國立東華大學

教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	半導體光特性分析			學年/學期 Academic Year/Semester	114/2
課程名稱(英文) Course Name in English	Optical Properties of Semiconductors				
科目代碼 Course Code	EE__D0260	系級 Department & Year	博士	開課單位 Course-Offering Department	電機工程學系
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/吳柏宏				
先修課程 Prerequisite					

課程描述 Course Description

本課程內容包含:由光的特性開始作介紹，進而探討半導體物理(能帶理論等)與其光學特性之量測方法(穿透光譜、反射光譜、光激發螢光光譜、調制光譜等)，更進一步了各種光電元件之應用(如發光二極體、半導體雷射、光檢測器、太陽能電池等)

課程目標 Course Objectives

學習半導體材料與元件之物理特性與其量測方式，進一步探討應用於光電元件製作之可行性，並培養學生了解其操作原理。

	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	培育具備電機電子資訊工程等專業技術研發之能力。To cultivate the research and developing ability of electrical, electronics and information engineering。	●
B	培育系統分析、模擬驗證、實作實現之能力。To cultivate the advanced 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	訓練電機電子資訊專業知識與工程實務相互結合運用之能力。To train the integrate ability between professional EECS knowledge and engineering practice。	●
E	落實高科技研究之分工整合與團體合作之領導能力。To fulfill the leading ability in high-tech research with integration and teamwork cooperation。	●
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，掌握國內外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	參與國際研討會了解國際市場變化與未來研究走向，具備純熟科技英文閱讀溝通寫作之能力。To participate the conferences to understand the change of global market and the future trend as well as to have the skillful ability of reading, conversation and technical writing 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		

2	Wave Nature of Light(I)	
3	Wave Nature of Light(II)	
4	Wave Nature of Light(III)	
5	Wave Nature of Light(IV)	
6		
7	Semiconductor Science (I)	
8	Semiconductor Science (II)	
9	期中考試週 Midterm Exam	
10		
11	Photoluminescence, Transmittance, Reflectance and Modulation spectroscopy	
12	Light Emitting Diode	
13	Stimulated Emission Device Laser	
14	Photodetectors & Photovoltaic Device	
15	期末考試週 Final presentation (I)	
16	期末考試週 Final Epresentation (II)	
17		
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)	20%						✓		
期中考成績 Midterm Exam	30%	✓					✓		
期末考成績 Final Exam	30%			✓					Oral presentation
作業成績 Homework and/or Assignments	20%			✓					A4 note 、 Final report
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.S.O. Kasap , “Optoelectronics and Photonics : Principle and Practice,” 2nd ed., Prentice Hall, (ISBN:0273774174)
2. Pallab Bhattacharya, “Semiconductor Optoelectronic Devices,” 2nd ed., Prentice Hall, 1997

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)