



**Universitas Negeri Surabaya
Faculty of Engineering
, Electrical Engineering Education Undergraduate Study Program**

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date																																	
Computer programming	8320102086		T=2 P=0 ECTS=3.18	3	July 17, 2024																																	
AUTHORIZATION	SP Developer		Course Cluster Coordinator		Study Program Coordinator																																	
		Dr. Nur Kholis, S.T., M.T.																																	
Learning model	Project Based Learning																																					
Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																					
	PLO-11	Have extensive knowledge in the fields of mathematics, science and electrical engineering so that you can solve complex problems typical of electrical engineering and electronics engineering skills programs by following the rules of scientific writing (SSC2.2).																																				
	Program Objectives (PO)																																					
	PLO-PO Matrix																																					
		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">P.O</td> <td style="padding: 5px;">PLO-11</td> </tr> </table>				P.O	PLO-11																															
P.O	PLO-11																																					
	PO Matrix at the end of each learning stage (Sub-PO)																																					
	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td rowspan="2" style="padding: 5px;">P.O</td> <td colspan="16" style="text-align: center; padding: 5px;">Week</td> </tr> <tr> <td style="padding: 5px;">1</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">3</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">5</td> <td style="padding: 5px;">6</td> <td style="padding: 5px;">7</td> <td style="padding: 5px;">8</td> <td style="padding: 5px;">9</td> <td style="padding: 5px;">10</td> <td style="padding: 5px;">11</td> <td style="padding: 5px;">12</td> <td style="padding: 5px;">13</td> <td style="padding: 5px;">14</td> <td style="padding: 5px;">15</td> <td style="padding: 5px;">16</td> </tr> </table>					P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																						
Short Course Description	This course discusses the introduction and understanding of programming languages, basic programming, program structure, data types, algorithm notation, control, repetition, functions, sequential processing, as well as simple problem practice questions to be able to analyze problems related to logic or methods. thinking which is then implemented into a programming language.																																					
References	Main :																																					
	1. 1. Cormen. 2009. Introduction to Algorithms 3rd edition. Massachusetts Institute of Technology. 2. Rao. Introduction to Design & Analysis of Algorithms - In Simple Way3. Levitin. 2012. 3. Introduction to The Design and Analysis of Algorithms. 3rd edition. Pearson.																																					
	Supporters:																																					
Supporting lecturer	L. Endah Cahya Ningrum, S.Pd., M.Pd.																																					
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 explain the relationship between digital technology and computer programming	accuracy in explaining the relationship between computers and digital technology	Criteria: A=very good, B=good, c=fair	Presentations and lectures 2 X 50		Material: Digital technology in computer programming References: 1. Cormen. 2009. <i>Introduction to Algorithms 3rd edition.</i> Massachusetts Institute of Technology. 2.Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> 3. Levitin. 2012. <i>Introduction to The Design and Analysis of Algorithms.</i> 3rd edition. Pearson.	6%
2	Students are able to explain the basic concepts of logic and algorithms, the characteristics of algorithms, and the nature of algorithms	accuracy in explaining the basis of logic and algorithms, characteristics of algorithms, and properties of algorithms	Criteria: A=very good, B=good, C=fair Form of Assessment : Participatory Activities	Presentation Discussion Reflection 2 X 50		Material: Basic concepts of logic and algorithms, characteristics of algorithms, and properties of algorithms References: 1. Cormen. 2009. <i>Introduction to Algorithms 3rd edition.</i> Massachusetts Institute of Technology. 2.Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> 3. Levitin. 2012. <i>Introduction to The Design and Analysis of Algorithms.</i> 3rd edition. Pearson.	6%
3	Students are able to explain the basic structure of algorithms and the differences between algorithms and programming	understand the basic structure of algorithms as well as the differences between algorithms and programming	Criteria: A=very good, B=good, C=fair Form of Assessment : Participatory Activities	Presentation Discussion Reflection 2 X 50		Material: Difference between algorithms and programming References: 1. Cormen. 2009. <i>Introduction to Algorithms 3rd edition.</i> Massachusetts Institute of Technology. 2.Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> 3. Levitin. 2012. <i>Introduction to The Design and Analysis of Algorithms.</i> 3rd edition. Pearson.	6%

4	Students are able to write notations for writing descriptive sentence algorithms and pseudocode	understand the procedures for writing algorithms in several notations	Criteria: A=very good, B=good, C=fair Form of Assessment : Participatory Activities	PresentationDiscussionReflection 2 X 50		Material: Descriptive sentence algorithm and pseudocode References: 1. Cormen. 2009. <i>Introduction to Algorithms 3rd edition</i> . Massachusetts Institute of Technology. 2.Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> . 3. Levitin. 2012. <i>Introduction to The Design and Analysis of Algorithms</i> . 3rd edition. Pearson.	6%
5	Students are able to describe algorithm notation using flowcharts	Students are able to draw a flowchart scheme for a simple problem	Criteria: A=very good, B=good, C=fair Form of Assessment : Test	Presentation, Simulation Reflection 2 X 50		Material: Algorithm notation using flowcharts References: 1. Cormen. 2009. <i>Introduction to Algorithms 3rd edition</i> . Massachusetts Institute of Technology. 2.Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> . 3. Levitin. 2012. <i>Introduction to The Design and Analysis of Algorithms</i> . 3rd edition. Pearson.	6%
6	Students are able to show the parts or structure contained in a program	Students are able to understand the structure of a program	Criteria: A=very good, B=good, C=fair Form of Assessment : Project Results Assessment / Product Assessment	PresentationSimulationReflection 2 X 50		Material: Structure of a program References: 1. Cormen. 2009. <i>Introduction to Algorithms 3rd edition</i> . Massachusetts Institute of Technology. 2.Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> . 3. Levitin. 2012. <i>Introduction to The Design and Analysis of Algorithms</i> . 3rd edition. Pearson.	7%

