National Taiwan Normal University Course Outline
Spring , 2026

I.Course information

Serial No.		**Course Level**	Undergraduate
Course Code	AEU0008	**Chinese Course Name**	工程數學（一）
Course Name	Engineering Mathematics (I)		
Department	Department of Electrical Engineering		
Two/one semester	1	**Req. / Sel.**	Req.
Credits	3.0	**Lecturing hours**	Lecture hours: 3
Prerequisite Course	Prerequisite course: 【MAU0180 Calculus B (I)】		
Comment			
Course Description	In this lecture, we focus on the differential equation and the transformation, i.e., Laplace transform and Fourier transform. Different skills for solving the differential equations are taught like separable equation, exact method. For the transformation, the duality of the transformation is elaborated on, and the details derivations are provided for each transform duality. Finally, we combine the transformation and the differential equation to allow the students learn how to integrate their math skills and how to apply Laplace transform to solve the differential equations.		
Day & Class Period/Location	Mon. 6-8 Heping 00000		

Curriculum Goals	Corresponding to the Departmental Core Goal
1. Realize theoretical concepts, professional terminologies and solve problems of engineering mathematics.	College: 1-1 Application of knowledge and techniques of physics, mathematics and electrical engineering.

II. General Syllabus

Instructor(s)	賴以威

Schedule

Week 1 : Introduction

Week 1-3 : First order ordinary differential equation (ODE)

Week 4-6 : High order differential equation

Week 7 : Midterm examination

Week 8 : Linear DE systems

Week 9-10 : Laplace transform

Week 11-13 : Laplace transform for solving differntial equation

Week 14-15 : Fourier series

Week 16 : Final examination

Please come to the first lecture if you want to attend this course.

Instructional Approach

Methods	Notes

Formal lecture	Powerpoint slides based on the reference books
Group discussion	Group discussion and final presentation

Grading assessment

Methods	Percentage	Notes
Midterm Exam	35 %	
Final exam	35 %	
Class discussion involvement	10 %	Exercises and quiz
Presentation	20 %	Each group will give final presentations that introduce the applications of EM in EE domain

Adjustment methods for students

Required and Recommended Texts/Readings with References	Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, John Wiley & Sons, 2010