HO CHI MINH CITY OPEN UNIVERSITY
FACULTY OF CIVIL ENGINEERING

SYLLABUS

I. General Information

1. Course tittle in Vietnamese: Cấp thoát nước công trình DD&CN (CENG5205)

2. Course tittle: Water Supply and Drainage for buildings

3. Knowledge/Skill block:

☐ General Knowledge ☒ Specialized Knowledge

☐ Fundamental knowledge ☐ Supplementary Knowledge

☐ Course project / Graduation project

4. Number of Credits

Total	Theory	Practice	Self-study
2 (1,1,3)	1	1	3

5. Responsible for the course

a. Faculty: Faculty of Civil Engineering
b. Lecturer: Ph.D. Bui Anh Kiet
c. Email: kiet.ba@ou.edu.vn
d. Work place: Room.705, Faculty of Civil Engineering, Ho Chi Minh City Open University; Address: 35-37 Ho Hao Hon St, Co Giang Ward, District 1, Ho Chi Minh City

II. Course Information

1. Course Description

Water supply and Drainage for buildings is a specialized course, supplying knowledge relating to water supply network, water drainage network, and water supply and drainage for civil and industrial buildings.

The content of water supply mentions knowledge, such as: basic concept of water supply system, hydraulic calculation of a water supply network for residential areas, and hydraulic calculation for a water supply system of civil and industrial buildings/construction sites.

The content of water drainage mentions knowledge, such as: water drainage network of a residential areas, water drainage system (waste water drainage and rainwater drainage) of civil and industrial buildings.

2. Course Conditions

No.	Course Conditions	Course Code
1.	Pre-requisites subject	
	None	
2.	Prior-subject	
	Fluid mechanics	CENG1303
3.	Parallel subject	

No.	Course Conditions	Course Code
	None	

3. Course objectives

After finishing the couse, students should be able to:

Course Objectives	Description	Programme learning Outcomes (PLOs) compactible to the course
CO	*Knowledge:* - Understand and apply the fundamental knowledge, such as: functions of hydraulic works in water supply systems, drainage systems. - Hydraulic calculation of water supply networks and drainage networks for residential areas. - Design and calculate water supply and drainage systems for civil and industrial building.	PLO7
CO	*Skill:* - Calculate water supply networks for residential areas, medium industrial zones, and construction site. - Calculate drainage networks (rain water drainage, waste water drainage) for residential areas, medium industrial zones, and construction sites. - Calculate and design water supply systems for civil and industrial buildings. - Calculate and design water drainage systems for civil and industrial buildings	PLO10.1
CO	*Attitude:* Achieve carefulness and accuracy in calculating problems of water supply and water drainage of residential areas/industrial zones/construction sites, and civil/industrial buildings.	PLO14.2, PLO15.3, PLO16.1, PLO16.2

4. Course Learning Outcomes (CLOs)

At the conclusion of the couse, students achieve:

Course Objectives	Course learning Outcome	Discription of CLO
CO1	CLO1.1	- Understand and apply the fundamental knowledge, such as: functions of hydraulic works in water supply systems, drainage systems.
	CLO1.2	Understand the classification and components of the drainage system; calculation method of wastewater and rainwater drainage networks.
	CLO1.3	Understand (a) the structure and diagram; (b) hydraulic design and calculation methods, (c) fire water system of inside water supply systems for civil and industrial

Course Objectives	Course learning Outcome	Discription of CLO
		buildings;
	CLO1.4	Understand (a) the classification and function of the drainage system; (b) hydraulic calculation method for wastewater drainage network and rainwater drainage network for civil and industrial buildings; Connection between the inside water drainage system of the buildings and the outside drainage network.
CO2	CLO2.1	Apply knowledge to calculate the multi-purpose water-use demand (Residential sector, industrial, firefighting, public uses (tree watering and road cleaning) of a typical residential area; calculate problems representative for truncated water supply network and circular water supply network.
	CLO2.2	Apply knowledge to calculate the water drainage network (wastewater and rainwater) for residential areas/industrial zones.
	CLO2.3	Apply knowledge to calculate water supply system for civil and industrial buildings.
	CLO2.4	Apply knowledge to calculate the water drainage network (waste water and rainwater) for civil/industrial buildings.
CO3	CLO3.1	Accurate calculation of problems of water supply and water drainage of residential areas/industrial zones/construction sites, and civil/industrial buildings.

