



**Universitas Negeri Surabaya
Faculty of Engineering,
Bachelor of Information Systems Study Program**

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date																																																																		
Software engineering	5720103046		T=3 P=0 ECTS=4.77	3	July 17, 2024																																																																		
AUTHORIZATION		SP Developer	Course Cluster Coordinator	Study Program Coordinator																																																																			
		I Kadek Dwi Nuryana, S.T., M.Kom.																																																																			
Learning model	Project Based Learning																																																																						
Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																																																						
	PLO-24	Mastering concepts and skills in computer programming languages;																																																																					
	PLO-29	Able to apply knowledge in the fields of computing, computer networks and programming in accordance with scientific disciplines;																																																																					
	Program Objectives (PO)																																																																						
	PO - 1	Able to utilize ICT in engineering software																																																																					
	PO - 2	Able to make strategic decisions to analyze systems, model systems, design systems, design and develop systems into software both individually and in software project management groups.																																																																					
	PLO-PO Matrix																																																																						
		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>P.O</td> <td>PLO-24</td> <td>PLO-29</td> </tr> <tr> <td>PO-1</td> <td></td> <td></td> </tr> <tr> <td>PO-2</td> <td></td> <td></td> </tr> </table>				P.O	PLO-24	PLO-29	PO-1			PO-2																																																											
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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">P.O</td> <td colspan="16">Week</td> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td> </tr> <tr> <td>PO-1</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>PO-2</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>				P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	PO-1																	PO-2																
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PO-1																																																																							
PO-2																																																																							
Short Course Description	This Software Engineering course provides software engineering concepts, software project management, various software development methodologies, software requirements analysis, system principles and modeling with DFD, creating database systems using ERD, interface design (Display Worksheet and Semantic Nets), RPL project design and implementation.																																																																						
References	Main :																																																																						
	<ol style="list-style-type: none"> 1. Pressman, R. S., Software Engineering: A Practitioner 19s Approach, 8th Edition, McGraw-Hill, 2008 2. Sommerville, I., Software Engineering 8th Edition, Addison-Wesley, 2007. 3. Siahaan, Daniel., Analisa Kebutuhan Dalam Rekayasa Perangkat Lunak, ANDI, Yogyakarta, 2012 4. Insap Santoso, 2009, Interaksi Manusia dan Komputer, Andi Offset, Yogyakarta. 5. Kendall, dan Kendall, 2003, Analisis dan Perancangan Sistem Jilid 1, Prenhallindo, Jakarta 6. Marlinda, Linda, S.Kom, 2004, Sistem Basis Data, Andi Offset, Yogyakarta. 																																																																						
	Supporters:																																																																						
Supporting lecturer	Ardhini Warih Utami, S.Kom., M.Kom. Bonda Sisepaputra, M. Kom. Martini Dwi Endah Susanti, S.Kom., M.Kom.																																																																						
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	Understand engineering concepts in software.	<ol style="list-style-type: none"> 1.Explain the meaning of engineering and engineering in software 2.Explaining the benefits in Software Engineering (RPL) 3.Explain the engineering objectives of software 4.Provide examples of the relationship between RPL and other sciences 	Criteria: <ol style="list-style-type: none"> 1.Participation = 20% 2.Tasks = 30% 3.UTS = 20% 4.UAS = 30% 5.NA = ((2xP) (3xT)(2xUTS) (3xUAS))/10 	lecture, discussion, Q&A, Presentation 3 X 50	lecture, discussion, Q&A, Presentation 3 X 50	Material: engineering concepts in software Library : Insap Santoso, 2009, <i>Human and Computer Interaction</i> , Andi Offset, Yogyakarta.	0%
2	Analyzing software development models	<ol style="list-style-type: none"> 1.Describe the prototype development model and its stages. 2.Describe the RAD development model and its stages 3.Describe the spiral development model and its stages 4.Mention the advantages and benefits of each development model 5.Identify the development model and model stages from the case study 	Criteria: <ol style="list-style-type: none"> 1.Participation = 20% 2.Tasks = 30% 3.UTS = 20% 4.UAS = 30% 5.NA = ((2xP) (3xT)(2xUTS) (3xUAS))/10 	Lectures, discussions, presentations, questions and answers 3 X 50	Lectures, discussions, presentations, questions and answers 3 X 50	Material: Software development models References: Siahaan, Daniel., <i>Requirements Analysis in Software Engineering</i> , ANDI, Yogyakarta, 2012	0%
3	Understand the concept of project management and software project management	<ol style="list-style-type: none"> 1.Explain the meaning of project management and software project management 2.Defining software project management boundaries (MPPL) 3.Explain the differences between software project development and other projects 4.Defining the stages in MPPL 5.Explain the need for good planning, monitoring and control in MPPL 6.Name PL project stakeholders 	Criteria: <ol style="list-style-type: none"> 1.Participation = 20% 2.Tasks = 30% 3.UTS = 20% 4.UAS = 30% 5.NA = ((2xP) (3xT)(2xUTS) (3xUAS))/10 	Discussion, Presentation 3 X 50	Discussion, Presentation 3 X 50	Material: project management concepts and software project management Reader: Pressman, RS, <i>Software Engineering: A Practitioner 19s Approach</i> , 8th Edition, McGraw-Hill, 2008	0%

