111-2 Full Curriculum of Da-Yeh University

Information			
Title	Practice of Artificial Intelligence and Internet of Things	Serial No./ID	0667 /IFI3116
Required/Credit	Optinal /3	Time/Place	(Thu)234 /H708
Language	Chinese	Grade Type	Number
Lecturer /Full- or Part-time	Tsai Huan-Liang /Full-time	Graduate Class	Non-graduating Class
School System /Dept /Class, Grade	Bachelor /Department of Computer Science and Information Engineering /Class 1, Grade 3		
Office Hour / Place	(Mon) 16:20~17:10, (Tue) 16:20~17:10, (Wed) 16:20~17:10, (Thu) 08:10~09:00 / H715		
Lecturer	n.a.		

Introduction

本課程介紹智慧聯網的技術及應用，運用Arduino及Raspberry Pi 平台來進行感測器聯網的開發與應用實例，建構智慧聯網的概念與應用技術，特別在智慧農業及水產養殖產業應用。

Outline

第一章、物聯網簡介
第二章、物聯網架構
第三章、感測器模組
第四章、感測器連網技術
第五章、農作物生長環境監測系統製作與開發
第六章、 田間機器人資通訊整合應用
第七章、智聯網外網技術
第八章、智慧水產養殖物聯網建置與整合
第九章、 智慧水產養殖物聯網建置與整合實驗
第十章 無菌培養器整合型感測模組實作
第十一章蛹蟲草菌珠自動育種系統
第十二章智慧水產養殖之水質監控系統與成長影像辨識系統實作

Prerequisite

Sensors

The Relationship Between Courses and Departmental Core Competencies and Basic Skills

- 1.2 Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
- 2.1 Ability to design and conduct experiments, as well as to analyze and interpret data
- 2.2 Ability to propose, conduct, and write the reports of a research project
- 2.3 Ability to dedign and integrate the systems

- 3.1 Ability to cooperate supportively with others and communicate effectively
- 3.3 Ability to engage in life-long learning
- 1.1 Knowledge of mathematics and physics for the application of information engineering
- 3.2 Understanding of engineering ethics and international vision

Teaching Plan						
Core Capability	Weight(%)【A】	Ability index(Performance Indicators)	Teaching Methods	Assessment and Weight	Core Competency Learning Outcomes【B】	Final Exam Grades【C=B*A】
1.2 Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	15	The practical abilities	Group Work Practical Operation (Experiment, Machine Operation Lecturing Student Presentation	Oral Report: 20% Course Participation: 20% Final Exam: 40% Written Report: 20%	Total: 100	15
2.1 Ability to design and conduct experiments, as well as to analyze and interpret data	15	The professional abilities	Lecturing Practical Operation (Experiment, Machine Operation Student Presentation Group Work	Final Exam: 40% Course Participation: 20% Written Report: 20% Oral Report: 20%	Total: 100	15
2.2 Ability to propose, conduct, and write the reports of a research project	15	The practical abilities	Lecturing Group Work Practical Operation (Experiment, Machine Operation Student Presentation	Final Exam: 40% Oral Report: 20% Course Participation: 20% Written Report: 20%	Total: 100	15
2.3 Ability to dedign and integrate the systems	15	The professional abilities	Group Work Practical Operation (Experiment, Machine Operation Lecturing Student Presentation	Oral Report: 20% Course Participation: 20% Final Exam: 40% Written Report: 20%	Total: 100	15

3.1 Ability to cooperate supportively with others and communicate effectively	10	The basic abilities	Group Work Practical Operation (Experiment, Machine Operation Lecturing Student Presentation	Oral Report: 20% Course Participation: 20% Final Exam: 40% Written Report: 20%	Total: 100	10
3.3 Ability to engage in life-long learning	10	The basic abilities	Group Work Practical Operation (Experiment, Machine Operation Lecturing Student Presentation	Oral Report: 20% Course Participation: 20% Final Exam: 40% Written Report: 20%	Total: 100	10
1.1 Knowledge of mathematics and physics for the application of information engineering	15	The professional abilities	Lecturing Practical Operation (Experiment, Machine Operation Group Work Student Presentation	Final Exam: 40% Course Participation: 20% Oral Report: 20% Written Report: 20%	Total: 100	15
3.2 Understanding of engineering ethics and international vision	5	The basic abilities	Lecturing Practical Operation (Experiment, Machine Operation Group Work Student Presentation	Final Exam: 40% Course Participation: 20% Oral Report: 20% Written Report: 20%	Total: 100	5

Grade Auditing

Final Exam: 40%
Written Report: 20%
Course Participation: 20%
Oral Report: 20%

Book Type (Respect intellectual property rights. Please use official textbooks and do not illegally photocopy others' works.)		
Book Type	Book name	Author
Textbook	IOT物聯網應用開發實作	施威銘
Textbook	超圖解物聯網IOT實作入門	趙英傑

Lesson Plan		
Weeks	Content	Teaching Methods
1	Introduction of IOT & Intellectual Property Protection (use legitimate textbooks only) & Traffic safety Propaganda	Lecturing、 Group Work
2	IOT Architecture	Lecturing、 Group Work、 Student Presentation
3	Sensor devices	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation
4	Networking technology of sensors	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work
5	Monitoring system for the agriculture cultivation	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation
6	Monitoring system for the agriculture cultivation	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation
7	Information communication technology for robot in agriculture farm	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation
8	Information communication technology for robot in agriculture farm	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation
9	Mid Exam	Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation
10	Networking technology of IOT	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work

11	Artificial IOT for the aquaculture cultivation	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation
12	Artificial IOT for the aquaculture cultivation	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation
13	MultiSensor Module for Aseptic Incubator	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation
14	MultiSensor Module for Aseptic Incubator	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation
15	Automatic cultivation system for Cordyceps militaris	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation
16	Monitoring system of water quality for the aquaculture cultivation	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation
17	Monitoring system of water quality for the aquaculture cultivation	Lecturing、 Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation
18	Final Exam	Practical Operation (Experiment, Machine Operation、 Group Work、 Student Presentation