Tamkang University Academic Year 108, 1st Semester Course Syllabus

Course Title	MULTIPHASE FLOW THEORY	Instructor	CHENG-HSIEN LEE
Course Class	TEWXD1A DOCTORAL PROGRAM, DEPARTMENT OF WATER RESOURCES AND ENVIRONMENTAL ENGINEERING, 1A	Details	◆ General Course ◆ Selective ◆ One Semester

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.

Course Introduction	This course covers fluid mechanics, equations governing fluid dynamics, finite volume method, linear algebra, and so on.

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	An in-depth understanding of computation fluid dynamics	Cognitive

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment				
No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	A		Discussion	Discussion(including classroom and online)

Course Schedule			
Week	Date	Course Contents	Note
1	108/09/09 ~ 108/09/15	Reviews of fluid dynamics	
2	108/09/16 ~ 108/09/22	Review of fluid dynamics	
3	108/09/23 ~ 108/09/29	Review of fluid dynamics	
4	108/09/30 ~ 108/10/06	Finite volume method	
5	108/10/07 ~ 108/10/13	Finite volume method	
6	108/10/14 ~ 108/10/20	Finite volume method	
7	108/10/21 ~ 108/10/27	Solutions to linear algebra	
8	108/10/28 ~ 108/11/03	Solutions to linear algebra	
9	108/11/04 ~ 108/11/10	Solutions to linear algebra	
10	108/11/11 ~ 108/11/17	Solution of Navier-Stokes' equation	
11	108/11/18 ~ 108/11/24	Solution of Navier-Stokes' equation	
12	108/11/25 ~ 108/12/01	Solution of Navier-Stokes' equation	
13	108/12/02 ~ 108/12/08	Free surface flow	
14	108/12/09 ~ 108/12/15	Free surface flow	
15	108/12/16 ~ 108/12/22	Free surface flow	
16	108/12/23 ~ 108/12/29	Turbulent flow	
17	108/12/30 ~ 109/01/05	Turbulent flow	
18	109/01/06 ~ 109/01/12	Turbulent flow	

Requirement	

Teaching Facility	Computer, Projector
Textbooks and Teaching Materials	Ferziger and Peric, 2002, Computational methods for fluid dynamics
References	
Number of Assignment(s)	**16** (Filled in by assignment instructor only)
Grading Policy	◆ Attendance： % ◆ Mark of Usual：50.0 % ◆ Midterm Exam： % ◆ Final Exam： 50.0 % ◆ Other〈 〉： %
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