



課 綱 Course Outline
物理學系奈米與光電科學組

中文課程名稱 Course Name in Chinese	電磁波				
英文課程名稱 Course Name in English	Electromagnetic Waves				
科目代碼 Course Code	PHYS32200	班 別 Degree	學士班 Bachelor' s		
修別 Type	學程 Program	學分數 Credit(s)	3.0	時 數 Hour(s)	3.0
先修課程 Prerequisite	電磁學(一)(二)				
課程目標 Course Objectives					
介紹電磁波的基本概念、原理與應用，增進學生對電磁學的認識與瞭解。					
系教育目標 Dept.' s Education Objectives					
1	物理科學人才培育，奠定物理及相關科學領域專業知識 To provide integrated education programs in view of fundamental knowledge of physical sciences and associated fields.				
2	培養高科技人才 To train the talent for knowledge-intensive industries.				
3	培養繼續進修的理工人才 To train the talent for taking higher educational program in physical sciences.				
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

課程大綱
Course Outline

1. Boundary Conditions
2. The Continuity Equation, Poyting' s Theorem
3. Newton' s Third law in Electrodynamics, Maxwell' s Stress tensor
4. Conservation of Momentum, Angular Momentum
5. Waves in One Dimension
6. Electromagnetic Waves in Vacuum
7. Electromagnetic Waves in Matter
8. Absorption and Dispersion
9. Guided Waves
10. Dipole Radiation

資源需求評估 (師資專長之聘任、儀器設備的配合 . . . 等)
Resources Required (e.g. qualifications and expertise, instrument and equipment, etc.)

具有各領域之專業師資、相關期刊及圖書、影印機、投影機、幻燈機。

課程要求和教學方式之建議
Course Requirements and Suggested Teaching Methods

講授、課堂及課後討論、作業、隨堂考試、期中考、期末考。

其他
Miscellaneous