國立東華大學
教學計劃表　Syllabus

課程名稱(中文) Course Name in Chinese	物聯網			學年/學期 Academic Year/Semester		113/2
課程名稱(英文) Course Name in English	Internet of Things					
科目代碼 Course Code	EE__M0090	系級 Department & Year	碩士	開課單位 Course-Offering Department		電機工程學系
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)		3.0/3.0		
授課教師 Instructor	/謝長倭					
先修課程 Prerequisite						

課程描述　Course Description

This course aims to explore the core principles, development trends, and application scenarios of Internet of Things (IoT) technologies. In anticipation, it is hoped that students will acquire a certain level of understanding regarding the Internet of Things (IoT) industry and its development processes, thereby facilitating their future research endeavors and applications in the professional arena. Students will learn how to design and develop IoT systems, including hardware selection, network deployment, and security considerations, while examining application cases such as smart homes, smart cities, healthcare, and Industry 4.0.

課程目標　Course Objectives

本課程旨在介紹一些重要且實用的近代線性系統回授控制理論，主要特點是針對系統狀態空間模型，運用數學方法進行系統性能分析，與回授控制器的設計，內容包括狀態回授、狀態估測與動態輸出回授等相關主題，使能實際的應用於高精度的馬達控制、機器臂、機器人與無人載具的運動控制。

	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	培育具備電機電子資訊工程等專業技術研發之能力。To cultivate the research and developing ability of electrical, electronics and information engineering。	●
B	培育系統分析、模擬驗證、實作實現之能力。To cultivate the advanced 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	訓練電機電子資訊專業知識與工程實務相互結合運用之能力。To train the integrate ability between professional EECS knowledge and engineering practice	●
E	落實論文研究之群體討論與團隊合作之互助能力。To fulfill the research ability in thesis by group discussion and teamwork cooperation	○
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，掌握國內外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，具備科技英文閱讀溝通與科技論文寫作之能力。To understand the change of global market and to have the ability of reading, conversation and technical writing in English。	●

圖示說明Illustration ：● 高度相關 Highly correlated ○中度相關 Moderately correlated

週次Week	內容 Subject/Topics	備註Remarks
1	Introduction to the Internet of Things	
2	Environment, People, and Time as Factors in the Internet of Things Technical Revolution	
3	Enabling Technologies for the Internet of Things	
4	Cloud and Fog Computing in the Internet of Things	
5	Smart home applications	
6	Industrial Internet of Things	
7	Internet of Things Applications for Smart Cities	
8	The Emerging "Energy Internet of Things	
9	期中考試週 Midterm Exam	
10	The Internet of Things and People in Health Care	
11	Internet of Things in Smart Ambulance and Emergency Medicine	
12	Internet of Things Applications for Agriculture	
13	The Role of Machine Learning Techniques in Internet of Things-Based Cloud Applications	
14	AI Edge Computing – New Paradigm for IoT	
15	Internet of Things Data Security and Privacy	
16	Internet of Things Trends and Challenges	
17	Final Report	
18	期末考試週 Final Exam	

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 Industy-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 General Performance	20%		✓						
期中考成績 Midterm Exam	30%	✓							
期末考成績 Final Exam	30%			✓					
作業成績 Homework and/or Assignments	20%		✓						
其他 Miscellaneous (_____)									

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.)

Internet of Things A to Z: Technologies and Applications
Editor(s): Qusay F. Hassan
Year: 2018
Wiley-IEEE Press
Online ISBN: 9781119456735

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)