

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：楊延齡

Instructor:

課程名稱：程序控制

Course Title : Process Control

2026/5/6

課程代號： TE3045301 Course Code 學分數： 3 Credits	必選修：必修/半學年 Required/Elective:Required/Half Yr. 先修課程： Prerequisites
節次教室： R3(RB-508) R4(RB-508) W1(RB-509) Time/Location	
專業核心能力： 運用數學、科學及工程知識的能力與執行工程實務所需技術、技巧及使用現代化工具的能力。 Core Professional Competencies	
課程網址： Course Website	
課程宗旨： 從化工程的觀點來探討控制的問題。內容包括控制系統元件和控制概念之介紹以及拉氏轉換和控制器設計方法，最後介紹頻率應答以及設計之基準。 1. Introduction to Process Control 2. Theoretical Models of Chemical Processes 3. Laplace Transforms 4. Transfer Function and State-Space Models 5. Dynamic Behavior of First-Order and Second-Order Processes 6. Dynamic Response Characteristics of More Complicated Processes 7. Development of Empirical Models from process Data 8. Feedback Controllers 9. Control System Instrumentation 10. Overview of Control System Design 11. Dynamic Behavior and Stability of Closed-Loop Control Systems 12. PID Controller Design, Tuning, and Troubleshooting 13. Frequency Response Analysis 14. Control System Design Based on Frequency Response Analysis Course Objectives	
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授課方式： 講授 Lecture：0% Method of Instruction 分組討論 Group discussion：0% 案例研討 Case study：0% 操做練習 Practical exercises：0% 講授 Lecture：%	
教科書： Textbooks	
參考書目： References	

修課須知：
Notice

評量方式：
Grading

備註說明：
Notes

This course combines theory and simulation practice, using Python with Aspen Plus Dynamics for dynamic simulations to connect fundamentals with practical applications.
本課程結合理論與模擬實作，將以 Python 搭配 Aspen Plus Dynamics 進行動態模擬，強化理論與實務的連結。