


**國立東華大學**  
**教學計劃表 Syllabus**

|                                                                                                                     |                                                                                                                                                                                                       |                             |    |                                    |                                                                                          |
|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----|------------------------------------|------------------------------------------------------------------------------------------|
| 課程名稱(中文)<br>Course Name in Chinese                                                                                  | 控制實驗                                                                                                                                                                                                  |                             |    | 學年/學期<br>Academic Year/Semester    | 113/2                                                                                    |
| 課程名稱(英文)<br>Course Name in English                                                                                  | Control Laboratory                                                                                                                                                                                    |                             |    |                                    |                                                                                          |
| 科目代碼<br>Course Code                                                                                                 | EE_40100                                                                                                                                                                                              | 系級<br>Department & Year     | 學四 | 開課單位<br>Course-Offering Department | 電機工程學系                                                                                   |
| 修別<br>Type                                                                                                          | 學程 Program                                                                                                                                                                                            | 學分數/時間<br>Credit(s)/Hour(s) |    | 1.0/                               |                                                                                          |
| 授課教師<br>Instructor                                                                                                  | /謝欣然                                                                                                                                                                                                  |                             |    |                                    |                                                                                          |
| 先修課程<br>Prerequisite                                                                                                |                                                                                                                                                                                                       |                             |    |                                    |                                                                                          |
| 課程描述 Course Description                                                                                             |                                                                                                                                                                                                       |                             |    |                                    |                                                                                          |
| Use Matlab/Simulink software to simulate the control systems, including the time responses and frequency responses. |                                                                                                                                                                                                       |                             |    |                                    |                                                                                          |
| 課程目標 Course Objectives                                                                                              |                                                                                                                                                                                                       |                             |    |                                    |                                                                                          |
| 學習控制系統之電腦模擬方式及實際系統建構與感測器配置技術                                                                                        |                                                                                                                                                                                                       |                             |    |                                    |                                                                                          |
| 系專業能力<br>Basic Learning Outcomes                                                                                    |                                                                                                                                                                                                       |                             |    |                                    | 課程目標與系專業能力相關性<br>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 course content<br>Grading rule and method                                                                                                                                         |                             |    |                                    | 02/18                                                                                    |
| 2                                                                                                                   | Introduction to Simulink                                                                                                                                                                              |                             |    |                                    | 02/25                                                                                    |

|    |                                              |       |
|----|----------------------------------------------|-------|
| 3  | Analysis of control systems by Simulink I    | 03/04 |
| 4  | Analysis of control systems by Simulink II   | 03/11 |
| 5  | Simulink-based design of control systems I   | 03/18 |
| 6  | Simulink-based design of control systems II  | 03/25 |
| 7  | Simulink-based design of control systems III | 04/01 |
| 8  | Control of electric motors I                 | 04/08 |
| 9  | Suspended due to exam week                   | 04/15 |
| 10 | Control of electric motors II                | 04/22 |
| 11 | Control of electric motors III               | 04/29 |
| 12 | Project work I                               | 05/06 |
| 13 | Project work II                              | 05/13 |
| 14 | Project work III                             | 05/20 |
| 15 | Oral presentation I                          | 05/27 |
| 16 | Oral presentation II                         | 06/03 |
| 17 | Oral presentation III                        | 06/10 |
| 18 | Summary to the lab                           | 06/17 |

#### 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<br>Items                                                                                                                                         | 配分比例<br>Percentage | 多元評量方式 Assessments |          |          |          |          |          |          |    |
|                                                                                                                                                       |                    | 測驗<br>會考           | 實作<br>觀察 | 口頭<br>發表 | 專題<br>研究 | 創作<br>展演 | 卷宗<br>評量 | 證照<br>檢定 | 其他 |
| 平時成績(含出缺席)<br>General Performance<br>(Attendance Record)                                                                                              | 20%                |                    |          |          |          |          |          |          |    |
| 期中考成績 Midterm Exam                                                                                                                                    | 30%                |                    |          |          |          |          |          |          |    |
| 期末考成績 Final Exam                                                                                                                                      |                    |                    |          |          |          |          |          |          |    |
| 作業成績 Homework and/or<br>Assignments                                                                                                                   | 50%                |                    |          |          |          |          |          |          |    |
| 其他 Miscellaneous<br>(_____)                                                                                                                           |                    |                    |          |          |          |          |          |          |    |
| 評量方式補充說明<br>Grading & Assessments Supplemental instructions<br>experiment reports: 30%, general performance: 20%, project: 50%                        |                    |                    |          |          |          |          |          |          |    |
| 教科書與參考書目(書名、作者、書局、代理商、說明)<br>Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)<br>Handout materials                       |                    |                    |          |          |          |          |          |          |    |
| 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)<br>Teaching Aids & Teacher's Website(Including online teaching information.<br>Personal website can be listed here.) |                    |                    |          |          |          |          |          |          |    |
| 其他補充說明 (Supplemental instructions)                                                                                                                    |                    |                    |          |          |          |          |          |          |    |