



教學計劃表 Syllabus

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| 課程名稱(中文) Course Name in Chinese | 晶體光學 | | 學年/學期 Academic Year/Semester | 112/2 | |
| 課程名稱(英文) Course Name in English | Optical waves in crystals | | | | |
| 科目代碼 Course Code | OE_52300 | 系級 Department & Year | 碩士 | 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 | /李政誼 | | | | |
| 先修課程 Prerequisite | | | | | |
| 課程描述 Course Description | | | | | |
| 介紹光偏振、偏振光在晶體中的傳播特性和雙折射性質，也介紹其積體光電元件和相關應用。 | | | | | |
| 課程目標 Course Objectives | | | | | |
| 建立電磁波與晶體中傳遞行為之觀念及分析能 | | | | | |
| 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. | | | | ○ |
| 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 | Electromagnetic plane wave | | | | |
| 2 | electromagnetic plane wave, Irradiance, and Poynting Vector | | | | |
| 3 | Polarization of light | | | | |
| 4 | Polarization of light & Jones Vector | | | | |
| 5 | Polarization devices: Jones Matrix | | | | |

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|----|--|------------|
| 6 | Polarization devices: Jones Matrix | |
| 7 | Fresnel Reflection, phase shift, Brewster angle, and Dispersion relation of refractive index | |
| 8 | | 民族掃墓節 (放假) |
| 9 | 期中考試週 Midterm Exam | |
| 10 | Propagation in Anisotropic Media | |
| 11 | Propagation in Anisotropic Media | |
| 12 | Wave propagation in Biaxial and uniaxial crystals | |
| 13 | Wave propagation in Biaxial and uniaxial crystals | |
| 14 | Refraction and Poynting vector at a uniaxial crystal surface | |
| 15 | Electo-optic devices and Integrated Optical Modulators | |
| 16 | Electo-optic devices and Integrated Optical Modulators | |
| 17 | 期末考試週 Final Exam | |
| 18 | Electo-optic devices and Integrated Optical Modulators | |

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% | | | | | | | | |
| 期中考成績 Midterm Exam | 25% | | | | | | | | |
| 期末考成績 Final Exam | 25% | | | | | | | | |
| 作業成績 Homework and/or Assignments | 20% | | | | | | | | |
| 其他 Miscellaneous (小考6次) | 20% | | | | | | | | |

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.)

- Chapter 6, Optoelectronics and Photonics: Principles and Practices, Author: S.O. Kasap and Ravindra Kumar Sinha
- Chapter 6, Fundamentals of Photonics, 作者: Saleh, Bahaa E. A. / Teich, Malvin Carl
- Chapter 5 and Chapter 6, Physics of Light and Optics, authors: Justin Peatross and MichaelWare, Brigham Young University
- Optical Waves in Crystals: Propagation and Control of Laser Radiation, Authors: Amnon Yariv, Pochi Yeh

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)