



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	Optimisation Methods
Module level	Undergraduate
Code	MII-3203
Courses (if applicable)	Optimisation Methods
Semester	Fall (Odd)
Contact person	Faizal, M.Sc., PhD.
Lecturer	
Language	Bahasa Indonesia and English
Relation to curriculum	1. Undergraduate degree program, compulsory, 3rd semester. 2. International undergraduate program, compulsory, 3rd semester.
Type of teaching, contact hours	1. Undergraduate degree program: lectures, < 60 students, 2. International undergraduate program: lectures, < 30 students.
Workload	1. Lectures: 3 x 50 = 100 minutes (1 hour 40 minutes) per week. 2. Exercises and assignments: 3 x 60 = 120 minutes (2 hours) per week. 3. Individual 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.
Recommended prerequisites	Numerical Methods
Learning outcomes (course outcomes) and their corresponding PLOs	After completing this module, students are expected to: CO1 Comprehend and be able to explain the concepts of Stochastic gradient descent and its variants CO2 Comprehend and be able to explain the Flower Pollination Algorithm. CO3 Comprehend and be able to explain the Ant Colony Algorithm CO4 Comprehend and be able to explain the Particle Swarm Optimization CO5 Comprehend and be able to explain the Simulated Annealing CO6 Comprehend and be able to explain the Optimization of SVM CO7 Comprehend and be able to explain the Nelder-Mead dan Levenberg Marquadt CO8 Comprehend and be able to explain the Interior point method CO9 Comprehend and be able to explain the Ant Colony Algorithm

	<p>CO9 Comprehend and be able to explain the performance tuning of optimization algorithm</p> <table border="1"> <thead> <tr> <th colspan="2">PLO</th> <th>CO1</th> <th>CO2</th> <th>CO3</th> <th>CO4</th> <th>CO5</th> <th>CO6</th> <th>CO7</th> <th>CO8</th> <th>CO9</th> </tr> </thead> <tbody> <tr> <td>Program Learning Outcome (PLO)</td> <td>PLO1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>PLO2</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td></td> <td>PLO3</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td></td> <td>PLO4</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td></td> <td>PLO5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	PLO		CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8	CO9	Program Learning Outcome (PLO)	PLO1											PLO2	√	√	√	√	√	√	√	√	√		PLO3	√	√	√	√	√	√	√	√	√		PLO4	√	√	√	√	√	√	√	√	√		PLO5																															
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Contents	<p>(a) Stochastic gradient descent dan pengembangannya (b) Flower Pollination Algorithm (c) Ant Colony Algorithm (d) Particle Swarm Optimization (e) Simulated Annealing (f) Optimisasi pada SVM (g) Nelder-Mead dan Levenberg Marquadt (h) Interior point method (i) Tuning performa dari algoritma optimisasi (regularisasi, dll)</p>																																																																																								
Study and examination requirements and forms of examination	<p>Evaluation is done in 3 forms, namely:</p> <ol style="list-style-type: none"> Two examinations, mid-term and final, Two individual assignments, and Two group assignments. <p>Assessment is done using benchmark assessment, with the aim of measuring the level of students' understanding related to the target and class rank.</p>																																																																																								
Media employed	LCD, blackboard, videos, and websites.																																																																																								
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