their application	4	CO1
3.	Strength of reinforced soil	4	CO2
4.	Geosynthetic reinforced soil retaining wall	5	CO2; CO3; CO4; CO5; CO6
5.	Slope stability analysis of reinforced soil	5	CO2; CO3; CO4; CO5; CO6

7.2. Practice (50)

Assignment	Content	Hours	COs

1.	Determine of geosynthetics properties	12	CO1; CO2
2.	Calculate shear strength of reinforce soil by geosynthetics	10	CO2; CO3
3.	Design retaining wall using geosynthetics	14	CO2; CO3; CO4; CO5; CO6
4.	Analysis of reinforced slope stability and safety factor	14	CO2; CO3; CO4; CO5; CO6

8. Teaching method:

- Lecture associated with slideshow, discussion and sample observation in class.
- Discussion with lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination of the subject.
- Finish the course assignment.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of student learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1.	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	10%	CO5;CO6
2.	Point of group assignments	- All chapter assignments /(3 – 5 students /group)	15%	CO1 to CO3
3.	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1 to CO3
4.	Point of final examination	- Writing test (90 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO1 to CO6

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Materials:

Thông tin về tài liệu	Số đăng ký cá biệt
1. Sản phẩm địa kỹ thuật polime và compozit trong xây dựng dân dụng, giao	MOL.062429 MOL.062430

thông, thủy lợi/Phan Trường Phiệt/ Hà Nội: Xây dựng, 2007/ 691.92 / Ph308	MON.042152
2. A Technical Manual For The Design of Bonar TF Geosynthetics into Civil and Marine Engineering Projects	
3. Geosynthetics in Civil Engineering / R W Sarsby/ Woodhead Publishing/2016	

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1	**Chapter 1.** Introduction to geosynthetics	2		- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] +Solve the problems or assignments required by lecturer and prepare the content for discussionon coming class. +Summarize the core content of study.
2-6	**Chapter 2.** Properties of geosynthetics and their application **Assignment 2** Determine of geosynthetics properties	4	12	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] +Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. +Summarize the core content of study.
7-9	**Chapter 3.** Strength of reinforced soil **Assignment 2** Calculate shear strength of reinforce soil by geosynthetics	4	10	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] +Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. +Summarize the core content of study.
10-12	**Chapter 4.** Geosynthetic reinforced soil retaining wall **Assignment 3** Design retaining wall using geosynthetics	5	14	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] +Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. +Summarize the core content of study.
12-15	**Chapter 5.** Slope stability analysis of reinforced soil **Assignment 3** Analysis of reinforced slope stability and safety factor	5	14	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] +Solve the problems or assignments required by lecturer and prepare the content for discussionon coming class. +Summarize the core content of study.

Can Tho, ……/……../20…

ON BEHALF OF RECTOR
DEAN OF COLLEGE/SCHOOL
(or DIRECTOR OF INSTITUTE)

Nguyễn Chí Ngôn

HEAD OF DEPARTMENT

Đặng Thế Gia

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

1. Course: Theories of Foundation Testing (Lý thuyết thí nghiệm nền móng)

- **Code number:** KC251H
- **Credits:** 3 credits
- **Hours:** 20 theory hours, 50 practice hours

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Technology

3. Requisites:

- **Prerequisites:** KC245H
- **Corequisites:** ...

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Understanding theory, identifying, analyzing, and making reasonable assumptions for geotechnical modelling	2.1.3a, b
4.2	Analyzing, assessing and developing technical issues related to geotechnical modelling.	2.2.1.a, b, c

4.3	Problem solving, group working, critical analysis and communication.	2.2.2c
4.4	Having the spirit of learning and sharing.	2.3a

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Describing and performing soil testing for geotechnical investigation	4.1	2.1.3a, b
CO2	Identifying physical properties of soils based on laboratory testing	4.1	2.1.3a, b
CO3	Having a through grasp of field testing, analyzing test results, and applying these results for foundation design	4.1	2.1.3a, b
CO4	Having a grasp of the methods for evaluating the quality of foundation	4.1	2.1.3a, b
	Skills		
CO5	Analyzing, assessing and recommending technical issues related to laboratory and field testing for foundation.	4.2	2.2.1.a, b, c
CO6	Problem solving, group working, critical analysis and communication.	4.3	2.2.2c
	Attitudes/Autonomy/Responsibilities		
CO7	Having the spirit of learning and sharing.	4.4	2.3a

6. Brief description of the course:

The subject is designed for students in civil, transportation and marine engineering. It mainly shows foundation testing and analysis on testing results for foundation design.

7. Course structure:

7.1. Theory

Headings	Content	Hours	Objectives
Chapter 1.	**Geotechnical investigation**		
1.1.	Test methods of geotechnical investigation	1	CO1; CO2; CO5; CO7
1.2.	Standards for geotechnical investigation	1	CO1; CO2; CO5; CO7
1.3.	Statistical and data processing methods used for geotechnical engineering	1	CO1; CO2; CO5; CO7
Chapter 2.	**Laboratory tests for determining geotechnical parameters used in foundation design**		
2.1.	Sieve and hydrometer test (determination of soil particle size)	0.5	CO1; CO2; CO5; CO6; CO7
2.2.	Test for determining soil moisture content	0.5	CO1; CO2; CO5; CO6; CO7
2.3.	Pycnometer test (determination of soil specific gravity).	0.5	CO1; CO2; CO5; CO6; CO7
2.4.	Atterberg test (determination of liquid limit, plastic limit, and plasticity index of soils)	0.5	CO1; CO2; CO5; CO6; CO7
2.5.	Direct shear test	0.5	CO1; CO2; CO5;

			CO6; CO7
2.6.	Tri-axial compression test	0.5	CO1; CO2; CO5; CO6; CO7
2.7.	One-dimensional consolidation test	0.5	CO1; CO2; CO5
Chapter 3.	**In situ tests for foundation design**	0.5	
3.1.	Cone penetration test (CPT)	0.5	CO1; CO2; CO5; CO6; CO7
3.2.	Standard penetration test (SPT)	0.5	CO1; CO2; CO5; CO6; CO7
3.3.	Dynamic load test on piles	0.5	CO1; CO2; CO5; CO6; CO7
3.4.	Static load test on piles	0.5	CO1; CO2; CO5; CO6; CO7
3.5.	Plat dilatometer test (DMT)	0.5	CO1; CO2; CO5; CO6; CO7
3.6.	Field vane shear test (FVST)	0.5	CO1; CO2; CO5; CO6; CO7
3.7.	Borehole shear test (BST)	0.5	CO1; CO2; CO5; CO6; CO7
Chapter 4.	**Ground tests**		
4.1.	Compaction test	1	CO1; CO2; CO5; CO6; CO7
4.2.	Benkelman beam test	1	CO1; CO2; CO5; CO6; CO7
4.3.	Static load test on timber piles	1	CO1; CO2; CO5; CO6; CO7
4.4.	California bearing ratio test (CBR)	1	CO1; CO2; CO5; CO6; CO7
Chapter 5	**Pile tests**		
5.1.	Low strain pile test (pile integrity test - PIT)	1	CO1; CO2; CO3; CO4; CO7
5.2.	High strain dynamic pile test (dynamic load testing - PDA)	1	CO1; CO2; CO3; CO4; CO7
5.3.	Sonic test	1	CO1; CO2; CO3; CO4; CO7
5.4.	Gamma-ray test	1	CO1; CO2; CO3; CO4; CO7
5.5.	Osterberg test	1	CO1; CO2; CO3; CO4; CO7
5.6.	Statnamic load test	1	CO1; CO2; CO3; CO4; CO7

7.2. Practice

Content	Number	Objectives
Thematic report (project based learning)	50	CO1; CO2; CO3; CO4; CO5; CO6; CO7

8. Teaching methods:

- Group discussion & student–lecturer interaction discussion.

- Personal and group assignment.

9. Duties of student:

Students have to do the following duties:

- Compulsory attendance at least 80% of theoretical lessons;
- Participation in full practice and reports;
- Compulsory attendance at group exercises / assignments;
- Taking the midterm and final exams.

10. Assessment of course learning outcomes:

10.1. Assessment

Students are assessed cumulatively as follows:

No.	Point components	Rules and Requirements	Weights	COs
1	Point of overall attendance	Compulsory attendance at least 80% of theory hours		
2	Mid-term exam	Written / multiple-part examination (60 minutes)	20%	CO1; CO2; CO4; CO6
3	Group assignments and report	• Number of assignments / number of assignments • Report	40%	CO1; CO2; CO4; CO5; CO6
4	Final exam	Attend 80% of theory and 100% of practicing time Written / multiple-part examination (60 minutes)	40%	CO1; CO2; CO3; CO4; CO5; CO6; CO7

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
[1]. Soil testing, soil stability and ground improvement - Proceedings of the 1st GeoMEast international congress and exhibition, Egypt 2017 on sustainable civil infrastructures. Wissem Frikha, Serge Varaksin, and Antonio Viana da Fonseca (eds). Copyright © 2018 by Springer International Publishing AG, ISSN: 2366-3405.	…
[2]. Geotechnical testing, observation, and documentation. Time Davis (ed.). Copyright © 2009 by the American Society of Civil Engineers, ISBN: 0-7844-0949-8.	…
[3]. Eurocode 7: Geotechnical design - Part 2: Ground investigation and testing. Copyright © 2007 by CEN members.	…
[4]. Geotechnical engineering and soil testing. Amir Wadi Al-khafaji, Orlando B. Andersland (eds). Copyright © 1992 by Oxford University Press, Inc., ISBN: 978-0-19-510719-7.	
[5]. Recent advancement in soil behavior, in situ test methods, pile foundations, and tunneling. António Gomes Correia, Junsheng Yang, Mingjiang Tao (eds). Copyright	

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1. Geotechnical investigation** 1. Test methods of geotechnical investigation 2. Standards for geotechnical investigation 3. Statistical and data processing methods used for geotechnical engineering	3	10	- Read lectures and materials on internet. - Solve assignments required by lecturer and prepare the content for the next lesson.
4	**Chapter 2. Tests for determining geotechnical parameters used in foundation design** Sieve and hydrometer test (determination of soil particle size) Test for determining soil moisture content Pycnometer test (determination of soil specific gravity) Atterberg test (determination of liquid limit, plastic limit, and plasticity index of soils 2.5. Direct shear test Tri-axial compression test One-dimensional consolidation test	3.5	10	- Read lectures and materials on internet. - Solve assignments required by lecturer and prepare the content for the next lesson.
8	**Chapter 3. In situ tests for foundation design** 1. Cone penetration test (CPT) 2. Standard penetration test (SPT) 3. Dynamic load test on piles 3.4. Static load test on piles 5. Plat dilatometer test (DMT) 6. Field vane shear test (FVST) 7. Borehole shear test (BST)	3.5	10	- Read lectures and materials on internet. - Solve assignments required by lecturer and prepare the content for the next lesson.
11	**Chapter 4. Ground tests** 4.1. Compaction test 4.2. Benkelman beam test Static load test on timber piles California bearing ratio test (CBR)	4	10	- Read lectures and materials on internet. - Solve assignments required by lecturer and prepare the content for the next lesson. - Describe issues related to the project/ analyze and discuss the problem. - Collect and analyze the data/assess foundations.
13	**Chapter 5. Pile tests** Low strain pile test (pile integrity test - PIT) High strain dynamic pile test (dynamic load testing - PDA) Sonic test Gamma-ray test	3	10	- Read lectures and materials on internet. - Discuss, conclude, report and present the project/report and present the problem.

	Osterberg test 5.6. Statnamic load test			

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COURSE OUTLINE DETAILS

1. Course: Environmental Impact Assessment for Construction (Đánh giá tác động môi trường - Xây dựng)

- **Code number:** KC253H
- **Credits: 0**2
- **Hours:** 24 theory hours, 12 project hours

2. Management Unit:

- **Department:** Civil Engineering

- **Faculty/School/Institute/Center/Department:** College of Eng. & Technology

3. Requisites:

- **Prerequisites:** None

- **Corequisites:** None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Find out, analysis, evaluate and estimate the negative effects to environment of one new project on construction phase or one infrastructure project (bridge, road, canal, sluice gate, etc.) Suggest the suitable ways to eliminated the environmental effects	2.1.3 c

	from construction phase of one new project or in operation phase of one infrastructure project	
4.2	Analysis, systematic technical issues which related to evaluation works on environmental problems	2.2.1 d, e
4.3	Skills at designing of construction measure and drawings deployed for excuting the work Skills at communication, report, presentation and analysis Be able to work at construction companies, project management	2.2.2 a, b, c, d
4.4	Creating working motivation and responsible spirit for student in career Understand on long-life learning	2.3 a, b, c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Find out, analysis, evaluate and estimate the negative effects to environment of one new project on construction phase or one infrastructure project (bridge, road, canal, sluice gate, etc.) Suggest the suitable ways to eliminated the environmental effects from construction phase of one new project or in operation phase of one infrastructure project	4.1	2.1.3 c
CO2	Analysis, systematic technical issues which related to evaluation works on environmental problems	4.2	2.2.1 d, e
	Skills		
CO3	Skills at designing of construction measure and drawings deployed for excuting the work	4.3	2.2.2 a, b, c, d
CO4	Skills at communication, report, presentation and analysis Be able to work at construction companies, project management	4.3	2.2.2 a, b, c, d
	Attitudes/Autonomy/Responsibilities		
CO5	Creating working motivation and responsible spirit for student in career Understand on long-life learning	4.4	2.3 a, b, c

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

The course provide students with basic knowledge and skills in preparing an EIA for a project, including knowledge and skills on site survey, group discussions to evaluate the effect of one project to environment (water, air, solid waste). In addition, the course also provides writing skills for an EIA report for a specific project in the construction phase.

