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：鄧伊茹

Instructor:I-Ju Teng

課程名稱：微積分(下)

Course Title：Calculus (II)

2026/11/3

課程代號：CE162B005 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	T10(TR-515) T9(TR-515) W3(TR-515) W4(TR-515) W5(TR-515)
專業核心能力： Core Professional Competencies	
課程網址： Course Website	https://moodle2.ntust.edu.tw/course/view.php?id=17878
課程宗旨： Course Objectives	This course aims to develop students' integrated understanding of multivariable calculus and vector analysis, with emphasis on describing and analyzing change in three-dimensional space. Core topics include parametric representations, vector functions, partial derivatives, multiple integrals, sequences, and series, with attention to their geometric and physical interpretations. The course focuses on applying mathematical tools to engineering contexts, including the analysis of spatial variation, optimization problems, and the construction and evaluation of mathematical models. Students are guided to interpret results critically, recognize the limitations of approximation methods, and understand the scope and constraints of mathematical models. In addition, the course supports the development of clear mathematical communication in English and encourages responsible use of digital and AI tools for verification, reflection, and deeper conceptual understanding.
課程大綱： Outline of Lectures	The Planned Course Topics (Tentative): Ch8 Further Applications of Integration Ch10 Parametric Equations and Polar Coordinates Ch11 Sequences, Series, and Power Series Ch12 Geometry of Space Ch14 Partial Derivatives Ch15 Multiple Integrals
授課方式： Method of Instruction	講授 Lecture：55% 分組討論 Group discussion：20% 案例研討 Case study：10% 操做練習 Practical exercises：15% 講授 Lecture：Teaching Strategies/Methods: 1. Constructive Alignment: ILOs　Activities　Assessment 2. Structured & Goal-Oriented Instruction (BOPPPS model) 3. Conceptual & Problem-Solving Focus 4. Active Learning & Student Engagement 5. Integrative & Application-Based Learning 6. Language Support & Multiple Learning Tools%

教科書： Textbooks	Calculus: Early Transcendentals, Metric Edition, 9th Edition, by James Stewart, Daniel K. Clegg, Saleem Watson, Lothar Redlin, 2020 Cengage Learning.(ISBN: 9780357113516)(滄海書局, 周經理, 0932597262, thbook@tsanghai.com.tw)
參考書目： References	1.Calculus, 11th Edition (International Metric Version), Larson & Edwards (2018), Cengage Learning. 2.Thomas' Calculus: Early Transcendentals, 14th Edition (SI Units), Hass & Thomas & Weir (2020), Pearson. 3.The Calculus Story: A Mathematical Adventure, D. Acheson (2018) Oxford University Press. 4.Khan Academy－Calculus; 3Blue1Brown; Paul's Online Math Notes. 5.GeoGebra/Desmos; Wolfram Alpha/Symbolab. 6.MIT OCW; Open Yale Courses. 7.YouGlish/Natural Readers.
修課須知： Notice	1.Innovative Teaching Approach: Constructive Alignment, BOPPPS model, Active Learning & Student Engagement, Integrative & Application-Based Learning, Language Support & Multiple Learning Tools. 2.The course may include online sessions; do not record without permission. 3.Instructor will record for teaching improvement; student privacy respected. 4.Check Moodle and school email regularly for updates. 5. Materials are for learning only; do not copy, share, or upload without permission.
評量方式： Grading	1.Departmental joint exam: Midterm 25% + Final 30%. 2.Chapter Quizzes & Learning Checks: 10%. 3.Integrative Application Task: 20%. 4.Engagement & Collaboration(attendance, participation, student-on-duty, pre-TA question submission and other course-related activities): 15%.
備註說明： Notes	1.No cheating, plagiarism, or disrespect; treat others with respect; follow university and syllabus rules. 2.Submit assignments on time. Late work may lose points or not be accepted.3.Group Work: Everyone must contribute; teamwork quality affects grade. Avoid free-riding. 4.No make-up for missed/late quizzes or exams (except documented emergencies). Notify instructor in advance if possible. 5.Arrive on time, keep phones silent, avoid distractions, focus on class-related activities.