



教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	半導體元件AA		學年/學期 Academic Year/Semester	114/2	
課程名稱(英文) Course Name in English	Semiconductor Devices				
科目代碼 Course Code	MS_5190AA	系級 Department & Year	碩士	開課單位 Course-Offering Department	材料科學與工程學系
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/林育賢				
先修課程 Prerequisite					
課程描述 Course Description					
Modern Semiconductor Devices for Integrated Circuits, First Edition introduces students to the world of modern semiconductor devices with an emphasis on integrated circuit applications. This course is appropriate for both undergraduate and graduate students.					
課程目標 Course Objectives					
讓學生在修習此一課程後，能對固態電子元件有深入的了解，以利研究工作的進行。					
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	具備材料科學所需的進階物理、化學及數學的知識。Acquire required advanced physical, chemical, and mathematic knowledge for materials science and engineering.			○	
B	具備材料科學的進階專業知識，並能應用於解決工程上之問題。Acquire required advanced professional knowledge for materials science and engineering, applicable in solving engineering problems.			●	
C	具備獨立研究之能力。Equipped with capabilities of independent research.			○	
D	具備專業道德及責任感，與良好的溝通及團隊合作的能力。Acquire professional morality and responsibility, and capability of quality communication and team cooperation.				
E	具備進階的英文能力，應用於學習與交流。Acquire English capability used for learning and interaction.			○	
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	Semiconductor Materials, Review				
3	Semiconductor Materials, PN Junction				
4	Semiconductor Materials, PN Junction				
5	Metal-Semiconductor Junction				

6	Metal-Semiconductor Junction	
7	清明節(放假)	
8	MOS Capacitor	
9	期中考試週 Midterm Exam	
10	MOS Capacitor	
11	MOS Capacitor	
12	MOS Capacitor	
13	Introduction to FETs	
14	High-Mobility FETs	
15	MOSFETs	
16	MOSFETs	
17	期末考試週 Final Exam	
18	彈性補充教學時間	

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: 實務

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 Industry-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(含出缺席) General Performance (Attendance Record)	30%								
期中考成績 Midterm Exam	25%								
期末考成績 Final Exam	30%								
作業成績 Homework and/or Assignments	5%								
其他 Miscellaneous (Classroom Attendance)	10%								

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.)

Textbook

Title: Modern Semiconductor Devices for Integrated Circuits

Author: Chenming Calvin Hu

References:

1. Solid State Electronic Devices

Author: Ben G. Streetman and S. K. Banerjee

2. Semiconductor Physics And Devices

Author: Donald Neamen

3. Semiconductor Devices: Physics and Technology

Author: Simon M. Sze, Ming-Kwei Lee

4. Physics of Semiconductor Devices

Author: Simon M. Sze, Kwok K. Ng

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)