Please consult Intellectual Property Rights before making a photocopy. Please use the textbook of copyrighted edition.

②图玄東華大學

教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	有機電子導論				學年/學期 Academic Year/Se	113/2		
課程名稱(英文) Course Name in English	Organic Electronics							
科目代碼 Course Code	OE53120	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	/林伯彦							
先修課程 Prerequisite								
		on black of						

課程描述 Course Description

This course will introduce the basic optoelectronic properties of organic materials and the technology of their devices (i.e. OLED). The instruction of this course is mainly based on lecture notes and supplemented by HW and reports in related to journal papers. It is hoped that students who want to engage in organic electronics and components in the future can build up relevant basic knowledge after taking this course. Besides, office hour is 1:00-3:00 PM every Monday.

課程目標 Course Objectives

Lean the fundamental theory of organic electronics which includes photophysical and electroluminescent characteristics, and also applications

	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	•
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	0

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	Syllabus Syllabus	
3	Syllabus Syllabus	

5 Optical Prop. 2: Excitons, Spin, Energy transfer 6 Optical Prop. 3: Exciton diffusion and recombination 7 Electronic Properties 1: Energy bands, electron transport 8 Electronic Properties 1: Energy bands, electron transport 9 期步考試理 Midterm Exam 10 Light emitters 1: Basics, efficiency, fluorescence, phosphorescence, TADF 11 Light emitters 2: Roll-off, White OLEDs, outcoupling 12 Light emitters 2: Roll-off, White OLEDs, outcoupling 13 Light emitters 3: Outcoupling, reliability 15 Light emitters 3: Outcoupling, reliability 16 Light detectors 1: Basics 17 Light detectors 2: Efficiency, architect., materials, transparency 18 期末考試理 Final Exam *** 数 學 策 略 Teaching Strategies** **	4	Optical Prop. 1: Born-Oppenheimer & Franck-Condon, Fermi's golden rule, transitions						
Electronic Properties 1: Energy bands, electron transport 8 Electronic Properties 1: Energy bands, electron transport 9 期中考試週 Midterm Exam 10 Light emitters 1: Basics, efficiency, fluorescence, phosphorescence, TADF 11 Light emitters 1: Basics, efficiency, fluorescence, phosphorescence, TADF 12 Light emitters 2: Roll-off, White OLEDs, outcoupling 13 Light emitters 3: Outcoupling, reliability 14 Light emitters 3: Outcoupling, reliability 15 Light detectors 1: Basics 17 Light detectors 2: Efficiency, architect., materials, transparency 18 期末考試週 Final Exam ** *** *** *** *** *** *** *** *** **	5	Optical Prop. 2: Excitons, Spin, Energy transfer						
8 Electronic Properties 1: Energy bands, electron transport 9 期中考試週 Midterm Exam 10 Light emitters 1: Basics, efficiency, fluorescence, phosphorescence, TADP 11 Light emitters 1: Basics, efficiency, fluorescence, phosphorescence, TADP 12 Light emitters 2: Roll-off, White OLEDs, outcoupling 13 Light emitters 2: Roll-off, White OLEDs, outcoupling 14 Light emitters 3: Outcoupling, reliability 15 Light emitters 3: Outcoupling, reliability 16 Light detectors 1: Basics 17 Light detectors 2: Efficiency, architect., materials, transparency 18 期末考試週 Final Exam *** ** ** ** ** Teaching Strategies** 講堂詩授 Lecture	6	Optical Prop. 3: Exciton diffusion and recombination						
9 期中考試週 Midterm Exam 10 Light emitters 1: Basics, efficiency, fluorescence, phosphorescence, TADF 11 Light emitters 1: Basics, efficiency, fluorescence, phosphorescence, TADF 12 Light emitters 2: Roll-off, White OLEDs, outcoupling 13 Light emitters 2: Roll-off, White OLEDs, outcoupling 14 Light emitters 3: Outcoupling, reliability 15 Light emitters 3: Outcoupling, reliability 16 Light detectors 1: Basics 17 Light detectors 2: Efficiency, architect., materials, transparency 18 期末考試週 Final Exam 数學 策略 Teaching Strategies □ 深堂講發 Lecture □ 分組討論Group Discussion □ 參閱實習 Field Trip □ 其他Miscellaneous: 数學 劍 新 自 評 Teaching Self-Evaluation 別新教學(Innovative Teaching) □ 問題等句學習(PBL) □ 園體合作學習(TBL) □ 解決等句學習(SBL) □ 翻轉教室 Flipped Classroom □ 唐課師 Moocs 社會責任(Social Responsibility) □ 在地實踐Community Practice □ 產學合作 Industy-Academia Cooperation 時景教學Transdisciplinary Projects) □ 跨院系教學Inter-collegiate Teaching	7	Electronic Properties 1: Energy bands, electron transport						
Light emitters 1: Basics, efficiency, fluorescence, phosphorescence, TADF	8	Electronic Properties 1: Energy bands, electron transport						
