



UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Department of Computer Science and Electronics

Sekip Utara Bulaksumur Yogyakarta 55281 Telp: +62 274 546194 Email: dep-ike.mipa@ugm.ac.id Website: <http://dcse.fmipa.ugm.ac.id>

Bachelor in Computer Science

Telp : +62 274 546194

Email : prodi-s1-ikom.mipa@ugm.ac.id

Website : <http://dcse.ugm.ac.id/>

MODULE HANDBOOK

Module name	IoT and Its Applications																	
Module level, if applicable	Undergraduate																	
Code, if applicable	MII-																	
Courses, if applicable	IoT and Its Applications																	
Semester(s) in which the module is taught	Summer (Even)																	
Person responsible for the module	Muhammad Idham Ananta Timur, M.Kom																	
Lecturer(s)	Muhammad Idham Ananta Timur, M.Kom Triyogatama Wahyu Widodo, M.Cs																	
Language	Bahasa Indonesia																	
Relation to curriculum	1. Undergraduate degree program, compulsory, 4th semester. 2. International undergraduate program, compulsory, 4th semester.																	
Teaching methods	1. Undergraduate degree program: lectures, < 60 students, 2. International undergraduate program: lectures, < 30 students.																	
Workload (incl. contact hours, self-study hours)	1. Lectures: 3 x 50 = 100 minutes (1 hours 40 menit) per week. 2. Exercises and Assignments: 3 x 60 = 120 minutes (2 hours) per week. 3. Private study: 3 x 60 = 120 minutes (2 hours) per week.																	
Credit points	3 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.																	
Required and recommended prerequisites for joining the module	-																	
Learning outcomes and their corresponding PLOs	<p>After completing this module, a student is expected to:</p> <p>CO1. Able to explain the concept and understanding of the Internet of Things (IoT)</p> <p>CO2. Able to explain IoT Architecture and Smart Object</p> <p>CO3. Able to explain Protocols on IoT Networks</p> <p>CO4. Able to explain Data Analysis and Security in IoT</p> <p>CO5. Able to explain IoT applications in Industry</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th style="width: 15%;">PLO</th> <th style="width: 10%;">CO1</th> <th style="width: 10%;">CO2</th> <th style="width: 10%;">CO3</th> <th style="width: 10%;">CO4</th> <th style="width: 10%;">CO5</th> </tr> </thead> <tbody> <tr> <td>PLO1</td> <td>√</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						PLO	CO1	CO2	CO3	CO4	CO5	PLO1	√				
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	Program Learning Outcome (PLO)	PLO2		√																																																					
		PLO3			√																																																				
		PLO4				√																																																			
		PLO5					√																																																		
Content	1. Introduction to IoT 2. IoT Network Design and Architecture 3. Smart Objects 4. Smart Object Networking 5. IP in the IoT Network layer 6. Application Protocols in IoT 7. IoT Data Analysis 8. IoT Security 9. IoT in Industry: Factory 10. IoT in Industry: Mining 11. IoT in Industry: Transportation 12. IoT in Industry: Security and Health																																																								
Study and examination requirements and examination forms	The evaluation is done in 3 forms, namely: <ol style="list-style-type: none"> 1. Trial, either midterm or semester test, 2. Tasks, including individual or group assignments to be completed within a certain timeframe, and 3. Quizzes, held on face-to-face, once before midterm exam and once after midterm exam, with a short answer form. <p>Assessment is done using benchmark assessment, with the aim of measuring the level of student understanding related to the target and class rank.</p>																																																								
Media employed	LCD, blackboard, and websites.																																																								
Assessments and evaluation	<table border="1"> <thead> <tr> <th>Type</th> <th>Percentage</th> <th>CO1</th> <th>CO2</th> <th>CO3</th> <th>CO4</th> <th>CO5</th> </tr> </thead> <tbody> <tr> <td>Quiz</td> <td>10</td> <td>√</td> <td>√</td> <td></td> <td>√</td> <td></td> </tr> <tr> <td>Individual Task</td> <td>15</td> <td></td> <td>√</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>Group Task</td> <td>30</td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>Midterm Exam</td> <td>15</td> <td></td> <td></td> <td></td> <td>√</td> <td>√</td> </tr> <tr> <td>Final Exam</td> <td>30</td> <td></td> <td></td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td>Total</td> <td>100%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>								Type	Percentage	CO1	CO2	CO3	CO4	CO5	Quiz	10	√	√		√		Individual Task	15		√	√			Group Task	30	√	√	√			Midterm Exam	15				√	√	Final Exam	30			√	√	√	Total	100%					
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Reading list	<ol style="list-style-type: none"> 1. Internet of Things A to Z: Technologies and Applications, Qusay F. Hassan, May 2018, Wiley IEEE Press 2. Hanes, David, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry. 2017. IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things. Indianapolis, USA: Cisco Press 3. Adrian McEwen, Hakim Cassimally, 2014, Designing the Internet of Things, John Wiley and Sons 																																																								

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