Integrated matrix between Course learning Outcomes (CLOs) and Programme Learning Outcomes (PLOs)

CLOs	**PLO 1**	**PLO 2**	**PLO 3**	**PLO 4**	**PLO 5**	**PLO 6**	**PLO 7**	**PLO 8**	**PLO 9**	**PLO 10**	**PLO 11**	**PLO 12**	**PLO 13**	**PLO 14**	**PLO 15**	**PLO 16**
1.1							X									
1.2							X									
1.3							X									
1.4							X									
2.1											X					
2.2											X					
2.3											X					
2.4											X					
3.1														X	X	X

5. Learning Materials

a. Textbook

[1] Assoc. Prof. Nguyen Thong, (2016). Water supply and Drainage (in Vietnamese, 2016 - NXB Xay dung

[2] Ph.D. Bui Anh Kiet, Lecture Slides of Water supply and Drainage (Internal circulation)

b. Additional readings

[3] Tran Thị Mai, (2013). Water supply and Drainage for buildings– NXB Xay Dung

[4] Hoang Hue, (2011). Water supply and Drainage (in Vietnamese - NXB Xay dung.

[5] Larry W.Mays, (2000). *Water Distribution Systems Handbook***,** McGraw-Hill.

6. Course Assessment

Assessment Components	Assessment Contents	Time	CLO	Weight (%)
(1)	(2)	(3)	(4)	
A1.Formative assessment (Asignment)	A.1.1. Water supply network for typical residential sector (truncated network circular network).	After finishing Chaper 1	CLO1.1 CLO2.1 CLO3.1	7%
	A.1.2. Water drainage network for residential sector (wastewater drainage, rainwater drainage).	After finishing Chaper 2	CLO1.2 CLO2.2 CLO3.1	7%
	A.1.3. Water supply system for civil buildings.	After finishing Chaper 3	CLO1.3 CLO2.3 CLO3.1	8%
	A1.4. Water drainage system for civil buildings (wastewater drainage, rainwater drainage	After finishing Chaper 4	CLO1.4 CLO2.4 CLO3.1	8%
	Total			50%
A2. Final assessment	All contents of the course	End of semester	CLO1.1 CLO1.2 CLO2.1 CLO1.3 CLO1.4 CLO1.5 CLO2.2 CLO3.1	50%
Total				100%

7. Schedule

Week/ Session	Contents	CLOs	Activities of teaching and learning	Assessment categories	Learning Materials
(1)	(2)	(3)	(4)	(5)	(6)
Week 1	**Chapter 1: Design water supply network** 1.1. Basic concepts of water supply system 1.2. Water sources, water collecting works,	CLO1.1 CLO2.1 CLO3.1	Lecturer: - Present the theoretical content, incorporate specific examples and exercises to help		[1], [2]

Week/ Session	Contents	CLOs	Activities of teaching and learning	Assessment categories	Learning Materials
(1)	(2)	(3)	(4)	(5)	(6)
	Water treatment 1.3. Water supply network for residential sector		students analyze and calculate, thereby students easily capture the respective theoretical knowledge. - Provide assignment A.1.1 Students: + At class: listen; do exercises/example. + At home: review, read the rest of chapter 1.		
Week 2	**Chapter 1: (cont)** 1.3. Water supply network for residential sector 1.4. Water supply for construction site 1.5. Tube and equipment on water supply network.	CLO1.1 CLO2.1 CLO3.1	Lecturer: - Present the theoretical content, incorporate specific examples and exercises to help students analyze and calculate, thereby students easily capture the respective theoretical knowledge. - Help students conduct the assignment A.1.1 Students: + At class: listen; do exercises/example. + At home: review, do assignment A.1.1; read chapter 2.		[1], [2]
Week 3	**Chapter 2: Design water drainage network** 2.1. Basic concepts of water drainage system 2.2. Classification of water drainage system	CLO1.2 CLO2.2 CLO3.1	Lecturers: - Present the theoretical content, incorporate specific examples and exercises to help		[1], [2]

