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：王孟菊

Instructor:Meng-Jiy Wang

課程名稱：微積分(下)

Course Title：Calculus (II)

2026/11/3

課程代號： CE162B003 Course Code 學分數： 4 Credits	必選修：必修/全學年 Required/Electve:Required/Full Yr. 先修課程： Prerequisites
節次教室： Time/Location	F6(IB-308) F7(IB-308) T9(IB-308) W3(IB-308) W4(IB-308)
專業核心能力： Core Professional Competencies	
課程網址： Course Website	
課程宗旨： Course Objectives	這門課將第一次介紹微分與積分的基礎。在這課程中，我們將介紹微積分的基礎與應用。更進一步學生將會練習許多積分與微分的技巧，而利用這些技巧解開在物理或工程上基礎與實際的問題。 In this course, we will introduce the fundamental and application of differentiation and integration. Furthermore, students will practice many techniques of differentiation and integration in the course, and use them to solve both fundamental and practical problems in the physical world.
課程大綱： Outline of Lectures	6.1 Integration of Rational Functions by Partial Fractions 6.2 Strategy for Integration 6.3 Improper Integrals 7.1 Arc Length 7.2 Area of a Surface of Revolution 7.3 Applications to Physics and Engineering 8.1 Curves Defined by Parametric Equations 8.2 Calculus with Parametric Curves 8.3 Polar Coordinates 8.4 Areas and Lengths in Polar Coordinates 8.5 Conic Sections 8.6 Conic Sections in Polar Coordinates 9.1 Functions of Several Variables 9.2 Limits and Continuity 9.3 Partial Derivatives 9.4 Tangent Planes and Linear Approximations 9.5 The Chain Rule 9.6 Directional Derivatives and the Gradient Vector 9.7 Maximum and Minimum Values 9.8 Lagrange Multipliers 10.1 Double Integrals over Rectangles 10.2 Double Integrals over General Regions 10.3 Double Integrals in Polar Coordinates 10.4 Application of Double Integrals 10.5 Surface Area 10.6 Triple Integrals 10.7 Triple Integrals in Cylindrical Coordinates 10.8 Triple Integrals in Spherical Coordinates 10.9 Change of Variables in Multiple Integrals
授課方式： Method of Instruction	講授 Lecture：65% 分組討論 Group discussion：0%

	案例研討 Case study：15% 操做練習 Practical exercises：20% 講授 Lecture：%
教科書： Textbooks	Essential Calculus:Early Transcendental Functions 5/e (Metric Version-2024) Ron Larson
參考書目： References	
修課須知： Notice	
評量方式： Grading	1. 第一次期中考: 30% 2. 第二次期中考: 30% 3.期末考: 30% 4. 小考+ 點名 10%
備註說明： Notes	