

Tamkang University Academic Year 111, 1st Semester Course Syllabus

Course Title	WATER-RESOURCES ENGINEERING(I)	Instructor	CHEN, YI-RU
Course Class	TEWAB3A DIVISION OF WATER RESOURCES ENGINEERING, DEPARTMENT OF WATER RESOURCES AND ENVIRONMENTAL ENGINEERING, 3A	Details	<ul style="list-style-type: none"> ◆ Blended Course ◆ Required ◆ One Semester ◆ 3 Credits
Relevance to SDGs	SDG4 Quality education SDG6 Clean water and sanitation SDG11 Sustainable cities and communities SDG13 Climate action		
Departmental Aim of Education			
<p>I. 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.</p> <ol style="list-style-type: none"> 1. Training students with engineering basics to equip them with the capabilities of construction supervision and operation management. 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. 3. Training students with capacity to apply information technology in the engineering business. <p>II. Cultivating students to become professional engineers with care in environment and professional ethics.</p> <ol style="list-style-type: none"> 1. Cultivating students with characters of respecting the nature and humane care. 2. Cultivating students with engineering ethics and law-abiding character. 3. Preparing students with the capabilities of exploring, analyzing, interpreting, and dealing with problems. <p>III. Preparing students with the capabilities of engaging in domestic and international engineering business.</p> <ol style="list-style-type: none"> 1. Cultivating students with the capabilities of project management, presentation and communication skills, and teamwork. 2. Preparing students with the capabilities of applying professional foreign language and expanding their global perspective. 3. Cultivating students with cognitive and habits of continuous learning. 			
Subject Departmental core competences			
<ol style="list-style-type: none"> A. Basic mathematical and engineering knowledge needed for water resources and environmental engineering applications.(ratio:20.00) B. Capabilities of Engineering drawings, measurement, design, construction, and application of information related tools.(ratio:20.00) 			

- C. Capabilities of logical thinking, analysis, integration, problem-solving skills, innovative design and engineering implementation.(ratio:20.00)
- D. Continuous learning of the up-to-date knowledge of professional engineering, professional foreign language skills and global perspective.(ratio:20.00)
- E. Awareness of the importance of teamwork and working attitude, and with cognition of professional ethics.(ratio:20.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:20.00)
2. Information literacy. (ratio:10.00)
3. A vision for the future. (ratio:10.00)
4. Moral integrity. (ratio:10.00)
5. Independent thinking. (ratio:20.00)
6. A cheerful attitude and healthy lifestyle. (ratio:5.00)
7. A spirit of teamwork and dedication. (ratio:20.00)
8. A sense of aesthetic appreciation. (ratio:5.00)

Course Introduction

This course introduces the application of water resources management. Topics discussed include hydrological cycle, hydrograph analysis, pressurized pipe flow, open-channel flow, storm runoff, concepts of flood estimation, unit hydrographs concepts, wetland, integrated water management, integrated watershed management and integrated water resources management.

The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.

Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.

- I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of the course's veracity, conception, procedures, outcomes, etc.
- II.Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal, morals, attitude, conviction, values, etc.
- III.Psychomotor: Emphasis upon the study of the course's physical activity and technical manipulation.

No.

Teaching Objectives

objective methods

1	This course offers the fundamental knowledge required for a water resources engineer and aims to train students to (1) understand water resources management concepts and how human activities affect hydrologic processes; (2) have an ability to explain the challenges of water availability and water quality improvement; (3) have an ability to consider a range of methods for solving water resources problems.	Cognitive
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The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCDE	12345678	Lecture, Discussion, Publication	Testing, Discussion(including classroom and online), Report(including oral and written)

Course Schedule

Note for Blended Course : When utilizing weekly digital instruction, please fill in "Online Asynchronous Instruction".

Week	Date	Course Contents	Note
1	111/09/05 ~ 111/09/11	Introduction to the course and class rules	
2	111/09/12 ~ 111/09/18	Quiz 1 and Water Resources Sustainability	
3	111/09/19 ~ 111/09/25	Water Resources Sustainability	
4	111/09/26 ~ 111/10/02	Wetlands; humans and ecosystems within a watershed	
5	111/10/03 ~ 111/10/09	Flow and Hydro-static Forces	
6	111/10/10 ~ 111/10/16	Pressurized pipe flow	
7	111/10/17 ~ 111/10/23	Open-channel flow	
8	111/10/24 ~ 111/10/30	Quiz 2; Hydrologic Processes	
9	111/10/31 ~ 111/11/06	Surface Runoff	
10	111/11/07 ~ 111/11/13	Midterm Exam Week	
11	111/11/14 ~ 111/11/20	Stormwater Control	
12	111/11/21 ~ 111/11/27	Flood Control	Online Asynchronous Instruction
13	111/11/28 ~ 111/12/04	IWM (integrated water management)	Online Asynchronous Instruction
14	111/12/05 ~ 111/12/11	Quiz 3; Watershed management examples	

15	111/12/12 ~ 111/12/18	Watershed management - Group presentations	Online Asynchronous Instruction
16	111/12/19 ~ 111/12/25	Watershed management - Group presentations	Online Asynchronous Instruction
17	111/12/26 ~ 112/01/01	Watershed management - Group presentations	
18	112/01/02 ~ 112/01/08	Final Exam Week	
Requirement	This course is taught in English.		
Teaching Facility	(None)		
Textbooks and Teaching Materials	Water Resources Engineering by Larry Mays		
References			
Number of Assignment(s)	(Filled in by assignment instructor only)		
Grading Policy	◆ Attendance : % ◆ Mark of Usual : 60.0 % ◆ Midterm Exam : 30.0 % ◆ Final Exam : 10.0 % ◆ Other < > : %		
Note	<ol style="list-style-type: none"> 1. This syllabus may be uploaded at the website of the Course Syllabus Management System at https://info.ais.tku.edu.tw/csp or through the link of the Course Syllabus Upload posted on the home page of the TKU Office of Academic Affairs http://www.acad.tku.edu.tw/CS/main.php 2. According to the Implementation regulations of distance education for junior college and above are prescribed pursuant to Article 2, "The distance learning course referred to in these Measures refers to more than one-half of the teaching hours in each subject." 3. According to the regulations of Tamkang University Enforcement Rules for digital teaching, Paragraph 2 and Article 3, the distance learning course of our school must be "The course of digital teaching with distance learning platform or synchronous video system in our school. Teaching Hours include course lectures, teacher-student interaction discussions, quizzes and other learning activities." 4. If there are any temporary course changes (including time changes and classroom changes of distance learning courses, blended courses), please make out an application according to regulations to the Office of Academic Affairs. <p>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</p>		