7. Course structure:

7.1. Theory

	Content	Hours	COs
Chapter 1.	**Introduction to the EIA**	**2**	CO1, CO2 CO3, CO4 CO5
1.1.	General concepts of EIA	0,5	
1.2.	History of EIA legislation	0,5	

1.3.	The EIA Law in Vietnam	0,5	
1.4.	The roles and responsibilities of agencies and individuals involved in the EIA process	0,5	
Chapter 2.	**Detail program for EIA process**	**6**	
2.1.	The objective of the step defining EIA	1	
2.2.	Identify impacts	1	
2.3.	Analysis and assessment of environmental impacts	1	
2.4.	Forecasting scale and intensity of impact	1	
2.5.	Assess the significance of the impact	1	
2.6.	Minimize and manage impacts	1	
Chapter 3.	**Methodology to minimize the environmental impacts**	**6**	
3.1.	Minimize effects of solid waste	2	
3.2.	Minimize effects of noise and air pollution	2	
3.3.	Minimize effects of wastewater	2	
Chapter 4.	**Evaluation of EIA reports**	**2**	
4.1.	Process of environmental impacts monitoring	1	
4.2.	The agency responsible for appraising the EIA report	1	
Chapter 5.	**Monitoring of environmental impacts**	**4**	
5.1.	Environmental management program	1	
5.2.	Environmental monitoring and suppervisor programs	2	
5.3	The agency responsible for environmental monitoring	1	
Chapter 6.	**Auditing and evaluation**	**4**	
6.1.	Environmental audit	2	
6.2.	Main process of environmental audit	2	

7.2. Practice

	Content	**Hours**	**COs**
Unit 1.	Students form up a working team and evaluate a struture of one project EIA report to the guideline	2	CO1, CO2 CO3, CO4 CO5
Unit 2.	Students form up a working team and preparing a EIA report for one project (construction phase)	10	

8. Teaching methods:

- Lecture associated with slideshow, discussion and sample observation in class.
- Discussion with lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Perform actively self-study hours and submit the course assignment.

- Attend final examination of the subject.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Point for diligent	Attendance hours/total study hours	10%	CO1, CO2 CO3, CO4 CO5
2	Point for exercise (mid-term)	Performing the excercise Attending approved by all team members	20%	
3	Point for project (final)	Performing the project Attending approved by all team members	70%	

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
1] Giáo trình đánh giá rủi ro và tác động môi trường / Nguyễn Văn Công, Nguyễn Văn Bé.- 363.7063/ C455	MOL.063967, MOL.063978, MOL.063979, MOL.063990, MOL.063991, MOL.064001, MOL.064002, MOL.064003, MON.043489, MON.043490, MON.043501
2] Mẫu báo cáo đánh giá tác động môi trường: Trình tự thẩm định và xử lý vi phạm về môi trường / Triệu Trung Dũng.- 344.597046/ D513	MOL.068079, MOL.068080, MON.044644
3] Cơ sở đánh giá tác động môi trường / Lê Xuân Hồng.- 363.7/ H455	MOL.049939, MOL.049940, MON.029512, MT.000028, MT.000029, MT.000030

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1. Introduction to the EIA** 1.1. General concepts of EIA 1.2. History of EIA legislation 1.3. The EIA Law in Vietnam 1.4. The roles and responsibilities of agencies and individuals involved in the EIA process	2		Pre-reading: - Course curriculumn - Reference [1, 2, 3]
2	**Chapter 2. Detail program for EIA process** 2.1. The objective of the step defining EIA 2.2. Identify impacts	2		Pre-reading: - Course curriculumn - Reference [1, 2, 3]

3	**Chapter 2. Detail program for EIA process (cont.)** 2.3. Analysis and assessment of environmental impacts 2.4. Forecasting scale and intensity of impact	2		Pre-reading: - Course curriculumn - Reference [1, 2, 3]
4	**Chapter 2. Detail program for EIA process (cont.)** 2.5. Assess the significance of the impact 2.6. Minimize and manage impacts	2		Pre-reading: - Course curriculumn - Reference [1, 2, 3]
5	**Chapter 3. Methodology to minimize the environmental impacts** 3.1. Minimize effects of solid waste	2		Pre-reading: - Course curriculumn - Reference [1, 2, 3]
6	**Chapter 3. Methodology to minimize the environmental impacts (cont.)** 3.2. Minimize effects of noise and air pollution			Pre-reading: - Course curriculumn - Reference [1, 2, 3]
7	**Chapter 3. Methodology to minimize the environmental impacts (cont.)** 3.3 Minimize effects of wastewater	2		Pre-reading: - Course curriculumn - Reference [1, 2, 3]
8	**Chapter 4. Evaluation of EIA reports** 4.1. Process of environmental impacts monitoring 4.2. The agency responsible for appraising the EIA report	2		Pre-reading: - Course curriculumn - Reference [1, 2, 3]
9	**Chapter 5. Monitoring of environmental impacts** 5.1. Environmental management program	2		Pre-reading: - Course curriculumn - Reference [1, 2, 3]
10	**Chapter 5. Monitoring of environmental impacts (cont.)** 5.2. Environmental monitoring and suppervisor programs 5.3. The agency responsible for environmental monitoring	2		Pre-reading: - Course curriculumn - Reference [1, 2, 3]
11	**Chapter 6. Auditing and evaluation** 6.1. Environmental audit	2		Pre-reading: - Course curriculumn - Reference [1, 2, 3]
12	**Chapter 6. Auditing and evaluation (cont.)** 6.2. Main process of environmental audit	2		Pre-reading: - Course curriculumn - Reference [1, 2, 3]
13	**Excercise 1** Form up a working team Evaluate a struture of one project EIA report to the guideline		2	Finding and reading references Preparing an exercise
14	**Project 1** Form up a working team		5	Finding and reading references

	Preparing a EIA report for one project (construction phase)			Preparing a EIA report
15	**Project 1 (tt)** Form up a working team Preparing a EIA report for one project (construction phase)		5	Finding and reading references Preparing a EIA report

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COURSE OUTLINE DETAILS

1. Course: Seminar/Internship (Báo cáo chuyên đề/Trao đổi sinh viên)
- **Code:** KC254H
- **Credits:**2 credits
- **Hours: 0** theory hours, 60 practicehours

2. Management Unit:
- **Department:**Civil Engineering
- **Faculty/School/Institute/Center/Department:**College of Technology

3. Requisites

Corequisites: Students have a 2.50 or higher GPA and CTU scholarship (optional). Students are good in English (Reading, writing and speaking) – interviewed by supervisers.

4. **Course objectives:**

Objectives	Descriptions	Program Outcomes
4.1	Knowledge on practical experience within the oversea universities; Knowledge and skills learned in the classroom in a work setting; understanding about career options while more clearly defining personal career goals; Experiences on the activities and functions of civil engineering professionals; areas for future knowledge and skill development.	2.1.3.1,b,c 2.2.1.a,b,c,d,e
4.2	Skills in communication in English; adaptation to international learning/research environment.	2.2.1.a,b,c
4.3	Having teamwork skills and presentation.	2.2.2c,d
4.4	Having responsibility and the correct vision of the application of mechanics in civil engineering field.	2.3 a,b,c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs

	Knowledge		
CO1	Gain practical experience within the oversea universities; Apply knowledge and skills learned in the classroom in a work setting;	4.1	2.1.3.1,b,c 2.2.1.a,b,c,d,e
CO2	Develop a greater understanding about career options while more clearly defining personal career goals; Experience the activities and functions of civil engineering professionals; Identify areas for future knowledge and skill development.	4.1	2.1.3.1,b,c 2.2.1.a,b,c,d,e
	Skills		
CO3	Be able to communicate in English; Be able to adapt to international learning/research environment; Be able to write reports and present reports to the public; Be able to to work in teams.	4.2	2.2.1.a,b,c
CO4	Having teamwork skills, team leadership skills, negotiating skills, conflict resolution, proficient use of tools to support teamwork cooperation, skills to evaluate contributions of the group members	4.3	2.2.2c,d
	Attitudes/Autonomy/Responsibilities		
CO5	Having the correct vision of the application of fluide mechanics in civil engineering field. Positive and proactive self-studying and practicing. Honesty in the learning process and examination.	4.4	2.3 a,b,c

6. Brief description of course:

- The internship course is designed for undergraduate students provide an academic framework and career research, and an opportunity for students to work/learn/research in international environment. It will integrate knowledge derived from academic studies with the experiences gained from real-world work settings and professional development. This course will support work experiences by fostering analytical, interpersonal, and communications skills.

- Students will spend 1-2 weeks in the oversea universities or industries or companies.

7. Course structure:

- In order for students to receive academic credit, each internship must include an academiccomponent (academic supervision, research, reflection, as well as written and oral assignments).

- This academic component will be related both to the internship placement itself (sector,professional and intercultural experience) and to the specific courses for each student.

The general content (tentative) is as below:

Practice

	Content	Hours	COs
Unit 1.	**Proposal**	10	CO1, CO2, CO3, CO4, CO5
Unit 2.	**Research activities**	**20**	CO1, CO2, CO3, CO4, CO5
Unit 3.	**Field work acticities**	20	CO1, CO2, CO3, CO4, CO5

Unit 4.	**Report and presentation**	10	CO1, CO2, CO3, CO4, CO5

8. Teaching method:

Students will spend 1-2 weeks to work with supervisers in the oversea universities or industries or companies**.**

9. Duties of student:

Students have to do the following duties:

- Self-study and discussion with superviser according to the schedule;
- Completion of course/practical assignments;
- Final report and presentation.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1	Proposal	Following the Regulations on Proposal of CTU/Oversea Universities	25%	CO1, CO2, CO3, CO4, CO5
2	Report	Following the Regulations on Report of CTU/Oversea Universities	25%	CO1, CO2, CO3, CO4, CO5
3	Presentation	Completion of presentation with commitee member	50%	CO1, CO2, CO3, CO4, CO5

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10(0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight.The course score is marked on a scale of 10 and rounded to one decimal place, then itis converted to A-B-C-D score and score on a scale of 4 under theacademic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
A set of reference materials related to the specification of research	Discussion with superviser

12. Self-study Guide:

Follwed by the general content (tentative).

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1-5	**Proposal**		30	- Read references related to research; - Follow the guidance of superviser.
6-10	**Research activities**		50	- Read references related to research; - Follow the guidance of superviser.
6-10	**Field work acticities**		100	- Follow the guidance of superviser.

11-15	**Report and Presentation**			

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COURSE OUTLINE DETAILS

1. Course: Water Supply and Drainage (Cấp thoát nước)

- **Code number:** KC255H
- **Credits:** 3 credits
- **Hours:**20 theory hours, 50practicehours (assignment)

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Technology

3. Prerequisites: KC176H

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Knowledge on water resources data (water demand, water sources, water quality/pollution) to optimize the selection of water sources and discharge locations appropriate for a water supply and drainage project. Knowledge on how to look up and apply the standards of the water supply and drainage in planning and designing the construction of water supply and drainage for a residential area. Knowledge on design the pipeline networks and systems for water supply and design the pipeline networks and systems for drainage.	2.1.3.a,b,c,d
4.2	Be able to demonstrate, interpret the formula; Be able to combine two or more learned knowledge; Be able to solve in-depth problems; Be able to synthesize learned knowledge;	2.2.1.c,d,e

	Be able to collect, compile and analyz data.	
4.3	Having teamwork skills and presentation.	2.2.2c,d
4.4	Having responsibility and the correct vision of the application of water supply and drainage in civil engineering field.	2.3 a,b,c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Understand and analyze water resources data (water demand, water sources, water quality/pollution) to optimize the selection of water sources and discharge locations appropriate for a water supply and drainage project. Know how to look up and apply the standards of the water supply and drainage in planning and designing the construction of water supply and drainage for a residential area	4.1	2.1.3.a,b
CO2	Design the pipeline networks and systems for water supply Design the pipeline networks and systems for drainage	4.1	2.1.3.a,b,c
	Skills		
CO3	To analyze, calculate and examine to optimize the selection of water sources and discharge locations appropriate for a water supply and drainage project.	4.2	2.2.1.a,b,c
CO4	Having teamwork skills, team leadership skills, negotiating skills, conflict resolution, proficient use of tools to support teamwork cooperation, skills to evaluate contributions of the group members	4.3	2.2.2c
	Attitudes/Autonomy/Responsibilities		
CO5	Having the correct vision of the application of fluid mechanics in water supply and drainage system in civil engineering field. Positive and proactive self-studying and practicing. Honesty in the learning process and examination.	4.4	2.3 a,b

6. Brief description of course:

Watre Supply and Drainage contains 2 main sections as follows:

- *Water supply*: Analysis of water resources data (water demand, water sources) to optimize the selection of water sources for a water supply project. Application of the standards of the water supply in planning and designing the construction of water supply for a residential area. Design the pipeline networks and systems for water supply.

- *Dainage*: Analysis of water water quality/pollutionto optimize the selection of discharge locations for a drainage project. Application of the standards of drainage in planning and designing the construction of drainage for a residential area. Design the pipeline networks and systems for drainage.

