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：Darwin

Instructor:Darwin Kurniawan

課程名稱：質能均衡

Course Title：Material and Energy Balances

2026/11/3

課程代號：CH2201303 Course Code 學分數：3 Credits	必選修：必修/半學年 Required/Electve:Required/Half Yr. 先修課程： Prerequisites
節次教室：F1(IB-409-2) W1(IB-409-2) W2(IB-409-2) Time/Location	
專業核心能力： Core Professional Competencies	
課程網址： Course Website	
課程宗旨： Course Objectives	This class is intended to serve as an introduction to the principles and techniques used in the field of chemical engineering as well as biological, petroleum, and environmental engineering. The primary objective of this class is to train you how to systematically formulate and solve material and energy balance problems. This class is organized as follows: Part I Introduction: background information. Part II Material balances: how to formulate and solve material balances. Part III Gas, Vapors, and Liquids: how to describe gases and liquids. Part IV Energy balances: how to formulate and solve energy balances.
課程大綱： Outline of Lectures	Part 1 Introduction 1. What Some Chemical Engineers Do for a Living 2. Introductory Concepts Part 2 Material Balances 3. Introduction to Material Balances 4. Material Balances without Reaction 5. Material Balances Involving Reaction 6. Material Balances for Multi-Unit Systems Part 3 Gas, Vapors, and Liquids 7. Ideal and Real Gases 8. Multiphase Equilibrium Part 4 Energy Balances 9. Introduction to Energy Balances 10. Energy Balances without Reaction 11. Energy Balances Involving Reaction 12. Energy Balances on Transient Processes (optional) 13. Humidity Charts and Their Use (optional)
授課方式： Method of Instruction	講授 Lecture：80% 分組討論 Group discussion：0% 案例研討 Case study：0% 操做練習 Practical exercises：20% 講授 Lecture：%

教科書： Textbooks	Himmelblau, D.M., Riggs, J.B., Basic Principles and Calculations in Chemical Engineering, 8th ed., Prentice Hall International Series in the Physical and Chemical Engineering Sciences (2013).
參考書目： References	• Felder, R. M., Rousseau, R. W., Bullard, L. G., Elementary Principles of Chemical Processes, 4th ed., John Wiley & Sons (2016). • Poling, B. E., Thomson, G. H., Friend, D. G., Rowley, R. L., Wilding, W. V., Perry's Chemical Engineers' Handbook, 8th ed., The McGraw Hill Companies, Inc. (2008)
修課須知： Notice	
評量方式： Grading	• Homework: 15% • Quiz: 20% • Mid-term exam: 30% • Final-term exam: 35%
備註說明： Notes	