國立東華大學

教學計劃表　Syllabus

課程名稱(中文) Course Name in Chinese	物理特論			學年/學期 Academic Year/Semester	113/2
課程名稱(英文) Course Name in English	Special Topics in Physics				
科目代碼 Course Code	SCE_51800	系級 Department & Year	碩士	開課單位 Course-Offering Department	教育與潛能開發學系
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/陳世文				
先修課程 Prerequisite					

課程描述　Course Description

此門課程介紹物理學在日常生活中的應用，使學生了解日常生活現象背後的特殊物理原理，引發學生對物理學的興趣，了解物理學的相關概念，培養學生物理素養，以及未來應用於科教研究與教學的能力。
This course introduces the applications of physics in daily life, enabling students to understand the unique physical principles behind everyday phenomena. It aims to spark students' interest in physics, enhance their understanding of relevant concepts, cultivate their scientific literacy in physics, and develop their ability to apply physics in future scientific education research and teaching.

課程目標　Course Objectives

1.瞭解物理學的發展過程。
2.瞭解物理學的基本概念。
3.可以進行簡易的物理實驗。
4.科學學習中學生常見的迷思概念(misconception)

	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	瞭解科學教育專業理論及內涵。To comprehend the theories and implementations of science education	
B	具備科學教學專業素養。To possess the professional competencies of science teaching	
C	具有科學教育研究基礎素養。To have the basic abilities of science education research	
D	具備科學素養與人文關懷。To integrate scientific literacy with humanistic concer	
E	具備科學教育推廣與傳播素養。To possess the abilities of science popularization and communicate	
F	具備主動探究之態度與熱愛自然的情操。To express the positive attitude toward inquiry and the sentiment adoring the nature	
G	具備多面相的科學觀。To understand the science with multidimensional viewpoints	

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	新生座談會暨演講	

2	2/28放假 February 28 Holiday	
3	課程介紹 Course Introduction	
4	音樂中的物理學1－音頻的原理與測量 Physics in Music 1 – Principles and Measurement of Audio Frequencies	
5	音樂中的物理學2－樂器物理原理設計 Physics in Music 2 – Physical Principles and Design of Musical Instruments	
6	拿鐵咖啡的物理學－熱與傳導 Physics of Latte – Heat and Conduction	
7	4/4放假 April 4 Holiday	
8	傳播中的物理學－光與訊號 Physics in Communication – Light and Signals Ttransmission	
9	期中考試週 Midterm Exam	
10	遊樂園中的物理學－力學守恆與圓周運動 Physics in Amusement Parks – Conservation of Mechanics and Circular Motion	
11	棉花糖的物理學－離心力與相變 Physics of Cotton Candy – Centrifugal Force and Phase Transition	
12	引擎中的物理學－史特林引擎與熱力學 Physics in Engines – Stirling Engine and Thermodynamics	
13	時空中的物理學－狹義相對論介紹 Physics in Spacetime – Introduction to Special Relativity	
14	紅酒中的物理學－馬倫哥尼效應 Physics of Red Wine – Marangoni's Effect	
15	530放假 530 Take off	
16	期末考試週 Final Exam	
17	自主學習 Self-Directed Learning	
18	自主學習 Self-Directed Learning	

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(含出缺席) General Performance (Attendance Record)	30%		✓	✓		✓			
期中考成績 Midterm Exam	30%		✓	✓		✓			
期末考成績 Final Exam	40%		✓	✓		✓			
作業成績 Homework and/or Assignments									
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.)

教師自備教材

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)