



教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	近代物理AA			學年/學期 Academic Year/Semester	114/1
課程名稱(英文) Course Name in English	Modern Physics				
科目代碼 Course Code	PHYS2110AA	系級 Department & Year	學二	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	/張俊明				
先修課程 Prerequisite					

課程描述 Course Description

Introduction of special relativity. Description of nature for motions near the speed of light. Student will learn basic principles and concepts of special relativity and will develop physical intuition for high speed physical phenomena.

Introduction of quantum physic. Quantum theory can be described as the study of phenomena involving small length scale (e.g., atomic size). It provides concepts for understanding the microscopic world. Students will learn basic principles of quantum mechanics, such as the wave-particle duality, the uncertainty principle, and Schrodinger equation for its application in a variety of simple application, such as Energy Levels of Electrons in a atom, molecules, solids and others.

課程目標 Course Objectives

介紹近代物理學的基本觀念與其應

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 & Special Relativity (time & length) (Chapter 1)	

2	Special Relativity (momentum & energy) (Chapter 1)	
3	Particle Properties of waves (Chapter 2)	
4	Wave properties of particles (Chapter 3)	
5	中秋節+國慶日放假	
6	Atomic structure (Chapter 4)	
7	Quantum Mechanics (Chapter 5)	
8	Quantum Mechanics (Chapter 5)	
9	期中考試週 Midterm Exam TEST & REVIEW	
10	近代物理期中考	
11	Quantum theory of the hydrogen atom (Chapter 6)	
12	Many-electron atoms (Chapter 7)	
13	Molecules (Chapter 8)	
14	The Solid state (Chapter 10) & TEST & REVIEW	
15	FINAL EXAM of Modern Physics 近代物理期末考	
16	行憲紀念日放假	
17	2026/01/01 星期四 元旦 放假 學校期末考試週	
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 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									
期中考成績 Midterm Exam	35%	✓							
期末考成績 Final Exam	35%	✓							
作業成績 Homework and/or Assignments	30%	✓							
其他 Miscellaneous (_____)									
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.)									
Textbook: "Concepts of Modern Physics" (Asia Adaptation), Arthur Beiser, (McGraw-Hill)									
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.)									
東華e學苑									
其他補充說明 (Supplemental instructions)									