國立東華大學

教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	超大型積體電路設計			學年/學期 Academic Year/Semester	112/1
課程名稱(英文) Course Name in English	Very large integrated circuit design				
科目代碼 Course Code	CSIEM0480	系級 Department & Year	碩士	開課單位 Course-Offering Department	資訊工程學系
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/紀新洲				
先修課程 Prerequisite					

課程描述 Course Description

This course aims at introducing to the students the basic concepts and the design techniques of integrated circuits. The topics covered include basic CMOS components, combinational circuits, sequential circuits, and system design methodologies. The emphasis is on the design of CMOS integrated circuits for various applications.

課程目標 Course Objectives

介紹超大型積體電路的基本原理與設計技巧，使學生熟悉如何設計晶片上所使用到的元件，以及如何用這些元件構築功能單元、次系統與完整的系統。

This course presents the basic theory and design techniques of very large scale integrated circuits. It aims at making the students understand how to design the basic components on chips, and how to design functional units, subsystems, and systems of chips.

	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	統合資工知識技術之能力Ability to integrate knowledge and technologies of computer science and information engineering.	○
B	設計技術理論驗證實驗之能力Ability to design and conduct science experiments and to validate hypotheses.	●
C	資訊軟硬體設計開發之能力Ability to design and develop computer software and hardware.	●
D	團隊專案開發之能力Ability to design and develop team projects.	○
E	批判性思考與創新研發之能力。Ability of analytical thinking, creative research planning, and innovative development.	●

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

授 課 進 度 表 Teaching Schedule & Content

週次Week	內容 Subject/Topics	備註Remarks
1	Introduction	
2	Circuits and Layout	
3	Circuits and Layout	

4	High-level Description Languages	
5	CMOS Transistors	
6	Circuit Families	
7	Combinational Circuit Design	
8	Combinational Circuit Design	
9	Midterm Exam	
10	School Sports Day	
11	Combinational Circuit Design	
12	Design for Testability	
13	SRAM	
14	CAM, ROM, and PLA	
15	Selected Topics	
16	Selected Topics	
17	Final Exam	
18		

教 學 策 略 Teaching Strategies

☑ 課堂講授 Lecture ☐ 分組討論Group Discussion ☐ 參觀實習 Field Trip

☐ 其他Miscellaneous:

教 學 創 新 自 評 Teaching Self-Evaluation

創新教學(Innovative Teaching)

☐ 問題導向學習(PBL) ☐ 團體合作學習(TBL) ☐ 解決導向學習(SBL)

☐ 翻轉教室 Flipped Classroom ☐ 磨課師 Moocs

社會責任(Social Responsibility)

☐ 在地實踐Community Practice ☐ 產學合作 Industy-Academia Cooperation

跨域合作(Transdisciplinary Projects)

☐ 跨界教學Transdisciplinary Teaching ☐ 跨院系教學Inter-collegiate Teaching

☐ 業師合授 Courses Co-taught with Industry Practitioners

其它 other: _____

學期成績計算及多元評量方式 Grading & Assessments									
配分項目 Items	配分比例 Percentage	多元評量方式 Assessments							
		測驗 會考	實作 觀察	口頭 發表	專題 研究	創作 展演	卷宗 評量	證照 檢定	其他
平時成績 General Performance	0%								
期中考成績 Midterm Exam	35%	✓							
期末考成績 Final Exam	35%	✓							
作業成績 Homework and/or Assignments	25%	✓	✓						Quiz & assignment
其他 Miscellaneous (Class participation)	5%								Class attendance

評量方式補充說明
Grading & Assessments Supplemental instructions

教科書與參考書目（書名、作者、書局、代理商、說明）
Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

Neil Weste and David Harris, CMOS VLSI Design: A Circuits and Systems Perspective.

課程教材網址(含線上教學資訊,教師個人網址請列位於本校內之網址)
Teaching Aids & Teacher's Website(Including online teaching information. Personal website can be listed here.)

其他補充說明 (Supplemental instructions)