UNIVERSITAS MATARAM

(University of Mataram)

FAKULTAS TEKNIK

(Faculty of Engineering)

PROGRAM STUDI TEKNIK INFORMATIKA

(Department of Informatics Engineering)

MODULE HANDBOOK DESCRIPTION

Internet of Things (D18KB309)

Module designation	Internet of Things
Semester(s) in which the module is taught	*6 / fourth year*
Person responsible for the module	*Dr.Eng I Gde Putu Wirarama Wedashwara Wirawan ST., MT.*
Language	*Indonesian*
Relation to curriculum	*Compulsory*
Teaching methods	*Lectures, Discussions, Project*
Workload (incl. contact hours, self-study hours)	Contact Hours every week, each week of the 16 weeks/semester including Evaluation ● 2 x 50 minutes lecturer/week ● 2 x 60 minutes class exercise/week ● Self Study hours = 120 minutes/week Total workload 340 minutes/week
Credit points	*2 (~ 3,2 ECTS)*
Required and recommended prerequisites for joining the module	-

Module objectives/intended learning outcomes	The main objective of Internet of Things (IoT) is to discusses the concept of embedded systems, sensors and transducers, wireless sensor networks, and the preparation of microcontroller and micro-computer circuits in system design, including data communication between devices via the internet and programming on devices to interact with connected devices (sensors, motorcycles, cameras). Project-based courses to train collaboration in groups and take responsibility for their respective roles to complete IoT projects. Based on these main objectives, the IoT courses have subject learning outcomes, namely: 1. Able to work together in groups and be responsible for their respective roles to complete IoT projects 2. Able to explain the concept of embedded systems, sensors and transducers, wireless sensor networks, and compose a series of micro-controllers and micro-computers in system design. 3. *Able to do programming on the microcontroller in interacting with connected devices (sensors, motors, cameras) and data communication between devices via the internet.*
Content	Internet of Things (IoT) discusses the concept of embedded systems, sensors and transducers, wireless sensor networks, and the preparation of microcontroller and micro-computer circuits in system design, including data communication between devices via the internet and programming on devices to interact with connected devices (sensors, motorcycles, cameras). Project-based courses to train collaboration in groups and take responsibility for their respective roles to complete IoT projects.
Examination forms	*Assignments, Quiz, Simulation, Project Based Assignments*
Study and examination requirements	*Assignments 25%,* *Quiz 25%,* *Project based assignments 50%*

Reading list	1. Ashton, K. (2009). That 'internet of things' thing. RFID journal, 22(7), 97-114.
	2. Xia, F., Yang, L. T., Wang, L., & Vinel, A. (2012). Internet of things. International journal of communication systems, 25(9), 1101.
	3. Devices, P. Embedded Systems. In Mobile HCI.
	4. Heath, S. (2002). Embedded systems design. Elsevier.
	5. Tarbell, J. M., & Ebong, E. E. (2008). The endothelial glycocalyx: a mechano-sensor and-transducer. Science signaling, 1(40), pt8-pt8.
	6. Tree, S. (2014). Wireless sensor networks. Self, 1(R2), C0.
	7. Light, R. A. (2017). Mosquitto: server and client implementation of the MQTT protocol. Journal of Open Source Software, 2(13), 265.
	8. Yokotani, T., & Sasaki, Y. (2016, September). Comparison with HTTP and MQTT on required network resources for IoT. In 2016 international conference on control, electronics, renewable energy and communications (ICCEREC) (pp. 1-6). IEEE.
	9. Kurniawan, A. (2019). Internet of Things Projects with ESP32: Build exciting and powerful IoT projects using the all-new Espressif ESP32. Packt Publishing Ltd.
	10. Richardson, M., & Wallace, S. (2012). Getting started with raspberry PI. " O'Reilly Media, Inc.".
	11. Chandana, R., Jilani, S., & Hussain, S. J. (2015). Smart surveillance system using thing speak and Raspberry Pi. International Journal of Advanced Research in Computer and Communication Engineering, 4(7), 214-218.
	12. Babu, R. G., Karthika, P., & Rajan, V. A. (2019, May). Secure IoT systems using Raspberry Pi machine learning artificial intelligence. In International Conference on Computer Networks and Inventive Communication Technologies (pp. 797-805). Springer, Cham.
	13. Kodeswaran, P. A., Kokku, R., Sen, S., & Srivatsa, M. (2016, June). Idea: A system for efficient failure management in smart iot environments. In Proceedings of the 14th Annual International Conference on Mobile Systems, Applications, and Services (pp. 43-56).