


國立東華大學
教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	光電數值分析與計算		學年/學期 Academic Year/Semester	115/1
課程名稱(英文) Course Name in English	Numerical analysis and calculation for Opto-electronics			
科目代碼 Course Code	OE_53130	系級 Department & Year	碩士	開課單位 Course-Offering Department
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)	3.0/3.0	
授課教師 Instructor	/李政誼			
先修課程 Prerequisite				
課程描述 Course Description				
課程分為兩部分：上部分介紹matlab程式語言的撰寫方式與程式邏輯、資料處理與分析。下部分介紹解決光電工程問題的一些數值方法。				
課程目標 Course Objectives				
以程式語言及數值方法處理光電領域的計算問題				
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	具有獨立研究能力。Equipped with abilities of independent research.			●
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 interac.			○
F	具有良好的溝通與團隊合作的能力。Ability to communicate and teamwork.			●
G	具有創新思維、永續發展及終身學習的能力。Creative thinking, sustainable development, and lifelong learning ability.			○
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	Environments of matlab, Script-M file, Basic operation, and matrix calculation			
2	Basic operation			
3	matrix calculation			
4	matrix calculation			

5	2D and 3D graphics	
6	Structured programming M Function files	
7	Data input/output, Symbol calculation and animation	
8	Optical System Design and Analysis	
9	期中考試週 Midterm Exam	
10	image analysis	
11	image analysis	
12	Curve fitting	
13	Curve fitting and Fast Fourier transform	
14	Fast Fourier transform	
15	期末考週	
16	Difference equation	
17	Finite difference equation	

彈性 教學 規劃 Flexible Teaching Plan	<p>請勾選(至少需勾選1 個項目): Please tick the box(es). (At least one item is required.):</p> <p><input type="checkbox"/> 問題討論 Problem-based Discussion</p> <p><input type="checkbox"/> 翻轉教學 Flipped Classroom</p> <p><input type="checkbox"/> 展演實作 Performance / Practical Presentation</p> <p><input type="checkbox"/> 校外參訪 Off-campus Visit</p> <p><input type="checkbox"/> 講座活動 Lecture / Seminar</p> <p><input type="checkbox"/> 線上作業 Online Assignments</p> <p><input checked="" type="checkbox"/> 自主學習 Self-directed Learning</p> <p><input type="checkbox"/> 課業輔導 Academic Support</p> <p><input type="checkbox"/> 實驗操作 Experiment Operation</p> <p><input type="checkbox"/> 遠距教學(同步) Distance Learning (Synchronous)</p> <p><input checked="" type="checkbox"/> 遠距教學(非同步) Distance Learning (Asynchronous)</p> <p><input type="checkbox"/> 其他(請填寫) Others (Please specify.):</p> <p>備註: 本校學期週數自115 學年度起調整為17 週, 為符合1學分18 小時之原則, 請教師規劃安排彈性教學。 Note: From the 115th academic year, the semester will be 17 weeks. Please include flexible teaching activities to meet the required 18 hours per credit.</p>
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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(含出缺席) General Performance (Attendance Record)	10%								
期中考成績 Midterm Exam	25%								
期末考成績 Final Exam	25%								
作業成績 Homework and/or Assignments	20%								
其他 Miscellaneous (小考4次)	20%								

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.)

PPT Lectures

References:

1. matlab 設計入門,

<http://mirlab.org/jang/books/matlabprogramming4beginner/>

2. Programming for Computations - MATLAB/Octave, A Gentle Introduction to Numerical Simulations with MATLAB/Octave

Authors: Svein Linge and Hans Petter Langtangen

Free for download:<https://link.springer.com/book/10.1007%2F978-3-319-32452-4>

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.)

課程講義放置於東華e學苑 <http://www.elearn.ndhu.edu.tw/moodle/>

其他補充說明 (Supplemental instructions)