

## Tamkang University Academic Year 111, 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"> <li>◆ General Course</li> <li>◆ Selective</li> <li>◆ One Semester</li> </ul>
Relevance to SDGs	SDG9 Industry, Innovation, and Infrastructure		
Departmental Aim of Education			
<ul style="list-style-type: none"> <li>I. Educate students to have electrical and robotic engineering knowledge to solve electrical engineering related problems.</li> <li>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.</li> <li>III. Educate students to have advanced global awareness to cope with the challenges of modern diversified professor careers.</li> </ul>			
Subject Departmental core competences			
<ul style="list-style-type: none"> <li>A. Core competency 1.1: Have professional knowledge in the disciplines of electrical, computer and robotic engineerings.(ratio:20.00)</li> <li>B. Core competency 1.2: Have the ability to plan and execute electrical and robotic engineering research studies.(ratio:15.00)</li> <li>C. Core competency 2.1: Have the ability to prepare professional papers in the electrical and robotic engineering field.(ratio:10.00)</li> <li>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)</li> <li>E. Core competency 2.3: Have the ability to lead, manage, plan, coordinate and integrate personnel from various fields.(ratio:25.00)</li> <li>F. Core competency 3.1: Have advanced global awareness and the ability of lifelong self-study.(ratio:10.00)</li> </ul>			
Subject Schoolwide essential virtues			
<ul style="list-style-type: none"> <li>1. A global perspective. (ratio:5.00)</li> <li>2. Information literacy. (ratio:25.00)</li> <li>3. A vision for the future. (ratio:15.00)</li> </ul>			

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	Cognitive

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	112/02/13~ 112/02/19	Introduction to IoT	

2	112/02/20 ~ 112/02/26	Connected Things I : IoT Nodes and Arduino	
3	112/02/27 ~ 112/03/05	Connected Things II: Raspberry Pi	
4	112/03/06 ~ 112/03/12	Connected Things III:	
5	112/03/13 ~ 112/03/19	Conversion Level I: LPWAN (1) - LPWAN Overview (NB-IoT/SigFox/LoRa)	
6	112/03/20 ~ 112/03/26	Conversion Level III: South-Bound Protocols	
7	112/03/27 ~ 112/04/02	Conversion Level IV: Gateway and North-Bound Protocols	
8	112/04/03 ~ 112/04/09	- Interim Review of IoT' s Lower Levels - Forward Looking: Cyber & Cognition Levels	
9	112/04/10 ~ 112/04/16	Cyber-Level I: - Overview of Cloud Computing - Distributed Programming	
10	112/04/17 ~ 112/04/23	midterm	
11	112/04/24 ~ 112/04/30	Cyber-Level II:	
12	112/05/01 ~ 112/05/07	Cyber-Level III: - Micro-services - Private Cloud and Software Containers	
13	112/05/08 ~ 112/05/14	Cognition Level I: Artificial Intelligence & IoT	
14	112/05/15 ~ 112/05/21	Cognition Level II: - Overview of Industry 4.0	
15	112/05/22 ~ 112/05/28	Cognition Level III: IoT Cybersecurity - Cybersecurity 101 - IoT-specific Security Issues - Trends and Future developments	
16	112/05/29 ~ 112/06/04	Cognition Level III: IoT Cybersecurity - Cybersecurity 101 - IoT-specific Security Issues - Trends and Future developments	
17	112/06/05 ~ 112/06/11	Cognition Level III: IoT Cybersecurity - Cybersecurity 101 - IoT-specific Security Issues - Trends and Future developments	
18	112/06/12 ~ 112/06/18	Final examination	
Requirement			

Teaching Facility	(None)
Textbooks and Teaching Materials	
References	
Number of Assignment(s)	(Filled in by assignment instructor only)
Grading Policy	<p>◆ Attendance : 10.0 %    ◆ Mark of Usual :        %    ◆ Midterm Exam : 40.0 %</p> <p>◆ Final Exam : 50.0 %</p> <p>◆ Other &lt;   &gt; :        %</p>
Note	<p>This syllabus may be uploaded at the website of Course Syllabus Management System at <a href="http://info.ais.tku.edu.tw/csp">http://info.ais.tku.edu.tw/csp</a> or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at <a href="http://www.acad.tku.edu.tw/CS/main.php">http://www.acad.tku.edu.tw/CS/main.php</a> .</p> <p><b>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</b></p>