國立東華大學

# 教學計劃表 Syllabus

| | | | | | |
|---|---|---|---|---|---|
| 課程名稱(中文)<br>Course Name in Chinese | 有機電子導論 | | | 學年/學期<br>Academic Year/Semester | 113/2 |
| 課程名稱(英文)<br>Course Name in English | Organic Electronics | | | | |
| 科目代碼<br>Course Code | OE__53120 | 系級<br>Department & Year | 碩士 | 開課單位<br>Course-Offering Department | 光電工程學系 |
| 修別<br>Type | 選修 Elective | 學分數/時間<br>Credit(s)/Hour(s) | 3.0/3.0 | | |
| 授課教師<br>Instructor | /林伯彥 | | | | |
| 先修課程<br>Prerequisite | | | | | |

## 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<br>Basic Learning Outcomes | 課程目標與系專業能力相關性<br>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 | Introduction | |
| 2 | Syllabus | |
| 3 | Syllabus | |

| | | |
|---|---|---|
| 4 | Optical Prop. 1: Born-Oppenheimer & Franck-Condon, Fermi’s golden rule, transitions | |
| 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 | |

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<br>Items | 配分比例<br>Percentage | 多元評量方式 Assessments | | | | | | | |
| | | 測驗<br>會考 | 實作<br>觀察 | 口頭<br>發表 | 專題<br>研究 | 創作<br>展演 | 卷宗<br>評量 | 證照<br>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<br>(_____) | | | | | | | | | |

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