7. Course structure:

	Content	Hours	COs
Chapter 1.	**Water supply** **Water demand and water sources**	**10**	CO1
1.1.	Watre demand		
1.2.	Water sources		
1.3.	Water quality/pollution		
Chapter 2.	**Pipe Network Analysis**	**12.5**	CO2
2.1.	Introduction		

2.2.	The head balance method (‘loop’ method)		
2.3.	The quantity balance method (‘nodal’method)		
2.4.	The gradient method		
Chapter 3.	**Pump–Pipeline System Analysis and Design**	**12.5**	CO2
3.1.	Introduction		
3.2.	Hydraulic gradient in pump–pipeline systems		
3.3.	Multiple pump systems		
3.4.	Variable-speed pump operation		
3.5.	Suction lift limitations		
Chapter 4.	**Drainage** **Drainage system and Drainage network**	**10**	CO1, CO2
4.1.	Drainage system		
4.2.	Drainage network		
4.3.	Wastewater treatment		

8. Teaching method:

- Lecture associated with sliceshow, discussion and sample observation in class.
- Discussion with lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination of the subject.
- Finish the course assignment.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of student learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	10%	CO5
	Point of group assignments	- All chapter assignments /(3 – 5 students /group)	15%	CO1-CO5
2	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1-CO3
3	Point of final examination	- Multiple-choice test (60 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO1-CO2

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Learning materials:

Learning materials information	Barcode number
[1] Cấp thoát nước / Trần Hiếu Nhuệ ...[et al.].- Hà Nội: Khoa học và Kỹ thuật, 1996.- 434 tr., 24 cm.- 628.144/ Nh507	1c_167292 1c_167293 MT.000708
[2]Giáo trình Hệ thống cấp nước. Dương Thanh Lượng Trường Đại học Thủy Lợi… Nxb. Xây Dựng 2006.	N.012252
3] Civil Engineering Hydraulcis/R.E.Featherstone & C. Nalluri/b Blackwell Science/627/F288	CN.013745

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' Tasks
1-3	**Water supply** **Chapter 1. Water demand and water sources** Watre demand Water sources Water quality/pollution	5	10	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] + Solve the problems or assignments required by lecturer and prepare the content for discussionon coming class. + Summarize the core content of study.
4-6	**Chapter 2. Pipe Network Analysis** 1 Introduction 2 The head balance method ('loop' method) 3 The quantity balance method ('nodal'method) 4 The gradient method	5	15	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] + Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
7-9	**Chapter 3. Pump–Pipeline System Analysis and Design** 1 Introduction 2 Hydraulic gradient in pump–pipeline systems 3 Multiple pump systems 4 Variable-speed pump operation 5 Suction lift limitations	5	15	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] + Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
10-15	**Drainage** **Chapter 4. Drainage system and Drainage network** Drainage system Drainage network Wastewater treatment	5	10	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] + Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.

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Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

1. Course: Hydraulics and Hydrology (Thủy lực và Thủy văn)

- **Code:** KC256H
- **Credits: 3** credits
- **Hours:** 20 theory hours, 30 practice hours (assignment)

2. Management Unit:

- **Department:** Hydraulic Engineering
- **Faculty/School/Institute/Center/Department:**College of Technology

3. Prerequisites: KC176H

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Knowledge on steady and un-steady flow calculations in open chanel: calculate trapezoidal, rectangular, triangular, and circular channels; Knowledge on hydraulic jumping: concept, classification and formulae; Knowledge on the spillway calculation: classification and calculation; Knowledge on hydrological cycle and hydrological measurement, and apply hydrological analysis	2.1.3.a,b,c
4.2	Be able to demonstrate, interpret the formula; Be able to combine two or more learned knowledge; Be able to solve in-depth problems; Be able to synthesize learned knowledge; Be able to answer multiple choice questions.	2.2.1.a,b,c,d
4.3	Having teamwork skills and presentation.	2.2.2c,d
4.4	Having responsibility and the correct vision of the application of hydraulics and hydrology in civil engineering field.	2.3 a,b,c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Understand and apply steady and un-steady flow calculations in open chanel: calculate trapezoidal, rectangular, triangular, and circular channels; Understand and apply hydraulic jumping: concept, classification and formulae; understand and apply the spillway calculation: classification and calculation.	4.1	2.1.3.a,b
CO2	Understand and apply hydrological cycle and hydrological measurement. Understand and apply hydrological analysis.	4.1	2.1.3.c
	Skills		
CO3	To analyze, calculate and examine to optimize the design of openchannel, hydrological analysis.	4.2	2.2.1.a,b,c
CO4	Having teamwork skills, team leadership skills, negotiating skills, conflict resolution, proficient use of tools to support teamwork cooperation, skills to evaluate contributions of the group members	4.3	2.2.2c
	Attitudes/Autonomy/Responsibilities		
CO5	Having the correct vision of necessity and importance of hydraulics and hydrology in research of civil engineering field. Positive and proactive self-studying and practicing. Honesty in the learning process and examination.	4.4	2.3 a,b

6. Brief description of subject content:

Hydraulics and Hydrology contains 2 main sections as follows:

- ***Hydraulics***: steady and un-steady flow calculations in open chanel, hydraulic jumping (concept, classification and formulae) and the spillway (classification and calculation);

- ***Hydrology***:Hydrological cycle and hydrological measurement and hydrological analysis (Precipitation, evaporation, river flow, catchment modelling and stochastic hydrology).

7. Course structure:

	Content	Hours	COs
Chapter 1.	**Steady Flow in Open Channels**	**9**	CO1
1.1.	Introduction		
1.2.	Uniform flow resistance		
1.3.	Channel design		
1.4.	Steady, rapidly varied channel flow energy principles		
1.5.	The momentum equation and the hydraulic jump		
1.6.	Steady gradually varied open channel flow		
1.7.	Culvert flow		
Chapter 2.	**Unsteady Flow in Channels**	**8**	CO1
2.1.	2.1 Introduction		
2.2.	2.2 Gradually varied unsteady flow		
2.3.	2.3 Surges in open channels		
Chapter 3.	**Hydraulic Structures**	**8**	CO1, CO3, CO4, CO5
3.1.	Introduction		

3.2.	Spillways		
3.3.	Energy dissipators and downstream scour protection		
Chapter 4.	**Hydrological Measurement**	**10**	CO2
4.1.	The Hydrological Cycle, Hydrometeorology and Climate		
4.2.	Hydrometric Networks and Catchment Morphometry		
4.3.	Precipitation, Evaporation, River Flow and Groundwater		
Chapter 4.	**Hydrological Analysis**	**10**	CO2, CO3, CO4, CO5
4.1.	Precipitation Analysis		
4.2.	Evaporation Calculations		
4.3.	River Flow Analysis		
4.4.	Rainfall-Runoff Relationships		
4.5.	Catchment Modelling		
4.6.	Stochastic Hydrology		

8. Teaching method:

- Lecture associated with sliceshow, discussion and sample observation in class.
- Discussion with lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination of the subject.
- Finish the course assignment.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	10%	CO5
2	Point of group assignments	- All chapter assignments /(3 – 5 students /group)	15%	CO1 to CO5
3	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1, CO2
4	Point of final examination	- Multiple-choice test (60 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO1 to CO3

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10(0 to 10), rounded to one decimal place.

- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight.The course score is marked on a scale of 10 and rounded to one decimal place, then itis converted to A-B-C-D score and score on a scale of 4 under theacademic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
Thủy lựv; T2 / Vũ Văn Tảo.- 1st.- Hà Nội : ĐH và THCN , 1987 .- 627/ T108/T2/1987	TQ.011226, CN.009829
Thủy lực; T2 / I I Agroskin, F I Pikalov, G C Dmitriev; Dịch giả: Thái Văn Lễ.- 3rt.- Hà Nội : Năng lượng , 1963 .- 627/ A281/T2	MOL.018848
3] Tính toánThuỷ Văn / Nguyễn Thanh Sơn.- Hà Nội: Đại học Quốc gia, 2003.- 202tr., 27cm.- 627.1/ S464	MFN: 74889
4] Giáo trình Thuỷ Văn Công Trình / Nguyễn Khắc Cường.- Hà Nội: Khoa học kỹ thuật, 1998.- 381 tr., 24 cm.- 627.1/ C561	IFN: 64834
5] Civil Engineering Hydraulcis/R.E.Featherstone & C. Nalluri/b Blackwell Science/627/F288	CN.013745
6] Handbook of Applied Hydrology/Vijay P. Singh/McGrauwHill Education/551.49/S617	CN.019026

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' Tasks
1-3	**Chapter 1** **Steady Flow in Open Channels** 1. Introduction 2. Uniform flow resistance 3. Channel design 4. Steady, rapidly varied channel flow energy principles 5. The momentum equation and the hydraulic jump 6. Steady gradually varied open channel flow 7. Culvert flow	5	10	- Previous study: [1], [2], [5] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [5] + Solve the problems or assignments required by lecturer and prepare the content for discussionon coming class. + Summarize the core content of study.
4-6	**Chapter 2** **Unsteady Flow in Channels** 2.1. Introduction 2.2. Gradually varied unsteady flow 2.3. Surges in open channels	5	10	- Previous study: [1], [2], [5] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [5] + Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
7-9	**Chapter 3** **Hydraulic Structures** 3.1. Introduction 3.2. Spillways	5	10	- Previous study: [1], [2], [5] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [5]

	3.3. Energy dissipators and downstream scour protection			+ Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
10-12	**Chapter 4** **Hydrological Measurements** 4.1. The Hydrological Cycle, Hydrometeorology and Climate 4.2. Hydrometric Networks and Catchment Morphometry 4.3. Precipitation, Evaporation, River Flow and Groundwater	5	10	- Previous study: [3], [4], [6] - After hours of theory, group study (group of 3 to 5 students): [3], [4], [6] + Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
13-15	**Chapter 5** **Hydrological Analysis** 5.1. Precipitation Analysis 5.2. Evaporation Calculations 5.3. River Flow Analysis 5.4. Rainfall-Runoff Relationships 5.5. Catchment Modelling 5.6. Stochastic Hydrology	5	10	- Previous study: [3], [4], [6] - After hours of theory, group study (group of 3 to 5 students): [3], [4], [6] + Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.

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ON BEHALF OF RECTOR
DEAN OF COLLEGE/SCHOOL

Nguyen Chi Ngon

HEAD OF DEPARTMENT

Dang The Gia

MINISTRY OF EDUCATION AND TRAINING
CẦN THƠ UNIVERSITY

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

SUBJECT LEARNING DETAIL

1. Tên học phần: Urban Planning (Quy Hoạch Đô Thị)

- Subject Code: KC252H

- **Number of Credit:** 2 tín chỉ Credits
- **Number of lesson:** 25 hours for theory and 10 hours practice.

2. Management Unit:

-Department: Civil Engineering

-Faculty/School/Institute/Center/Department: College of Technology.

3. Requisites:

-Prerequisites: No

-Corequisites: No

4. Course objectives

Objectives	Descriptions	Program Outcomes
4.1	Basic knowledge about the process of formation of urban planning and development	2.1.3a;
4.2	Analysis of urban planning issues and the tasks	2.2.1.c
4.3	Able to analyze and critique issues of urban planning and development Teamwork skills, computer skills, presentation skills and report	2. b 2. c
4.4	Enhance awareness of the role of urban planning in urban development.	2.3. a

5. **Course learning outcomes:**

COs	Descriptions	Objectives	POs
	owledge		
COl	Understand the field of construction environment and mission to meet human needs _ Master the urban planning cycle Issues of urban and urban planning	4.1	2.1.3a;
CO2	Factors of urban formation and development Premises for urban development	4.1	2.1.3a;
CO3	Understand the negative and positive effects of urbanization lysis of internal relationships of the region	4.1	2.1.3a;
CO4	Theory of urban structure The importance of urban structure in urban planning and management	4.1	2.1.3a;
CO5	Construction planning content of residential areas and public service centers Construction planning content of traffic infrastructure, industrial areas and parks	4.1	2.1.3a;
	Skills		
CO6	Analyze and critique issues related to urban planning and management.	4.2	2.2.1.c
CO7	Identify urban area's development process : architecture, transportation, regional culture	4.2	2.2.1.c
CO8	Enhance teamwork skills and skills of presentations report to the crowd.	4.3	2.2.2.b 2.2.2.c
	Attitude / Degree of autonomy and responsibility		
CO9	Responsible, ethical and professional sense of learning and completing assignments	4.4	2.3. a
CO10	Understand the role of architects and engineers in the process of forging and practicing, always have a sense of community and professional ethics.	4.4	2.3. a

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

-This subject will provide basic knowledge of process of urban planning and development. In addition, it includes basic knowledge of urban planning: conetnt, tasks, implementation methods and products.
-Furthermore, students are also provided with the skills to analyze and evaluate urban issues and to perform some stages in urban planning.

