



教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	晶體光學		學年/學期 Academic Year/Semester		114/2			
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.	<input type="radio"/>
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	<input checked="" type="radio"/>
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	<input type="radio"/>
D	使用儀器進行物件的分析及測試。Analysis and test of devices by instruments	<input type="radio"/>
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	<input checked="" type="radio"/>
F	具有良好的溝通與團隊合作的能力。Ability to communicate and teamwork	<input type="radio"/>
G	具有創新思維及終身學習的能力。Creative thinking and life-long learning ability	<input type="radio"/>

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	

6	Polarization devices: Jones Matrix	
7	Fresnel Reflection, phase shift, Brewster angle, and Dispersion relation of refractive index	
8	Fresnel Reflection, phase shift, Brewster angle, and Dispersion relation of refractive index	
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	Electro-optic devices and Integrated Optical Modulators	
16	Electro-optic devices and Integrated Optical Modulators	
17	期末考試週 Final Exam	
18	Electro-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 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
平時成績(含出缺席) General Performance (Attendance Record)	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.)

1. Chapter 6, Optoelectronics and Photonics: Principles and Practices, Author: S.O. Kasap and Ravindra Kumar Sinha
2. Chapter 6, Fundamentals of Photonics, 作者: Saleh, Bahaa E. A. / Teich, Malvin Carl
3. Chapter 5 and Chapter 6, Physics of Light and Optics, authors: Justin Peatross and Michael Ware, Brigham Young University
4. 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)