

Tamkang University Academic Year 113, 2nd Semester Course Syllabus

Course Title	IOT APPLICATION SYSTEMS	Instructor	LIAO, SHU-HAN
Course Class	TETXJ1A EXECUTIVE MASTER'S PROGRAM, DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING, 1A	Details	<ul style="list-style-type: none"> ◆ General Course ◆ Selective ◆ One Semester ◆ 3 Credits
Relevance to SDGs	SDG4 Quality education		
Departmental Aim of Education			
<ul style="list-style-type: none"> I. Educate students to have electrical and robotic engineering knowledge to solve electrical engineering related problems. II. Educate the student as a senior electrical and robotic engineer to enable creative thinking, to be independently complete the assigned tasks and be willing to work as a team member. III. Educate students to have advanced global awareness to cope with the challenges of modern diversified professor careers. 			
Subject Departmental core competences			
<ul style="list-style-type: none"> A. Core competency 1.1: Have professional knowledge in the disciplines of electrical, computer and robotic engineerings.(ratio:20.00) B. Core competency 1.2: Have the ability to plan and execute electrical and robotic engineering research studies.(ratio:15.00) C. Core competency 2.1: Have the ability to prepare professional papers in the electrical and robotic engineering field.(ratio:10.00) D. Core competency 2.2: Have the abilities to be creative thinking and to independently solve electrical and robotic engineering related problems.(ratio:20.00) E. Core competency 2.3: Have the ability to lead, manage, plan, coordinate and integrate personnel from various fields.(ratio:25.00) F. Core competency 3.1: Have advanced global awareness and the ability of lifelong self-study.(ratio:10.00) 			
Subject Schoolwide essential virtues			
<ul style="list-style-type: none"> 1. A global perspective. (ratio:5.00) 2. Information literacy. (ratio:25.00) 3. A vision for the future. (ratio:15.00) 			

4. Moral integrity. (ratio:5.00)
5. Independent thinking. (ratio:25.00)
6. A cheerful attitude and healthy lifestyle. (ratio:15.00)
7. A spirit of teamwork and dedication. (ratio:5.00)
8. A sense of aesthetic appreciation. (ratio:5.00)

Course Introduction

Understand how the IoT is bridging the gap between operational and information technology systems.
The security concerns that must be considered when implementing IoT solutions.

The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.

Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.

- I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of the course's veracity, conception, procedures, outcomes, etc.
- II. Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal, morals, attitude, conviction, values, etc.
- III. Psychomotor: Emphasis upon the study of the course's physical activity and technical manipulation.

No.	Teaching Objectives	objective methods
1	The concept of IoT and its applications.	Psychomotor

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCDEF	12345678	Lecture	Discussion(including classroom and online), Practicum, Report(including oral and written)

Course Schedule

Week	Date	Course Contents	Note
1	114/02/17 ~ 114/02/23	Introduction to IoT	

2	114/02/24 ~ 114/03/02	Connected Things I : IoT Nodes and Arduino	
3	114/03/03 ~ 114/03/09	Connected Things II: Raspberry Pi	
4	114/03/10 ~ 114/03/16	Connected Things III:	
5	114/03/17 ~ 114/03/23	Conversion Level I: LPWAN (1) - LPWAN Overview (NB-IoT/SigFox/LoRa)	
6	114/03/24 ~ 114/03/30	Conversion Level III: South-Bound Protocols	
7	114/03/31 ~ 114/04/06	Conversion Level IV: Gateway and North-Bound Protocols	
8	114/04/07 ~ 114/04/13	- Interim Review of IoT' s Lower Levels - Forward Looking: Cyber & Cognition Levels	
9	114/04/14 ~ 114/04/20	Cyber-Level I: - Overview of Cloud Computing - Distributed Programming	
10	114/04/21 ~ 114/04/27	midterm	
11	114/04/28 ~ 114/05/04	Cyber-Level II:	
12	114/05/05 ~ 114/05/11	Cyber-Level III: - Micro-services - Private Cloud and Software Containers	
13	114/05/12 ~ 114/05/18	Cognition Level I: Artificial Intelligence & IoT	
14	114/05/19 ~ 114/05/25	Cognition Level II: - Overview of Industry 4.0	
15	114/05/26 ~ 114/06/01	Cognition Level III: IoT Cybersecurity - Cybersecurity 101 - IoT-specific Security Issues - Trends and Future developments	
16	114/06/02 ~ 114/06/08	Cognition Level III: IoT Cybersecurity - Cybersecurity 101 - IoT-specific Security Issues - Trends and Future developments	
17	114/06/09 ~ 114/06/15	Cognition Level III: IoT Cybersecurity - Cybersecurity 101 - IoT-specific Security Issues - Trends and Future developments	
18	114/06/16 ~ 114/06/22	Final examination	
Key capabilities			

Interdisciplinary	
Distinctive teaching	
Course Content	AI application
Requirement	
Textbooks and Teaching Materials	Self-made teaching materials:Presentations Using teaching materials from other writers:Presentations
References	
Grading Policy	<p>◆ Attendance : 10.0 % ◆ Mark of Usual : % ◆ Midterm Exam : 40.0 %</p> <p>◆ Final Exam : 50.0 %</p> <p>◆ Other < > : %</p>
Note	<p>This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php.</p> <p>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</p>