7. Course structure:

7.1. Theory

	Content	Hours	COs
Chapter 1	Concept of construction environment and urban planning work.	**4**	CO1; CO2;
	• Human needs and the fulfillment of the needs of the construction environment fields • Some important areas of the construction environment • Urban issues and the task and formation of planning • The Basics of Planning Theory • Planning concept (is a cycle) • Contents and tasks of planning • Urban issues and the task of planning and planners		
Chapter 2	**Urban and urban formation**	**4**	CO2,CO6
	• Driving forces of urban development: • Socio-economic arguments: • Constructing urban development premises: • History of urban formation: Ancient period; • The revolution of science and technology and urban social transformation: • Theories and views on modern urban development planning:	...	...
Chapter 3	**Urbanization - Population distribution and regional planning**	4	CO3,CO7
	■ Concept of urbanization: ■ Urbanize a huge city: ■ Urbanization consequences: ■ Concept: ■ Key points of regional planning: • Relationship of regional planning and other planning:		
Chapter 4	**Theory of urban structure and planning**	4	C04;CO6
	■ Concept of urban structure; ■ Basic diagrams of urban structure ■ The basic theory of urban structure: ■ Urban structure and functional components of planning ■ Urban and urban classification ■ Construction planning: ■Planning stages: Contents of construction planning stages		
Chapter 5	**Construction planning and functional areas of the city**	4	CO5; CO7
	▪ Concept of urban residential area:		

	▪ Position and function of urban residential area: ▪ Unit in urban area: ▪ Residential targets: ▪ Overview of the central area and the system of urban public service centers: ▪ Types of functions and organizational principles: ▪ Planning details of functional areas		
Chapter 6	**Construction planning and functional areas of the city (continued)**	4	CO5; CO7
	■Design urban transport system planning: ■Construction planning of urban technical infrastructure system: ■Industrial zone construction planning: ■Principles of planning industrial zone: ■Request to design a storage area ■Functions of the urban greenery system: The role of urban greenery types: Forms of urban greenery system planning: Park planning and other forms of greenery planning in urban areas:		

7.2. Practice

	Content	Hours	COs
Unit 1.	Homework chapter 1	2	CO2, CO3, CO4, CO5
Unit 2.	Homework chapter 3 & 4	2	CO2, CO3, CO4, CO5
Unit 3.	Homework chapter 5	2	CO2, CO3, CO4, CO5
Unit 4.	Group reporting.	4	CO2, CO3, CO4, CO5

8. Phương pháp giảng dạy:

- Presentation.
- Problem Based Learning & Case Study - Essay
- Think – Pair – Share & Group Based Learning – Assignment/ Practical exercise.

9. Duties of student:

Please follow the below must-do things:
-Attend at least 80% of theoretical lessons.
-Attend 100% of group presentation / essays
-Attend mid-term examination.
-Take the final exam for the module (2-3 questions)
-Actively organize the implementation of self-study hours.

10. Assessment of student learning outcomes:

10.1. Assessment

Student's academic results are assessed as the below table.

No	Point components	Rules and Requirement	Weights	Cos
1	Attendance	Number of lessons attended / total number of lessons	10%	COl; C02
2	Group exercise scores(essay)	-Report / Presentation/... -Attendance is verified by group	20%	C08
3	Mid-term test score	-Writing / multiple-choice / oral /... (..•minutes)	30%	C01;C02
4	Final test score	-Writing test in class (with 2-3 questions in question) (60 minutes) -Attend 80% of theory and 100% of discussion time and group essay -Required to take the exam	40%	C01;C02

10.2. Grading

-Component and final test scores are graded on a 10-point scale (from 0 to 10), rounded to one decimal place.

-Total score is the sum of all component scores multiplied by the relevant proportion. The total score is graded on a 10-point scale rounded to one decimal place, then converted into a score (by both letter and number) on a 4-point scale according to the University's academic regulations.

11. Materials:

Thông tin về tài liệu	Số đăng ký cá biệt
1] Lecture content of Urban Planning	.
]. Quy hoạch đô thị / Nguyễn Thế Bá,- Hà Nội: Bộ Xây dựng, 2009- 258tr,.27cm.	CN.016125 MON.038422
[3]. Môi trường và phát triển bền vững / Nguyễn Đình Hòe - Hà Nội: NXB Giáo dục, 2006.- 338.927 / H420	MOL.042450 MOL.042451 MON.023651 MT.004185
4] Quy hoạch đô thị / Việt Nam (Cộng hoà xã hội chủ nghĩa). Quốc hội.- Hà Nội: Chính trị Quốc gia, 2009.- 26 tr., 30 cm.- 346.597045/ V308	LUAT.003802 LUAT.003803 LUAT.003804
5] Luật quy hoạch đô thị số: 21/2017/QH14 , được Quốc hội nước Cộng hòa xã hội chủ nghĩa Việt Nam khóa XIV, kỳ họp thứ 4 thông qua ngày 24 tháng 11 năm 2017.	nline pdf

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1 &2	Chapter 01: Concept of construction environment and urban planning. ▪ Human needs and meeting the needs of the construction environment ▪ Some important areas of the construction environment ▪ Urban issues, tasks and the formation of planning ▪ The Basics of Planning Theory ▪ Planning concept: is a cycle ▪ Contents and tasks of planning ▪ Urban issues and the task of planners and planning	4		-Preview: +Material [1]: Content of chapter 1
3&4	Chapter 2. Urban and urban formation ▪ Driving forces of urban development: ▪ Socio-economic arguments: ▪ Constructing urban development premises: ▪ History of urban formation: Ancient period; ■ The revolution of science and technology nd urban social transformation: ▪ Theories and views on modern urban development planning:	4		-Preview: .Material [1]: Content of Chapter 2
5&6	Chapter 3. Urbanization - Population distribution	4		-Preview:

	and regional planning ■Concept of urbanization: ■Urbanize a huge city: ■Urbanization consequences: ■Concept: ■Key points of regional planning: ■ Relationship of regional planning and other planning			+Material [1]: Content of Chapter 3
7&8	Chapter 4. Theory of urban structure and planning ■Concept of urban structure; ■Basic diagrams of urban structure ■The basic theory of urban structure: ■ Urban structure and functional components of planning ■Urban and urban classification ■Construction planning: ■Planning stages: ■Contents of construction planning stages	4		-Preview: +Material [1]: Content of Chapter 4
9 đến 10	Chapter 5. Construction planning and functional areas of the city ▪ Concept of urban residential area: ▪ Position and function of urban residential area: ▪ Unit in urban area: ▪ Residential targets: ▪ Overview of the central area and the system of urban public service centers: ▪ Types of functions and organizational principles: ▪ Planning details of functional areas	4		-Preview: +Material [1]: Content of Chapter 5
11 & **12**	Chapter 6. Construction planning and functional areas of the city (continued) ■Design urban transport system planning: ■Construction planning of urban technical infrastructure system: ■Industrial zone construction planning: ■Principles of planning industrial zone: ■Request to design a storage area ■Functions of the urban greenery system: ■The role of urban greenery types: ■Forms of urban greenery system planning: ■ Park planning and other forms of greenery planning in urban areas:	4		-Preview: +Material [1]: Content of Chapter 6
13	roup Thematic Report - Discussion		2	Material preview: [1]; [2]; [3]; 4]; [5]
14	roup Thematic Report - Discussion		2	
15	roup Thematic Report - Discussion		2	
16	roup Thematic Report - Discussion		4	
17	nal test			

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ON BEHALF OF RECTOR **DEAN OF COLLEGE**	**HEAD OF DEPARTMENT**
Nguyễn Chí Ngôn	**Đặng Thế Gia**

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

1. Course: Transportation Planning (Quy hoạch Giao thông)

- Code number: KC257H

- Credits: 02.

- Hours: 25 theory hours, 10 practice hours.

2. Management Unit:

- Department: Civil Engineering

- Faculty/School/Institute/Center/Department: College of Eng. & Technology

3. Requisites: None

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Planning design and management of traffic system.	2.1.3.c
4.2	Ability to research, analyze, forecast and make decisions. Understanding the State's regulations on traffic planning and management.	2.2.1.a,c
4.3	Ability to work independently and team work. Ability to learn for life. Ability to communicate in specialized English.	2.2.2.b
4.4	Have a sense of responsibility in professional study and research. There is a spirit of advancement in career. There is scientific ethics and adherence to academic principles.	2.3b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Understanding and having basic knowledge about traffic system: concept, content, role of traffic.	4.1	2.1.3.c
CO2	Understand the position and importance of urban traffic planning in construction and development planning.	4.1	2.1.3.c
CO3	Understand the content of traffic planning: planning, process and traffic planning designed products	4.1	2.1.3.c

CO4	Understand the principles of organizing types of in / out urban traffic; set up traffic network; Identify and design components of the traffic network.	4.1	2.1.3.c
	Skills		
CO5	Skills: analyzing, collecting information / data, generalizing and defining goals, solving problems.	4.2	2.2.1.a,c
CO6	Work: intensively, independently, in group.	4.3	2.2.2.b
CO7	Ability to research, report, write reports and presentation skills.	4.3	2.2.2.b
CO8	Ability to communicate in specialized English.	4.3	2.2.2.b
	Attitudes/Autonomy/Responsibilities		
CO9	There is a spirit of love for profession and responsibility in professional work.	4.4	2.3 b
CO10	There is a moral career ethic devoted to professionalism and community.	….	2.3 b

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

- The course will provide knowledge and skills on traffic system research: concepts, content, the role of traffic in urban areas, planning tasks, process and traffic planning products.

- The course will develop skills for students to coordinate with interdisciplinary planning and methods: meta-analysis, survey, evaluation, forecast, comparison, selection and design.

7. Course structure:

7.1. Theory

	Content	**Hours**	**COs**
Chapter 1.	**Traffic overview**	**2**	CO1; CO2; CO3
1.1.	The role of traffic in urban areas		
1.2.	General concepts of traffic		
1.3.	Traffic situation and development trend		
Chapter 2.	**Content and process of traffic planning**	**2**	CO1; CO2; CO3; CO4
2.1.	Purpose and meaning of traffic planning		
2.2.	The role of traffic planning		
2.3.	Requirements of traffic planning		
2.4.	Bases for setting up traffic planning		
2.5.	Content of traffic planning		
2.6.	Traffic planning order		
Chapter 3.	**Identify attractive areas**	**2**	CO1; CO3; CO4; CO5; CO6
3.1.	Attractive area concept		
3.2.	Classify attractive areas		
3.3.	Method of identifying attractive areas		
Chapter	**Economic and technical investigation and**	**2**	CO1; CO3; CO4; CO5;

4.	**methods of assessing the status quo**		CO6
4.1.	General issues of economic and technical investigation and traffic planning investigation		
4.2.	Classification of economic and technical investigations in traffic planning		
4.3.	Principles of economic and technical investigation		
4.4.	Methods of economic and technical investigation		
4.5.	The order and content of economic and technical investigation		
4.6.	Purpose and request to assess the status quo		
4.7.	Content and criteria for evaluating the status quo		
Chapter 5.	**Forecast of transportation volume**	**2**	CO1; CO3; CO4; CO5; CO6
5.1.	Purpose, meaning and predictive principles		
5.2.	Bases for forecasting transport demand		
5.3.	Content and order for forecasting transportation demand		
5.4.	Methods of forecasting transport demand		
Chapter 6.	**Compare, evaluate and select options**	**2**	CO2; CO3; CO4; CO5; CO6; CO7; CO8; CO9; CO10
6.1.	Purpose, request of comparing and evaluating options		
6.2.	Principles of evaluation		
6.3.	Order of evaluation and selection of planning options		
Chapter 7.	**Road network planning**	**4**	CO2; CO3; CO4; CO5; CO6; CO7; CO8; CO9; CO10
7.1.	classification of roads in urban areas		
7.2.	Road networks in urban areas		
7.3.	Basic requirements in road network planning		
7.4.	Organization of bicycle road network		
7.5.	Organization of walking roads system in urban areas		
Chapter 8.	**traffic junction planning**	**4**	CO2; CO3; CO4; CO5; CO6; CO7; CO8; CO9; CO10
8.1.	Definition and classification		
8.2.	Basic principles and requirements when designing traffic junctions		
8.3.	Method of planning a traffic junction		
8.4.	Traffic junctions at the same level		
8.5.	Traffic junctions at different levels		
Chapter	**Planning squares and parking lots**	**2**	CO2; CO3; CO4; CO5;

9.			CO6; CO7; CO8; CO9; CO10
9.1.	Planning squares		
9.2.	Planning parking lots		
Chapter 10.	**Planning traffic hubs**	**3**	CO2; CO3; CO4; CO5; CO6; CO7; CO8; CO9; CO10
10.1.	Roles and characteristics of traffic hubs		
10.2.	Planning traffic hubs by railways		
10.3.	Planning traffic hubs by waterways		
10.4.	Planning traffic hubs by air		
10.5.	Planning traffic hubs by roads		

7.2. Practice

	Content	**Hours**	**COs**
Unit 1.	Survey and forecast traffic along the route	**3**	CO5; CO6; CO7
Unit 2.	Survey and forecast traffic at the traffic junction	**3**	CO5; CO6; CO7
Unit 3.	Analyze and forecast the development of traffic networks and types of traffic.	**2**	CO2; CO3; CO4; CO5; CO6; CO7; CO8
Unit 4.	Design planning to improve / develop traffic network.	**2**	CO2; CO3; CO4; CO5; CO6; CO7; CO8

8. Teaching methods:

- Presentation

- Methods based on problems (Problem Based Learning & Case Study) – essay

- Group discussion method (Think – Pair – Share & Group Based Learning) – Exercises/Practice

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of the theoretical lessons.
- Fully participate in 100% practice hours, group discussions and reports.
- Fully complete group assignment and have performance evaluated.
- Attend the final exam.
- Actively organize self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	**Point components**	**Rules and Requirements**	**Weights**	**COs**
1	Personal exercise scores	The number of assignments completed correctly / assignments given	20%	CO1; CO2; CO9; CO10
2	Group exercise scores	- Report the results of exercises / teamwork skills - Get confirmed by the group - Join 100% of the hours	20%	CO3; CO4; CO5; CO6; CO7; CO8; CO9; CO10

