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## ②图 i 東華大學 教學計劃表 Syllabus

		教与	产計劃衣	<b>Sy</b> 11	abus				
	名稱(中文) ame in Chinese	光電電磁元件模擬			學年/學期 Academic Year/Sem	ester	113/2		
	課程名稱(英文) se Name in English Simulation of opto-electromagnetic devices								
	科目代碼 Course CodeOE_53200系級 Department & Year碩士 G A A Year開課單位 Course-Offering Department					光	光電工程學系		
	修別 Type  選修 Elective								
	授課教師 Instructor /李政誼								
先修課程 Prerequisite									
課程描述 Course Description									
Provide a comprehensive introduction of modern Photonic Devices: its physics and modelling.									
		課	程目標 Cour	se Objecti	ives				
介紹如何使用電腦輔助工具來模擬光電電磁元件並分析其計算結果									
系專業能力 Basic Learning Outcomes						Cor	課程目標與系專業能 力相關性 Correlation between Course Objectives and Dept.'s Education Objectives		
	獨立研究能力Equippe						•		
B 具有光電工程的專業知識及應用能力。Professional knowledge and application ability of Opto-electronic engineering  C 具有設計與執行實驗、報告撰寫與數據解釋之能力。Abilities to design and execute							•		
experiment, write reports, and explain data  D 使用儀器進行物件的分析及測試。Analysis and test of devices by instruments							•		
E 具備適當的英文能力,應用於學習與交流。English language ability to study and interact						<u> </u>	0		
F 具有良好的溝通與團隊合作的能力。Ability to communicate and teamwork							0		
G 具有創新思維及終身學習的能力。Creative thinking and life-long learning ability							•		
圖示說明]	Illustration :	● 高度相關 Hi	ghly correla	ated 〇中	度相關 Moderately	y corre	lated		
		授課進	度表 Teachin	g Schedule	e & Content				
週次Week		內容 Subject/Topics					備註Remarks		
1	Modelling envir and setting of		-						
2	2					和平紀	和平紀念日		
3	Electromagnetic	e Plane wave and Model of refractive index							
4	Gaussian beam:	theory and its modelling							

5	Waves of Reflection and Transmission, Brewster angle, and Goos- Hänchen effect						
6	Mie's scattering theory for 2D object [米式散射]: theoretical background and its simulation						
7		民族掃墓節					
8	Mie's scattering theory for 2D object [米式散射]: theoretical background and its simulation, Transfer matrix [傳遞矩陣] and scattering matrix [散射矩陣]						
9	期中考試週 Midterm Exam						
10	1D photonic crystal [一維光子晶體]: Theory and Simulation						
11	Localized surface plasmon [區域性表面電漿共振]: theoretical background and its modelling						
12	Step-index fiber [步階光纖]: theoretical background and its modelling						
13	Yagi-Uda nano-Antena [八木奈米天線]: theoretical background and its modelling						
14	2D photonic crystal [二維光子晶體]: theoretical background						
15		補假					
16	2D photonic crystal [二維光子晶體]: Simulation & Metasurfaces [超穎介面]: theory and its modelling						
17	Project report						
18	Project report						
	教學策略 Teaching Strategies						
✓ 課堂講	授 Lecture 分組討論Group Discussion 參觀實習	Field Trip					
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							
社會責任(Social Responsibility)							
□ 在地實踐Community Practice □ 產學合作 Industy-Academia Cooperation							
一 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	配分比例 Percentage	多元評量方式 Assessments							
Items		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)	10%								
期中考成績 Midterm Exam	30%								
期末考成績 Final Exam	30%								
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.)

- 1. Introduction to COMSOL Multiphysics
- 2. Photonic crystals:Physics  $\,$  and Practical Modeling, Igor A. Sukhoivanov Igor V. Guryev  $\,$
- 3. An Introduction to Metamaterials and Nanophotonics, CONSTANTIN SIMOVSKI and SERGEI TRETYAKOV
- 4. Wave Propagation From Electrons to Photonic Crystals and Left-Handed Materials, Peter Markos.

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)