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②國玄東華大學

教學計劃表 Syllabus								
課程名稱(中文) Course Name in Chinese	半導體元件物理				學年/學期 Academic Year/Semester		113/2	
課程名稱(英文) Course Name in English	Physics of Semicond uctor Devices							
科目代碼 Course Code	OE53100	系級 Department 碩士 & Year		開課單位 Course-Offering Department	光電工程學系			
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)			3.0/3.0			
授課教師 Instructor	/林楚軒							
先修課程 Prerequisite								
課程描述 Course Description								
This course includes (1) Semiconductor Material (2) Fundamentals of pn-Jun This is an EMI (English as	ction Semicondo	uctor Devices						

課程目標 Course Objectives

Obtaining a basis for understanding the theory, characteristics, and operation of semiconductor devices.

	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	具有獨立研究能力Equipped with abilities of independent research.	•
В	具有光電工程的專業知識及應用能力。Professional knowledge and application ability of Opto-electronic engineering	•
С	具有設計與執行實驗、報告撰寫與數據解釋之能力。Abilities to design and execute experiment, write reports, and explain data	0
D	使用儀器進行物件的分析及測試。Analysis and test of devices by instruments	0
Е	具備適當的英文能力,應用於學習與交流。English language ability to study and interact	•
F	具有良好的溝通與團隊合作的能力。Ability to communicate and teamwork	
G	具有創新思維及終身學習的能力。Creative thinking and life-long learning ability	•

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	Quantum Mechanics(1/2)	
3	Quantum Mechanics(2/2)	
4	Quantum Theory of Solids (1/2)	

5	Quantum Theory of Solids (2/2)					
6	The Semiconductor in Equilibrium(1/3)					
7	The Semiconductor in Equilibrium(2/3)					
8	The Semiconductor in Equilibrium(3/3)					
9	Midterm evaluation					
10	Carrier Transport Phenomena					
11	Professor needs to attend a meeting at NSTC on 4/29, so this class will be paused. Discussion on 4/30 in Professor's office if needed.					
12	Excess Carriers in Semiconductors (1/2)					
13	Excess Carriers in Semiconductors (2/2)					
14	The pn junction (1/2)					
15	The pn junction (2/2)					
16	The pn junction diode					
17	Final Exam	Final evaluation				
18	Video study and direct discussion if needed https://365ndhu-my.sharepoint.com/:f:/g/personal/chlin0109_o365_ndhu_edu_tw/Ei-Qjp1pid1Ckcxs_Cdu8YIByv2Tp12CKQ1aX1AE8rHITw?e=80ymze					
	教 學 策 略 Teaching Strategies					
→ 課堂講授 Lecture 分組討論Group Discussion 参觀實習 Field Trip						
 其他Mis	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) ■ ■ ■ ■ ■ 配合作學習(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						
跨域合作(Transdisciplinary Projects)						
一跨界教學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	配分比例 Percentage	多元評量方式 Assessments								
Items		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)	40%			~						
期中考成績 Midterm Exam	30%	~								
期末考成績 Final Exam	30%	~								
作業成績 Homework and/or Assignments										
其他 Miscellaneous										

評量方式補充說明

Grading & Assessments Supplemental instructions

General Performance is based on the Review Questions (get at least half of the points if you are in the class when you are drawn. The points would be deducted if you don't review in English)

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.)

- 1. Lecture Notes
- 2. Semiconductor Physics and Devices: Basic Principles, 4th edition, Donald A. Neamen.

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.)

Powerpoints and further information will be given on e-learn website https://elearn4.ndhu.edu.tw/moodle/

其他補充說明(Supplemental instructions)