				Document Code
	Universitas Negeri Surabaya **Vocational Faculty,** **D4 Informatics Management Study Program**			

SEMESTER LEARNING PLAN

Courses		CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Software engineering		5730102159	Compulsory Study Program Subjects	T=2	P=0	ECTS=3.18	2	July 17, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	....	....	Dodik Arwin Dermawan, S.ST., S.T., M.T.

Learning model	**Project Based Learning**		
Program Learning Outcomes (PLO)	**PLO study program which is charged to the course**		
	PLO-1	Able to demonstrate religious, national and cultural values, as well as academic ethics in carrying out their duties	
	PLO-2	Demonstrate the character of being tough, collaborative, adaptive, innovative, inclusive, lifelong learning and entrepreneurial spirit	
	PLO-3	Develop logical, critical, systematic and creative thinking in carrying out specific work in their field of expertise and in accordance with work competency standards in the field concerned	
	PLO-4	Develop yourself continuously and collaborate.	
	Program Objectives (PO)		
	PLO-PO Matrix		

P.O	PLO-1	PLO-2	PLO-3	PLO-4

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

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 :**	
	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	Salamun Rohman Nudin, 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.	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:** 1. Participation = 20% 2. Tasks = 30% 3. UTS = 20% 4. UAS = 30% 5. NA = ((2xP) (3xT)(2xUTS) (3xUAS))/10 **Form of Assessment** : Participatory Activities, Practical Assessment	lecture, discussion, Q&A, Presentation 3 X 50			0%
2	Analyzing software development models	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:** 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			0%
3	Understand the concept of project management and software project management	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:** 1. Participation = 20% 2. Tasks = 30% 3. UTS = 20% 4. UAS = 30% 5. NA = ((2xP) (3xT)(2xUTS) (3xUAS))/10	Discussion, Presentation 3 X 50			0%

No	Ability	Indicators	Assessment Criteria	Learning Method			Weight
4	Understand software requirements and software requirements analysis techniques	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:** 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			0%
5	Understand the concept of system modeling	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:** 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			0%
6	Understanding Database Concepts	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:** 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			0%

7	Understand the concept of software interface design	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	**Criteria:** 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			0%
8	Students can analyze the RPL stages based on case studies of UTS questions	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	**Criteria:** 1. Participation = 20% 2. Tasks = 30% 3. UTS = 20% 4. UAS = 30% 5. NA = ((2xP) (3xT)(2xUTS) (3xUAS))/10	Exercise 1 X 50			0%
9	Skilled in software requirements (PL) specifications	1. Identifying PL functional needs. 2. Identify non-functional PL needs. 3. Identify user requirements. 4. Identify system requirements. 5. Identify interface requirements. 6. Identifying documentation requirements	**Criteria:** 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			0%

10	Skilled in system modeling with DFD (Data Flow Diagram)	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:** 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			0%
11	Skilled in Entity relational diagram (ERD) modeling	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:** 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			0%
12	Skilled in interface design	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:** 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			0%

No			Criteria					
13	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				0%
14	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				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				0%
16								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 and 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.