3	Final exam scores	- Written examinations; multiple choice (90 minutes) - Attend 80% theory and 100% practical hours - Compulsory	60%	CO1; CO2; CO3; CO4; CO5; CO6; CO7; CO8;

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number
]. Lecture on Traffic Planning / Dang Tram Anh (Compiled) .- Can Tho: Can Tho University, 2008 - 101 p. ; illustration, 28 cm.	
]. Economic and technical survey and traffic planning / Pham Van Vu - Hanoi: Transportation, 2003-204tr, 28cm.	MOL.009682 MOL.009683 MON.102431
]. Planning of traffic and urban road design / Nguyen Xuan Truc.- Hanoi: Education, 1997- 184 p., 27 cm.- 625.72 / Tr506q	CN.013327 MOL.001381 MOL.018838 MON.010007 MT.004699
]. Planning of Urban Traffic Hubs / Translator: Vu Dinh Phung.- Ha Noi: Construction, 1997.- 329 p., 21 cm.- 625.72 / Qu600	CN.013337 MT.004735
]. Economics - Technical analysis and selection of investment projects / Pham Phu.- Ho Chi Minh City: Ho Chi Minh City University of Technology. HCM, 1991.- 238 p., 24 cm.- 658.1554 / Ph500	MOL.082786
]. Design of traffic junctions and organization of urban traffic / Nguyen Xuan Vinh.- 1st - Hanoi: Transportation, 2000, 208p .. - 690.53 / V312	MOL.021838 MOL.021837 MON.112438
]. Traffic junctions / Nguyen Xuan Vinh.- Hanoi: Transportation, 1999.- 208 p., 27 cm.- 690.53 / V312	CN006124 CN006125
[8] . Highway Engineering -SK.KHANNA-C.E.G.JUSTO	
] Vietnam construction standards January-2020	
0] Vietnam construction standards 104 : 2007 " Urban roads - Design requirements "	

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1	**Chapter 1: Overview of traffic**	2	0	- Read before class:

				+ Document [1]: content Chapter 1 + Document [3]: content Chapter 1
1	**Chapter 2: Content and order for construction of traffic planning**	2	10	- Read before class: +Document [2]: content Chapter 6,7 +Document [3]: content Chapter 3
2	**Chapter 3: Identifying attractive areas**	2	10	- Read before class: +Document [2]: content Chapter 5 +Document [3]: content Chapter 3
2	**Chapter 4: Economic and technical surveys and methods of assessing the status quo**	2	10	- Read before class: +Document [2]: content Chapter 2,3,4 +Document [3]: content Chapter 3
3	**Chapter 5: Forecast of transport volume**	2	10	- Read before class: +Document [2]: content Chapter 8 +Document [3]: content Chapter 3
4	**Practice: Survey and forecast traffic along the route**	0	10	- Group work, writing and presenting group reports.
5	**Practice: Survey and forecast traffic at the junction**	0	10	- Group work, writing and presenting group reports.
6	**Chapter 6: Comparing, evaluating and choosing options**	2	5	-Read in advance: +Document [2]: content Chapter 10 +Document [5]
7	**Personal exercises: Analyzing traffic problems**	0	20	
8	**Chapter 7: Road network planning**	2	10	- Read before class: +Document [1]: content Chapter 2 +Document [3]: content Chapter 2
9	**Chapter 7: Road network planning (cont)**	2	5	_ Read before class: + Document [8] + Document [9] + Document [10]
10	**Chapter 8: Planning traffic junctions**	2	10	- Read before class: +Document [1]: content Chapter 3,4 +Document [3]: content Chapter 9
11	**Chapter 8: Planning traffic junctions** (cont)	2	5	- Read before class: +Document [6]

				+Document [7]
12	**Chapter 9: Planning squares and parking lots**	2	10	- Read before class: +Document [1]: content Chapter 4 +Document [9]
13	**Chapter 10: Planning traffic hubs**	2	5	- Read before class: +Document [4]
14	**Chapter 10: Planning traffic hubs (cont)**	1	5	- Read before class: +Document [9] - Divide group and assign tasks
15	**Group exercises**	0	10	- Group work, writing and presenting group reports.

	Can Tho, 24/4/2019
ON BEHALF OF RECTOR **DEAN OF COLLEGE/SCHOOL** **Nguyen Chi Ngon**	**HEAD OF DEPARTMENT** **Dang The Gia**

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

1. Course: Thesis (Luận văn Tốt nghiệp)

- **Code number:** KC269H
- **Credits: 10**
- **Hours:** 0 theory hour, 300 thesis hours

2. Management Unit:

- **Department:** Civil Engineering

- **Faculty/School/Institute/Center/Department:** College of Eng. & Technology

3. Requisites:

- **Prerequisites:** Accummulated ≥ 110 credits

- **Corequisites:** ...

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Acquire basic concepts and knowledge in the field of construction engineering; acquire the depth knowlegdes of the project's specialization.	2.1.2a; 2.1.2b; 2.3a; 2.3b; 2.3c

4.2	Implement technical design alternatives; analyze and establish technical solution for the project's specialization. Evaluate feasibility, analyze advantages (technical, economic, ...) of the design alternatives.	2.1.3a; 2.1.3b; 2.1.3c; 2.2.1a; 2.2.1b; 2.2.1c; 2.2.1d; 2.2.2a; 2.2.2c
4.3	Able to work independently and in team; able to detect and solve problems in project's specialization.	2.2.1a; 2.2.1e; 2.2.2b; 2.2.2d
4.4	Perceive and secure professional codes of ethics	2.3a; 2.3b; 2.3c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Identify technical issues to be addressed, propose solutions to the issues.	4.1	2.1.2a; 2.1.2b; 2.3a; 2.3b; 2.3c
CO2	Ability to collect, analyze and process data for design work or research in project's specialization.	4.2	2.1.3a; 2.1.3b; 2.1.3c; 2.2.1a; 2.2.1b; 2.2.1c; 2.2.1d; 2.2.2a; 2.2.2c
CO3	Calculate, design, analysis, discuss, and systemize technical issues related to the content of the graduation project.	4.2	2.1.3a; 2.1.3b; 2.1.3c; 2.2.1a; 2.2.1b; 2.2.1c; 2.2.1d; 2.2.2a; 2.2.2c
CO4	Understand the impact of technical solutions; capable to detect and improve technical errors in designing and constructing building accommodation.	4.3	2.2.1a; 2.2.1e; 2.2.2b; 2.2.2d
	Skills		
CO5	Produce technical drawings	4.1	2.1.2a; 2.1.2b; 2.3a; 2.3b; 2.3c
CO6	Acquire writing and presentaion skills of technical reports and drawings	4.2	2.1.3a; 2.1.3b; 2.1.3c; 2.2.1a; 2.2.1b; 2.2.1c; 2.2.1d; 2.2.2a; 2.2.2c
CO7	Equip teamwork skills and ability to work with partners with different desciplinaries.	4.3	2.2.1a; 2.2.1e; 2.2.2b; 2.2.2d
	Attitudes/Autonomy/Responsibilities		
CO8	Consciously comply with legal technical regulations; adhere to professional codes of ethics.	4.4	2.3a; 2.3b; 2.3c

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

The course helps students to synthesize the entire body of knowledge they have learned to solve issues of technical design, materials, construction, and project management of a civil and industrial project; or study depth specialization of construction field.

7. Course structure:

7.1. Theory

7.2. Practice

Student conducts individual project and technical drawings.

8. Teaching methods:

Student conducts graduatuion project with technical report and drawings under direcrection of a supervisor assigned by the department. Content and format of the graduation thesis must be approved by the supervisor.

9. Duties of student:

Student has to perform the following duties:

- Pre-reading the required and related references
- Periodically discuss with supervisor
- Actively organize self-study hours
- Participate oral exam with assigned panel committee

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	Cos
1	Content of technical report and drawings		30%	CO2; CO3; CO5; CO6
2	Presentation skill in oral exam (if any)		0 – 10%	CO6; CO7; CO8
3	Answering question in oral exam	Entire knowleged within the curriculum	60 – 70%	CO1; CO2; CO3; CO4; CO7; CO8

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1 – 15	Regulated in "Regulations on Graduation thesis and Graduation project" of the department.		300	Pre-reading related references and technical standards, perceive term-papers, and fully complete the graduation project.

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ON BEHALF OF RECTOR
DEAN OF COLLEGE

Nguyen Chi Ngon

HEAD OF DEPARTMENT

Dang The Gia

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

Graduation Project – CE (Tiểu luận tốt nghiệp – XD)

- **Code number:** KC261H

- **Credits: 4**

- **Hours:** 120 project hours

gement Unit:

- **Department:** Civil Engineering

- **Faculty/School/Institute/Center/Department:** College of Eng. & Technology

3. Requisites:

- **Prerequisites:** Accummulated ≥ 110 credits

- **Corequisites:**

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Acquire basic concepts and knowledge in the field of construction engineering; acquire the depth knowlegdes of the project's specialization.	2.1.2a; 2.1.2b; 2.3a; 2.3b; 2.3c
4.2	Implement technical design alternatives; analyze and establish technical solution for the project's specialization. Evaluate feasibility, analyze advantages (technical, economic, ...) of the design alternatives.	2.1.3a; 2.1.3b; 2.1.3c; 2.2.1a; 2.2.1b; 2.2.1c; 2.2.1d; 2.2.2a; 2.2.2c
4.3	Able to work independently and in team; able to detect and solve problems in project's specialization.	2.2.1a; 2.2.1e; 2.2.2b; 2.2.2d
4.4	Perceive and secure professional codes of ethics	2.3a; 2.3b; 2.3c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Identify technical issues to be addressed, propose solutions to the issues.	4.1	2.1.2a; 2.1.2b; 2.3a; 2.3b; 2.3c
CO2	Ability to collect, analyze and process data for design	4.2	2.1.3a; 2.1.3b;

	work or research in project's specialization.		2.1.3c; 2.2.1a; 2.2.1b; 2.2.1c; 2.2.1d; 2.2.2a; 2.2.2c
CO3	Calculate, design, analysis, discuss, and systemize technical issues related to the content of the graduation project.	4.2	2.1.3a; 2.1.3b; 2.1.3c; 2.2.1a; 2.2.1b; 2.2.1c; 2.2.1d; 2.2.2a; 2.2.2c
CO4	Understand the impact of technical solutions; capable to detect and improve technical errors in designing and constructing building accommodation.	4.3	2.2.1a; 2.2.1e; 2.2.2b; 2.2.2d
	Skills		
CO5	Produce technical drawings	4.1	2.1.2a; 2.1.2b; 2.3a; 2.3b; 2.3c
CO6	Acquire writing and presentaion skills of technical reports and drawings	4.2	2.1.3a; 2.1.3b; 2.1.3c; 2.2.1a; 2.2.1b; 2.2.1c; 2.2.1d; 2.2.2a; 2.2.2c
CO7	Equip teamwork skills and ability to work with partners with different desciplinaries.	4.3	2.2.1a; 2.2.1e; 2.2.2b; 2.2.2d
	Attitudes/Autonomy/Responsibilities		
CO8	Consciously comply with legal technical regulations; adhere to professional codes of ethics.	4.4	2.3a; 2.3b; 2.3c

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of the course:

The course helps students to synthesize the entire knowledge they have learned to solve issues of technical design, materials, construction, and project management of a civil and industrial project; or study depth specialization of construction field.

7. Course structure:

7.1. Theory

7.2. Practice

Student conducts individual project and technical drawings.

8. Teaching methods:

Student conducts graduatuion project with technical report and drawings under direcrection of a supervisor assigned by the department. Content and format of the graduation thesis must be approved by the supervisor.

9. Duties of student:

Student has to perform the following duties:

- Pre-reading the required and related references
- Periodically discuss with supervisor
- Actively organize self-study hours

- Participate oral exam with reviewer(s)

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	Cos
1	Content of technical report and drawings		30%	CO2; CO3; CO5; CO6
2	Presentation skill in oral exam (if any)		0 – 10%	CO6; CO7; CO8
3	Answering question in oral exam	Entire knowleged within the curriculum	60 – 70%	CO1; CO2; CO3; CO4; CO7; CO8

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. Learning materials:

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1 – 15	Regulated in "Regulations on Graduation thesis and Graduation project" of the department.		300	Pre-reading related references and technical standards, perceive term-papers, and fully complete the graduation project.

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ON BEHALF OF RECTOR
DEAN OF COLLEGE

Nguyen Chi Ngon

HEAD OF DEPARTMENT

Dang The Gia

MINISTRY OF EDUCATION AND TRAINING **SOCIALIST REPUBLIC OF VIETNAM**
CAN THO UNIVERSITY **Independence - Freedom – Happiness**

COURSE OUTLINE DETAILS

1. Course: Advanced Concrete Structures (Kết cấu Bê-tông nâng cao)

- **Code**: KC258H
- **Credits**: 03
- **Hours**: 30 theory hours, 30 practice hours.

2. Management Unit:

- **Department**: Civil Engineering.
- **Faculty/School/Institute/Center/Department**: College of Technology.

