國立東華大學

課　綱　Course Outline
電機工程學系博士班國際組

中文課程名稱 Course Name in Chinese	物聯網
英文課程名稱 Course Name in English	Internet of Things

科目代碼 Course Code	EE__D0210	班　別 Degree	博士班 Ph.D.		
修別 Type	選修 Elective	學分數 Credit(s)	3.0	時　數 Hour(s)	3.0

先修課程 Prerequisite	

課程目標
Course Objectives

Students will be familiar with the state-of-the-art of the researches in the areas of Internet of Things (IoT).

系教育目標
Dept.'s Education Objectives

1	研究人才培育—訓練嚴謹思考能力,培育國家研究人才。 To cultivate talents with research knowledge
2	團隊分工領導—落實分工合作觀念,具備領導協調能力。 To train students with teamwork leading and coordinate ability
3	創新思維啟發—建立積極挑戰態度,展現獨力研究能力。 To inspire students with creative thinking
4	國際視野養成—營造國際宏觀視野,培育卓越領導人才。 To educate students with global perspective and vision

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	落實高科技研究之分工整合與團體合作之領導能力。 To fulfill the leading ability in high-tech research with integration 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	參與國際研討會了解國際市場變化與未來研究走向，具備純熟科技英文閱讀溝通寫作之能力。 To participate the conferences to understand the change of global market and the future trend as well as to have the skillful 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

課程大綱
Course Outline

1. Introduction
2. Applications and Services of IoT
3. Industry 4.0 and IoT
4. WSN and IoT
5. PHY layer protocols
6. MAC layer protocols
7. Upper layers and Cloud of Things
8. Cellular IoT
9. Smart Technology and IoT
10. AI with IoT
11. Cloud Computing/ Fog Computing/ Edge Computing/ Tactile internet and IoT
12. Localization and tracking algorithms by IoT
13. Data fusion and data aggregation in IoT
14. Data centric protocols
15. Security and fault tolerance
16. System view and practical implementation
17. Standards

資源需求評估（師資專長之聘任、儀器設備的配合···等）
Resources Required (e.g. qualifications and expertise, instrument and equipment, etc.)

課程要求和教學方式之建議
Course Requirements and Suggested Teaching Methods

其他
Miscellaneous