

## Tamkang University Academic Year 109, 2nd Semester Course Syllabus

Course Title	UNIT OPERATION AND LABORATORY FOR ENVIRONMENTAL ENGINEERING	Instructor	YA VINH
Course Class	TEWBB4A DIVISION OF ENVIRONMENTAL ENGINEERING, DEPARTMENT OF WATER RESOURCES AND ENVIRONMENTAL ENGINEERING, 4A	Details	<ul style="list-style-type: none"> <li>◆ General Course</li> <li>◆ Selective</li> <li>◆ One Semester</li> </ul>
Relevance to SDGs	<p>SDG3 Good health and well-being for people</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"> <li>1. Training students with engineering basics to equip them with the capabilities of construction supervision and operation management.</li> <li>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.</li> <li>3. Training students with capacity to apply information technology in the engineering business.</li> </ol> <p>II. Cultivating students to become professional engineers with care in environment and professional ethics.</p> <ol style="list-style-type: none"> <li>1. Cultivating students with characters of respecting the nature and humane care.</li> <li>2. Cultivating students with engineering ethics and law-abiding character.</li> <li>3. Preparing students with the capabilities of exploring, analyzing, interpreting, and dealing with problems.</li> </ol> <p>III. Preparing students with the capabilities of engaging in domestic and international engineering business.</p> <ol style="list-style-type: none"> <li>1. Cultivating students with the capabilities of project management, presentation and communication skills, and teamwork.</li> <li>2. Preparing students with the capabilities of applying professional foreign language and expanding their global perspective.</li> <li>3. Cultivating students with cognitive and habits of continuous learning.</li> </ol>			
Subject Departmental core competences			
<p>B. Capabilities of Engineering drawings, measurement, design, construction, and application of information related tools.(ratio:40.00)</p> <p>C. Capabilities of logical thinking, analysis, integration, problem-solving skills, innovative design and engineering implementation.(ratio:30.00)</p>			

E. Awareness of the importance of teamwork and working attitude, and with cognition of professional ethics.(ratio:30.00)				
Subject Schoolwide essential virtues				
5. Independent thinking. (ratio:50.00)				
7. A spirit of teamwork and dedication. (ratio:50.00)				
Course Introduction	<p>1. 介紹反應槽設計、混凝、沈澱、過濾、離子交換、吸附、薄膜及消毒等環工處理單元之原理及設計要點</p> <p>2. 藉由實習及實作，讓學生熟悉單元操作</p> <p>1. Theory of environmental unit operation processes such as reactor design, sedimentation, coagulation, filtration, ionic exchange, adsorption, membrane, and disinfection processes are introduced in this course.</p> <p>2. Students are familiar with the unit operations through practice and implementation.</p>			
<b>The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.</b>				
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	Understand the theory of environmental operation processes, and apply the knowledge to design and operate environmental operation processes.			Psychomotor
The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment				
No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	BCE	57	Lecture, Experience	Testing, Practicum, Report(including oral and written)
Course Schedule				
Week	Date	Course Contents		Note

1	110/02/22 ~ 110/02/28	Reactor Design	
2	110/03/01 ~ 110/03/07	Reactor Design	
3	110/03/08 ~ 110/03/14	Coagulation and flocculation	
4	110/03/15 ~ 110/03/21	Coagulation and flocculation	
5	110/03/22 ~ 110/03/28	Sedimentation	
6	110/03/29 ~ 110/04/04	Sedimentation	
7	110/04/05 ~ 110/04/11	Filtration	
8	110/04/12 ~ 110/04/18	Filtration	
9	110/04/19 ~ 110/04/25	Ion exchange	
10	110/04/26 ~ 110/05/02	Midterm Exam Week	
11	110/05/03 ~ 110/05/09	Ion exchange	
12	110/05/10 ~ 110/05/16	Field trip	
13	110/05/17 ~ 110/05/23	Adsorption	
14	110/05/24 ~ 110/05/30	Adsorption	
15	110/05/31 ~ 110/06/06	Graduate Exam Week	
16	110/06/07 ~ 110/06/13	---	
17	110/06/14 ~ 110/06/20	---	
18	110/06/21 ~ 110/06/27	---	
Requirement			
Teaching Facility		Computer, Projector, Other (Experiment equipment)	
Textbooks and Teaching Materials			
References			

Number of Assignment(s)	(Filled in by assignment instructor only)
Grading Policy	<p>◆ Attendance : 10.0 %    ◆ Mark of Usual : 40.0 %    ◆ Midterm Exam : %</p> <p>◆ Final Exam : %</p> <p>◆ Other (operation and report) : 50.0 %</p>
Note	<p>This syllabus may be uploaded at the website of Course Syllabus Management System at <a href="http://info.ais.tku.edu.tw/csp">http://info.ais.tku.edu.tw/csp</a> or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at <a href="http://www.acad.tku.edu.tw/CS/main.php">http://www.acad.tku.edu.tw/CS/main.php</a>.</p> <p><b>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</b></p>