3. Requisites:

- **Prerequisites:** KC182H
- **Corequisites:** No

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Leaning the crucial behaviors of the special concrete structures under the various loads applied.	2.1.3.b
4.2	Applying the training knowledge for modeling, analyzing, and designing the special concrete structure.	2.2.1.b
4.3	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	2.2.2.a,d,e
4.4	Improving the capacities in terms of self-study, practice, and knowledge expansion for final examination, term papers, and future work.	2.3b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
	Chapter 1. Prestressed concrete structure		
1.	Prestress of steel reinforcement	4.1	2.1.3.b
2.	Analysis prestressed concrete structures based on the first limit state design	4.1	2.1.3.b
3.	Analysis prestressed concrete structures based on the second limit state design	4.1	2.1.3.b
	Chapter 2. Thin-shell concrete structure		
4.	Definition	4.1	2.1.3.b

5.	Characteristics and Components	4.1	2.1.3.b
6.	Analysis Model	4.1	2.1.3.b
7.	Load Analysis	4.1	2.1.3.b
8.	Internal Force Analysis	4.1	2.1.3.b
9.	Steel Bar Analysis	4.1	2.1.3.b
	Chapter 3. Water concrete tower		
10.	Definition	4.1	2.1.3.b
11.	Characteristics and Components	4.1	2.1.3.b
12.	Analysis Model	4.1	2.1.3.b
13.	Load Analysis	4.1	2.1.3.b
14	Internal Force Analysis	4.1	2.1.3.b
15.	Steel Bar Analysis	4.1	2.1.3.b
	Chapter 4. Strut and tie model		
16.	Definition	4.1	2.1.3.b
17.	Characteristics and Components	4.1	2.1.3.b
18.	Model Analysis	4.1	2.1.3.b
19.	Load Analysis	4.1	2.1.3.b
20.	Internal Force Analysis	4.1	2.1.3.b
21.	Steel Bar Analysis	4.1	2.1.3.b
	Skills		
22.	Modeling, analyzing, and designing the special concrete structures including prestressed concrete, thin-shell concrete, concrete under torsion, and shear fractured concrete.	4.2	2.2.1.b
23.	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	4.3	2.2.2.a,d,e
	Attitudes/Autonomy/Responsibilities		
24.	Being positively and prospectively enhancing capacities for self-study and practice.	4.4	2.3b
25.	Being honest during the learning process and in the examination.	4.4	2.3b

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

The course provides the knowledge of analysis of the main load bearing system of a structure including slab, beam, column, foundation, and other elements (stair, pool). The learners can solve out the internal force components of the structure and integrate the knowledge of concrete structure to design in details including steel bars analysis, and technical drawings.

7. Course structure:

7.1. Theory

Chapter	Content	Hours	COs
1.	**Prestressed concrete structure**	**10**	
1.	Prestress of steel reinforcement		1.
2.	Analysis prestressed concrete structures based on the first limit state design		2.
3.	Analysis prestressed concrete structures based on the second limit state design		3.
2.	**Thin-shell concrete structure**	**8**	
1.	Definition		4.
2.	Characteristics and Components		5.
3.	Analysis Model		6.
4.	Load Analysis		7.
5.	Internal Force Analysis		8.
6.	Steel Bar Analysis		9.
3.	**Water concrete tower**	**5**	
1.	Definition		10.
2.	Characteristics and Components		11.
3.	Analysis Model		12.
4.	Load Analysis		13.
5.	Internal Force Analysis		14.
6.	Steel Bar Analysis		15.
4.	**Strut and tie model**	**7**	
1.	Definition		16.
2.	Characteristics and Components		17.

3.	Model Analysis		18.
4.	Load Analysis		19.
5.	Internal Force Analysis		20.
6.	Steel Bar Analysis		21.

7.2. Practice

Chapter	Content	Hours	COs
1.	**Prestressed concrete structure**	**15**	
	Designing the prestressed beam based on the first and second limit state designing principle.	15	CO1 to CO3
2.	**Thin-shell concrete structure**	**15**	
	Analysis and steel reinforce design for structural reinforced concrete wall.	15	CO4 to CO9

8. Teaching method:

- Lecture associated with slideshow, discussion and sample observation in class.
- Discussion with lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination of the subject.
- Finish the course assignment.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of student learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1.	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	10%	CO24;CO25
2.	Point of group assignments	- All chapter assignments /(3 – 5 students /group)	15%	CO1 to CO9
3.	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1 to CO9
4.	Point of final examination	- Writing test (90 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO10 to CO21

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Materials:

Learning materials information	Barcode number
Kết cấu bê-tông cốt thép : Phần kết cấu nhà cửa / Ngô Thế Phong (chủ biên) ... [et al.].- Hà Nội: Khoa học và Kỹ thuật, 1996.- 315 tr., 24 cm.- 693.54/ Ph431	CN.013592 CN.013593 MOL.021782 MON.113602
] Kết cấu bê-tông cốt thép- T2- Cấu kiện nhà cửa / Võ Bá Tầm.- 1st.- Thành phố Hồ Chí Minh: Đại học Quốc gia Thành phố Hồ Chí Minh, 2003.- 393p., 23cm.- 624.1834/ T120/T2	MON.105492
TCVN 2737-1995 - Tiêu chuẩn tải trọng và tác động/ Bộ xây dựng	

12. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1-4	**Chapter 1.** **Prestressed concrete structure** 1.1. Prestress of steel reinforcement 1.2. Analysis prestressed concrete structures based on the first limit state design 1.3. Analysis prestressed concrete structures based on the second limit state design	10	10	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] +Solve the problems or assignments required by lecturer and prepare the content for discussionon coming class. +Summarize the core content of study.
5-9	**Chapter 2.** **Thin-shell concrete structure** 2.1. Definition 2.2. Characteristics and Components 2.3. Analysis Model 2.4. Load Analysis 2.5. Internal Force Analysis 2.6. Steel Bar Analysis	8	8	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] +Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. +Summarize the core content of study.
10-11	**Chapter 3.** **Water concrete tower** 3.1. Definition 3.2. Characteristics and Components	5	5	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] +Solve the problems or assignments

	3.3. Analysis Model 3.4. Load Analysis 3.5. Internal Force Analysis 3.6. Steel Bar Analysis			required by lecturer and prepare the content for discussion on coming class. +Summarize the core content of study.
12-13	**Chapter 4.** **Strut and tie model** 4.1. Definition 4.2. Characteristics and Components 4.3. Analysis Model 4.4. Load Analysis 4.5. Internal Force Analysis 4.6. Steel Bar Analysis	7	7	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] +Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. +Summarize the core content of study.

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ON BEHALF OF RECTOR
DEAN OF COLLEGE/SCHOOL
(or DIRECTOR OF INSTITUTE)

Nguyễn Chí Ngôn

HEAD OF DEPARTMENT

Đặng Thế Gia

MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

SUBJECT OUTLINE DETAILS

1. Subject: Applied Elasticity and Finite Element Method (Đàn Hồi Ứng Dụng và Phương Pháp Phần Tử Hữu Hạn)

- **Code: KC267**
- **Credits:** 3 credits
- **Hours:** 30 theory hours, 30 practice hours (Matlab practice and group assignment)

2. Management Unit:

- **Department:** Civil Engineering
- **Faculty/School/Institute/Center/Department:** College of Technology

3. Requisites:

- **Prerequisites:** Differential and Integral Calculus-A (TN006), Theoretical Mechanics (CN101).
- **Corequisites:**

4. Subject objectives:

Objectives	Descriptions	Program Outcomes
4.1	**Knowledge:** - Know how to determine displacement, deformation fields and stress tensors of solid elastic materials in static or dynamic states which are subjected to a prescribed system of external forces; - Understanding the theory of elasticity to the calculation of strength of materials and structural analysis. Applying the formulae to solve the assignments by analytical ways or using finite element methods for some of one-dimension structures such as: axial force members, plane truss elements, beam elements and plane frame elements and two-dimensional plane structures as well; - Introduce the MatLab's computer language to students with some available computer programs for the structural analysis in building engineering. - To equip the students with the finite element algorithms to have their good understanding of some basic calculations which are embedded in the hidden source code of the finite element analysis programs such as SAP2000, ETABS, v.v.	2.1.3.a;b;c;d
4.2	**Professional skills:** - Be able to apply the analytical formulae to solve the assignments or to apply the finite element methods for solving some one-dimension structures problems such as: axial force members, plane truss elements, beam elements and plane frame elements; - Be able to make use of the available Matlab's functions to verify the correct solutions earlier obtained by analytical methods. - Be able to use, modify or write a computer programs in Matlab language for solving the one-dimension structural analysis assignments; - Be able to analyse and synthesize learned knowledge;	2.2.1.a;b;c;d
4.3	**Soft skills:** - Be able to work efficiently in the consulting team to accomplish a program or a team project; - Be able to determine, setup and solve the technical problems in the civil engineering aspect; - Be able to read, write and present the engineering topics in either Vietnamese or English convincingly; - Be able to do a lifelong learning.	2.2.2.a;b;c;d
4.4	**Attitude:** - Having the correct vision of necessity and importance of the subject of Applied Elasticity and Finite element methods in practice and research of civil engineering. - Positive and proactive self-studying and practicing. - Honesty in the learning process and examination.	2.3.a;b;c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	- Know how to determine displacement, deformation fields and stress tensors of solid elastic materials in static or dynamic states which are subjected to a prescribed system of external forces;	4.1	2.1.3.a
CO2	- Understanding the theory of elasticity to the calculation of strength of materials and structural analysis. Applying the formulae to solve the assignments by analytical ways or using finite element methods for some of one-dimension structures such as: axial force members, plane truss elements, beam elements and plane frame elements and two-dimensional plane structures as well;	4.1	2.1.3.b
	Skills		
CO3	- Be able to apply the analytical formulae to solve the assignments or to apply the finite element methods for solving some one-dimension structures problems such as: axial force members, plane truss elements, beam elements and plane frame elements; - Be able to make use of the available Matlab's functions to verify the correct solutions earlier obtained by analytical methods. - Be able to use, modify or write a computer programs in Matlab language for solving the one-dimension structural analysis assignments;	4.2	2.2.1.a;b;c
CO4	- Be able to work efficiently in the consulting team to accomplish a program or a team project; - Be able to determine, setup and solve the technical problems in the civil engineering aspect; - Be able to read, write and present the engineering topics in either Vietnamese or English convincingly;	4.3	2.2.2.a;b;c;d
	Attitudes/Autonomy/Responsibilities		
CO5	- Having the correct vision of necessity and importance of the subject of Applied Elasticity and Finite element methods in practice and research of civil engineering. - Positive and proactive self-studying and practicing. - Honesty in the learning process and examination.	4.4	2.3.a;b;c

Note: "COs" means Course Outcomes; "POs" means Program Outcomes

6. Brief description of subject content:

The subject "Applied elasticity and Finite element methods" contains 2 main sections as follows:
- Theory of Elasticity: Concentrate on stress analysis, strain and stress-strain relation in elasticity. This part is the basis of calculation for strength of materials, stiffness and stability in mechanical engineering and civil engineering problems, ect.

- Finite element methods: Mainly solving structural analysis problems in one or two-dimensional problems. The knowledge focuses on elastic strain energy methods, together with stiffness matrices and the direct stiffness method. The students will be provided the numerical algorithms (finite element method) to do the structural analysis for either some of one-dimensional structures such as plane truss elements, beam elements, plane frame elements or two-dimensional problems in elasticity such as plane stress and plane strain problems.

7. Subject content structure:

7.1. Theory (30 credit hours) and group assignments (15 practice hours)

	Content	**Hours**		**COs**
		Theory	**Asignment**	
Chapter 1.	**Analysis of Stress**	5	3	CO1;CO2; CO3
1.1.	Introduction			
1.2.	State of stress at a point and Stress tensor			
1.3.	The differential equations of equilibrium (Navier Cauchy)			
1.4.	Normal component and shear component of a stress vector			
1.5.	Principal stresses-Stress invariants			
1.6.	Maximum and minimum shear stress values			
1.7.	Transformation law for Cartesian tensors			
1.8.	Boundary conditions			
Chapter 2.	**Deformation and Strain**	4	3	CO1;CO2; CO3
2.1.	Displacement and strain			
2.2.	Determination of strain			
2.3.	State of strain at a point			
2.4.	Compatibility equations for linear strains			
Chapter 3.	**Stress and strain relation**	4	3	CO1;CO2; CO3
3.1.	Stress-Strain diagrams			
3.2.	Hooke’s law and Poisson’s ratio- Generelized Hooke’s law			
3.3.	Shear deformation and volume deformation. Dilatational strain energy and distortional energy			
3.4.	Elastic strain energy (elastic strain potential)			
Chapter 4.	**Methods for solving the Elasticity problems**	3		CO1;CO2; CO3
4.1.	Solution of the elasticity problems by the integral of the basic equations			

4.2.	Solution of the elasticity problems by the elastic strain energy theory			
Chapter 5.	**The finite element methods for the one and two-dimension problems**	15	4	CO1;CO2; CO3
5.1.	Introduction to the one-dimensional elements			
5.2.	The axial force member			
5.3.	The truss element			
5.4.	The beam element			
5.5.	The plane frame element			
Chapter 6.	**Two Dimensional Elasticity**	4	2	CO1;CO2; CO3
6.1.	Plane Stress and Plane Strain problems			
6.2.	Solution of the plane stress and plane strain problems in form of Stress equations.			
6.3.	Airy's stress function for plane problem.			
6.4.	Using Finite element method for solving the two-dimensional elasticity problem (triangular elasticity element)			

7.2. Practice on computer programs (15 practical hours)

	Content	Hours	COs
1.	Introdution of some commonly used Matlab commands in matrix calculation.	**2**	CO1;CO2; CO3
2.	Using the available Matlab programs to solve the axial force member in comparison with SAP 2000 software.	**2**	CO1;CO2; CO3
3.	Using the available Matlab programs to solve the truss element in comparison with SAP 2000 software.	**2**	CO1;CO2; CO3
4.	Using the available Matlab programs to solve the beam element in comparison with SAP 2000 software.	**2**	CO1;CO2; CO3
5.	Using the available Matlab programs to solve the plane frame element in comparison with SAP 2000 software.	**2**	CO1;CO2; CO3
6.	Using the available Matlab programs to solve the two-dimensional elasticity problem (triangular elasticity element)	**2**	CO1;CO2; CO3
	Examination of practical assignments on computers or laptops	**3**	CO1;CO2; CO3

8. Teaching method:

- Lecture associated with slide show, practice on computer programs and solving assignments in the classroom or at home.
- Discussion with lecturer.
- Group assignments and discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Finish the group assignments and handing in their solutions to the teacher on time.
- Attend final examination of the subject.

