

Tamkang University Academic Year 112, 1st Semester Course Syllabus

Course Title	WATERSHED ECOLOGY AND THE ENVIRONMENT	Instructor	TA-KEN HUANG
Course Class	TEWAB1A DIVISION OF WATER RESOURCES ENGINEERING, DEPARTMENT OF WATER RESOURCES AND ENVIRONMENTAL ENGINEERING, 1A	Details	<ul style="list-style-type: none"> ◆ General Course ◆ Required ◆ One Semester
Relevance to SDGs	SDG6 Clean water and sanitation SDG13 Climate action SDG14 Life below water SDG15 Life on land		
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:15.00)
2. Information literacy. (ratio:15.00)
3. A vision for the future. (ratio:15.00)
4. Moral integrity. (ratio:10.00)
5. Independent thinking. (ratio:15.00)
6. A cheerful attitude and healthy lifestyle. (ratio:10.00)
7. A spirit of teamwork and dedication. (ratio:10.00)
8. A sense of aesthetic appreciation. (ratio:10.00)

Course Introduction

以系統化的方式介紹水與環境和生態的交互作用，使工程科系學生具備分析上述三者互動之能力。

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	教育學生應用數學、科學及工程的原理，使其能成功的從事水資源及環境工程相關實務或學術研究。			Cognitive
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, Discussion(including classroom and online), Report(including oral and written)
Course Schedule				
Week	Date	Course Contents	Note	
1	112/09/11 ~ 112/09/17	Introduction to Ecology		
2	112/09/18 ~ 112/09/24	Life in Water		
3	112/09/25 ~ 112/10/01	Temperature Relations		
4	112/10/02 ~ 112/10/08	Water Relations		
5	112/10/09 ~ 112/10/15	Energy and Nutrient Relations		
6	112/10/16 ~ 112/10/22	Guest Lecture		
7	112/10/23 ~ 112/10/29	Population Distribution and Abundance		
8	112/10/30 ~ 112/11/05	Population Dynamics		
9	112/11/06 ~ 112/11/12	Midterm Exam Week		
10	112/11/13 ~ 112/11/19	Population Growth		
11	112/11/20 ~ 112/11/26	Competition		
12	112/11/27 ~ 112/12/03	Species Abundance and Diversity		
13	112/12/04 ~ 112/12/10	Species Interactions and Community Structure		
14	112/12/11 ~ 112/12/17	Primary Production and Energy Flow		
15	112/12/18 ~ 112/12/24	Landscape Ecology		
16	112/12/25 ~ 112/12/31	Geographic Ecology		
17	113/01/01 ~ 113/01/07	Final Exam Week		
18	113/01/08 ~ 113/01/14	Flex week, learning activities should be arranged.		

Key capabilities	
Interdisciplinary	
Distinctive teaching	
Course Content	Environmental Safety
Requirement	
Textbooks and Teaching Materials	Using teaching materials from other writers:Textbooks Name of teaching materials: Molles, M. (2018). Ecology: concepts and applications. McGraw-Hill Education.
References	Dodds, W. (2002). Freshwater ecology: concepts and environmental applications. Elsevier.
Grading Policy	◆ Attendance : 10.0 % ◆ Mark of Usual : 40.0 % ◆ Midterm Exam : 25.0 % ◆ Final Exam : 25.0 % ◆ Other () : %
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/CS/main.php . ※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.