



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-ilkom.mipa@ugm.ac.id

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

MODULE HANDBOOK

Module name	Machine Learning
Module level	Undergraduate
Code	MII-212402
Courses (if applicable)	
Semester	4 (Even)
Contact person	Dzikri Rahadian Fudholi, S.Kom., M.Comp.
Lecturer	<ol style="list-style-type: none">1. Afiahayati, S.Kom., M.Cs., Ph.D.2. Wahyono, S.Kom., Ph.D.3. Yunita Sari, S.Kom., M.Sc., Ph.D.4. Dzikri Rahadian Fudholi, S.Kom., M.Comp.
Language	Bahasa Indonesia & English
Relation to curriculum	<ol style="list-style-type: none">1. Undergraduate degree program, compulsory, 4th semester.2. International undergraduate program, compulsory, 4th semester.
Type of teaching, contact hours	<ol style="list-style-type: none">1. Undergraduate degree program: lectures, < 60 students,2. International undergraduate program: lectures, < 30 students.
Workload	<ol style="list-style-type: none">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.
Recommended prerequisites	Artificial Intelligence

<p>Learning outcomes (course outcomes) and their corresponding PLOs</p>	<p>After completing this module, a student is expected to:</p> <p>CO1. Students are able to understand the types of Machine Learning. the concept and steps of algorithms in Machine Learning</p> <p>CO2. Students are able to implement algorithms of Machine Learning</p> <p>CO3. Students are able to solve real world problem using Machine Learning</p> <table border="1" data-bbox="467 436 1105 659"> <thead> <tr> <th colspan="2">PLO</th> <th>CO1</th> <th>CO2</th> <th>CO3</th> </tr> </thead> <tbody> <tr> <td>Program Learning Outcome (PLO)</td> <td>PLO1</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>PLO2</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td></td> <td>PLO3</td> <td></td> <td>√</td> <td></td> </tr> <tr> <td></td> <td>PLO4</td> <td></td> <td></td> <td>√</td> </tr> <tr> <td></td> <td>PLO5</td> <td></td> <td></td> <td>√</td> </tr> </tbody> </table>	PLO		CO1	CO2	CO3	Program Learning Outcome (PLO)	PLO1					PLO2	√				PLO3		√			PLO4			√		PLO5			√										
PLO		CO1	CO2	CO3																																					
Program Learning Outcome (PLO)	PLO1																																								
	PLO2	√																																							
	PLO3		√																																						
	PLO4			√																																					
	PLO5			√																																					
<p>Contents</p>	<ol style="list-style-type: none"> 1. Introduction Machine Learning, learning types: supervised learning, semi-supervised learning, unsupervised learning 2. Data exploration and acquisition 3. Regression 4. Linear Classification: single layer perceptron, gradient descent, activation function, backpropagation 5. Training objectives, performance evaluation, validation 6. Decision tree 7. Nearest neighbour model, Naive Bayes 8. Support Vector Machine 9. Overfitting and Regularization 10. Ensemble and Boosting 11. Unsupervised Learning: Hierarchical clustering, Density based clustering 																																								
<p>Study and examination requirements and forms of examination</p>	<p>The evaluation is done in 3 forms, namely:</p> <ol style="list-style-type: none"> 1. Trial, either midterm and/or semester test, 2. Two individual tasks, 3. Two group assignment to be completed within a certain timeframe, <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>																																								
<p>Media employed</p>	<p>e-learning Platform (eLOK), LCD, whiteboard, and websites.</p>																																								
<p>Assessments and Evaluation</p>	<table border="1" data-bbox="467 1577 1154 1871"> <thead> <tr> <th>Type</th> <th>Percentage</th> <th>CO1</th> <th>CO2</th> <th>CO3</th> </tr> </thead> <tbody> <tr> <td>Task 1</td> <td>5</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>Group Task 1</td> <td>15</td> <td></td> <td>√</td> <td>√</td> </tr> <tr> <td>Mid Test</td> <td>30</td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td>Task 3</td> <td>5</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>Group Task 2</td> <td>15</td> <td></td> <td>√</td> <td></td> </tr> <tr> <td>Final test</td> <td>30</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	Task 1	5	√			Group Task 1	15		√	√	Mid Test	30	√	√	√	Task 3	5	√			Group Task 2	15		√		Final test	30	√	√	√	Total	100			
Type	Percentage	CO1	CO2	CO3																																					
Task 1	5	√																																							
Group Task 1	15		√	√																																					
Mid Test	30	√	√	√																																					
Task 3	5	√																																							
Group Task 2	15		√																																						
Final test	30	√	√	√																																					
Total	100																																								

Reading List	1. Bishop, C.M., 2006, Pattern Recognition and Machine learning, Springer
--------------	---

Created date : May 27, 2021

Revision date : June 28, 2022