

Tamkang University Academic Year 112, 2nd Semester Course Syllabus

Course Title	ENGINEERING MATHEMATICS	Instructor	HUANG-WEN HUANG
Course Class	TEIDB4P DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION ENGINEERING (ENGLISH-TAUGHT PROGRAM), 4P	Details	◆ General Course ◆ Selective ◆ One Semester
Relevance to SDGs	SDG4 Quality education SDG9 Industry, Innovation, and Infrastructure		
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			
I . Comprehend professional knowledge. II . Acquire mastery of Practical Skills. III . Establish creative achievement.			
Subject Departmental core competences			
A. Programming and application ability.(ratio:15.00) B. Mathematical reasoning ability.(ratio:40.00) C. Implementing computer systems ability.(ratio:15.00) D. Computer networking application skills.(ratio:15.00) E. Professional skills for information technology (IT) industry.(ratio:15.00)			
Subject Schoolwide essential virtues			
1. A global perspective. (ratio:5.00) 2. Information literacy. (ratio:20.00) 3. A vision for the future. (ratio:10.00) 4. Moral integrity. (ratio:20.00) 5. Independent thinking. (ratio:30.00) 6. A cheerful attitude and healthy lifestyle. (ratio:5.00) 7. A spirit of teamwork and dedication. (ratio:5.00) 8. A sense of aesthetic appreciation. (ratio:5.00)			

Course Introduction	This is a one semester course to introduce a compendium of many mathematical topics concerning mathematical methods and techniques that are typically used in engineering and industry. All of which are loosely related by the expedient of either being needed or useful in courses in science and engineering or in subsequent careers in these areas.
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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	To learn mathematical methods and techniques that are typically used in engineering and industry	Cognitive

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCDE	12345678	Lecture, Discussion, Practicum	Testing, Study Assignments, Practicum, Activity Participation

Course Schedule

Week	Date	Course Contents	Note
1	113/02/19 ~ 113/02/25	Introduction to engineering mathematics	
2	113/02/26 ~ 113/03/03	Introduction to differential equations	
3	113/03/04 ~ 113/03/10	Definitions and terminology	
4	113/03/11 ~ 113/03/17	First-order differential equations	
5	113/03/18 ~ 113/03/24	Separable equations, linear equations and exact equations	

6	113/03/25 ~ 113/03/31	Higher-order differential equations	
7	113/04/01 ~ 113/04/07	The Laplace Transform	
8	113/04/08 ~ 113/04/14	Series solutions of linear equations	
9	113/04/15 ~ 113/04/21	Midterm Exam Week	
10	113/04/22 ~ 113/04/28	In-class exercises	
11	113/04/29 ~ 113/05/05	Vectors	
12	113/05/06 ~ 113/05/12	Matrices	
13	113/05/13 ~ 113/05/19	Vector calculus	
14	113/05/20 ~ 113/05/26	Misc	
15	113/05/27 ~ 113/06/02	Graduate Exam Week	
16	113/06/03 ~ 113/06/09		
17	113/06/10 ~ 113/06/16		
18	113/06/17 ~ 113/06/23		
Key capabilities		Information Technology	
Interdisciplinary		STEAM course (S:Science, T:Technology, E:Engineering, M:Math, A field:Integration of Art and Humanist)	
Distinctive teaching		Special/Problem-Based(PBL) Courses	
Course Content		Logical Thinking	
Requirement			

Textbooks and Teaching Materials	Self-made teaching materials:Textbooks Name of teaching materials: Advanced Engineering Mathematics, 7/e by Jones and Bartlett , ISBN: 1284240770 Dennis G. Zill
References	
Grading Policy	<p>◆ Attendance : 10.0 % ◆ Mark of Usual : % ◆ Midterm Exam : 30.0 %</p> <p>◆ Final Exam : 30.0 %</p> <p>◆ Other 〈quizzes〉 : 30.0 %</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>