



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	Lab Work in Algorithms and Data Structures
Module level, if applicable	Bachelor
Code, if applicable	MII21-1204
Courses, if applicable	Lab Work in Algorithms and Data Structures
Semester(s) in which the module is taught	Spring (Even)
Person responsible for the module	I Gede Mujiyatna, S.Kom., M.Kom.
Lecturer(s)	I Gede Mujiyatna, S.Kom., M.Kom. Drs. Janoe Hendarto, M.Kom.
Language	Bahasa Indonesia and English
Relation to curriculum	Bachelor degree, compulsory, 2 nd semester.
Teaching methods	100 minutes of lectures and 120 minutes of structured activities per week.
Workload (incl. contact hours, self-study hours)	1. Lectures: 2 x 50 = 100 minutes (1.6 hours) per week. 2. Exercises and Assignments: 2 x 60 = 120 minutes (2 hours) per week. 3. Private study: 2 x 60 = 120 minutes (2 hours) per week.
Credit points	1 credit point
Requirements according to the examination regulations	-
Required and recommended prerequisites for joining the module	MII21-1203 Algorithms and Data Structures

<p>Learning outcomes and their corresponding PLOs</p>	<p>After completing this module, a student is expected to:</p> <p>LO1 Students are able to make programs with object-oriented programming methods</p> <p>LO2 Students are able to make programs with linear data structure of strings, linked lists, stacks and queues</p> <p>LO3 Students are able to make programs with non-linear data structures of trees and graphs and apply algorithms related to trees and graphs</p> <p>LO4 Students are able to make programs by solving network flow problems</p> <p>LO5 Students are able to create problem solving programs with disjoint set data structures</p> <p>LO6 Students are able to make programs for solving searching and matching strings problem</p> <p>LO7 Students are able to make programs for solving geometric problems</p> <table border="1" data-bbox="630 793 1247 1087"> <thead> <tr> <th colspan="2">PLO</th> <th>L O 1</th> <th>L O 2</th> <th>L O 3</th> <th>L O 4</th> <th>L O 5</th> <th>L O 6</th> <th>L O 7</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Program Learning Outcome (PLO)</td> <td>PLO1</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td>PLO2</td> <td></td> <td></td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td>PLO3</td> <td></td> <td></td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td>PLO4</td> <td></td> <td></td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td>PLO5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	PLO		L O 1	L O 2	L O 3	L O 4	L O 5	L O 6	L O 7	Program Learning Outcome (PLO)	PLO1	√	√	√	√	√	√	√	PLO2			√	√	√	√	√	PLO3			√	√	√	√	√	PLO4			√	√	√	√	√	PLO5							
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<p>Content</p>	<p>This course is a complement to the algorithm and data structure courses in the form of practicum/lab activities. This course provides programming skills to students using appropriate data structures so that the resulting computer programs are structured and efficient. Practical material in the form of object-oriented programming exercises applying linear and non-linear data structures, graphs, and trying some advanced algorithms to solve complex problems.</p>																																																		
<p>Study and examination requirements and examination forms</p>	<p>In class group discussion, Practicum task, Final examination</p>																																																		
<p>Media employed</p>	<p>LCD, Whiteboard, websites.</p>																																																		
<p>Assessments and evaluation</p>	<p>LO1 Practicum task 1 (11%), Final Examination 1 (2%)</p> <p>LO2 Practicum task 2 (11%), Final Examination 2 (3%)</p> <p>LO3 Practicum task 3 (11%), Final Examination 3 (3%)</p> <p>LO4 Practicum task 4 (11%), Final Examination 4 (3%)</p> <p>LO5 Practicum task 5 (12%), Final Examination 5 (3%)</p> <p>LO6 Practicum task 6 (12%), Final Examination 6 (3%)</p> <p>LO7 Practicum task 7 (12%), Final Examination 7 (3%)</p>																																																		

Reading list	<ol style="list-style-type: none">1. Dasgupta, Sanjoy, Christos Papadimitriou, and Umesh Vazirani. <i>Algorithms</i>. McGraw-Hill, 2006. ISBN: 9780073523408.2. Kleinberg, Jon, and Eva Tardos. <i>Algorithm Design</i>. Addison-Wesley, 2005. ISBN: 9780321295354.3. Thomas H. Cormen, Charles E. Leiserson, et.al., <i>Introduction to Algorithms</i>, third edition, 2014.4. Brian W. Kernighan, Dennis M., <i>The C Programming Language 2nd Edition</i>, 1988. Ritchie, ISBN-13: -0131103627.
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