



Universitas Negeri Surabaya
Faculty of Engineering
, Information Technology Education Undergraduate Study Program

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date
Object Base Programming	8320703058		T=3 P=0 ECTS=4.77	0	July 18, 2024
AUTHORIZATION	SP Developer	Course Cluster Coordinator		Study Program Coordinator	
		Drs. Bambang Sujatmiko, M.T.	

Learning model	Project Based Learning
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Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																																																																																																																							
	Program Objectives (PO)																																																																																																																																							
	PO - 1 Able to describe, explain, create, use objects and classes in object-oriented programming																																																																																																																																							
	PO - 2 Able to design programs with Object-Oriented Thinking																																																																																																																																							
	PO - 3 Able to define general classes and derived classes																																																																																																																																							
	PO - 4 Able to design and use abstract classes and interfaces																																																																																																																																							
	PO - 5 Able to use exceptions to handle errors in programs																																																																																																																																							
	PO - 6 Able to create programs using AWT and Swing in Java																																																																																																																																							
	PLO-PO Matrix																																																																																																																																							
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	PO Matrix at the end of each learning stage (Sub-PO)																																																																																																																																							
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Short Course Description	This course teaches object-oriented programming concepts and techniques. In teaching the PBO concept, the Java programming language will be used because Java uses the concepts of objects and classes in making programs. Teaching materials include an introduction to OOP concepts, Java Virtual Machine (JVM), objects, classes, methods, constructors, I/O, inheritance, encapsulation, polymorphism, overloading, UML, files, AWT, Swing, applets and exceptions.
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References	<p>Main :</p> <ol style="list-style-type: none"> 1. Harold, E.R. 2014. Java Network Programming, 4th edition. O'Reilly. 2. Jaworski, J. 1998. Java 2 Unleashed. Sams Publishing. 3. Modul Teori dan Student Activity 4. Holmes, B.J., Joice D.T. 2001. Object-Oriented Programming With Java, second edition. 5. Bakker, J. 2005. Beginning Java Objects From Concepts to Code, second edition, Apress. <p>Supporters:</p>
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Supporting lecturer	Drs. Bambang Sujatmiko, M.T.
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Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [Estimated time]		Learning materials [References]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline (offline)	Online (online)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

1	Students are able to understand the objectives of the course and apply VisualStudio.NET and Database programming	<p>1.ExplainingLearningContracts andRPS - ExplainingDatabaseIntegrationWithFramework.Net</p> <p>2.Implementing query creation and relationships between tables</p>	<p>Criteria: Group Value (20%), Individual Value (35%), Project Value (30%), and Presentation and Report Value (15%)</p> <p>Form of Assessment : Participatory Activities</p>	<p>Scientific approach with the Project Based Learning model with the following stages</p> <ol style="list-style-type: none"> 1. Students observe the problems given by the lecturer, referring to the topics that have been agreed upon during the lesson. As a group, students discuss to formulate hypotheses related to the problems faced. 2. Students begin to prepare projects that will be carried out to answer the hypotheses that have been prepared 3. Students prepare a schedule for completing the project to be carried out 4. Students carry out the stages of the project according to the schedule they have prepared (the lecturer observes each stage of the project the students are working on) 5. Students make reports related to projects that have been carried out and within the specified time period 6. Students reveal their experiences by showing the outcomes of completed projects <p>3x50</p>		0%
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2	Students are able to apply database programming	<ol style="list-style-type: none"> 1.explain the concept of databases 2.explains ADO.NET 3.create databases and tables 4.write SQL commands 5.create an application connection to the database 6.implement dataGridView 	<p>Criteria: Group Value (20%), Individual Value (35%), Project Value (30%), and Presentation and Report Value (15%)</p> <p>Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment</p>	Scientific approach with the Project Based Learning model with the following stages 1. Students observe the problems given by the lecturer, referring to the topics that have been agreed upon during the lesson. As a group, students discuss to formulate hypotheses related to the problems faced. 2. Students begin to prepare projects that will be carried out to answer the hypotheses that have been prepared 3. Students prepare a schedule for completing the project to be carried out 4. Students carry out the stages of the project according to the schedule they have prepared (the lecturer observes each stage of the project the students are working on) 5. Students make reports related to projects that have been carried out and within the specified time period 6. Students reveal their experiences by showing the outcomes of completed projects 3x50		0%
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3	Students are able to understand control structures	<ol style="list-style-type: none"> 1.Explain the decision control structure 2.explain the loop control structure 3.explain branching statements 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.Cognitive Score (C3, C4, C5, and C6) Score 1 - 100 2.Character/Attitude Score Score 1 - 100 3.Performance Score Score 1 - 100 <p>Form of Assessment : Participatory Activities</p>	<ol style="list-style-type: none"> 1. Students observe the problems given by the lecturer, referring to the topics that have been agreed upon during the lesson. As a group, students discuss to formulate hypotheses related to the problems faced. 2. Students begin to prepare projects that will be carried out to answer the hypotheses that have been prepared. 3. Students prepare a schedule for completing the project to be carried out. 4. Students carry out the stages of the project according to the schedule they have prepared (the lecturer observes each stage of the project the students are working on) 5. Students make reports related to projects that have been carried out and within the specified time period. 6. Students reveal the experiences they have had by showing the outcomes of the projects they have completed. <p>3x50</p>		0%
4	Students are able to understand the concept of arrays	<ol style="list-style-type: none"> 1.explains the definition of an array 2.explains the declaration and use of 1-dimensional arrays 3.describes the elements in the array 4.Explains determining the number of elements in an array 5.Explain the declaration and use of multi-dimensional arrays 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.Cognitive Score (C3, C4, C5, and C6) Score 1 - 100 2.Character/Attitude Score Score 1 - 100 3.Performance Value Score 1 - 100 <p>Form of Assessment : Participatory Activities</p>			0%

