

**UNDERGRADUATE PROGRAM IN COMPUTER SCIENCE
DEPARTMENT OF COMPUTER ENGINEERING
FACULTY OF INTELLIGENT ELECTRICAL AND INFORMATICS TECHNOLOGY**

Module name	Wireless Sensor Network and IoT	
Module level	Undergraduate	
Code	EC184703	
Courses (if applicable)	Wireless Sensor Network and IoT	
Semester	7 / Fall (Gasal)	
Contact person	Arief Kurniawan, S.T, M.T.	
Lecturer	Arief Kurniawan, S.T, M.T.	
Language	Indonesia / English	
Relation to curriculum	Undergraduate degree program, <i>mandatory</i> , 7 th semester.	
Type of teaching, contact hours	Lecture, < 60 students, 170 Minutes * 4 SKS	
Workload	<ol style="list-style-type: none"> 1. Lectures: 4 x 50 = 200 minutes (3.3 hours) per week. 2. Exercises and Assignments: 4 x 60 = 240 minutes (4 hours) per week. 3. Private study: 4 x 60 = 240 minutes (4 hours) per week. 	
Credit points	4 credit points (sks).	
Requirements according to the examination regulations	A student must have attended at least 75% of the lectures to sit in the exams.	
Mandatory prerequisites		
Learning outcomes and their corresponding PLOs	<p>CLO-1 Students are able to explain the concepts and principles of engineering, and implementing them in the form of procedures for analysis and design in power systems, control systems, multimedia telecommunications, or electronics.</p> <p>CLO-2 Students are able to explain the concepts and techniques of wireless sensor and IoT networks, namely: device architecture, MAC and network protocols, the concept of spatial sensing, aggregation and computation of distributed data, and examples of their applications.</p> <p>CLO-3 Students are able to explain the working principles of WSN and IoT devices, protocols for ad hoc wireless networks and be able to analyze WSN and IoT performance in terms of capacity, throughput and energy use.</p> <p>CLO-4 Students are able to complete a case by using Internet of Things technology</p>	<p>PLO-4</p> <p>PLO-4</p> <p>PLO-5 PLO-6</p> <p>PLO-5 PLO-6 PLO-7</p>

Content	In this course, students will learn about the Internet of Things, one of the latest technology in the field of computer networks. IoT concerns itself with objects that has the ability to communicate over a network without requiring human-to-human or human-to-computer interaction. IoT can be composed of several node sensors equipped with data processing, memory, battery and wireless communication equipment (Wireless Sensor Node/WSN). The node sensors send data to the sinks, which in turn send data to the server or cloud storage over the Internet. Among the systems that implement IoT are agriculture, traffic, health, and some other fields.
Study and examination requirements and forms of examination	<ul style="list-style-type: none"> • <i>In-class exercises</i> • <i>Quiz 1 and 2</i> • <i>Assignment 1, 2, 3</i> • <i>Mid-term examination</i> • <i>Final examination</i>
Media employed	<i>LCD, whiteboard, websites (myITS Classroom).</i>
Assessments and Evaluation	<p><i>CO-1: Question no 1 in midterm exam (10%)</i></p> <p><i>CO-2: Question no 2 in midterm exam (10%)</i></p> <p><i>CO-3: Assignment 1 (5%), question no 4 in midterm exam (20%), Quiz 2 (5%)</i></p> <p><i>CO-4: Question no 1 in final exam (25%), question no 2 in final exam (25%)</i></p>
Reading List	<ol style="list-style-type: none"> 1. Samuel Greengard, "The Internet of Things", MIT Press 2015. 2. H. Karl and A. Willig, "Protocols and Architectures for Wireless Sensor Networks", Wiley Publishers, 2005. 3. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", C. Raman, (CRC Press) 4. Arshdeep Bahga and Vijay Madisetti, "Internet of Things: A Hands-on Approach", (Universities Press)