

Tamkang University Academic Year 112, 2nd Semester Course Syllabus

Course Title	WATER-RESOURCES ENGINEERING(I)	Instructor	WANG, SHENG-WEI
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	<p>SDG4 Quality education</p> <p>SDG6 Clean water and sanitation</p>		
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 planning, design, and information applications.(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 is designed to provide students with a comprehensive understanding of the principles, practices, and challenges related to the sustainable management and utilization of water resources. This course will explore a wide range of topics, from the fundamental principles of fluid mechanics to advanced techniques in hydrological modeling and water infrastructure design.

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
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1	Develop a solid understanding of the fundamental principles of water resources engineering, including fluid mechanics, hydrology, hydraulics, and water quality.	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	Testing, Study Assignments

Course Schedule

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

Week	Date	Course Contents	Note
1	113/02/19 ~ 113/02/25	Introduction to Water Resources Engineering	
2	113/02/26 ~ 113/03/03	Quantitative hydrology (I)	
3	113/03/04 ~ 113/03/10	Quantitative hydrology (II)	
4	113/03/11 ~ 113/03/17	Groundwater	
5	113/03/18 ~ 113/03/24	Probability concepts in planning	
6	113/03/25 ~ 113/03/31	Reservoirs	
7	113/04/01 ~ 113/04/07	Dams	
8	113/04/08 ~ 113/04/14	Open channels	
9	113/04/15 ~ 113/04/21	Midterm Exam Week	
10	113/04/22 ~ 113/04/28	Pressure conduits	Online Asynchronous Instruction
11	113/04/29 ~ 113/05/05	Engineering economy in water resources planning	
12	113/05/06 ~ 113/05/12	Irrigation	
13	113/05/13 ~ 113/05/19	Water-supply systems	
14	113/05/20 ~ 113/05/26	Sewerage and wastewater treatment	
15	113/05/27 ~ 113/06/02	Flood-damage mitigation (I)	Online Asynchronous Instruction
16	113/06/03 ~ 113/06/09	Flood-damage mitigation (II)	
17	113/06/10 ~ 113/06/16	Final Exam Week (Date:113/6/11-113/6/17)	
18	113/06/17 ~ 113/06/23	Flex week, learning activities should be arranged.	

Key capabilities	self-directed learning Problem solving
Interdisciplinary	Competency-based education 'competency exploration' sustained competency or global issues STEEP (Society, Technology, Economy, Environment, and Politics)
Distinctive teaching	Special/Problem-Based(PBL) Courses
Course Content	Environmental Safety Sustainability issue
Requirement	
Textbooks and Teaching Materials	Self-made teaching materials:Presentations Using teaching materials from other writers:Presentations
References	Linsley, R.K., et al. (1992) Water Resources Engineering. 4th Edition, McGraw-Hill Publishing Co., London.
Grading Policy	◆ Attendance : 10.0 % ◆ Mark of Usual : 30.0 % ◆ Midterm Exam : 30.0 % ◆ Final Exam : 30.0 % ◆ Other () : %
Note	<p>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</p> <p>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."</p> <p>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."</p> <p>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> <p>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</p>