



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	114/2
課程名稱(英文) Course Name in English	Fabrication Processes of Optoelectronic Semiconductor Devices			
科目代碼 Course Code	EE_33680	系級 Department & Year	學三	開課單位 Course-Offering Department
修別 Type	學程 Program	學分數/時間 Credit(s)/Hour(s)	3.0/3.0	
授課教師 Instructor	/黃家華			
先修課程 Prerequisite				
課程描述 Course Description				
介紹光電半導體元件包括發光二極體、雷射二極體、光偵測器、太陽光電、及顯示器等之元件物理、運作原理、及設計概念，與其相關製程和設備。				
課程目標 Course Objectives				
透過光電半導體元件之元件物理及製程介紹，使修課學生熟悉光電半導體製程原理，並具備光電半導體製程與技術之相關知識，瞭解光電半導體產業與發展。				
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	培育具備工程、應用數學與物理科學等數理知識之基本能力。To cultivate the basic knowledge of engineering, applied mathematics and physics.			●
B	培育系統分析、模擬驗證、實作實現之能力。To cultivate the basic ability of analysis, verification and implementation of systems.			●
C	訓練軟體工具使用與硬體實務驗證相互輔助之能力。To train the auxiliary ability between the utilization of software tool and the verification of the hardware practice.			○
D	訓練電機本知學能技術與工程實務相互結合運用之能力。To train the integrate ability between professional instinct in learning technique and engineering practice.			●
E	落實專題製作之群體合作與團隊競爭之能力。To fulfill the ability of group cooperation and teamwork competition.			●
F	落實發掘問題、邏輯分析、克服瓶頸與持續學習之能力To fulfill the ability of question finding, logical analyzing, bottleneck overcoming and continuous learning.			●
G	了解學術倫理與智慧財產觀念，掌握產業更迭需求與具備多元專長之能力。To obtain the ability of multi-specialization and to meet the industry demand as well as to have the ability of academic ethics and concept of intellectual property			●
H	了解國內外市場變化，具備基本科技英文閱讀溝通之能力。To understand the change of global market and the have the basic ability of reading and conversation in English.			●
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	光電半導體元件簡介			
2	光電半導體製程與設備簡介			

3	液晶和OLED顯示器	
4	TFT-LCD和OLED顯示模態及運作原理	
5	TFT-LCD和OLED製程	
6	微影和蝕刻技術與設備	
7	真空與電漿	
8	薄膜沈積技術與設備	
9	期中考試週 Midterm Exam	
10	發光二極體和半導體雷射	
11	藍寶石基板製備	
12	發光二極體和半導體雷射磊晶與製程技術	
13	太陽光電與光檢測器理論和元件	
14	矽基板製備	
15	矽晶太陽光電與光檢測器製程	
16	薄膜太陽光電-perovskite 和製程	
17	期末考試週 Final Exam	
18	薄膜太陽光電模組製程	

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	50%								
期末考成績 Final Exam	50%								
作業成績 Homework and/or Assignments									
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. 半導體與光電製程及設備, 李有璋 主編/吳芳賓·陳一塵·張耀仁·洪銘聰·徐桂珠·郭明村·郭浩中·賴芳儀·劉海平 編著, 高立圖書, 2018
2. Optoelectronics & Photonics: Principles & Practices, 2nd Edition, Safa O. Kasap, Pearson
3. Semiconductor optoelectronics : physics and technology, Jasprit Singh, McGraw-Hill
4. Semiconductor Devices: Physics and Technology, 3rd Edition, Simon M. Sze and Ming-Kwei Lee, Wiley

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)