

 **國立東華大學**
教學計劃表 Syllabus

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| 課程名稱(中文) Course Name in Chinese | 自動控制系統AB | | | 學年/學期 Academic Year/Semester | 114/1 |
| 課程名稱(英文) Course Name in English | Automatic Control Systems | | | | |
| 科目代碼 Course Code | EE__3360AB | 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 | | | | 9/10 |
| 2 | Modeling of dynamic systems Differential equations of dynamic systems -part 1 | | | | 9/17 |

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| 3 | Class suspending due to day-off | 9/24 |
| 4 | Differential equations of dynamic systems -part 2 | 10/01 |
| 5 | Differential equations of dynamic systems -part 3 Block diagrams and signal-flow graphs -part 1 | 10/08 |
| 6 | Block diagrams and signal-flow graphs -part 2 Stability of linear control systems -part 1 | 10/15 |
| 7 | Stability of linear control systems -part 2 Time-domain performance of control systems -part 1 | 10/22 |
| 8 | Time-domain performance of control systems -part 2 | 10/29 |
| 9 | 1st Exam | 11/05 |
| 10 | Suspended (全校運動會) | 11/12 |
| 11 | State-space analysis and controller design -part1 | 11/19 |
| 12 | State-space analysis and controller design -part 2 | 11/26 |
| 13 | 2nd Exam | 12/03 |
| 14 | Root-locus analysis -part 1 | 12/10 |
| 15 | Root-locus analysis -part 2 Frequency-domain analysis -part 1 | 12/17 |
| 16 | Frequency-domain analysis -part 2 Design of control systems | 12/24 |
| 17 | 3rd Exam (Final Exam) | 12/31 |
| 18 | Supplementary study | 1/07 |

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: 45%, 30%, 15% | | | | | | | | | |
| 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, 2017. 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) | | | | | | | | | |