Tamkang University Academic Year 110, 1st Semester Course Syllabus

Course Title	ADVANCED ENGINEERING MATHEMATICS	Instructor	
Course Class	TEWXM1A MASTER'S PROGRAM, DEPARTMENT OF WATER RESOURCES AND ENVIRONMENTAL ENGINEERING, 1A	Details	◆ General Course ◆ Selective ◆ One Semester
Relevance to SDGs	SDG4 Quality education		

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

2. Information literacy. (ratio:50.00)

5. Independent thinking. (ratio:50.00)

Course Introduction	The course applies advanced mathematics to solve engineering problems. Advanced mathematics include first and second order differential equations, Homogeneous and Non-homogeneous differential equations, Bernoulli equation, Laplace Transformation and Dirac' s Delta Function.

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 main purpose of this course is to enhance the understanding of engineering mathematics of graduate students.	Cognitive

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	AC	25	Lecture	Testing, Study Assignments, Attendance and in-class problem solving

Course Schedule

Week	Date	Course Contents	Note
1	110/09/22 ~ 110/09/28	Introduction, first order differential equations	
2	110/09/29 ~ 110/10/05	First order differential equations	
3	110/10/06 ~ 110/10/12	First order differential equations	
4	110/10/13 ~ 110/10/19	Bernoulli differential equation	
5	110/10/20 ~ 110/10/26	Homogeneous second order differential equations	

6	110/10/27 ~ 110/11/02	Homogeneous second order differential equations	
7	110/11/03 ~ 110/11/09	Non-homogeneous second order differential equation	
8	110/11/10 ~ 110/11/16	Non-Homogeneous second order differential equation	
9	110/11/17 ~ 110/11/23	Mid-term Exam	
10	110/11/24 ~ 110/11/30	Power series method	
11	110/12/01 ~ 110/12/07	Power series method	
12	110/12/08 ~ 110/12/14	Laplace Transformation	
13	110/12/15 ~ 110/12/21	Laplace Transformation	
14	110/12/22 ~ 110/12/28	Dirac’ s Delta Function	
15	110/12/29 ~ 111/01/04	Public holiday on Dec 31	Public holiday
16	111/01/05 ~ 111/01/11	Dirac’ s Delta Function	
17	111/01/12 ~ 111/01/18	Final Exam	
18	111/01/19 ~ 111/01/25		

Requirement	
Teaching Facility	Computer, Projector
Textbooks and Teaching Materials	Advanced Engineering Mathematics by Erwin Kreyszig
References	
Number of Assignment(s)	(Filled in by assignment instructor only)
Grading Policy	◆ Attendance： 15.0 % ◆ Mark of Usual： % ◆ Midterm Exam： 25.0 % ◆ Final Exam： 25.0 % ◆ Other〈Assignments〉：35.0 %
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.**