

Course Syllabus
Internet of Things and Robotics
Super AI Engineer Course by AI Association of Thailand

Course	:	Internet of Things and Robotics
Credit	:	3 credits
Semester	:	January 2022 – April 2022
Course Outline	:	Introduction to Internet of Things (IoT), Smart IoT device. IoT computing. IoT components. AI & IoT concept, Embedded board & Programming Languages. Introduction to Arduino. Basic I/O. IoT simulator. Digital Input-Output. Analog Input-Output. IoT connectivity. IoT application. Tool and supplements. IoT network protocol. Setup docker desktop. IoT applications. Case Study: Temp/Humid Monitoring and Control Node-RED Simulation/ Node-RED Brain Process / Databases / Grafana. Introduction to Robotics. Robot Types. Robot Mechanics. Robot Controller. Sensors and actuators. Robot Kinematics. Concepts of kinematics. Notation and Matrix Representation.
Instructor	:	Asst. Prof. Dr. Wanayuth Sanngoen (wanayuth.sa@spu.ac.th) (SPU) Dr. Ronnapee Chaichaowarat (ronnapee.c@chula.ac.th) (CU) Dr. Surachai Thongkaew (surachai.th@spu.ac.th) (SPU) Asst. Prof. Chirot Charitkhuan (chirot.ch@spu.ac.th) (SPU) Dr. Pin Chatkaewmanee (pin.ch@spu.ac.th) (SPU) A. Nimit Tuksavitayapong (nimit.tu@spu.ac.th) (SPU)
Grading	:	Attendance / Quiz 20% Examination 40% On-hand Project 40% Top 20% → 'A'. Bottom 20% and/or students whose score < 30% → 'F'
Quiz	:	Quizzes are randomly conducted in the classes
Projects	:	The project aims to give you experience of deep learning. The project will be classified into individual hackathon projects, small group projects, and big bang group projects.
Course Material	:	http://mooc.ariat.or.th/ https://www.unibo.it/en/teaching/course-unit-catalogue/course-unit/2020/446598

Schedule:

No.	Topics	Hours
1	Introduction to Internet of Things (IoT), Smart IoT device.	3
2	IoT computing, IoT components. AI & IoT concept. Embedded board & Programming Languages.	3
3	Introduction to Arduino. Basic I/O. IoT simulator. Digital Input-Output. Analog Input-Output. IoT connectivity.	3
4	IoT application. Tool and supplements.	3
5	IoT network protocol.	3
6	Setup docker desktop. IoT applications.	3
7	Case Study: Temp/Humid Monitoring and Control Node-RED Simulation/ Node-RED Brain Process / Databases / Grafana.	3
8	Introduction to Robotics.	3
9	Notation and Matrix Representation.	3
10	Robot Types. Robot Mechanics. Robot Controller.	3
11	Sensors and actuators. Robot Kinematics.	3
12	Concepts of kinematics.	3
13	Project Workshop 1	10
14	Project Workshop 2	10
15	Project Workshop 3	10
16	Examination	
	Lecture	36
	Workshop	30