


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	113/1	
課程名稱(英文) Course Name in English	Introduction to Semiconductor Manufacturing Technology for Optoelectronics				
科目代碼 Course Code	MS_57120	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	/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					
After studying this course, students can have an in-depth understanding of semiconductor process technology to facilitate their research work.					
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	具備適當的英文能力，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	Chapter 1: Introduction				
2	Holliday				
3	Chapter 2: Crystal growth (1)				
4	Chapter 2: Crystal growth (2)				
5	Chapter 3: Silicon oxidation				
6	Chapter 4: Photolithography (1)				

7	Chapter 4: Photolithography (2)	
8	Chapter 5: Etching (1)	
9	期中考試週 Midterm Exam	
10	Chapter 5: Etching (2)	
11	Chapter 6: Diffusion (1)	
12	Chapter 6: Diffusion (2)	
13	Chapter 7: Ion implantation (1)	
14	Chapter 7: Ion implantation (2)	
15	Chapter 8: Film deposition (1)	
16	Chapter 8: Film deposition (2)	
17	期末考試週 Final Exam	
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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 General Performance	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.)

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)

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)

1. Marc J. Madou, Fundamentals of Microfabrication, 2nd Ed., CRC Press (2002)

2. W. F. Smith and J. Hashemi, Foundations of materials science and engineering, 4th Ed., McGraw-Hill (2006)

3. W. D Callister, Jr., Materials science and engineering an introduction, 6th ed., John Wiley & Sons, Inc. (2003)

4. 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)