5	Students are able to understand the classes available in the Java Class Library	<ol style="list-style-type: none"> 1.Explain the concept of Object Oriented Programming 2.Explain the difference between objects and classes 3.Explain the difference between instance variables/methods and class (static) variables/methods 4.Explains methods and how to call and provide parameters to methods 5.Identify the range of variables 6.Casting primitive and object data types 7.Comparing objects 8.Determines the class of an object 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.Cognitive Score (C3, C4, C5, and C6) Score 1 - 100 2.Character/Attitude Score Score 1 - 100 3.Performance Value Score 1 - 100 <p>Form of Assessment : Participatory Activities, Practical Assessment</p>	<ol style="list-style-type: none"> 1. Students observe the problems given by the lecturer, referring to the topics that have been agreed upon during the lesson. As a group, students discuss to formulate hypotheses related to the problems faced. 2. Students begin to prepare projects that will be carried out to answer the hypotheses that have been prepared. 3. Students prepare a schedule for completing the project to be carried out. 4. Students carry out the stages of the project according to the schedule they have prepared (the lecturer observes each stage of the project the students are working on) 5. Students make reports related to projects that have been carried out and within the specified time period 6. Students reveal their experiences by showing the outcomes of completed projects <p>3x50</p>		0%
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6	Students are able to understand the concept of class by designing their own classes	<ol style="list-style-type: none"> 1.Explains how to create your own class 2.Explains the attribute and method declarations for classes 3.describes reference this to access instance data 4.explains the creation and calling of overloaded methods 5.explains how to import and create packages 6.explain the use of access modifiers 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.Cognitive Score (C3, C4, C5, and C6) Score 1 - 100 2.Character/Attitude Score Score 1 - 100 3.Performance value score 1-100 <p>Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment, Practical Assessment</p>	<ol style="list-style-type: none"> 1. Students observe the problems given by the lecturer, referring to the topics that have been agreed upon during the lesson. As a group, students discuss to formulate hypotheses related to the problems faced. 2. Students begin to prepare projects that will be carried out to answer the hypotheses that have been prepared. 3. Students prepare a schedule for completing the project to be carried out. 4. Students carry out the stages of the project according to the schedule they have prepared (the lecturer observes each stage of the project the students are working on) 5. Students make reports related to projects that have been carried out and within the specified time period 6. Students reveal the experiences they have had by showing the outcomes of the projects they have completed. <p>3x50</p>		0%
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7	Students are able to understand the concepts of inheritance, polymorphism and interfaces	<ol style="list-style-type: none"> 1. Describe superclasses and subclasses in inheritance 2. explains the overriding method of the superclass 3. explains final methods and final classes 4. explain polymorphism (abstract classes and interfaces) 	<p>Criteria:</p> <ol style="list-style-type: none"> 1. Cognitive Score (C3, C4, C5, and C6) Score 1 - 100 2. Character/Attitude Score Score 1 - 100 3. Performance Value Score 1 - 100 <p>Form of Assessment : Participatory Activities</p>	<ol style="list-style-type: none"> 1. Students observe the problems given by the lecturer, referring to the topics that have been agreed upon during the lesson. As a group, students discuss to formulate hypotheses related to the problems faced. 2. Students begin to prepare projects that will be carried out to answer the hypotheses that have been prepared. 3. Students prepare a schedule for completing the project to be carried out. 4. Students carry out the stages of the project according to the schedule they have prepared (the lecturer observes each stage of the project the students are working on) 5. Students make reports related to projects that have been carried out and within the specified time period. 6. Students reveal the experiences they have had by showing the outcomes of the projects they have completed. 			0%
8	UTS		<p>Form of Assessment : Test</p>	offline quiz 2x50			0%

