

Tamkang University Academic Year 112, 2nd Semester Course Syllabus

Course Title	POLLUTION PREVENTION	Instructor	GAU SUE-HUAI
Course Class	TEWXD1A DOCTORAL PROGRAM, DEPARTMENT OF WATER RESOURCES AND ENVIRONMENTAL ENGINEERING, 1A	Details	<ul style="list-style-type: none"> ◆ General Course ◆ Selective ◆ One Semester
Relevance to SDGs	SDG11 Sustainable cities and communities SDG13 Climate action		
D e p a r t m e n t a l A i m o f E d u c a t i o n			
<ul style="list-style-type: none"> I . Cultivating students with capabilities of carrying out practical works or academic research related to water resources and environmental engineering. II. Cultivating students with capability of solving problems through researching, planning, and management. III. Cultivating students to become professional engineers with care in environment and professional ethics. 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. 			
Subject Departmental core competences			
<ul style="list-style-type: none"> A. Mathematical and engineering knowledge needed for water resources and environmental engineering applications.(ratio:10.00) B. Capabilities of planning and conducting experiments, analyzing and explaining experimental data, applying information tool, and collecting and compiling data. (ratio:10.00) C. Logical thinking, analysis, integration, problem-solving skills, engineering planning, design and implementation ability.(ratio:20.00) D. Skill of using professional foreign language and global perspective.(ratio:30.00) E. Capabilities of writing and presenting research report.(ratio:25.00) F. Awareness of the importance of teamwork, working attitude and professional ethics, and to learn continuously.(ratio:5.00) 			
Subject Schoolwide essential virtues			
<ul style="list-style-type: none"> 1. A global perspective. (ratio:25.00) 2. Information literacy. (ratio:5.00) 3. A vision for the future. (ratio:25.00) 			

4. Moral integrity. (ratio:5.00)
5. Independent thinking. (ratio:10.00)
6. A cheerful attitude and healthy lifestyle. (ratio:20.00)
7. A spirit of teamwork and dedication. (ratio:5.00)
8. A sense of aesthetic appreciation. (ratio:5.00)

Course Introduction

The cognition of the policies, engineering, and researches of pollution prevention, exploring the future development.

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	The cognition of the policies, engineering, and researches of pollution prevention.	Cognitive
2	exploring the future development.	Affective

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	CDE	136	Lecture, Discussion	Testing, Report(including oral and written)
2	ABF	24578	Lecture, Discussion	Testing, Report(including oral and written)

Course Schedule

Week	Date	Course Contents	Note

1	113/02/19 ~ 113/02/25	Introduction	2/21
2	113/02/26 ~ 113/03/03	Public Holiday	2/28
3	113/03/04 ~ 113/03/10	Environmental Concerns	3/6
4	113/03/11 ~ 113/03/17	Sustainable Development	3/13
5	113/03/18 ~ 113/03/24	FCCC	3/20
6	113/03/25 ~ 113/03/31	ISO 14000	3/27
7	113/04/01 ~ 113/04/07	Spring vacation	4/3
8	113/04/08 ~ 113/04/14	Life Cycle Assessment	4/10
9	113/04/15 ~ 113/04/21	Mid-term exam	4/17
10	113/04/22 ~ 113/04/28	ISO 14064 & ISO 50001	4/24
11	113/04/29 ~ 113/05/05	Basel Convention	5/1
12	113/05/06 ~ 113/05/12	Industrial Waste Minimization	5/8
13	113/05/13 ~ 113/05/19	Design for Environment	5/15
14	113/05/20 ~ 113/05/26	Zero Waste	5/22
15	113/05/27 ~ 113/06/02	Sustainable Resource Management	5/29
16	113/06/03 ~ 113/06/09	Industrial Ecology	6/5
17	113/06/10 ~ 113/06/16	Final exam	6/12
18	113/06/17 ~ 113/06/23	Comprehensive Discussion	6/19
Key capabilities	self-directed learning		
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	Sustainability issue
Requirement	
Textbooks and Teaching Materials	Self-made teaching materials:Presentations
References	<p>1.T. E. Graedel and B. R. Allenby, "Industrial Ecology" , Prentice Hall, 1995.</p> <p>2.C. R. Rhyner, L. J. Schwartz, R. B. Wenger and M. G. Kohrell, "Waste Management and Resource Recovery" , CRC Lewis Publishers, 1995.</p> <p>3.T. E. Welch and T. Welch, "Moving Beyond Environmental Compliance: A Handbook for Integrating Pollution Prevention with ISO 14000" , Lewis Publishers, 1997.</p> <p>4.A. Bendavid-Val and N. P. Cheremisinoff, "Green Profits: The Manager&amp;amp;#39;s Handbook for ISO 14001 and Pollution Prevention" , Butterworth-Heinemann, 2001.</p> <p>5.D. T. Allen and K. S. Rosselot, "Pollution Prevention for Chemical Processes" , Wiley-Interscience, 1996.</p> <p>6.Mitchell L. Kennedy, "Total Cost Assessment for Environmental Engineers and Managers" , John Wiley &amp;amp; Sons, 1997.</p> <p>7.National Council for Sustainable Development, https://ncsd.ndc.gov.tw/Fore/en/</p> <p>8.Climate Change Administration, Ministry of Environment, https://www.moenv.gov.tw/cca-en/54B01E3B232183DB</p> <p>9.Basel Convention, https://www.basel.int/</p>
Grading Policy	<p>◆ Attendance : % ◆ Mark of Usual : 40.0 % ◆ Midterm Exam : 30.0 %</p> <p>◆ Final Exam : 30.0 %</p> <p>◆ Other < > : %</p>
Note	<p>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 .</p> <p>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</p>