4	Understand software requirements and software requirements analysis techniques	<ol style="list-style-type: none"> 1.Explain software requirements. 2.Mention software requirements analysis techniques 3.Explains needs analysis techniques using questionnaire surveys 4.Explaining needs analysis techniques using interviews 5.Explains needs analysis techniques using observation 6.Explains requirements analysis techniques using document analysis 	Criteria: <ol style="list-style-type: none"> 1.Participation = 20% 2.Tasks = 30% 3.UTS = 20% 4.UAS = 30% 5.NA = ((2xP)(3xT)(2xUTS)(3xUAS))/10 	Presentation, Discussion, Exercise 3 X 50	Presentation, Discussion, Exercise 3 X 50	Material: software requirements analysis techniques References:	0%
5	Understand the concept of system modeling	<ol style="list-style-type: none"> 1.Explain the meaning of system modeling. 2.Explain the purpose of system modeling 3.Explain the various types of system modeling 4.Explain the concept of use case system modeling 5.Explains the concept of DFD system modeling 	Criteria: <ol style="list-style-type: none"> 1.Participation = 20% 2.Tasks = 30% 3.UTS = 20% 4.UAS = 30% 5.NA = ((2xP)(3xT)(2xUTS)(3xUAS))/10 	Presentation, Discussion, Exercise 3 X 50	Presentation, Discussion, Exercise 3 X 50	Material: system modeling concepts References: Kendall, and Kendall, 2003, <i>System Analysis and Design Volume 1</i> , Prenhallindo, Jakarta	0%
6	Understanding Database Concepts	<ol style="list-style-type: none"> 1.Explain the basic concepts of databases and database systems. 2.Explain the components of a database system. 3.Explain the advantages and disadvantages of database systems. 4.Explain the purpose of database design. 5.Explain the concept of database design. 6.Explain the concept of Entity Relational Diagram (ERD) 	Criteria: <ol style="list-style-type: none"> 1.Participation = 20% 2.Tasks = 30% 3.UTS = 20% 4.UAS = 30% 5.NA = ((2xP)(3xT)(2xUTS)(3xUAS))/10 	Presentation, Discussion, Exercise 3 X 50	Presentation, Discussion, Exercise 3 X 50	Material: Database Concepts References: Marlinda, Linda, S.Kom, 2004, <i>Database Systems</i> , Andi Offset, Yogyakarta.	0%

7	Understand the concept of software interface design	<ol style="list-style-type: none"> 1.Explain the concept of interface design. 2.Mention the principles of user interface. 3.Explain design documentation. 4.Explain the application program categories. 5.Explains design using various approaches. 6.Mention the interface components. 7.Mention the sequence of dialogue design. 8.Explains text-based design 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.Participation = 20% 2.Tasks = 30% 3.UTS = 20% 4.UAS = 30% 5.NA = ((2xP)(3xT)(2xUTS)(3xUAS))/10 	Presentation, Discussion, Exercise 3 X 50	Presentation, Discussion, Exercise 3 X 50	<p>Material: software interface design concept Reference: <i>Insap Santoso, 2009, Human and Computer Interaction, Andi Offset, Yogyakarta.</i></p>	0%
8	Students can analyze the RPL stages based on case studies of UTS questions	<ol style="list-style-type: none"> 1.Students can define the concept of RPL 2.Students can mention RPL development models 3.Students can mention the concept of project management 4.Students can analyze RPL needs based on UTS question cases 5.Students can design a DFD system based on UTS question cases 6.Students can design an ERD system based on UTS question cases 7.Students can design LKT systems based on UTS question cases 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.Participation = 20% 2.Tasks = 30% 3.UTS = 20% 4.UAS = 30% 5.NA = ((2xP)(3xT)(2xUTS)(3xUAS))/10 <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Exercise 1 X 50	Exercise 1 X 50	<p>Material: RPL stage analysis Reference: <i>Siahaan, Daniel., Needs Analysis in Software Engineering, ANDI, Yogyakarta, 2012</i></p>	0%
9	Skilled in software requirements (PL) specifications	<ol style="list-style-type: none"> 1.Identifying PL functional needs. 2.Identify non-functional OT needs. 3.Identify user requirements. 4.Identify system requirements. 5.Identify interface requirements. 6.Identifying documentation requirements 	<p>Criteria:</p> <ol style="list-style-type: none"> 1.Participation = 20% 2.Tasks = 30% 3.UTS = 20% 4.UAS = 30% 5.NA = ((2xP)(3xT)(2xUTS)(3xUAS))/10 	Exercises, Discussions, Presentations 3 X 50	Exercises, Discussions, Presentations 3 X 50	<p>Material: software requirements specifications References: <i>Sommerville, I., Software Engineering 8th Edition, Addison-Wesley, 2007.</i></p>	0%

