國立東華大學

課　　綱　Course Outline

資訊工程學系國際組

中文課程名稱 Course Name in Chinese	數位邏輯設計				
英文課程名稱 Course Name in English	Digital Logic Design				
科目代碼 Course Code	CSIEB0070	班 別 Degree	學士班 Bachelor’ s		
修別 Type	學程 Program	學分數 Credit(s)	3.0	時 數 Hour(s)	3.0
先修課程 Prerequisite					

課程目標
Course Objectives

This course will provide students fundamental knowledge of digitail logic design,which includes the basic Boolean algebra,combinational circuits, and sequential circuits,which are the engines of smart phones,digital cameras,personal digital devices,and other computer hardware.At the completion of the course,students can design reliable and cost-effective digital systems.

系教育目標
Dept.’s Education Objectives

1	具備學科知識，養成專業技能 Acquire academic knowledge, develop professional skills
2	學習創新思考，分析解決問題 Inspire innovative thinking, increase analytical problem solving ability
3	培養團隊精神，學習溝通合作 Promote teamwork spirit, encourage coordination and cooperatio
4	提昇專業倫理，承擔社會責任 Sublimate professional ethics, engage social responsibility
5	涵育人文素養，開拓國際視野 Cultivate humanities, broaden global perspectives

	系專業能力 Basic Learning Outcomes	課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.’ s Education Objectives
A	資訊專業終身學習能力 Profound professional knowledge and skills	●
B	實驗驗證資訊科學能力 Sound and free spirit; simple and generous quality	●

C	資訊工具整合運用能力 Ability to appreciate beauty and think creatively	●
D	資訊系統應用設計開發能力 Sense of democracy, the rule of law, and civil responsibility	●
E	團隊合作溝通協調能力 Ability of communication, teamwork, and social practice	○
F	資通訊科技問題解決能力 Possess both domestic and global perspectives	●
G	瞭解資訊科技多元影響能力 Knowledgeable and possess the quality of humanism	○
H	肩負資訊人社會責任能力 Ability of verbal expression and information organization and application	

圖示說明Illustration ：● 高度相關 Highly correlated ○中度相關 Moderately correlated

課程大綱
Course Outline

1.Number Systems, Operations,and Codes.
2.Logic Gates(NOT,AND,OR,NAND,NOR)
3.Boolean Algebra and Logic Simplification(K-map,Reduction of K-map,SOP and POS)
4.Combinational Logic Analysis.
5.Functions of Combinational Logic(Adder,Comparator,Decoder,Encoder, Code converter,Multiplexers).
6.Latches,Flip-Flops(SR, JK,D,T),and Timers.
7.Counters(Synchronous counter,Asynchronous counter,UP/Down counter).
8.Shift Registers(Serial and Parallel).
9.Memory and Storage(RAM,ROM,PROM,EPROM).
10.Programmable Logic and Software.
11.Multisim

資源需求評估（師資專長之聘任、儀器設備的配合・・・等）
Resources Required (e.g. qualifications and expertise, instrument and equipment, etc.)

Simulation software for digital circuits.

課程要求和教學方式之建議
Course Requirements and Suggested Teaching Methods

Requirements:
(1)Midterm Exam: 1/3 (2) Final Exam: 1/3 (3) General Performance (including homework, assignments , in-call practicum):1/3.
Teaching Strategies:
(1)Lecture(2)In-class practicum.

其他
Miscellaneous