

Tamkang University Academic Year 108, 1st Semester Course Syllabus

Course Title	PHYSICAL AND CHEMICAL TREATMENT PROCESSES	Instructor	CHING-YU PENG
Course Class	TEWXM1A MASTER'S PROGRAM, DEPARTMENT OF WATER RESOURCES AND ENVIRONMENTAL ENGINEERING, 1A	Details	<ul style="list-style-type: none"> ◆ General Course ◆ Selective ◆ One Semester
<p>Departmental Aim of Education</p> <p>I. Cultivating students with capabilities of carrying out practical works or academic research related to water resources and environmental engineering.</p> <p>II. Cultivating students with capability of solving problems through researching, planning, and management.</p> <p>III. Cultivating students to become professional engineers with care in environment and professional ethics.</p> <p>IV. Preparing students with the capabilities of engaging in international engineering business, to adapt to globalization and social needs, and to expand their global perspectives.</p>			
<p>Subject Departmental core competences</p> <p>C. Logical thinking, analysis, integration, problem-solving skills, engineering planning, design and implementation ability.(ratio:70.00)</p> <p>E. Capabilities of writing and presenting research report.(ratio:30.00)</p>			
<p>Subject Schoolwide essential virtues</p> <p>2. Information literacy. (ratio:30.00)</p> <p>4. Moral integrity. (ratio:70.00)</p>			
Course Introduction	<p>Through journal papers reading, understand and learn how to apply up-to-date environmental physical and chemical treatment processes for contaminants removal.</p>		

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	1. Understand the theory and mechanisms governing physical and chemical treatment processes	Cognitive
2	Understand and apply the theory underlying each process	Cognitive

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	C	2	Lecture	Testing
2	CE	24	Discussion	Report(including oral and written)

Course Schedule

Week	Date	Course Contents	Note
1	108/09/09 ~ 108/09/15	Introduction to physical-chemical treatment processes	
2	108/09/16 ~ 108/09/22	Ion Exchange (I)	
3	108/09/23 ~ 108/09/29	Ion Exchange (II)	
4	108/09/30 ~ 108/10/06	Ion Exchange (III)	
5	108/10/07 ~ 108/10/13	Granular Filtration (I)	
6	108/10/14 ~ 108/10/20	Granular Filtration (II)	
7	108/10/21 ~ 108/10/27	Granular Filtration (III)	
8	108/10/28 ~ 108/11/03	Secondary treatment (I)	
9	108/11/04 ~ 108/11/10	Secondary treatment (II)	
10	108/11/11 ~ 108/11/17	Midterm Exam	

11	108/11/18 ~ 108/11/24	Secondary Treatment (III)	
12	108/11/25 ~ 108/12/01	Carbon Adsorption (I)	
13	108/12/02 ~ 108/12/08	Carbon Adsorption (II)	
14	108/12/09 ~ 108/12/15	Carbon Adsorption (III)	
15	108/12/16 ~ 108/12/22	Removal of selected constituents (I)	
16	108/12/23 ~ 108/12/29	Removal of selected constituents (II)	
17	108/12/30 ~ 109/01/05	Removal of selected constituents (III)	
18	109/01/06 ~ 109/01/12	Final Exam	
Requirement	1. There will be paper presentation, and journal review. Missed paper presentation or journal review counts as a zero.		
Teaching Facility	Computer, Projector		
Textbooks and Teaching Materials	Water and Wastewater Engineering: Design Principles & Practice, Davis, 2011		
References	Selected papers Water Treatment Principles and Design, 2nd ed. by Montgomery Watson Harza		
Number of Assignment(s)	2 (Filled in by assignment instructor only)		
Grading Policy	◆ Attendance : 10.0 % ◆ Mark of Usual : % ◆ Midterm Exam : 20.0 % ◆ Final Exam : 20.0 % ◆ Other (Oral Presentation) : 50.0 %		
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.		