


**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	113/1
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。下部分介紹常用的數值方法解決光電工程問題。				
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 interact			○
F	具有良好的溝通與團隊合作的能力。Ability to communicate and teamwork			●
G	具有創新思維及終身學習的能力。Creative thinking and life-long 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	2D, and 3D graphics			

5	Structured programming	
6	M Function files and Data input/output	
7	Symbol calculation and App Designer	
8	Optoelectric application	
9	期中考試週 Midterm Exam	
10		全校運動會
11	Computing integrals and application	
12	Ordinary differential equations and application	
13	Nonlinear algebra equations and Optimization	
14	Fast Fourier transform	
15	Curve fitting: linear and nonlinear regression	
16	Numerical calculation of partial differential equation	
17		1/1 中華民國開國紀念日
18	期末考試週 (Finite-Difference Time-Domain method (時域有限差分))	

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:

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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 General Performance	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6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/>

線上教學連線資訊, 也會一併公布在東華e學苑 <http://www.elearn.ndhu.edu.tw/moodle/>

其他補充說明 (Supplemental instructions)