- Perform actively self-study hours.

10. Assessment of student learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours	10%	CO1;CO2; CO3
2	Point of practice on computer programs of the finite element methods	- Handing in 04 input files of matlab-programs or modified versions of the matlab-programs - Attend at least 80% of theory hours up to exam day.	30%	CO1;CO2; CO3
3	Point of group assignments	- Solving the remainder of group assignments /(3 – 5 students /group) in the classroom	10%	CO1;CO2; CO3
4	Point of final examination	- Written exam (90 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO1;CO2; CO3

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Materials:

Materials information	Code number
Bài giảng môn học Đàn hồi ứng dụng và phương pháp phần tử hữu hạn/Trần Minh Thuận- Cần Thơ: Trường Đại Học Cần Thơ, 2007.- 150tr., 27 cm. Tủ sách Khoa Công Nghệ.	Tủ sách Khoa Công Nghệ.
Lý thuyết đàn hồi ứng dụng / Nguyễn Văn Vượng.- Hà Nội: Giáo Dục, 1999.- 300 tr., 27 cm.- 531.382/ V561	4c_361174 CN.013962 CN.013963 CN.013964 CN.013965 MOL.013952 MON.107796
Bài tập đàn hồi ứng dụng / Nhữ Phương Mai chủ biên, Nguyễn Nhật Thăng.- Hà Nội: Giáo dục, 2007.- 188 tr., 24 cm.- 531.382076/ M103	MOL.066564 MOL.001603 MOL.001602 MOL.001601
Đàn hồi ứng dụng / Đỗ Kiến Quốc.- Tái bản lần 3.- Thành phố Hồ Chí Minh: Đại Học Quốc Gia Thành phố Hồ Chí Minh, 2005.- 200tr., 24cm.-	CN.011307 CN.011308

531.382/ Qu451	
5] Ugural, A.C., Fenster, S.K., 1995. Advanced strength and applied elasticity. Englewood Cliffs : PTR Prentice-Hall.	Ebook accouts of the Learning resource Center of CTU
6] Applied finite element analysis / Larry J Segerlind.- 2nd.- New York: John Wiley, 1984, 426p..- 620.001515353/ S454	CN-1c_164451

11. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1-2	**Chapter 1. Analysis of Stress** 1.1. Introduction 1.2. State of stress at a point and Stress tensor 1.3. The differential equations of equilibrium (Navier Cauchy) 1.4. Normal component and shear component of a stress vector 1.5. Principal stresses-Stress invariants 1.6. Maximum and minimum shear stress values 1.7. Transformation law for Cartesian tensors 1.8. Boundary conditions	5	3	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] +[1]:Read chapter1. Solve the problems N°1, to N° 9. + [2]: Read chapter 1. + [3]:Solve the problems 1.1 to 1.10. + Solve the group assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
3	**Chapter 2. Deformation and Strain** 2.1. Displacement and strain 2.2. Determination of Strain 2.3. State of strain at a point 2.4. Compatibility equations for linear strains	2	3	-Previous study: [1], [2], [3] +[1]: Read chapter 2. Solve the problems N°1, to N° 11. + [2]: Read chapter 2. + [3]:Solve the problems 1.1 to 1.18. + Solve the group assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
4	**Chapter 3. Stress and strain relation** 3.1. Stress-Strain diagrams 3.2. Hooke's law and Poisson's ratio- Generelized Hooke's law 3.3. Shear deformation and volume deformation. Dilatational strain energy and distortional energy 3.4. Elastic strain energy (elastic strain potential)	2	3	-Previous study: [1], [2], [3] +[1]: Read chapter 3. Solve the problems N°1, to N° 8. + [2]: Read chapter 3. + [3]:Solve the problems in chapter 2. + Solve the group assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
5	**Chapter 4. Methods for solving**	3	0	-Previous study: [1], [2], [3]

	the Elasticity problems 4.1. Solution of the elasticity problems by the integral of the basic equations 4.2. Solution of the elasticity problems by the elastic strain energy theory			+[1]: Read chapter 3.
6-9	**Chapter 5. The finite element methods for the one-dimension problems** 5.1. Introduction to the one-dimensional elements 5.2. The axial force member 5.3. The truss element 5.3. The truss element 5.4. The beam element 5.5. The plane frame element	8	10	-Previous study: [1], [6] + [1]: read the chapters of the finite element methods. Solve all their problems. + [6]: read the chapter 17, 18, 19, 20, 21. + Solve the group assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
10	**Chapter 6. Two Dimensional Elasticity** 6.1. Plane Stress and Plane Strain problems 6.2. Solution of the plane stress and plane strain problems in form of Stress equations. 6.3. Airy's stress function for plane problem. 6.4. Using Finite element method for solving the two-dimensional elasticity problem (triangular elasticity element)			- Previous study: [1], [2], [3] +[1]: Read chapter 6.1 to 6.4 chapter 6 + Solve the assignments N°1,2,3,4,5,6,7,8,9 of [1] chapter 6 required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
12	The students solve group assigments on the blackboard from Group 1,.. to 5	0	3 BT	- Previous study: [1] - Group working: solving group assignments: Assig. No1; 2; 3; 8; 9; 10.
13	The students solve group assigments on the blackboard from Group 6,.. to 10	0	3 BT	- Previous study: [1] - Group working: solving group assignments: Assig. No1; 2; 3; 8; 9; 10.
14	Review lecture for students before final exam.	0	3 BT	- Previous study: [1] + Students review all chapters in the syllabus [1].

Can Tho, ……./……../2018

ON BEHALF OF RECTOR
DEAN/DIRECTOR

HEAD OF DEPARTMENT

Nguyen Chi Ngon

Dang The Gia

MINISTRY OF EDUCATION AND TRAINING

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

CAN THO UNIVERSITY

COURSE OUTLINE DETAILS

Hydraulic structures (Công trình thủy)

- **Code:** KC266H
- **Credits:** 3 credits
- **Hours:**20 theory hours, 50practicehours (assignment)

gement Unit:

- **Department:**Civil Engineering
- **Faculty/School/Institute/Center/Department:**College of Technology

3. Prerequisites: KC176H

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Basic knowledge about loads to professional works; In-depth knowledge of hydraulic structures (safety factor, measures); Basic knowledge to the technical design of specialized hydraulic structuresin the Mekong delta (culverts, embankments, canals, dikes);	2.1.3.a,b,c
4.2	Be able to design water engineering; Be able to write reports and present reports to the public; Be able to work in teams.	2.2.1.a,b,c
4.3	Having teamwork skills and presentation.	2.2.2c,d
4.4	Having responsibility and the correct vision of the hydraulics engineering field.	2.3 a,b,c

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	Understand and apply loads to professional works Apply and analyze the technical design of specialized hydraulic structuresin the Mekong delta (culverts, embankments, canals,	4.1	2.1.3.a

	dikes)		
CO2	Analyze and design of hydraulic structures (safety factor, measures)	4.1	2.1.3.b,c
	Skills		
CO3	Analyze, synthesize and evaluate the results of construction design calculations	4.2	2.2.1.a,b,c
CO4	Having teamwork skills, team leadership skills, negotiating skills, conflict resolution, proficient use of tools to support teamwork cooperation, skills to evaluate contributions of the group members	4.3	2.2.2c
	Attitudes/Autonomy/Responsibilities		
CO5	Having the correct vision of necessity and importance of hydraulics and hydrology in research of civil engineering field. Positive and proactive self-studying and practicing. Honesty in the learning process and examination.	4.4	2.3 a,b

6. Brief description of course:

Hydraulics structures subject specialized in combining water sources with construction/structural measure solutions: water works, water flow adjustment works, sluices, irrigation canals, dams, dikes, etc.

7. **Course structure:**

	Content	**Hours**	**COs**
Chapter 1.	**Introduction**	**2**	CO1
1.1.	Introduction		
1.2.	General issues of hydraulic structures		
1.3.	Introduction to hydraulic structures subjects		
Chapter 2.	**Loads and forces**	**8**	CO1, CO2
2.1.	Forces and forces and the combination		
2.2.	Determination of the loaded/forces		
2.3.	Examples and assignments		
Chapter 3.	**Permeability**	**7**	CO1, CO2
3.1.	General concept		
3.2.	Permeability under hydraulics structures		
3.3.	Permeability in heterogeneous soils		
3.4.	Impacts of Permeability and measures		
Chapter 4.	**Earth dykes/dams**	**8**	CO1, CO2, CO3, CO4, CO5
4.1.	Introduction		
4.2.	Principles and steps of earth dykes/dams design		
4.3.	Permeability through dams		
Chapter 5.	**Stabilization of hydraulic structures**	**10**	CO1, CO2, CO3, CO4, CO5
4.1.	Stabilization of hydraulics structures		
4.2.	Forms of instability - prediction		
4.3.	Calculation of bearing capacity		

4.4.	Calculation the factor of safety		
Chapter 6.	**Sluice**	**10**	CO1, CO2, CO3, CO4, CO5
6.1.	Concept		
6.2.	Classification		
6.3.	Principles of sluice design		
6.4.	Sluice		
6.5.	Calculation of the structural components of the sluice		

8. Teaching method:

- Lecture associated with sliceshow, discussion and sample observation in class.
- Discussion with lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination of the subject.
- Finish the course assignment.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of course learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	10%	CO5
	Point of group assignments	- All chapter assignments /(3 – 5 students /group)	15%	CO1 to CO5
2	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1, CO2
3	Point of final examination	- Multiple-choice test (60 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO1, CO2

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10(0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight.The course score is marked on a scale of 10 and rounded to one decimal place, then itis converted to A-B-C-D score and score on a scale of 4 under theacademic regulations of the University.

11. Learning materials:

Learning materials information	Barcode number

[1] Thủy công / Ngô Trí Viềng. - Hà Nội : Xây dựng, 2004	TS.001501, TS.001504, TS.001507
[2] Thiết kế cống / Trịnh Bốn, Lê Hòa Xưởng. - Hà Nội : Nông nghiệp, 1988	CN.013863, lc_181631, MT.000490
[3] Cơ học đất (đại học thủy lợi) / Cao Văn Chí. - Hà Nội : Xây dựng, 2003	CN.001612, CN.001613, CN.001614,MOL.018580, MOL.018581, MON.109006
4] Civil Engineering Hydraulcis/R.E.Featherstone & C. Nalluri/b Blackwell Science/627/F288	CN.013745

11. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' Tasks
1	**Chapter 1** **Introduction** 1.1. Introduction 1.2.General issues of hydraulic structures 1.3 Introduction to hydraulic structures subjects	2	0	- Previous study: [1], [2], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [4] + Solve the problems or assignments required by lecturer and prepare the content for discussionon coming class. + Summarize the core content of study.
2-3	**Chapter 2** **Loads and forces** 2.1. Forces and forces and the combination 2.2. Determination of the loaded/forces 2.3. Examples and assignments	3	10	- Previous study: [1], [2], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [4] + Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
4-5	**Chapter 3** **Permeability** 3.1. General concept 3.2. Permeability under hydraulics structures 3.3. Permeability in heterogeneous soils 3.4. Impacts of Permeability and measures	3	10	- Previous study: [1], [2], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [4] + Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
6	**Chapter 4** **Earth dykes/dams** 4.1. Introduction 4.2. Principles and steps of earth dykes/dams design 4.3. Permeability through	2	10	- Previous study: [1], [2], [4] - After hours of theory, group study (group of 3 to 5 students): : [1], [2], [4] + Solve the problems or assignments required by lecturer

	dams			and prepare the content for discussion on coming class. + Summarize the core content of study.
7-10	**Chapter 5** **Stabilization of hydraulicstructures** 5.1. Stabilization of hydraulics structures 5.2. Forms of instability - prediction 5.3. Calculation of bearing capacity 5.4. Calculate the factor of safety	5	10	- Previous study: [3] - After hours of theory, group study (group of 3 to 5 students): [3] + Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.
11-15	**Chapter 6** **Sluice** 6.1. Concept 6.2. Classification 6.3. Principles of sluice design 6.4. Sluice 6.5. Calculation of the structural components of the sluice	5	10	- Previous study: [1], [2], [3], [4] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] + Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. + Summarize the core content of study.

