



教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	半導體物理AA			學年/學期 Academic Year/Semester	113/1
課程名稱(英文) Course Name in English	Semiconductor Physics				
科目代碼 Course Code	PHYS3230AA	系級 Department & Year	學三	開課單位 Course-Offering Department	物理學系
修別 Type	學程 Program	學分數/時間 Credit(s)/Hour(s)		3.0/3.0	
授課教師 Instructor	/彭文平				
先修課程 Prerequisite					
課程描述 Course Description					
半導體物理原理與基礎理論					
課程目標 Course Objectives					
從固態物理出發，介紹半導體基礎知識，建立理解固態電子元件運作原理的物理觀念與實際元件操作。					
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	具備物理之基礎背景知識Possessing fundamental knowledge in physical sciences.				●
B	能運用基本物理知識與邏輯推理，分析解決物理問題Being able to analyze and solve physics problems based on basic knowledge in physics as well as logical reasoning.				●
C	對目前測量器材有基礎認識，且具有操作物理實驗儀器的能力Being acquainted with modern equipment and being able to operate them for performing physics experiments.				●
D	能使用基礎電腦程式語言解決物理問題Being able to use basic computer programming for solving physics problems.				●
E	善用各種資訊平台進行論文資料蒐集的能力Being able to use various platforms for data collection benefiting a topical research.				
F	具備科技發展的國際視野以及外語溝通的能力Having an international view of the technology developments and being able to use a foreign language for communications				
G	能整合物理與其它領域知識Being able to integrate the knowledge of physics with that of other fields.				●
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	9/11 (Wed.): Introduction to semiconductor physics				
2	9/18 (Wed.): The crystal structure of solid				
3	9/25 (Wed.): Introduction to quantum mechanics				
4	10/2(Wed.): Introduction to the quantum theory of solids				

5	10/9 (Wed.): Introduction to the quantum theory of solids/The semiconductor in equilibrium	
6	10/16 (Wed.): Conference meeting	
7	10/23 (Wed.): The semiconductor in equilibrium	
8	10/30 (Wed.): The semiconductor in equilibrium	
9	期中考試週 Midterm Exam 11/6 (Wed.): Carrier Transport phenomena	
10	11/13 (Wed.): Carrier Transport phenomena	
11	11/20 (Wed.): Nonequilibrium excess carriers in semiconductors	
12	11/27 (Wed.): Midterm Exam	
13	12/4 (Wed.): Presentation (The pn junction)	
14	12/11 (Wed.): Presentation (The pn junction diode)	
15	12/18 (Wed.): Presentation (Metal-semiconductor and semiconductor heterojunctions)	
16	12/25 (Wed.): Presentation (Fundamentals of the MOSFET)	
17		
18	期末考試週 Final Exam	

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 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)									
期中考成績 Midterm Exam	35%								
期末考成績 Final Exam									
作業成績 Homework and/or Assignments	30%								
其他 Miscellaneous (Presentation and report)	35%								
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.) Semiconductor Physics and Devices (Donald A. Neamen, Fourth edition, 2012) McGRAW Hill International Editions ISBN: 978-007-108902-9 東華書局 02-23114027, 0933328278									
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)									