



課 綱 Course Outline
電機工程學系學士班

中文課程名稱 Course Name in Chinese	超大型積體電路設計導論				
英文課程名稱 Course Name in English	Introduction to VLSI Design				
科目代碼 Course Code	EE_31300	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	計算機概論(一)(二)、數位電路與系統				
課程目標 Course Objectives					
學習超大型積體電路的設計，從製程佈局電路到晶片一貫設計，並配合SPICE/HDL等模擬軟體，對VLSI有深入認識。					
系教育目標 Dept.' s Education Objectives					
1	專業人才培育—奠立學生專業知能，培育產業技術人才。 To cultivate talents with basic professional knowledge				
2	團隊合作訓練—落實分工合作觀念，具備溝通服從能力。 To train students with teamwork ability				
3	創新思維啟發—具備自我學習能力，啟發創新思維模式。 To inspire students with creative thinking				
4	多元學習規劃—訓練觸類旁通思維，培養基本科技英文閱讀溝通能力。 To plan courses with multi-learning modes				
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	培育具備工程、應用數學與物理科學等數理知識之基本能力。 To cultivate the basic knowledge of engineering, applied mathematics and physics.				
B	培育系統分析、模擬驗證、實作實現之能力。 To cultivate the basic ability of analysis, verification and implementation of systems.				
C	訓練軟體工具使用與硬體實務驗證相互輔助之能力。 To train the auxiliary ability between the utilization of software tool and the verification of the hardware practice.				

D	訓練電機本知學能技術與工程實務相互結合運用之能力。 To train the integrate ability between professional instinct in learning technique and engineering practice.	
E	落實專題製作之群體合作與團隊競爭之能力。 To fulfill the ability of group cooperation and teamwork competition.	
F	落實發掘問題、邏輯分析、克服瓶頸與持續學習之能力 To fulfill the ability of question finding, logical analyzing, bottleneck overcoming and continuous learning.	
G	了解學術倫理與智慧財產觀念，掌握產業更迭需求與具備多元專長之能力。 To obtain the ability of multi-specialization and to meet the industry demand as well as to have the ability of academic ethics and concept of intellectual property	
H	了解國內外市場變化，具備基本科技英文閱讀溝通之能力。 To understand the change of global market and the have the basic ability of reading and conversation in English.	

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

課程大綱
Course Outline

1. 技術走向及製程 (2週)
2. 基本反向閘及其電器特性
3. 佈局規則及技術
4. 靜態/動態電路設計
5. 速度分析
6. 功率分析
7. 個案研討 (加法器/乘法器)

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.)

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

1. 作業
2. 期中考
3. 期末

其他
Miscellaneous

教科書：Rabaey, "Digital Integrated Circuit", 2nd edition, Prentice Hall, 2003