phosphorescence, TADF Light emitters 1: Basics, efficiency, fluorescence, phosphorescence, TADF Light emitters 2: Roll-off, White OLEDs, outcoupling light emitters 2: Roll-off, White OLEDs, outcoupling light emitters 3: Outcoupling, reliability light emitters 3: Outcoupling, reliability light detectors 1: Basics light detectors 1: Basics light detectors 2: Efficiency, architect., materials, transparency light detectors 2: Efficiency, architect., materials, light detectors 2: Efficiency, architect., materials	9	期中考試週 Midterm Exam						
11 phosphorescence, TADF 12 Light emitters 2: Roll-off, White OLEDs, outcoupling 13 Light emitters 2: Roll-off, White OLEDs, outcoupling 14 Light emitters 3: Outcoupling, reliability 15 Light emitters 3: Outcoupling, reliability 16 Light detectors 1: Basics 17 Light detectors 2: Efficiency, architect., materials, transparency 18 期末考試週 Final Exam	10							
Light emitters 2: Roll-off, White OLEDs, outcoupling 14 Light emitters 3: Outcoupling, reliability 15 Light emitters 3: Outcoupling, reliability 16 Light detectors 1: Basics 17 Light detectors 2: Efficiency, architect., materials, transparency 18 期末考試週 Final Exam ***数學 策 略 Teaching Strategies** ### We apply apply Discussion ** *** ** ** ** ** ** ** ** ** ** ** *	11							
Light emitters 3: Outcoupling, reliability	12	Light emitters 2: Roll-off, White OLEDs, outcoupling						
Light emitters 3: Outcoupling, reliability 16 Light detectors 1: Basics 17 Light detectors 2: Efficiency, architect., materials, transparency 18 期末考試週 Final Exam 数學策略 Teaching Strategies 课堂講授 Lecture	13	Light emitters 2: Roll-off, White OLEDs, outcoupling						
Light detectors 1: Basics 17 Light detectors 2: Efficiency, architect., materials, transparency 18 期末考試週 Final Exam 数學策略 Teaching Strategies 教學創新自評 Teaching Strategies 教學創新自評 Teaching Self-Evaluation 多觀實習 Field Trip 其他Miscellaneous: 数學創新自評 Teaching Self-Evaluation	14	Light emitters 3: Outcoupling, reliability						
Light detectors 2: Efficiency, architect., materials, transparency	15	Light emitters 3: Outcoupling, reliability						
教學策略 Teaching Strategies 課堂講授 Lecture	16	Light detectors 1: Basics						
数學 策略 Teaching Strategies 一課堂講授 Lecture 分組討論Group Discussion 參觀實習 Field Trip 其他Miscellaneous: 数學 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) 解轉教室 Flipped Classroom 唐課師 Moocs 社會責任(Social Responsibility) 產地實踐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	17	Light detectors 2: Efficiency, architect., materials, transparency						
課堂講授 Lecture	18	期末考試週 Final Exam						
大學創新自評 Teaching Self-Evaluation 創新教學(Innovative Teaching) 問題導向學習(PBL) 翻轉教室 Flipped Classroom は會責任(Social Responsibility) 一在地實踐Community Practice 彦域合作(Transdisciplinary Projects) 「跨界教學Transdisciplinary Teaching 」 持知 Teaching Self-Evaluation 解決導向學習(SBL)	教學策略 Teaching Strategies							
教學創新自評 Teaching Self-Evaluation 創新教學(Innovative Teaching) 問題導向學習(PBL) 翻轉教室 Flipped Classroom 准會責任(Social Responsibility) 在地實踐Community Practice 齊場合作(Transdisciplinary Projects) 「跨界教學Transdisciplinary Teaching 」 跨院系教學Inter-collegiate Teaching	課堂講授 Lecture							
創新教學(Innovative Teaching) □ 問題導向學習(PBL) ■ 翻轉教室 Flipped Classroom □ 在地實踐Community Practice □ 查學合作 Industy-Academia Cooperation □ 跨域合作(Transdisciplinary Projects) □ 跨界教學Transdisciplinary Teaching □ 跨院系教學Inter-collegiate Teaching	其他Miscellaneous:							
□ 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 ■ 産學合作 Industy-Academia Cooperation の時域合作(Transdisciplinary Projects) ■ 跨界教學Transdisciplinary Teaching ■ 跨院系教學Inter-collegiate Teaching	教 學 創 新 自 評 Teaching Self-Evaluation							
■ 翻轉教室 Flipped Classroom	創新教學(Innovative Teaching)						
社會責任(Social Responsibility) 「在地實踐Community Practice	問題導向學習(PBL) ■ 團體合作學習(TBL) ■ 解決導向學習(SBL)							
□ 在地實踐Community Practice	翻轉教室 Flipped Classroom							
跨域合作(Transdisciplinary Projects) □ 跨界教學Transdisciplinary Teaching □ 跨院系教學Inter-collegiate Teaching	社會責任(Social Responsibility)							
■ 跨界教學Transdisciplinary Teaching ■ 跨院系教學Inter-collegiate Teaching	在地實踐Community Practice							
	跨域合作(Transdisciplinary Projects)							
──業師合授 Courses Co-taught with Industry Practitioners	■ 跨界教學Transdisciplinary Teaching ■ 跨院系教學Inter-collegiate Teaching							
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 多元評量方式 Assessments								
Items	Percentage	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									
期中考成績 Midterm Exam									
期末考成績 Final Exam									
作業成績 Homework and/or Assignments									
其他 Miscellaneous			- H - L 1						

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.)

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)

課程內容依實際上課情形滾動式調整進行