10	Skilled in system modeling with DFD (Data Flow Diagram)	<ol style="list-style-type: none"> 1. Create a context level/level 0 DFD along with its data flow using power designer software. 2. Create a level 1 DFD along with all processes and data flows using power designer software. 3. Create a level 2 DFD from a process/more and its data flow using power designer software. 4. Develop character behavior, including: honesty, thoroughness, and responsibility in designing systems 	Criteria: <ol style="list-style-type: none"> 1. Participation = 20% 2. Tasks = 30% 3. UTS = 20% 4. UAS = 30% 5. NA = ((2xP) (3xT)(2xUTS) (3xUAS))/10 	Exercises, Discussions, Presentations 3 X 50	Exercises, Discussions, Presentations 3 X 50	Material: DFD (Data Flow Diagram) Library: Sommerville, I., <i>Software Engineering 8th Edition</i> , Addison-Wesley, 2007.	0%
11	Skilled in Entity relational diagram (ERD) modeling	<ol style="list-style-type: none"> 1. Create a Conceptual Data Model (CDM) using power designer. 2. Create entities and fill in the attributes of each entity using power designer. 3. Create relationships between tables/entities and determine cardinality between entities/tables 4. Create a Physical Data Model (PDM) by generating it from CDM 5. Develop character behavior, including: honesty, thoroughness, and responsibility 6.. 	Criteria: <ol style="list-style-type: none"> 1. Participation = 20% 2. Tasks = 30% 3. UTS = 20% 4. UAS = 30% 5. NA = ((2xP) (3xT)(2xUTS) (3xUAS))/10 	Exercises, Discussions, Presentations 3 X 50	Exercises, Discussions, Presentations 3 X 50	Material: Entity relational diagram (ERD) Bibliography: Pressman, RS, <i>Software Engineering: A Practitioner 19s Approach, 8th Edition</i> , McGraw-Hill, 2008	0%
12	Skilled in interface design	<ol style="list-style-type: none"> 1. Create an interface design according to the number of processes in DFD modeling on the Display Worksheet (LKT). 2. Creating semantic nets. 3. Implementing interfaces in developer programs 	Criteria: <ol style="list-style-type: none"> 1. Participation = 20% 2. Tasks = 30% 3. UTS = 20% 4. UAS = 30% 5. NA = ((2xP) (3xT)(2xUTS) (3xUAS))/10 	Discussion Practice, Presentation 3 X 50	Discussion Practice, Presentation 3 X 50	Material: interface design Reference: Insap Santoso, 2009, <i>Human and Computer Interaction, Andi Offset, Yogyakarta.</i>	0%

13	Skilled in creating RPL applications/programs	1.Create a database with the SQL Server tool from the PDM power designer generated results. 2.Relate interface design to SQL Server database. 3.Create an RPL project program	Criteria: 1.Participation = 20% 2.Tasks = 30% 3.UTS = 20% 4.UAS = 30% 5.NA = ((2xP)(3xT)(2xUTS)(3xUAS))/10	Exercise 9 X 50	Exercise 9 X 50	Material: creating RPL applications/programs Reader: Pressman, RS, Software Engineering: A Practitioner 19s Approach, 8th Edition, McGraw-Hill, 2008	0%
14	Skilled in creating RPL program applications			Exercise 9 X 50	Exercise 9 X 50	Material: creating an RPL program application Reader: Pressman, RS, Software Engineering: A Practitioner 19s Approach, 8th Edition, McGraw-Hill, 2008	0%
15	Skilled in creating RPL applications/programs	1.Create a database with the SQL Server tool from the PDM power designer generated results. 2.Relating interface design in Visual Basic with SQL Server database. 3.Create an RPL project program	Criteria: 1.Participation = 20% 2.Tasks = 30% 3.UTS = 20% 4.UAS = 30% 5.NA = ((2xP)(3xT)(2xUTS)(3xUAS))/10	Exercise 9 X 50	Exercise 9 X 50	Material: creating RPL applications/programs Reader: Pressman, RS, Software Engineering: A Practitioner 19s Approach, 8th Edition, McGraw-Hill, 2008	0%
16	UAS		Form of Assessment : Project Results Assessment / Product Assessment	UAS 1x1	UAS 1x1	Material: UAS Literature:	0%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
		0%

Notes

- 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.
- 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.
- 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.
- 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.
- Indicators for assessing** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities or performance of student learning outcomes accompanied by evidence.
- 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.
- Forms of assessment:** test and non-test.
- 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.
- 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.
- Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
- 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%.
- TM=Face to face, PT=Structured assignments, BM=Independent study.

