

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

Module name	<b>Object Oriented Software Engineering</b>
Module level	Undergraduate
Code	MIK-4521
Courses (if applicable)	<b>Object Oriented Software Engineering</b>
Semester	Odd (Ganjil)
Contact person	Arif Nurwidyantoro, M.Cs Guntur Budi Herwanto, M.Cs
Lecturer	Arif Nurwidyantoro, M.Cs Guntur Budi Herwanto, M.Cs
Language	Indonesian and English
Relation to curriculum	1. Undergraduate degree program, elective, 5 <sup>th</sup> semester. 2. International undergraduate program, elective, 5 <sup>th</sup> semester.
Type of teaching, contact hours	1. Undergraduate degree program: lectures, < 25 students, 2. International undergraduate program: lectures, < 25 student
Workload	1. Lectures: 3 x 50 = 150 minutes (2.5 hours) per week. 2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. 3. Private study: 3 x 60 = 180 minutes (3 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	MII 3501 Software Engineering
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to:  <b>CO1</b> Be able to understand the concept and development of object-oriented systems <b>PLO9</b> <b>CO2</b> Be able to implement object oriented development concept <b>PLO5</b> <b>CO3</b> Be able to analyze the requirements needed in the design of object-oriented systems <b>PLO4</b> <b>CO4</b> Be able to understand the concept of object oriented design <b>PLO3</b> <b>CO5</b> Be able to understand the concept of design pattern <b>PLO4</b> <b>CO6</b> Be able to utilize refactoring in improving the quality of object oriented design and programming <b>PLO4</b>
Content	Object-oriented software development courses introduce software development with object-oriented programming paradigms. This course introduces how to define system requirements of users for system modeling using UML diagrams. Later, this course also introduces software development with object oriented approach and the use of design pattern to create reusable software components.

Study and examination requirements and forms of examination	Midterms examination and Final examination.			
Media employed	LCD, blackboard, websites and e-Learning			
Assessments and Evaluation	<b>CO</b>	<b>Evaluation Method</b>	<b>Type</b>	<b>Percentage</b>
	CO-1	Problem in Midterm	Summative	10
		Problem in Midterm	Summative	5
	CO-2	Assignment	Formative	5
		Assignment	Formative	10
	CO-3	Assignment	Formative	5
		Assignment	Formative	5
		Problem in Midterm	Summative	10
	CO-4	Problem in Midterm	Summative	10
		Assignment	Formative	5
		Assignment	Formative	5
		Problem in Final	Summative	5
		Problem in Final	Summative	5
CO-5	Problem in Final	Summative	10	
CO-6	Problem in Final	Summative	10	
Reading List	<p>WA: Booch, dkk., 2007, <i>Object-Oriented Analysis and Design with Applications</i>, 3<sup>rd</sup> Edition, Addison Wesley</p> <p>AA: Lethbridge, T.C. dan Laganier, R., 2005, <i>Object Oriented Software Engineering: Practical Software Development Using UML and Java</i>, 2<sup>nd</sup> Edition, McGraw-Hill</p> <p>AB: Gamma, E., Helm R., Johnson R., dan Vlissides, J., 1994, <i>Design Patterns: Elements of Reusable Object-Oriented Software</i>, Addison-Wesley</p> <p>AC: Deitel, P. , dan Deitel, H., 2014, <i>Java How to Program (Late Objects)</i>, 10<sup>th</sup> Edition, Prentice Hall</p> <p>AD: Fowler, M., Beck, K., Brant, J., Opdyke, W., and Roberts, D., 1999, <i>Refactoring: Improving the Design of Existing Code</i>, Addison Wesley Professional</p>			