元智大學電機工程學系（丙組）「感測器數位應用」深耕跨域微學程科目規劃表

Department of Electrical Engineering (Program C), Yuan Ze University

" Sensor Digital Application" Advanced Cross-Domain Micro Program Course Planning Table

（115學年度申請適用)

(For students applied in Academic Year 2026)

115.04.29 一一四學年度第七次教務會議通過

Passed by the 7th Academic Affairs Meeting, Academic Year 2025, on April 29, 2026

一、教學目標 Teaching Objectives：

自十八世紀蒸汽機開啟工業革命以來，人類文明歷經電力與資訊化的洗禮，現正邁入以大數據、物聯網與人工智慧為核心的第四次工業革命。台灣憑藉半導體產業優勢，在物聯網（IoT）生態系中，感測器技術及其跨領域應用正是最具競爭力的核心。

感測器是數位世界的『五官』，負責擷取生物與非生物資訊並產生大數據。本學程旨在教授感測器從物理量偵測到數位信號處理的完整路徑：透過嵌入式系統進行前端整合，並經由物聯網傳輸至雲端。更進一步，本學程強調『感測智慧化』，透過導入人工智慧（AI）與機器學習算法，使系統具備邊緣運算能力，能即時分析感測數據並做出精準決策。

學程引導學生掌握感測技術、物聯網架構與 AIoT 應用。透過本微學程之訓練，學生將具備感測器開發與數位應用之實務專長，接軌未來數十年食、衣、住、行、育、樂等各項產業的智慧化浪潮。

Since the invention of the steam engine in the 18th century triggered the first Industrial Revolution, followed by the ages of electricity and information technology, humanity has now entered the Fourth Industrial Revolution (Industry 4.0). At its core are Big Data, the Internet of Things (IoT), and Artificial Intelligence (AI). Leveraging its strengths in the semiconductor industry, Taiwan occupies a strategic position in the development of sensors and their cross-industry integration within the IoT ecosystem.

Sensors serve as the "sensory organs" of the digital world, capturing biological and physical data to generate massive datasets. This micro-program is designed to teach the complete data pathway—from physical sensing to digital application. Students will learn how embedded systems integrate sensors to convert real-world physical quantities into digital signals for cloud transmission. Furthermore, the program emphasizes "Intelligent Sensing" by introducing AI algorithms and Machine Learning, enabling systems with Edge Computing capabilities for real-time data analysis and precision decision-making.

This program guides students through sensor technology, IoT architecture, and AIoT (AI + IoT) applications. Through this training, students will develop professional expertise in sensor development and digital integration, preparing them to lead the wave of digital transformation across industries such as food, clothing, housing, transportation, education, and entertainment.

二、課程設計 Curriculum Design:

選修課程（組內）：至少 6 學分

Elective courses within program C: at least 6 credits

課號 Course ID	課程名稱 Course Name	學分 Credit(s)	學制 Degree structure	開課系所 Department Offered the Present Course(s)	備註 Remarks
EEC321	光電程式設計 Electro-Optics Programming	3	學士班 Undergraduate Program	電機系(丙組) Department of Electrical Engineering (Program C)	
EEC323	嵌入式系統之光電應用 Photonics Applications of Embedded Systems	3	學士班 Undergraduate Program	電機系(丙組) Department of Electrical Engineering (Program C)	

課號 Course ID	課程名稱 Course Name	學分 Credit(s)	學制 Degree structure	開課系所 Department Offered the Present Course(s)	備註 Remarks
EEC329	感測器與其應用 Sensors and Their Applications	3	學士班 Undergraduate Program	電機系(丙組) Department of Electrical Engineering (Program C)	

選修課程（組外）：至少 3 學分

Elective courses outside program C: at least 3 credits

課號 Course ID	課程名稱 Course Name	學分 Credit(s)	學制 Degree structure	開課系所 Department Offered the Present Course(s)	備註 Remarks
EEB340	智慧物聯網 AIoT Fundamentals	3	學士班 Undergraduate Program	電機系(乙組) Department of Electrical Engineering (Program B)	
EEA494	物聯網應用技術與實作（一） IoT Ecosystem and Applications(I)	3	學士班 Undergraduate Program	電機系(甲組) Department of Electrical Engineering (Program A)	
EEB611	智慧物聯網高階實務 Advanced AIoT Practices	3	碩士班 Master Program	電機系(乙組) Department of Electrical Engineering (Program B)	

三、學程證書授予標準Certificate Award Criteria：

1. 凡修畢規定課程，組內選修課程至少 6 學分以及組外選修課程至少 3 學分，合計修滿 9 學分（含）以上者，授與「感測器數位應用」深耕跨域微學程證書。

   Students who complete the required courses, including at least 6 credits of elective courses listed as being within the program and at least 3 credits of elective courses listed as being outside the program, with total of 9 credits or more, will be awarded Certificate of the “Sensor Digital Application” Advanced Cross-Domain Micro Program.

2. 須至少修習一門非學生所屬學系（組、班）之科目（不可包含與他系合開之課程）
   Students are required to take at least one course outside their own department (or program/class). (The courses co-offered with other departments are not included.)

四、領域別 Fields of Study：

人工智慧 Artificial Intelligence

五、學程召集人 Program Director：

陳念波 教授 Prof. Nien-Po Chen

六、負責規劃單位 Responsible Planning Unit：

電機工程學系(丙組) Department of Electrical Engineering (Program C)