Tamkang University Academic Year 101, 2nd Semester

Course Syllabus

<table>
<tr><td>Course Title</td><td colspan="2">Water Supply Engineering</td><td>Instructor</td><td>Chi-Wang Li</td></tr>
<tr><td>Department/Year/Class</td><td colspan="4">Course Details</td></tr>
<tr><td>Department of Water Resources and Environmental Engineering, /2012/ Division of Environmental Engineering</td><td>■Required
□Selective</td><td colspan="2">□0（One Semester）
□1（1st Semester）
■2（2nd Semester）
□3（3rd Semester）</td><td>Credits 3</td></tr>
<tr><td colspan="2">Aim of Education</td><td colspan="3">Core Competences</td></tr>
<tr><td colspan="2">1. Educating students with the fundamental knowledge of mathematics, science and engineering to enable them to succeed in the practice or academic research related to water resources and environmental engineering.
1.1 Training students with engineering basics to equip them with the capabilities of construction supervision and operation management.
1.2 Cultivating students with ability of applying engineering theory and pursuing innovation to equip them with the capabilities of researching, planning, engineering design, integration and assessment.
1.3 Training students with capacity to apply information technology in the engineering business.
2. Cultivating students to become professional engineers with care in environment and professional ethics.
2.1 Cultivating students with characters of respecting the nature and humane care.
2.2 Cultivating students with engineering ethics and law-abiding character.
2.3 Preparing students with the capabilities of exploring, analyzing, interpreting, and dealing with problems.
3. Preparing students with the capabilities of engaging in domestic and international engineering business.
3.1 Cultivating students with the capabilities of project management, presentation and communication skills, and teamwork.
3.2 Preparing students with the capabilities of applying professional foreign language and expanding their global perspective.
3.3 Cultivating students with cognitive and habits of continuous learning.</td><td colspan="3">A. Basic mathematical and engineering knowledge needed for water resources and environmental engineering applications.
B. Engineering drawings, measurement, design, construction, operation, and management capabilities.
C. Capabilities of basic programming and application of information related tools.
D. Logical thinking, analysis, integration, and problem-solving skills.
E. Innovative design and engineering implementation capacity.
F. Professional foreign language skills and global perspective.
G. Awareness of the importance of teamwork and working attitude, and with cognition of professional ethics.
H. Continuous learning of the up-to-date knowledge of professional engineering.</td></tr>
<tr><td>Course Introduction (50 to 100 words)</td><td colspan="4">In this course, following topics are discussed. Methods to predict population and quantity of water supply. Sources and characteristic of water supply. Application of pipe hydraulics in design water system. Pump and pumping station design. Introduction of distribution system. Introduction of water treatment processes.</td></tr>
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The Relevance among Teaching Objectives, Objective Levels and Core Competences

I.Objective Levels (select applicable ones)：

(I) Cognitive Domain：C1 Remembering、C2 Understanding、C3 Applying、C4 Analyzing、C5 Evaluating、C6 Creating

(II) Psychomotor Domain：P1 Imitation、P2 Mechanism、P3 Independent Operation、P4 Linked Operation、P5 Automation、P6 Origination

(III) Affective Domain：A1 Receiving、A2 Responding、A3 Valuing、A4 Organizing、A5 Charaterizing、A6 Implementing

II.The Relevance among Teaching Objectives, Objective Levels and Core Competences：

(I)Determine the objective level(s) in any one of the three learning domains (cognitive, psychomotor, and affective) corresponding to the teaching objectives. Each objective should correspond to the objective level(s) of ONLY ONE of the three domains.

(II)If more than one objective levels are applicable for each learning domain, select the highest one only. (For example, if the objective levels for Cognitive Domain include C3, C5, and C6, select C6 only and fill it in the boxes below. The same rule applies to Psychomotor Domain and Affective Domain.)

(III)Determine the core competences that correspond to each teaching objective. Each objective may correspond to one or more core competences at a time. (For example, if one objective corresponds to three core competences: A, AD, and BEF, list all of the three in the box.)

Teaching objectives	**Relevance**	
	Objective Levels	**Core Competences**
1 Methods for predication of population and quantity of water	C4	AB
2 Characteristics of the sources of water supply and quality of drinking Water	C4	D
3 Application of pipe and open channel hydraulics in designing water system	C3	ABD
4 Understand the basic of pump and pumping design	C4	AB
5 Analysis of water distribution system	C4	ABD
6 Introduction of water treatment processes	C4	ABDH

Teaching Objectives, Teaching Methods and Assessment

Teaching Objectives	Teaching Methods	Assessment
2 Methods for predication of population and quantity of water	Lecture	Written Examination
2 Characteristics of the sources of water supply and quality of drinking Water	Lecture	Written Examination
3 Application of pipe and open channel hydraulics in designing water system	Lecture	Written Examination
4 Understand the basic of pump and pumping design	Lecture	Written Examination

5 Analysis of water distribution system	Lecture	Written Examination
6 Introduction of water treatment processes	Lecture	Written Examination
7		
8		

This course has been designed to cultivate the following essential qualities in TKU students.

Essential Qualities of TKU Students	Description
□global perspectives	翻譯建構中
□a vision for the future	
□information literacy	
□ethical and moral principles	
□independent thinking	
□an awareness of healthy living	
□effective teamwork	
□an appreciation of the arts	

Course Schedule

Week	Date	Subject/Topics	Note
1		Introduction of water supply Engineering; Water Quantity	
2		Characteristics of Water supply	
3		Reviews of Hydraulic in pipes and open channel	
4		Water sources	
5		Pump and Pumping station (Types of pump; Head and capacity; NPSH; Power and efficiency)	1st exam
6		Pump and Pumping station (Types of pump; Head and capacity; NPSH; Power and efficiency)	
7		Distribution system (pressure calculation)	
8		Distribution system (pressure calculation)	
9		Primary treatment process	
10		Midterm Exam Week	
11		Coagulation	
12		Sedimentation	
13		Sedimentation	
14		Filtration	2nd exam
15		Adsorption	
16		disinfection	
17		Advanced water treatment process	
18		Final Exam Week	

Requirement	1. There will be homework assignments, dozen short quizzes (during regular lecture hours), two exams (during regular lecture hours), a mid-term exam and a final exam. Missed homework, quiz, or exam counts as a zero. Exams can cover any material from the lectures and the assignments. There are no make-up exams. 2. All quizzes, homework, and exam papers should be answered in English.
Teaching Facility	■Computer □Overhead Projector □Other（_____）
Textbook(s)	Reynolds and Richards, Unit operations and processes in Environmental Engineering, 2nd edition
Suggested Readings	1. McGhee, Water supply and sewerage, 6th edition 2. Twort, A.C., Ratnayaka, D.D., and Brandt, M.J., Water Supply, 5th edition 3. Hammer and Hammer, Water and wastewater technology, 7th edition. (高立)
Number of Assignment(s)	There will be around ten homework assignments.
Grading Policy	1. Short Quizzes：20 ％ 2. Homework： 20％ 3. Four exams (two during regular lecture hours, a mid-term, and a final exam)：60 ％
Note	This syllabus may be uploaded at the website of Course Syllabus Management System at **http://info.ais.tku.edu.tw/csp** or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/index.asp. **※Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**

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