



UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Department of Computer Science and Electronics

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Bachelor in Computer Science

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MODULE HANDBOOK

Module name	Smart and Intelligent Environment																					
Module level, if applicable	Undergraduate																					
Code, if applicable	MII-3603																					
Courses, if applicable	NA																					
Semester(s) in which the module is taught	Fall (Odd)																					
Person responsible for the module	Muhammad Idham Ananta Timur, S.T., M.Kom																					
Lecturer(s)	Muhammad Idham Ananta Timur, S.T., M.Kom																					
Language	Bahasa Indonesia & English																					
Relation to curriculum	1. Undergraduate degree program, compulsory, 6th semester. 2. International undergraduate program, compulsory, 6th 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 = 150 minutes per week. 2. Exercises and Assignments: 2 x 50 = 100 minutes per week. 3. Private study: 1 x 50 = 50 minutes 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	Artificial Intelligence																					
Learning outcomes and their corresponding PLOs	<p>After completing this module, a student is expected to:</p> <p>CO1. Able to explain and identify the concepts and characteristics of intelligent systems for monitoring and controlling environment</p> <p>CO2. Able to perform analysis and design of intelligent environment systems.</p> <p>CO3. Be able to show professional attitudes, responsibility, and team works</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>PLO</th> <th>CO1</th> <th>CO2</th> <th>CO3</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Program Learning Outcome (PLO)</td> <td>PLO3</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>PLO4</td> <td></td> <td>√</td> <td></td> </tr> <tr> <td>PLO5</td> <td></td> <td></td> <td>√</td> </tr> </tbody> </table>					PLO	CO1	CO2	CO3	Program Learning Outcome (PLO)	PLO3	√			PLO4		√		PLO5			√
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Content	<ol style="list-style-type: none"> 1. Definition and Concept of Intelligent Environments 2. Air and Water Quality monitoring using intelligent systems 3. Activity learning in Smart Home 4. Adaptive Traffic Signal Controller 																																								
Study and examination requirements and examination forms	<p>The evaluation is done in 2 forms, namely:</p> <ol style="list-style-type: none"> 1. Trial, either midterm or semester test, 2. One individual quiz and assignment 3. Group Presentation <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	e-learning Platform (ELOK), 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> </tr> </thead> <tbody> <tr> <td>Quiz</td> <td>10</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>Assignment</td> <td>15</td> <td>√</td> <td>√</td> <td></td> </tr> <tr> <td>Mid Term Exam</td> <td>25</td> <td>√</td> <td>√</td> <td></td> </tr> <tr> <td>Group Project 1</td> <td>10</td> <td></td> <td>√</td> <td>√</td> </tr> <tr> <td>Group Project 2</td> <td>15</td> <td></td> <td>√</td> <td>√</td> </tr> <tr> <td>Final Presentation</td> <td>25</td> <td></td> <td>√</td> <td>√</td> </tr> <tr> <td>Total</td> <td>100</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Type	Percentage	CO1	CO2	CO3	Quiz	10	√			Assignment	15	√	√		Mid Term Exam	25	√	√		Group Project 1	10		√	√	Group Project 2	15		√	√	Final Presentation	25		√	√	Total	100			
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Reading list	<ol style="list-style-type: none"> 1. Least Squares Neural Network-based Wireless E-nose System using SnO₂ Sensor Array, Areej Shahid, Jong-Hyeok Choi, Abu ul Hassan Sarwar Rana and Hyun-Seok Kim, MDPI SENSOR 2018 2. Automated Water Quality Survey and Evaluation Using an IoT Platform with Mobile Sensor Nodes, Teng Li, Min Xia, Jiahong Chen, Yuanjie Zhao and Clarence de Silva, MDPI Sensor 2017 3. Activity Learning: Discovering, Recognizing, and Predicting Human Behavior from Sensor Data, Wiley Series on Parallel and Distributed Computing 2015, Diane J Cook, Narayanan C. Krishnan 4. Human Activity Recognition Challenge, Springer 2021, Md Atiqur Rahman Ahad, Paula Lago, Sozo Inoue 5. Smart Environments: Technologies, Protocols, and Applications, Diane J. Cook and Sajal K. Das, Wiley Series on Parallel and Distributed Computing, 2005 6. Next Generation Intelligent Environments Ambient Adaptive Systems Second Edition, Stefan Ultes, Florian Nothdurft, Tobias Heinroth, Wolfgang Minker (eds.), 2016 7. Intelligent Transportation Systems – Problems and Perspectives, Aleksander Sładkowski · Wiesław Pamuła Springer International Publishing Switzerland 2016 8. State-of-art review of traffic signal control methods: challenges and opportunities, Syed Shah Sultan Mohiuddin Qadri, Mahmut Ali Gökçe and Erdiñç Öner , European Transport Research Review https://doi.org/10.1186/s12544-020-00439-1 , 2020 																																								

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