國立東華大學

教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	雷射物理AA			學年/學期 Academic Year/Semester	112/2
課程名稱(英文) Course Name in English	Laser Physics				
科目代碼 Course Code	PHYS3090AA	系級 Department & Year	學三	開課單位 Course-Offering Department	物理學系
修別 Type	學程 Program	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/賴建智				
先修課程 Prerequisite					

課程描述 Course Description

介紹基礎光學知識與雷射原理, 訓練學生具有各種雷射, 光譜等相關基本概念.

課程目標 Course Objectives

簡介雷射的發光原理、雷射系統的基本架構、工作原理和特性，以及雷射調變技術:如脈衝壓縮技術等。在雷射光學部分則介紹雷射光束的傳播理論及匯聚特性。

	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	具備物理之基礎背景知識Possessing fundamental knowledge in physical sciences.	●
B	能運用基本物理知識與邏輯推理，分析解決物理問題Being able to analyze and solve physics problems based on basic knowledge in physics as well as logical reasoning.	●
C	對目前測量器材有基礎認識，且具有操作物理實驗儀器的能力Being acquainted with modern equipment and being able to operate them for performing physics experiments.	○
D	能使用基礎電腦程式語言解決物理問題Being able to use basic computer programming for solving physics problems.	○
E	善用各種資訊平台進行論文資料蒐集的能力Being able to use various platforms for data collection benefiting a topical research.	○
F	具備科技發展的國際視野以及外語溝通的能力Having an international view of the technology developments and being able to use a foreign language for communications	○
G	能整合物理與其它領域知識Being able to integrate the knowledge of physics with that of other fields.	●

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	Electromagnetic Theory	◎2/28（三）放假
3	Electromagnetic Theory	
4	Propagation of Laser Beams	

5	Propagation of Laser Beams	
6	Light Propagation in Matters	
7	Light Propagation in Matters	◎4/4（四）放假
8	Optical Resonators	
9	期中考試週	
10	Optical Resonators	
11	Interaction of Radiation and Atomic Systems	
12	Laser Oscillation	
13	Laser Oscillation	
14	期末報告	
15	期末報告	
16	期末報告	
17	期末報告	◎6/10（一）放假 ◎期末考週
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 General Performance									
期中考成績 Midterm Exam									
期末考成績 Final Exam	70%			✓					Oral Presentation
作業成績 Homework and/or Assignments									
其他 Miscellaneous (Attendance)	30%								

評量方式補充說明
Grading & Assessments Supplemental instructions

*無補考、無補交（正當理由並檢附證明除外）。
*請假請遵守校規，並依規定附上證明辦理。
*未遵守期末報告相關規定者，總成績為不及格。
*本課程不使用麥克風，修課視為同意，不得事後異議。
*授課週次安排依實際課堂進度為主。

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.)

Textbook: Photonics: Optical Electronics in Modern Communications by Amnon Yariv (Author), Pochi Yeh (Author), Oxford University Press; 6 edition (January 26, 2006)

References: [1] Optics by Eugene Hecht, Addison-Wesley; 4 edition (August 12, 2001)
[2] Lasers, by Anthony E. Siegman, University Science Books; New edition edition (May 1, 1986)

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)