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ON BEHALF OF RECTOR
DEAN OF COLLEGE/SCHOOL
(or DIRECTOR OF INSTITUTE)

Nguyen Chi Ngon

HEAD OF DEPARTMENT

Dang The Gia

CAN THO UNIVERSITY **Independence - Freedom – Happiness**

COURSE OUTLINE DETAILS

1. Course: Transportation Engineering (Công trình giao thông)

- **Code**: KC264H
- **Credits**: 03
- **Hours**: 30 theory hours, 30 practice hours.

2. Management Unit:

- **Department**: Civil Engineering

- **Faculty/School/Institute/Center/Department:** College of Eng. & Technology

3. Requisites:

- **Prerequisites:** KC175H

- **Corequisites:** No

4. Course objectives:

Objectives	Descriptions	Program Outcomes
4.1	Understanding functions and structures and design methods of transportation engineering	2.1.3.b
4.2	Analyzing design proposals	2.2.1.b
4.3	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	2.2.2.a,d,e
4.4	Improving the capacities in terms of self-study, practice, and knowledge expansion for final examination, term papers, and future work.	2.3b

5. Course learning outcomes:

COs	Descriptions	Objectives	POs
	Knowledge		
1.	Understanding and analyzing components and functions of transportation systems	4.1	2.1.3.b; c
2.	Determining design methods and orienting the transportation development		2.1.3.b; c
	Skills		
3.	Analyzing and selecting design proposals	4.2	2.2.1.b
4.	Expanding the learning knowledge for efficiently self-leaning other courses required for civil engineers.	4.3	2.2.2.a,d,e
	Attitudes/Autonomy/Responsibilities		

5.	Being positively and prospectively enhancing capacities for self-study and practice.	4.4	2.3b
6.	Being honest during the learning process and in the examination.	4.4	2.3b

Note: “COs” means Course Outcomes; “POs” means Program Outcomes

6. Brief description of the course:

The course provides knowledge of transportation engineering, analyzes orienting development of transport. It also introduces design methods and principles of planning, construction and assessment of transportation engineering.

7. Course structure:

7.1. Theory (30 hrs.)

Chapter	Content	Hours	COs
1.	Principles of transport engineering	6	CO1
2.	Structures of transportation system	6	CO1
3.	Concepts of planning, design, construction and assessment for transportation engineering	6	CO1; CO2
4.	Design methods	6	CO2; CO3; CO4; CO5; CO6
5.	Orientations of transportation engineering	6	CO2; CO3; CO4; CO5; CO6

7.2. Practice (50)

Assignment	Content	Hours	COs
1.	Definitions and functions of transportation engineering	6	CO1; CO2
2.	Determining structures of transport system	6	CO1; CO2
3.	Principles and criteria of planing, design, construction and assessment	6	CO1; CO2; CO3
4.	Determining methods for design of transportation engineering	6	CO1; CO2; CO3; CO4; CO5; CO6
5.	Ananlysis of transportation engineering orientation	6	CO1; CO2; CO3; CO4; CO5; CO6

8. Teaching method:

- Lecture associated with slideshow, discussion and sample observation in class.
- Discussion with lecturer.
- Group discussion.

9. Duties of student:

Students have to do the following duties:

- Attend at least 80% of theory hours.
- Attend mid-term examination of the subject.

- Finish the course assignment.
- Attend final examination of the subject.
- Perform actively self-study hours.

10. Assessment of student learning outcomes:

10.1. Assessment

No.	Point components	Rules and Requirement	Weights	COs
1.	Point of overall attendance	-Attend at least 80% of theory hours - Attendance hours / theory hours	10%	CO5;CO6
2.	Point of group assignments	- All chapter assignments /(3 – 5 students /group)	15%	CO1 to CO6
3.	Point of mid-term examination	- Writing test (60 minutes) - Attend at least 80% of theory hours up to exam day. - Compulsory attendance exam	25%	CO1 to CO3
4.	Point of final examination	- Writing test (90 minutes) - Attend at least 80% of theory hours. - Compulsory attendance exam	50%	CO1 to CO6

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

11. Materials:

Thông tin về tài liệu	Số đăng ký cá biệt
1. Tiêu chuẩn thiết kế cầu TCVN 11823 2017 – Bộ GTVT, 2017.	
2. Tiêu chuẩn kỹ thuật công trình giao thông (2015). NXB Giao Thông Vận Tải	
3. Những vấn đề chung và mố trụ cầu / Nguyễn Như Khải, Nguyễn Duy Hòa, Nguyễn Minh Hùng.- 1st.- Hà Nội: Xây Dựng, 2000.- 99 tr..- 624.25/ Kh103	CN.001635, CN.001636, CN.001637
4. Reis, A., & Pedro, J. (2019). Bridge Design. Wiley.	
5. Teodorovic, D., & Janic, M. (2016). Transportation Engineering: Theory, Practice and Modeling. Butterworth-Heinemann.	
6. Wang, W., Baumann, M., & Jiang, X. (Eds.). (2020). Green, Smart and Connected Transportation Systems: Proceedings of the 9th International Conference on Green Intelligent Transportation Systems and Safety (Vol. 617). Springer Nature.	

12. Self-study Guide:

Week	Content	Theory	Practice	Students' duties

		(hours)	(hours)	
1	**Chapter 1.** Principles of transport engineering **Assignment 1** Definitions and functions of transportation engineering	6	6	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] +Solve the problems or assignments required by lecturer and prepare the content for discussionon coming class. +Summarize the core content of study.
2-6	**Chapter 2.** Structures of transportation system **Assignment 2** Determining structures of transport system	6	6	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3], [4] +Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. +Summarize the core content of study.
7-9	**Chapter 3.** Principles and criteria of planing, design, construction and assessment **Assignment 3** Principles and criteria of planing, design, construction and assessment	6	6	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] +Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. +Summarize the core content of study.
10-12	**Chapter 4.** Design methods **Assignment 4** Determining methods for design of transportation engineering	6	6	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] +Solve the problems or assignments required by lecturer and prepare the content for discussion on coming class. +Summarize the core content of study.
12-15	**Chapter 5.** Ananlysis of transportation engineering orientation **Assignment 5** Ananlysis of transportation engineering orientation	6	6	- Previous study: [1], [2], [3] - After hours of theory, group study (group of 3 to 5 students): [1], [2], [3] +Solve the problems or assignments required by lecturer and prepare the content for discussionon coming class. +Summarize the core content of study.

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ON BEHALF OF RECTOR
DEAN OF COLLEGE/SCHOOL
(or DIRECTOR OF INSTITUTE)

HEAD OF DEPARTMENT

Nguyễn Chí Ngôn

Đặng Thế Gia

MINISTRY OF EDUCATION & TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

COURSE OUTLINE DETAILS

1. **Course: Foundation Engineering for Soft Soils (Công trình trên đất yếu)**
   - **Code number:** KC249H
   - **Credits:** 03
   - **Hours:** 35 theory hours, 20 practice hours.
2. **Management Unit:**
   - **Department:** Civil Engineering
   - **Faculty:** College of Engineering Technology
3. **Requisites:**
   - **Prerequisites:** KC175H
   - **Corequisites:** No
4. **Course objectives:**

Objectives	Descriptions	Program Outcomes
4.1	• Knowledge about the properties of soft soil, the distribution of soft soil in Vietnam and around the world; • Knowledge about foundation methods on soft ground; • Knowledge about foundation design dealing with soft soil conditions.	2.1.3a, b, c;
4.2	• Skills of analyzing and assessing soft soils and applying knowledge to solve practical problems in handling soft soil foundation; • Communication skills, academic exchange and teamwork.	2.2.2a, b;
4.3	• Awareness, responsibility and professional ethics.	2.3

5. **Course learning outcomes**

COs	Descriptions	Objectives	POs
	Knowledge		
CO1	• Identifing and analyzing basic properties of soft soil.	4.1	2.1.3a,

			b, c;
CO2	• Presenting foundation methods on soft ground.	4.1	2.1.3a, b, c;
CO3	• Presenting procedures of foundation design on soft ground for constructions of civil, industrial, transport and irrigation engineering.	4.1	2.1.3a, b, c;
	Skill		
CO4	• Presenting, working in group to discuss and solve issues related to constructions on soft ground.	4.2	2.2.2a, b;
CO5	• Analyzing and evaluating design options according to different construction techniques.	4.4	2.2.2a, b;
	Attitudes/Autonomy/Responsibilities		
CO6	• A sense of responsibility, good professional ethics.	4.3	2.3

6. **Brief description of the course:**

The course Foundation Engineering for Soft Soils is a specialized module in the training program of civil engineering (civil, transportation and hydraulics engineering) to provide students with knowledge about soft soils, strengthening soft soils and calculating and designing foundations on soft soils.

7. **Course structure:**

7.1. Theory

Heading	Content	Hours	CĐR HP
Chapter 1.	**Concepts of soft soils**	**6**	CO1; CO4; CO6
1.1.	Introduction and basic properties of soft soils	3	
1.2.	Soft soils in the Mekong Delta, Red River Delta and some parts of the world..	3	
Chapter 2.	**Soil investigation and testing methods for soft soils**	**7**	CO1; CO4; CO6
2.1.	Soil investigation	1	
2.2.	Testing methods for soft soils	3	
2.3.	Some in-situ testing methods in soft soils	3	
Chapter 3.	**Ground improvement in soft soils**	**10**	CO1; CO2; CO4; CO6
3.1.	Sand cushion	2	
3.2.	Counterweight berm	2	
3.3.	Geotextile	2	
3.4.	Wick drain	2	
3.5.	Vacuum consolidation method	2	
Chapter 4.	**Foundation on soft soils**	**12**	CO1; CO2; CO3; CO4; CO5; CO6
4.1.	Bored piles	3	
4.2.	Concrete piles	3	
4.3.	Wooden piles	2	

4.4.	Sand compaction piles and stone columns	2	
4.5.	Soil-cement column	2	

7.2. Practice

Content	Hours	CĐR HP
Thematic report is presented as follows: • Looking for foundation failures related to soft ground • Presentating and evaluating geological data of constructions in the Mekong Delta. • Analyzing, evaluating and designing plans based on the geological data. • Comparing the results with the desgined foundation of construction. • Giving conclusions and recommendations	**20**	CO1; CO2; CO3; CO4; CO5; CO6

8. **Teaching methods:**

Students are required to read the required documents, complete assignments from the previous lesson and discuss in class. The lesson will be a combination of lectures, group exercises and discussion questions.

9. **Duties of student:**

Students must perform the following tasks::

- Attendance at least 70% of theoretical lessons.
- Completing individual/group assignments.
- Attendance at the final exam.
- Organizing the implement of self-study hours actively and effectively

10. **Assessment of course learning outcomes:**

10.1. Assessment

No.	Point components	Rules and Requirements	Weights	COs
1	Personal exercise scores	• Students have to complete and submit their assignments to lecture on time.	15%	CO1; CO2; CO3; CO5; CO6
2	Group exercise scores	• The workload of the group must be planned and assigned to each member.	15%	CO1; CO2; CO3; CO4; CO5; CO6
3	Thematic report scores	• The workload of the group must be planned and assigned to each member.	20	CO1; CO2; CO3; CO4; CO5; CO6
4	Final exam scores	• Written test (90 minutes) • Attendance at the final exam	40%	CO1; CO2; CO3; CO5; CO6

10.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Course score is the sum of all the components of the evaluation multiplied by the corresponding weight. The course score is marked on a scale of 10 and rounded to one

decimal place, then it is converted to A-B-C-D score and score on a scale of 4 under the academic regulations of the University.

11. **Learning materials:**

Learning materials information	Barcode number
1. Hoàng Văn Tân (1997). Những phương pháp xây dựng công trình trên nền đất yếu, NXB Xây Dựng.	MOL.030548 CN.013200
2. Nguyễn Văn Quảng, Nguyễn Hữu Kháng, Uông Đình Chất. (2009). Nền và Móng các công trình dân dụng và công nghiệp, NXB Xây Dựng.	
3. Nguyễn Uyên (2011). Xử lý nền đất yếu trong xây dựng. Nhà xuất bản Xây Dựng.	
4. Châu Ngọc Ẩn (2013). Nền và móng công trình, NXB Xây Dựng.	
5. Trần Quang Hộ (2013). Công trình trên nền đất yếu, NXB ĐHQG TP.HCM.	
6. Trần Quang Hộ (2013). Giải pháp nền móng cho nhà cao tầng, NXB ĐHQG TP.HCM.	
7. N. S. V. Kameswara Rao (2011). Foundation design theory and practice, John Wiley & Sons (Asia) Pte Ltd.	

12. **Self-study Guide:**

Week	Content	Theory (hours)	Practice (hours)	Student's Tasks
1-3	**Chapter 1. Concepts of soft soils** 1.1. Introduction and basic properties of soft soils 1.2. Soft soils in the Mekong Delta, Red River Delta and some parts of the world.	6	5	Students preview the chapter content
4-6	**Chương 2. Soil investigation and testing methods for soft soils** **2**.1. Soil investigation 2.2. Testing methods for soft soils 2.3. Some in-situ testing methods in soft soils	7	5	Students preview the chapter content and complete assignments
7-11	**Chương 3. Ground improvement in soft soils** 3.1. Sand cushion 3.2. Counterweight berm 3.3. Geotextile 3.4. Wick drain 3.5. Vacuum consolidation method	10	5	Students preview the chapter content and complete assignments
12-15	**Chương 4. Foundation on soft soils** 4.1. Bored piles 4.2. Concrete piles 4.3. Wooden piles 4.4. Sand compaction piles and stone columns	12	5	Group work, writing and presenting group reports.

	4.5. Soil-cement column			

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