9	Students are able to understand design with an object-oriented approach using UML notation	<ol style="list-style-type: none"> 1.Explains how to design in Object Oriented Programming using UML 2.Explaining usecase diagrams in object-oriented application design 3.Explaining class diagrams in object-oriented application design 4.Explaining activity diagrams in object-oriented application design 5.Explain sequence diagrams in object-oriented application design 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.group value (20%) 2.individual value (35%) 3.project value (30%) 4.Report value (15%) <p>Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment</p>	<ol style="list-style-type: none"> 1. Students observe the problems given by the lecturer, referring to the topics that have been agreed upon during the lesson. As a group, students discuss to formulate hypotheses related to the problems faced. 2. Students begin to prepare projects that will be carried out to answer the hypotheses that have been prepared. 3. Students prepare a schedule for completing the project to be carried out. 4. Students carry out the stages of the project according to the schedule they have prepared (the lecturer observes each stage of the project the students are working on) 5. Students make reports related to projects that have been carried out and within the specified time period 6. Students reveal their experiences by showing the outcomes of completed projects <p>3x50</p>		0%
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10	Students are able to understand the basics of exception handling and assertions in advanced programming	<ol style="list-style-type: none"> 1. explain exceptions 2. explains exception handling using the try-catch-finally block 3. explain recursive programming 4. explain abstract data types in programming 5. explain algorithms in programming 	<p>Criteria:</p> <ol style="list-style-type: none"> 1. Group Value (20%) 2. Individual Value (35%) 3. Project Value (30%) 4. Report Value (15%) <p>Form of Assessment : Participatory Activities</p>	<ol style="list-style-type: none"> 1. Students observe the problems given by the lecturer, referring to the topics that have been agreed upon during the lesson. As a group, students discuss to formulate hypotheses related to the problems faced. 2. Students begin to prepare projects that will be carried out to answer the hypotheses that have been prepared. 3. Students prepare a schedule for completing the project to be carried out. 4. Students carry out the stages of the project according to the schedule they have prepared (the lecturer observes each stage of the project the students are working on) 5. Students make reports related to projects that have been carried out and within the specified time period. 6. Students reveal their experiences by showing the outcomes of completed projects <p>3x50</p>		0%
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11	Students are able to understand the User Interface using the Abstract Windowing Toolkit (AWT) and Swing	<ol style="list-style-type: none"> 1. explains the definition of AWT and Swing 2. Explaining AWT in program creation 3. Explain the components of Layout Managers in program creation 4. Explain the components of Swing GUI in creating programs 	<p>Criteria:</p> <ol style="list-style-type: none"> 1. group value (20%) 2. individual value (35%) 3. project value (30%) 4. report value (15%) <p>Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment, Practical Assessment</p>	<ol style="list-style-type: none"> 1. Students observe the problems given by the lecturer, referring to the topics that have been agreed upon during the lesson. As a group, students discuss to formulate hypotheses related to the problems faced. 2. Students begin to prepare projects that will be carried out to answer the hypotheses that have been prepared. 3. Students prepare a schedule for completing the project to be carried out. 4. Students carry out the stages of the project according to the schedule they have prepared (the lecturer observes each stage of the project the students are working on) 5. Students make reports related to projects that have been carried out and within the specified time period. 6. Students reveal their experiences by showing the outcomes of completed projects <p>3x50</p>		0%
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12	Students are able to understand User Interface handling using User Interface Handling	<ol style="list-style-type: none"> 1.explains the definition and use of the delegation event model 2.identify event classes 3.explain event listeners in programming 4.explains event handling techniques in making applications 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.group value (20%) 2.individual value (35%) 3.project value (30%) 4.report value (15%) <p>Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment</p>	<ol style="list-style-type: none"> 1. Students observe the problems given by the lecturer, referring to the topics that have been agreed upon during the lesson. As a group, students discuss to formulate hypotheses related to the problems faced. 2. Students begin to prepare projects that will be carried out to answer the hypotheses that have been prepared. 3. Students prepare a schedule for completing the project to be carried out. 4. Students carry out the stages of the project according to the schedule they have prepared (the lecturer observes each stage of the project the students are working on) 5. Students make reports related to projects that have been carried out and within the specified time period 6. Students reveal their experiences by showing the outcomes of completed projects <p>3x50</p>		0%
