

**UNDERGRADUATE PROGRAM IN COMPUTER SCIENCE**  
**DEPARTMENT OF COMPUTER SCIENCE AND ELECTRONICS**  
**FACULTY OF MATHEMATICS AND NATURAL SCIENCES**  
**UNIVERSITAS GADJAH MADA**

Module name	Geographic Information System
Module level	Undergraduate
Code	MII-4453
Courses (if applicable)	Geographic Information System
Semester	Spring (Genap)
Contact person	Dr. Sigit Priyanta, M.Kom
Lecturer	Dr. Sigit Priyanta, M.Kom
Language	Bahasa Indonesia and English
Relation to curriculum	<ol style="list-style-type: none"> <li>1. Undergraduate degree program, optional, 6th semester.</li> <li>2. International undergraduate program, optional, 6th semester.</li> </ol>
Type of teaching, contact hours	<ol style="list-style-type: none"> <li>1. Undergraduate degree program: lectures, &lt; 60 students,</li> <li>2. International undergraduate program: lectures, &lt; 30 students.</li> </ol>
Workload	<ol style="list-style-type: none"> <li>1. Lectures: 3 x 50 = 150 minutes per week.</li> <li>2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week.</li> <li>3. Private study: 3 x 60 = 180 minutes (3 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	Database

<p>Learning outcomes and their corresponding PLOs</p>	<p><b>(LO-1)</b> Students are able to apply the GIS concepts and software in a research or work environment and be aware of how GIS is used in the work environment</p> <p><b>(LO-2)</b> Students are able to explain about common file formats, GIS data sources, and the integration of other data types including those not explicitly formatted for GIS.</p> <p><b>(LO-3)</b> Students are able to explain techniques, both basic and advanced, to do representing data into GIS.</p> <p><b>(LO-4)</b> Students are able to operate GIS software for special purposes</p> <p><b>(LO-5)</b> Students are able to deliver unique ideas on GIS projects and gain an overview of various analysis techniques and how they might be applied</p>																			
<p>Content</p>	<p>Geographic information systems deals with the analysis and management of geographic information. This course offers an introduction on the GIS management process and contributes to the “systems thinking” approach used in Information Systems (IS), Information Technology (IT) and Computer Science (CS) fields. The course will explain the nature of GIS, data models, structure on geographic information, data input, manipulation, storage, spatial analytic, and other advance materials such as map understanding, data transformation, spatial analysis and data visualization, GIS for problem-solving and decision making. The course is made of two major activities: lectures and project based. The lectures activities will conduct with presentation and discussion. The project based will conduct with student activities on presenting information based on GIS.</p> <p>The course will use several GIS software (open source based), analyse and understand how it works, and then implementing the best practices into the student projects. The course will help the student to have clear understanding on concepts, theories and perform experiences on the project</p>																			
<p>Study and examination requirements and forms of examination</p>	<p>Exercises in class, Mid-terms examination, Final Project, and Final examination.</p>																			
<p>Media employed</p>	<p>LCD, blackboard, websites, and e-learning.</p>																			
<p>Assessments and Evaluation</p>	<table border="1" data-bbox="358 1759 1429 1894"> <tr> <td data-bbox="358 1759 589 1822">LO1</td> <td data-bbox="589 1759 812 1822">Problem 1 in midterm</td> <td data-bbox="812 1759 1034 1822">Summatif</td> <td data-bbox="1034 1759 1224 1822">10 %</td> <td data-bbox="1224 1759 1429 1822"><b>12,5%</b></td> </tr> <tr> <td data-bbox="358 1822 589 1864">Excercise 1</td> <td data-bbox="589 1822 812 1864">Formatif</td> <td data-bbox="812 1822 1034 1864">2.5%</td> <td data-bbox="1034 1822 1224 1864"></td> <td data-bbox="1224 1822 1429 1864"></td> </tr> <tr> <td data-bbox="358 1864 589 1894">LO2</td> <td data-bbox="589 1864 812 1894">Problem 2 in</td> <td data-bbox="812 1864 1034 1894">Summatif</td> <td data-bbox="1034 1864 1224 1894">10%</td> <td data-bbox="1224 1864 1429 1894"><b>12,5%</b></td> </tr> </table>					LO1	Problem 1 in midterm	Summatif	10 %	<b>12,5%</b>	Excercise 1	Formatif	2.5%			LO2	Problem 2 in	Summatif	10%	<b>12,5%</b>
LO1	Problem 1 in midterm	Summatif	10 %	<b>12,5%</b>																
Excercise 1	Formatif	2.5%																		
LO2	Problem 2 in	Summatif	10%	<b>12,5%</b>																

		midterm			
	Excercise 2	Formatif	2.5%		
	LO3	Problem 3 in midterm	Summatif	10%	<b>25%</b>
	Problem 4 in midterm	Summatif	10 %		
	Excercise 3	Formatif	5 %		
	LO4	Problem 1 in Final	Summatif	10%	<b>22.5%</b>
	Problem 2 in Final	Summatif	10 %		
	Excercise 3	Formatif	2.5 %		
	LO5	Problem 3 in Final	Summatif	10%	<b>27.5%</b>
	Problem 4 in Final	Summatif	10 %		
	Final Project	Formatif	7.5%		
Reading List	<p>Burrough,P.A., dan McDonnell, R.A., Lloyd, C., 2015, "Principles of Geographical Information Systems", 3rd edition, Oxford University Press.</p> <p>DeMers, M.N., 2008, "Fundamentals of Geographic Information Systems", 4th edition, Wiley.</p> <p>Clarke, K. C., 2010, "Getting Started with Geographic Information Systems", 5th edition, Prentice Hall.</p> <p>I. Heywood, S. Cornelius, and S. Carver., 2012, "An Introduction to Geographical Information Systems", Prentice Hall.</p> <p>LongLey P.A, M.F Goodchiled, D.J. Maguire, D.W Rhind, 2011: Geographic information system and science, John Wiley and Sons, New Jersery, 517p</p> <p>Chang, K.T, 2012. Introduction to Geographic Information System (sixth edition) McGraw Hill New York, 418p</p>				