



# 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	<b>Modeling and Digital Community Network</b>															
Module level	Undergraduate															
Code	MII-3511															
Courses (if applicable)	Modeling and Digital Community Network															
Semester	Fall (Odd)															
Contact person	Dr. Suprpto, M.I.Kom															
Lecturer	-															
Language	Bahasa Indonesia and English															
Relation to curriculum	<ol style="list-style-type: none"> <li>Undergraduate degree program, compulsory, 3th semester.</li> <li>International undergraduate program, compulsory, 3th semester.</li> </ol>															
Type of teaching, contact hours	<ol style="list-style-type: none"> <li>Undergraduate degree program: lectures, &lt; 60 students,</li> <li>International undergraduate program: lectures, &lt; 30 students.</li> </ol>															
Workload	<ol style="list-style-type: none"> <li>Lectures: 3 x 50 = 150 minutes (1 hours 50 menit) per week.</li> <li>Exercises and Assignments: 2 x 60 = 120 minutes (2 hours) per week.</li> <li>Private study: 2 x 60 = 120 minutes (2 hours) per week.</li> </ol>															
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	Algorithm and Datastructure															
Learning outcomes (course outcomes) and their corresponding PLOs	<p>After completing this module, a student is expected to:</p> <table border="1"> <tr> <td>CO1</td> <td>Students capable of explaining networks together with basic network measurements, and random graph model together with examples.</td> </tr> <tr> <td>CO2</td> <td>Students understand and capable of explaining the concept of network centrality.</td> </tr> <tr> <td>CO3</td> <td>Students understand the concept of community, and capable of explaining as well as using the method of community detection.</td> </tr> <tr> <td>CO4</td> <td>Students understand the structure of Web, Search and Power Laws.</td> </tr> <tr> <td>CO5</td> <td>Students capable of explaining the concept of robustness for networks, especially for power law networks.</td> </tr> <tr> <td>CO6</td> <td>Students capable of explaining spreading techniques in networks, especially cascading of information and epidemic spreading together with their differences.</td> </tr> <tr> <td>CO7</td> <td>Students understand and capable of explaining as well as doing analysis of temporal networks.</td> </tr> </table>		CO1	Students capable of explaining networks together with basic network measurements, and random graph model together with examples.	CO2	Students understand and capable of explaining the concept of network centrality.	CO3	Students understand the concept of community, and capable of explaining as well as using the method of community detection.	CO4	Students understand the structure of Web, Search and Power Laws.	CO5	Students capable of explaining the concept of robustness for networks, especially for power law networks.	CO6	Students capable of explaining spreading techniques in networks, especially cascading of information and epidemic spreading together with their differences.	CO7	Students understand and capable of explaining as well as doing analysis of temporal networks.
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	PLO		CO1	CO2	CO3	CO4	CO5	CO6	CO7																																																															
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Contents	(a) Networks and Random Graphs (b) Network Centrality and Applications (c) Community and Community Detection (d) Structure of Web, Search and Power Laws (e) Network Robustness and Applications (f) Cascade of Information and Epidemic Spreading (g) Temporal Network Analysis																																																																							
Study and examination requirements and forms of examination	The evaluation is performed in 3 forms, i.e.: 1. Midterm and finalterm, 2. Two assignments, both individual and team. It must be completed within a certain time interval, and 3. Two quizzes, held on face-to-face, one is done before midterm and the other is done after midterm (before finalterm).  Assessment is performed using benchmark, the purpose is to measure the level of student understanding respect to the target and class rank.																																																																							
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> <th>CO6</th> <th>CO7</th> </tr> </thead> <tbody> <tr> <td>Quiz</td> <td>7%</td> <td>√</td> <td>√</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> <td>√</td> <td>√</td> </tr> <tr> <td>Group Task</td> <td>20%</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td>Midterm Exam</td> <td>29%</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Final Exam</td> <td>29%</td> <td></td> <td></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> <td></td> <td></td> </tr> </tbody> </table>									Type	Percentage	CO1	CO2	CO3	CO4	CO5	CO6	CO7	Quiz	7%	√	√	√	√	√	√	√	Individual Task	15%	√	√	√	√	√	√	√	Group Task	20%	√	√	√	√	√	√	√	Midterm Exam	29%	√	√	√	√				Final Exam	29%				√	√	√	√	Total	100%							
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Reading List	W1: Easley, D. & Kleinberg, J. (2010). Networks, crowds, and markets: reasoning about a highly connected world. Cambridge University Press.																																																																							

**Created date** : June 28, 2022

**Revision date** : June 28, 2022