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13	Students are able to understand threads in programming	<ol style="list-style-type: none"> 1.Explain the definition of thread 2.Explains the basics of threads 3.Explaining thread classes in programming 4.explains the thread 5.Explains synchronization 6.Explains communication methods between threads (interthread) 7.Explain concurrency capabilities 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.Cognitive Score (C3, C4, C5, and C6) Score 1 - 100 2.Character/Attitude Score Score 1 - 100 3.Performance Value Score 1 - 100 <p>Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment, Practical Assessment</p>	<ol style="list-style-type: none"> 1. Students observe the problems given by the lecturer, referring to the topics that have been agreed upon during the lesson. As a group, students discuss to formulate hypotheses related to the problems faced. 2. Students begin to prepare projects that will be carried out to answer the hypotheses that have been prepared. 3. Students prepare a schedule for completing the project to be carried out. 4. Students carry out the stages of the project according to the schedule they have prepared (the lecturer observes each stage of the project the students are working on) 5. Students make reports related to projects that have been carried out and within the specified time period 6. Students reveal the experiences they have had by showing the outcomes of the projects they have completed. <p>3x50</p>		0%
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14	Students are able to understand the concept of network-based programming and applets in making programs	<ol style="list-style-type: none"> 1. explain the basic concepts of networking 2. Identify the types of Java network packages 3. Explain the definition of Applet 4. Explain how to use Applets 5. Explain the Applet method in programming 	<p>Criteria:</p> <ol style="list-style-type: none"> 1. group value (30%) 2. individual value (25%) 3. project value (30%) 4. report value (15%) <p>Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment, Practical Assessment</p>	<ol style="list-style-type: none"> 1. Students observe the problems given by the lecturer, referring to the topics that have been agreed upon during the lesson. As a group, students discuss to formulate hypotheses related to the problems faced. 2. Students begin to prepare projects that will be carried out to answer the hypotheses that have been prepared. 3. Students prepare a schedule for completing the project to be carried out. 4. Students carry out the stages of the project according to the schedule they have prepared (the lecturer observes each stage of the project the students are working on) 5. Students make reports related to projects that have been carried out and within the specified time period. 6. Students reveal the experiences they have had by showing the outcomes of the projects they have completed. <p>3x50</p>		0%
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15	Students are able to understand I/OStream in managing files	<ol style="list-style-type: none"> 1.Explain the types of streams in general 2.Explaining Reader classes 3.Explaining Writer classes 4.Explain the InputStream classes 5.Explain the OutputStream classes 6.explain serialization and deserialization 	Criteria: <ol style="list-style-type: none"> 1.group value (30%) 2.individual value (25%) 3.project value (30%) 4.report value (15%) 	<ol style="list-style-type: none"> 1. Students observe the problems given by the lecturer, referring to the topics that have been agreed upon during the lesson. As a group, students discuss to formulate hypotheses related to the problems faced. 2. Students begin to prepare projects that will be carried out to answer the hypotheses that have been prepared. 3. Students prepare a schedule for completing the project to be carried out. 4. Students carry out the stages of the project according to the schedule they have prepared (the lecturer observes each stage of the project the students are working on). 5. Students make reports related to projects that have been carried out and within the specified time period. 6. Students reveal the experiences they have had by showing the outcomes of the projects they have completed. 		0%
16	Students are able to understand generic concepts (classes and methods) in programming	<ol style="list-style-type: none"> 1.Visual Design (15%) 2.Algorithms involved are at least 2 (Sorting and Searching) (25%) 3.Program complexity (20 %) 4.Functionality and Originality (15 %) 5.Packaging (10 %) 6.Databases (15 %) 	Criteria: <ol style="list-style-type: none"> 1.Group Value (25 %) 2.Individual Value (25%) 3.Project Value (40%) 4.Report Value (10%) Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment	Final Project Presentation Courses for each group 3x50		0%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
		0%

Notes

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.

5. **Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.