# 國立台灣科技大學 114學年 第2學期　課程大綱

## Spring 2026 NTUST Course Outline

授課教師：Iman Adipur

Instructor:Iman Adipurnama

課程名稱：工程數學(二)

Course Title：Engineering Mathematics (II)

2026/11/3

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| 課程代號： GD3002301<br>Course Code | 必選修：必修/半學年<br>Required/Electve:Required/Half Yr. |
| 學分數： 3<br>Credits | 先修課程：<br>Prerequisites |
| 節次教室：<br>Time/Location | R2(TR-515) W1(TR-515) W2(TR-515) |
| 專業核心能力：<br>Core Professional Competencies | 培養學生具備了解常微分方程式之級數解、特殊函數、傅立葉轉換、偏微分方程式、複變數理論之觀念與核心能力。 |
| 課程網址：<br>Course Website | |
| 課程宗旨：<br>Course Objectives | The course is aimed at developing the basic and advanced Mathematical skills for Engineering students that are imperative for effective understanding of Engineering subjects.<br>Students should understand and be able to use the language and methods of mathematics in the description, analysis and design of engineering systems. |
| 課程大綱：<br>Outline of Lectures | Outline of the Course<br>- Linear Algebra: Matrices, Vectors, Determinants. Linear Systems<br>• Inverse of a Matrix. Gauss－Jordan Elimination<br>- The Matrix Eigenvalue Problem. Determining Eigenvalues and Eigenvectors. Diagonalization.<br>- System of Differential Equations - Solving through Diagonalization<br>- Vector Differential Calculus. Grad, Div, Curl<br>• Line Integrals. Path Independence of Line Integrals<br>• Green’s Theorem in the Plane<br>• Surface Integrals<br>• Divergence Theorem of Gauss |
| 授課方式：<br>Method of Instruction | 講授 Lecture：40%<br>分組討論 Group discussion：15%<br>案例研討 Case study：20%<br>操做練習 Practical exercises：25%<br>講授 Lecture：% |
| 教科書：<br>Textbooks | Dennis G. Zill, Advanced Engineering Mathematics, 7th edition, Jones & Bartlett Learning, 2022 |
| 參考書目：<br>References | 1. Dennis G. Zill, Advanced Engineering Mathematics, 7th edition, Jones & Bartlett Learning, 2022<br>2. Erwin Kreyszig, Advanced Engineering Mathematics, 10th edition, John Wiley & Sons, Inc., 2011<br>3. Mathematica: http://www.wolframalpha.com/?source=nav<br>4. Geogebra: http://www.geogebra.com |

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| 修課須知：<br>Notice | The course will be finished in 16 weeks. The course may adjusted to Online Class if there is an emergency. There will be some supplemental videos during the semester. |
| 評量方式：<br>Grading | Quiz 15% + Midterm 40% + Attendance 5% + Participation 10% + Final Exam 30% |
| 備註說明：<br>Notes | Prerequisite knowledge: Single Variable and Multi Variable Calculus. Students are expected to know the fundamental concepts in Calculus and basic mathematics. Course will be delivered in English. |