

 國立東華大學
教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	自動控制系統AA			學年/學期 Academic Year/Semester	115/1
課程名稱(英文) Course Name in English	Automatic Control Systems				
科目代碼 Course Code	EE__3360AA	系級 Department & Year	學三	開課單位 Course-Offering Department	電機工程學系
修別 Type	學程 Program	學分數/時間 Credit(s)/Hour(s)		3.0/3.0	
授課教師 Instructor	/謝欣然				
先修課程 Prerequisite					
課程描述 Course Description					
Studies on analysis and design of control systems. It contains modeling of dynamic systems, stability, and controllers development based on transfer functions and state-space equations.					
課程目標 Course Objectives					
學習控制系統之穩定度分析、控制器設計方式、以及控制相關軟硬體設備之認識與應用					
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	培育具備工程、應用數學與物理科學等數理知識之基本能力。To cultivate the basic knowledge of engineering, applied mathematics and physics				●
B	培育系統分析、模擬驗證、實作實現之能力。To cultivate the basic ability of analysis, verification and implementation of systems.				●
C	訓練軟體工具使用與硬體實務驗證相互輔助之能力。To train the auxiliary ability between the utilization of software tool and the verification of the hardware practice				○
D	訓練電機本知學能技術與工程實務相互結合運用之能力。To train the integrate ability between professional instinct in learning technique and engineering practice.				●
E	落實專題製作之群體合作與團隊競爭之能力。To fulfill the ability of group cooperation and teamwork competition.				○
F	落實發掘問題、邏輯分析、克服瓶頸與持續學習之能力。To fulfill the ability of question finding, logical analyzing, bottleneck overcoming and continuous learning				●
G	了解學術倫理與智慧財產觀念，掌握產業更迭需求與具備多元專長之能力。To obtain the ability of multi-specialization and to meet the industry demand as well as to have the ability of academic ethics and concept of intellectual property				○
H	了解國內外市場變化，具備基本科技英文閱讀溝通之能力。To understand the change of global market and the have the basic ability of reading and conversation in English.				○
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	Introduction to the grading rules for the semester's score Introduction to control systems				09/09
2	Modeling of dynamic systems Differential equations of dynamic systems -part 1				09/16

3	Differential equations of dynamic systems -part 2	09/23
4	Differential equations of dynamic systems -part 3 Block diagrams and signal-flow graphs -part 1	09/30
5	Block diagrams and signal-flow graphs -part 2 Stability of linear control systems -part 1	10/07
6	Stability of linear control systems -part 2 Time-domain performance of control systems -part 1	10/14
7	Time-domain performance of control systems -part 2	10/21
8	Time-domain performance of control systems -part 3	10/28
9	1st Exam	11/04
10	Root-locus analysis -part 1	11/11
11	Root-locus analysis -part 2	11/18
12	Root-locus analysis -part 3	11/25
13	2nd Exam (tentative)	12/02
14	State-space analysis and controller design -part 1	12/09
15	State-space analysis and controller design -part 2 Frequency-domain analysis	12/16
16	Design of control systems	12/23
17	3rd Exam (Final Exam)	12/30

彈性 教學 規劃 Flexible Teaching Plan	請勾選(至少需勾選1 個項目): Please tick the box(es). (At least one item is required.): ☒ 問題討論 Problem-based Discussion ☐ 翻轉教學 Flipped Classroom ☐ 展演實作 Performance / Practical Presentation ☐ 校外參訪 Off-campus Visit ☐ 講座活動 Lecture / Seminar ☐ 線上作業 Online Assignments ☒ 自主學習 Self-directed Learning ☒ 課業輔導 Academic Support ☐ 實驗操作 Experiment Operation ☐ 遠距教學(同步) Distance Learning (Synchronous) ☐ 遠距教學(非同步) Distance Learning (Asynchronous) ☐ 其他(請填寫) Others (Please specify.):
	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.

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)			✓						
期中考成績 Midterm Exam		✓							
期末考成績 Final Exam		✓							
作業成績 Homework and/or Assignments									
其他 Miscellaneous (_____)									
評量方式補充說明 Grading & Assessments Supplemental instructions Roll call: 10% by Zuvio Semester-grade percentage: 40%, 30%, 20%									
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.) Automatic Control Systems, McGraw-Hill Education, B.K. Bose, 東華/新月圖書公司代理									
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)									