# 朝陽科技大學 093學年度第1學期教學大綱
# Digital Systems 數位系統

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| 當期課號 | 2148 | Course Number | 2148 |
| 授課教師 | 陳伯岳 | Instructor | CHEN,PO YUEH |
| 中文課名 | 數位系統 | Course Name | Digital Systems |
| 開課單位 | 資訊工程系(四日)一B | Department | |
| 修習別 | 必修 | Required/Elective | Required |
| 學分數 | 3 | Credits | 3 |
| 課程目標 | 這個課程介紹數位系統設計與實務，內容包含邏輯電路的基本觀念、電子電路實作邏輯電路、邏輯函數的最佳化、以較大型組合電路來設計邏輯函數、儲存元件、同步與非同步序向電路。在基本觀念上，說明布林代數與邏輯閘；在電子電路實作與邏輯函數最佳化的課程中，我們使用CAD工具來設計與合成電路；接著介紹利用解碼器、編碼器、與多工器來設計邏輯函數；序向電路是另一個重點，包括：位移記錄器、計數器、有限狀態機、以及CAD工具。 | Objectives | This course is an introduction to the design and implementation of digital systems. We will study various topics including basic aspects and electronic aspects of logic circuits, optimized implementation of logic functions, combinational circuits used as building blocks, storage elements, synchronous and asynchronous sequential circuits. In the basic aspects of logic circuits, we will study Boolean algebra, logic gates; in the electronic aspects and optimized implementation of logic functions, we study how to synthesize combinational circuits using logic gates and CAD tools. Using decoder, encoders, and multiplexers as building blocks in larger design is presented. Following the studies of combinational circuits, sequential circuits are introduced. We study the storage element (flip-flops), realization of shift registers and counters; explain the behavior of synchronous (asynchronous) sequential circuits (finite state machines) and develop practical design technique for both manual and automated design. |
| 教材 | Foundamentals of Logic Design, 5th Edition<br>Charles H. Roth, Jr.<br>Thomson Brooks/Cole<br>滄海書局代理 | Teaching Materials | |
| 成績評量方式 | 平常考: 30%<br>期中考: 30%<br>期末考: 40% | Grading | Quiz: 30%<br>Midterm Exam: 30%<br>Final Exam: 40% |
| 教師網頁 | | | |
| 教學內容 | 數字系統, 布林函數, 坎諾圖, 組合邏輯電路設計, 基本邏輯元件介紹, 正反器, 暫存器, 計數器, 狀態圖與狀態分配, 序相邏輯電路設計, VHDL語言簡介 | Syllabus | Number Systems, Boolean Algebra, Karnaugh Maps, Combinational Circuit Design, Basic Logic Devices, Latch and Flip-Flops, Registers and Counters, State table and State Assignment, Clocked Sequential Circuit Design, Introduction to VHDL |

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