國立東華大學

教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	光電半導體製程			學年/學期 Academic Year/Semester	113/2
課程名稱(英文) Course Name in English	Introduction to Semiconductor Manufacturing Technology for Optoelectronics				
科目代碼 Course Code	OE__52920	系級 Department & Year	碩士	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	/魏茂國				
先修課程 Prerequisite					

課程描述 Course Description

讓學生在修習此一課程後，能對(光電)半導體相關製程科技能有深入的了解，以利研究工作的進行。

課程目標 Course Objectives

讓學生修習此一課程後，能對半導體製程科技能有深入了解，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	具有獨立研究能力Equipped with abilities of independent research.	○
B	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	●
C	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	●
D	使用儀器進行物件的分析及測試。Analysis and test of devices by instruments	●
E	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	Chapter 1: Introduction	
2	Chapter 2: Crystal growth (1)	
3	Chapter 2: Crystal growth (2)	
4	Chapter 3: Silicon oxidation	
5	Chapter 4: Photolithography (1)	

6	Chapter 4: Photolithography (2)	
7	Chapter 5: Etching (1)	
8	Chapter 5: Etching (2)	
9	期中考試週 Midterm Exam	
10	Chapter 6: Diffusion (1)	
11	Chapter 6: Diffusion (2)	
12	Chapter 7: Ion implantation (1)	
13	Chapter 7: Ion implantation (2)	
14	Chapter 8: Film deposition (1)	
15	Chapter 8: Film deposition (2)	
16	Chapter 8: Film deposition (3)	
17	期末考試週 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(含出缺席) General Performance (Attendance Record)	10%								出席
期中考成績 Midterm Exam	35%	✓							
期末考成績 Final Exam	35%	✓							
作業成績 Homework and/or Assignments	20%		✓						
其他 Miscellaneous (_____)									

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.)

1. Gray S. May and Simon M. Sze, Fundamentals of Semiconductor Fabrication, Int’l Ed., Wiley, 2004. (歐亞書局，02-77053358，林佳璟小姐)
2. 施敏、梅凱瑞原著，林鴻志譯，半導體製程概論，高立圖書，2016 (全華書局)
3. Marc J. Madou, Fundamentals of Microfabrication, 2nd Ed., CRC Press (2002)
4. W. F. Smith and J. Hashemi, Foundations of materials science and engineering, 4th Ed., McGraw-Hill (2006)
5. W. D Callister, Jr., Materials science and engineering an introduction, 6th ed., John Wiley & Sons, Inc. (2003)
6. D. A. Porter, K. E. Easterling, and M. Y. Sherif, Phase Transformations in Metals and Alloys, 3rd ed., CRC Press (2009)

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.)

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其他補充說明 (Supplemental instructions)