7	Students are able to explain functions, variables, data types, constants and operators used in a program	Students are able to understand functions, variables, data types, constants and operators in programs	Criteria: A=very good, B=Good, C=Fair Form of Assessment : Project Results Assessment / Product Assessment	PresentationSimulationReflection 2 X 50		Material: Functions, variables, data types, constants and operators used in a program Library: 1. Cormen. 2009. <i>Introduction to Algorithms</i> 3rd edition. Massachusetts Institute of Technology. 2.Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> 3. Levitin. 2012. 3. <i>Introduction to The Design and Analysis of Algorithms</i> . 3rd edition. Pearson.	0%
8	UTS	UTS	Criteria: UTS Form of Assessment : Project Results Assessment / Product Assessment	UTS 2 X 50		Material: Programming Algorithms Library: 1. Cormen. 2009. <i>Introduction to Algorithms</i> 3rd edition. Massachusetts Institute of Technology. 2.Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> 3. Levitin. 2012. 3. <i>Introduction to The Design and Analysis of Algorithms</i> . 3rd edition. Pearson.	7%
9	Students are able to demonstrate basic input output operations in a simple program	understand how to use input output in a program	Criteria: A=very good, B=good, and C=fair Form of Assessment : Project Results Assessment / Product Assessment	PresentationSimulationReflection 2 X 50		Material: Basic input output operations in a simple program References: 1. Cormen. 2009. <i>Introduction to Algorithms</i> 3rd edition. Massachusetts Institute of Technology. 2.Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> 3. Levitin. 2012. 3. <i>Introduction to The Design and Analysis of Algorithms</i> . 3rd edition. Pearson.	0%

10	Students are able to explain the basic concepts of array elements	understand variables and array concepts	Criteria: A=very good, B=good, and C=fair Form of Assessment : Project Results Assessment / Product Assessment	SimulationPresentationReflection 2 X 50		Material: Basic concepts of array elements References: 1. Cormen. 2009. <i>Introduction to Algorithms 3rd edition</i> . Massachusetts Institute of Technology. 2.Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> 3. Levitin. 2012. 3. <i>Introduction to The Design and Analysis of Algorithms</i> . 3rd edition. Pearson.	6%
11	Students are able to explain the concept of control statements and loops in a program	students understand the basic concepts of using control statements and loops in programs	Criteria: A=very good, B=good, and C=fair Form of Assessment : Project Results Assessment / Product Assessment	PresentationSimulationReflection 2 X 50		Material: Basic concepts of using control statements and loops in programs. Library: 1. Cormen. 2009. <i>Introduction to Algorithms 3rd edition</i> . Massachusetts Institute of Technology. 2.Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> 3. Levitin. 2012. 3. <i>Introduction to The Design and Analysis of Algorithms</i> . 3rd edition. Pearson.	6%
12	Students are able to analyze the concept of object oriented programming	Students are able to understand the basic concepts of object oriented programming	Criteria: A=very good, B=good, and C=fair Form of Assessment : Project Results Assessment / Product Assessment	PresentationSimulationReflection 2 X 50		Material: The concept of object oriented programming References: 1. Cormen. 2009. <i>Introduction to Algorithms 3rd edition</i> . Massachusetts Institute of Technology. 2.Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> 3. Levitin. 2012. 3. <i>Introduction to The Design and Analysis of Algorithms</i> . 3rd edition. Pearson.	6%

13	Case Study 1: Calculating the Area and Circumference of a Circle Case Study 2: Temperature Conversion Case Study 3: Displaying Odd Numbers	Students are able to design algorithms about the cases that have been given	Form of Assessment : Project Results Assessment / Product Assessment	Presentation Simulation Reflection 2 X 50		Material: Project Implementation and Presentation References: 1. Cormen. 2009. <i>Introduction to Algorithms 3rd edition.</i> Massachusetts Institute of Technology. 2. Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> 3. Levitin. 2012. <i>Introduction to The Design and Analysis of Algorithms.</i> 3rd edition. Pearson.	6%
14	Case Study 1: Calculating the Area and Circumference of a Circle Case Study 2: Temperature Conversion Case Study 3: Displaying Odd Numbers	Students are able to design algorithms about the cases that have been given	Form of Assessment : Project Results Assessment / Product Assessment	Presentation Simulation Reflection 2 X 50		Material: Project Implementation and Presentation References: 1. Cormen. 2009. <i>Introduction to Algorithms 3rd edition.</i> Massachusetts Institute of Technology. 2. Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> 3. Levitin. 2012. <i>Introduction to The Design and Analysis of Algorithms.</i> 3rd edition. Pearson.	6%
15	Case Study 1: Calculating the Area and Circumference of a Circle Case Study 2: Temperature Conversion Case Study 3: Displaying Odd Numbers	Students are able to design algorithms about the cases that have been given	Criteria: The assessment score is on a scale of 0-100 according to the assessment indicators Form of Assessment : Project Results Assessment / Product Assessment, Test	Presentation Simulation Reflection 2 X 50		Material: Project Implementation and Presentation References: 1. Cormen. 2009. <i>Introduction to Algorithms 3rd edition.</i> Massachusetts Institute of Technology. 2. Rao. <i>Introduction to Design & Analysis of Algorithms - In Simple Way</i> 3. Levitin. 2012. <i>Introduction to The Design and Analysis of Algorithms.</i> 3rd edition. Pearson.	13%
16	FINAL EXAMS			2 X 50			0%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	18%
2.	Project Results Assessment / Product Assessment	50.5%
3.	Test	12.5%
		81%

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.