Tamkang University Academic Year 110, 1st Semester Course Syllabus

Course Title	SPECIAL LECTURE OF GROUNDWATER AND WETLAND	Instructor	
Course Class	TEWXD1A DOCTORAL PROGRAM, DEPARTMENT OF WATER RESOURCES AND ENVIRONMENTAL ENGINEERING, 1A	Details	◆ General Course ◆ Selective ◆ One Semester
Relevance to SDGs	SDG6 Clean water and sanitation SDG11 Sustainable cities and communities SDG14 Life below water SDG15 Life on land		

Departmental Aim of Education

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

A. Mathematical and engineering knowledge needed for water resources and environmental engineering applications.(ratio:50.00)

C. Logical thinking, analysis, integration, problem-solving skills, engineering planning, design and implementation ability.(ratio:50.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:25.00)

2. Information literacy. (ratio:25.00)

3. A vision for the future. (ratio:25.00)

5. Independent thinking. (ratio:25.00)

Course Introduction	The course facilitates students' abilities for understanding cutting-edge knowledge of wetlands and groundwater. Students are expected to present their ability about reading and synthesize journal papers and present their knowledge about wetlands and groundwater in English.

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	Enable students' abilities for synthesizing the cutting-edge knowledge of wetlands and groundwater.	Cognitive

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	AC	1235	Lecture, Discussion	Study Assignments, Discussion(including classroom and online), Report(including oral and written), Activity Participation

Course Schedule

Week	Date	Course Contents	Note
1	110/09/22 ~ 110/09/28	Introduction	
2	110/09/29 ~ 110/10/05	Wetland Hydrology	
3	110/10/06 ~ 110/10/12	Wetland Soils	
4	110/10/13 ~ 110/10/19	Wetland Biogeochemistry	

5	110/10/20 ~ 110/10/26	Wetland Vegetation and Succession	
6	110/10/27 ~ 110/11/02	Wetland Ecosystems (I)	
7	110/11/03 ~ 110/11/09	Wetland Ecosystems (II)	
8	110/11/10 ~ 110/11/16	Wetlands and Water quality	
9	110/11/17 ~ 110/11/23	Wetland Creation and Restoration	
10	110/11/24 ~ 110/11/30	Wetland Ecosystem Services and Field Trip	
11	110/12/01 ~ 110/12/07	Wetland and Climate Change	
12	110/12/08 ~ 110/12/14	Wetland Paper Review Presentation	
13	110/12/15 ~ 110/12/21	Introduction to Groundwater Monitoring	
14	110/12/22 ~ 110/12/28	Groundwater Hydrogeology and Geochemistry	
15	110/12/29 ~ 111/01/04	Models for Groundwater Flow and Solute Transport	
16	111/01/05 ~ 111/01/11	Groundwater Pollution Investigation and Remediation	
17	111/01/12 ~ 111/01/18	Research Paper Review Presentation	
18	111/01/19 ~ 111/01/25		

Requirement	
Teaching Facility	Computer
Textbooks and Teaching Materials	Kadlec, R. H., & Wallace, S. (2008). Treatment wetlands. CRC press. Mitsch, W. J., & Gosselink, J. G. (2015). Wetlands,fifth edition (5th ed.). Wiley. Selected journal papers
References	Rushton, K. R. (2003). Groundwater hydrology: conceptual and computational models. John Wiley & Sons. Austin, G. (Gary D. ., & Yu, K. (2016). Constructed wetlands and sustainable development . Routledge, Taylor & Francis Group.
Number of Assignment(s)	**4** (Filled in by assignment instructor only)
Grading Policy	◆ Attendance： 20.0 % ◆ Mark of Usual：30.0 % ◆ 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.**