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：吳森統

Instructor:Sen-Tung Wu

課程名稱：電子電路設計實務

Course Title：Designs and Applications of Electric Circuits

2026/11/3

課程代號：ES5845701 Course Code 學分數：3 Credits	必選修：選修/半學年 Required/Electve:Elective/Half Yr. 先修課程： Prerequisites
節次教室：W6(華夏機械館G309) W7(華夏機械館G309) W8(華夏機械館G309) Time/Location	
專業核心能力： Core Professional Competencies	1.具備基礎科學與材料工程專業知識之整合、創新能力。 2.具備收集文獻、建構研究規劃、設計實驗流程與整合分析之能力。 3.具備執行專題研究、應用研究成果，以及口頭發表與報告撰寫之能力。 4.具備創新思考，並可獨立解決複雜性問題之能力。 7.具備管理、規劃與領導之能力。 8.體認及實踐工程倫理與社會永續發展之觀念，具備終身自我學習與成長之能力
課程網址： Course Website	https://reurl.cc/MWV3LK
課程宗旨： Course Objectives	This course will guide and inspire students in the design concepts of electronic circuit applications, establishing basic operational knowledge and component selection criteria for active and passive electronic components to help students build a solid foundation in electronic circuit knowledge.
課程大綱： Outline of Lectures	1.Basic theory for electrical circuits 2.Components stress and characteristics 3.Power amplifier circuit 4.Filter design 5.Protection circuit 6.AC circuits 7.DC circuits 8.Sensors circuits 9.Introduction of commercial integrated circuits 10.Switch driver
授課方式： Method of Instruction	講授 Lecture：60% 分組討論 Group discussion：10% 案例研討 Case study：20% 操做練習 Practical exercises：10% 講授 Lecture：1. This course is conducted through instructor-led lectures covering circuit characteristics, component selection and design considerations, and practical application circuit examples. 2. Following explanations of key chapters, the instructor will assign in-class circuit design exercises to encourage group discussion and peer interaction among students. 3. During explanations of commercial circuit design examples, the instructor will pose questions regarding practical engineering application.%

教科書： Textbooks	Handouts made by the instructor.
參考書目： References	1. Microelectronics: Circuit Analysis and Design, Author: Donald A. Neamen 2. Fundamentals of Electric Circuits, Author: Alexander & Sadiku
修課須知： Notice	Course Materials & Software Course Handouts (Digital Files) 1.Course handouts will be provided for instruction. Students may download these files to take notes during class lectures. 2.Circuit Simulation Software: An educational/academic version of circuit simulation software will be made available for download to help students perform basic circuit simulation and functional verification.
評量方式： Grading	1.Course Assignments (60%) Assignments must be submitted within the deadline specified by the instructor. Assignments include theoretical analysis, software simulation, and experimental/analytical verification. 2.Midterm Presentation (20%) In-class oral presentation. Topics focus on specific circuit application areas designated by the instructor. 3.Final Presentation (20%) In-class oral presentation. Students may choose topics related to their ongoing research.
備註說明： Notes	Prerequisite Knowledge & Required Skills 1.Completion of a course in Electronics (or Microelectronic Circuits). 2.Completion of a course in Electric Circuits (or Circuit Theory). 3.Completion of relevant coursework in Digital Logic Circuit Design. 4.Hands-on experience with laboratory instruments or practical circuit fabrication in laboratory.