Week/ Session	Contents	CLOs	Activities of teaching and learning	Assessment categories	Learning Materials
(1)	(2)	(3)	(4)	(5)	(6)
	2.3. Wastewater drainage network		students analyze and calculate, thereby students easily capture the respective theoretical knowledge. - Provide assignment A.1.2 Students: + At class: listen; do exercises/example. + At home: review, read the rest of chapter 2.		
Week 4	**Chapter 2: (cont)** 2.3. Waste water drainage network. 2.4. Rainwater drainage network.	CLO1.2 CLO2.2 CLO3.1	Lecturer: - Present the theoretical content, incorporate specific examples and exercises to help students analyze and calculate, thereby students easily capture the respective theoretical knowledge. - Help students conduct the assignment A.1.2 Students: + At class: listen; do exercises/example. + At home: review, do assignment A.1.2; read chapter 3.		[1], [2]
Week 5	**Chapter 3: Water supply system for civil and industrial buildings** 3.1. Basic concepts of water supply system.	CLO1.3 CLO2.3 CLO3.1	Lecturer: - Present the theoretical content, incorporate specific examples and		[1], [2]

Week/ Session	Contents	CLOs	Activities of teaching and learning	Assessment categories	Learning Materials
(1)	(2)	(3)	(4)	(5)	(6)
	3.2. Classification of water supply system. 3.3. Diagrams of water supply system. 3.4. Calculate required water pressure for buildings.		exercises to help students analyze and calculate, thereby students easily capture the respective theoretical knowledge. - Provide assignment A.1.3 Students: + At class: listen; do exercises/example. + At home: review, read the rest of chapter 3.		
Week 6	**Chapter 3: (cont)** 3.5. Design water supply system for buildings. 3.6. Determine parameters of underground water tank, water tank on roof of building, pumb.	CLO1.3 CLO2.3 CLO3.1	Lecturer: - Present the theoretical content, incorporate specific examples and exercises to help students analyze and calculate, thereby students easily capture the respective theoretical knowledge. - Help students conduct the assignment A.1.3 Students: + At class: listen; do exercises/example. + At home: review, do assignment A.1.3; read chapter 4.		[1], [2]
Week 7	**Chapter 4: Water drainage system for civil and industrial buildings** 4.1. Function and components of water	CLO1.4 CLO2.4 CLO3.1	Lecturer: - Present the theoretical content, incorporate specific examples and		[1], [2]

Week/ Session	Contents	CLOs	Activities of teaching and learning	Assessment categories	Learning Materials
(1)	(2)	(3)	(4)	(5)	(6)
	drainage system of civil/industrial buildings. 4.2. Classification of water drainage system 4.3. Structure of water drainage system 4.4. Calculate wastewater drainage sysytem		exercises to help students analyze and calculate, thereby students easily capture the respective theoretical knowledge. - Provide assignment A.1.4 Students: + At class: listen; do exercises/example. + At home: review, read the rest of chapter 4.		
Week 8	**Chapter 4: (cont)** 4.4. Calculate wastewater drainage sysytem (cont) 4.5. Calculate rainwater drainage sysytem (cont) 4.6. Connection inside water drainage pipe and outside water drainage network.	CLO1.4 CLO2.4 CLO3.1	Lecturer: - Present the theoretical content, incorporate specific examples and exercises to help students analyze and calculate, thereby students easily capture the respective theoretical knowledge. - Help students conduct the assignment A.1.4 Students: + At class: listen; do exercises/example. + At home: review, do assignment A.1.4.		[1], [2]
Week 9	- Review chapter 1&2 - Instructions, answer questions for assigment A1.1& A1.2	CLO1.1 CLO1.2 CLO2.4 CLO3.1	Lecturer: - Review contents of chapter 1&2 - Help students conduct assignments A1.1 and A.1.2		[1], [2]

Week/ Session	Contents	CLOs	Activities of teaching and learning	Assessment categories	Learning Materials
(1)	(2)	(3)	(4)	(5)	(6)
			Students: conduct and complete assignments A.1.1 and A.1.2		
Week 10	- Review chapter 3&4 - Instructions, answer questions for assigment A1.3& A1.4	CLO1.3 CLO1.4 CLO2.4 CLO3.1	Lecturer: - Review contents of chapter 3&4 - Help students conduct assignments A1.3 and A.1.4 Students: conduct and complete assignments A.1.3 and A.1.4		[1], [2]

8. Regulations

- Attend and submit the assignments and final examination: students need to attend and submit the assignments and final examination ontime.
- Comply the general regulations in education of Ho Chi Minh City Open University.