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②图玄東華大學

教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	物理學專題研究			學年/學期 Academic Year/Se	113/2		
課程名稱(英文) Course Name in English	Advanced Research in Physics						
科目代碼 Course Code	SCE_71940	系級 Department 博士 (& Year		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 Credit(s)/Hou		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	具備科學教育專業理論發展與實踐之素養。To possess the capacity to develop and practice theories in science education	0
В	具備科學教育獨立研究素養。To possess the ability of independent study focusing on science education	•
С	具備科學教育的創新與問題解決素養。To possess creativity in science education and the ability of problem solving	0
D	具備國際學術交流之素養。To possess the ability of international academic exchanges	0
Е	具備科學教學專業素養。To possess the ability and professional knowledge in science education	•

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	
	2/28放假 February 28 Holiday	
3	課程介紹 Course Introduction	

4	音樂中的物理學1一音頻的原理與測量 Dhyaing in Musical Dringiples and Management of Audia						
4	Physics in Music 1 - Principles and Measurement of Audio Frequencies						
	音樂中的物理學2一樂器物理原理設計						
5							
	Instruments						
6	拿鐵咖啡的物理學一熱與傳導						
	Physics of Latte - Heat and Conduction						
7	4/4放假 April 4 Holiday						
8	傳播中的物理學一光與訊號 Physics in Communication - Light and Signals Ttransmission						
9	期中考試週 Midterm Exam						
J							
10	遊樂園中的物理學一力學守恆與圓周運動 Physics in Amusement Parks - Conservation of Mechanics and						
10	Circular Motion						
11	棉花糖的物理學一離心力與相變						
11	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	時空中的物理學一狹義相對論介紹 Physics in Spacetime - Introduction to Special Relativity						
14	紅酒中的物理學一馬倫哥尼效應						
	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 自主學習						
18	Self-Directed Learning						
	教學策略 Teaching Strategies						
✓ 課堂講	授 Lecture	Field Trip					
	scellaneous:						
	教學創新自評Teaching Self-Evaluation						
創新教學(Innovative Teaching)						
✓ 問題導	向學習(PBL) ■ ■體合作學習(TBL) ■ 解決導向學	보谐(SBL)					
翻轉教	室 Flipped Classroom						
 社會責任(Social Responsibility)						
	踐Community Practice 產學合作 Industy-Academia Cooperati	on					
	Transdisciplinary Projects)						
	學Transdisciplinary Teaching 跨院系教學Inter-collegiate Teaching						
	-, iranoaroorpirmary reaching						
業師合	授 Courses Co-taught with Industry Practitioners						
其它 othe	r:						

學期成績計算及多元評量方式 Grading & Assessments									
配分項目	多元評量方式 Assessments								
Items	配分比例 Percentage	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(含出鉄席) 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)