	Universitas Negeri Surabaya Faculty of Economics and Business Digital Business Undergraduate Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
System Analysis and Design	6120903027	Compulsory Study Program Subjects	T=0	P=2	ECTS=3.18	4	January 2, 2023

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
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Learning model	**Project Based Learning**

Program Learning Outcomes (PLO)

PLO study program that is charged to the course

Program Objectives (PO)

PO - 1	Students are able to explain software requirements specifications [C2, A2] | Students are able to explain software requirement specification [C2, A2]
PO - 2	Students are able to define high-level requirements and candidate domains [C3, A2] | Students are able to define high-level requirements and domain candidate [C2, A2]
PO - 3	Students are able to analyze and elicit software requirements specifications [C3, P2, A2] | Students are able to analyze and to derive software requirement specification [C3, P2, A2]
PO - 4	Students are able to design unified modeling language (UML) diagrams according to software requirements [C4, P3, A2] | Students are capable to design software specification using UML diagram [C4, P3, A2]

PLO-PO Matrix

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

Short Course Description

One of the crucial stages in software development is requirements engineering. The success of a software development project is achieved when stakeholder needs can be met according to what was promised by the developer. So in the initial software development process, students need an understanding of systems and software engineering, methods for exploring stakeholder needs, analysis techniques, and approaches for documenting software requirements specifications. The activities in this lecture will be carried out using independent and group learning methods so that students can be trained when they are directly involved in software development projects. (One of the crucial stages in software development is requirements engineering. The success of a software development project is achieved when stakeholder needs can be fulfilled according to what was promised by the developer. So, in the initial process of software development, students need an understanding of systems and software engineering, methods for exploring stakeholder needs, techniques for analyzing, and approaches for documenting software requirements specifications Activities in this lecture will be carried out using independent and group learning methods so that they can train students when they are directly involved in software development projects.)

References

Main :

	1. Roger S Pressman and Bruce R. Maxim. 2014. Software Engineering: A Practitioners Approach (8th edition). 2. Ivar Jacobson. 2012. Use Case version 2. 3. IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.
	Supporters:
Supporting lecturer	Riska Dhenabayu, S.Kom., M.M. Renny Sari Dewi, S. Kom., M. Kom., MCE., MOS. Anita Safitri, 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	Students are able to understand the concept of framework-based software requirements analysis [C2, A2] | Students are able to understand the concept of software requirements analysis using framework [C2, A2]	1.1. Students are able to come up with digital business system ideas that are in line with the industrial revolution 4.0	**Criteria:** Holistic rubric **Form of Assessment** : Participatory Activities	Non-test form: Interactive question and answer | Non-test form: Interactive Q&A 3 X 50	Non-test form: Interactive question and answer | Non-test form: Interactive Q&A 3 X 50	**Material:** IEEE ConOps Framework **Library:** *IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.*	5%
2	Students are able to understand the concept of framework-based software requirements analysis [C2, A2] | Students are able to understand the concept of software requirements analysis using framework [C2, A2]	2.1 Students are able to explain the digitalization of manual business operations	**Criteria:** Holistic rubric **Form of Assessment** : Participatory Activities, Practice/Performance	Non-test form: Interactive question and answer | Non-test form: Interactive Q&A 3 X 50	Non-test form: Interactive question and answer | Non-test form: Interactive Q&A 3 X 50	**Material:** Scope Description and Document Referenced **Library:** *IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.*	5%
3	Students are able to define high-level system requirements and domain objects [C3, A2] | Students are able to define a high-level requirement system and domain objects [C3, A2]	1.3.1. Students are able to explain high-level requirements from user stories 2.3.2. Students are able to provide several domain objects based on user stories	**Criteria:** Holistic rubric **Form of Assessment** : Participatory Activities, Practice/Performance	Lecture | Discovery & Cooperative learning 3 X 50	Lecture | Discovery & Cooperative learning 3 X 50	**Material:** High-level Requirements and Domain Object **Library:** *IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.*	5%
4	Students are able to analyze functional and non-functional requirements based on user stories [C3, A2] | Students are able to analyze functional and non-functional requirements based on user stories [C3, A2]	1.4.1. Students are able to explain the functional requirements of the system 2.4.2. Students are able to name several functional requirements that support the business processes of the digital business system that will be developed	**Criteria:** Holistic rubric **Form of Assessment** : Participatory Activities	Lectures and Simulations | Discovery & Cooperative learning, Simulation-based learning 3 X 50	Lectures and Simulations | Discovery & Cooperative learning, Simulation-based learning 3 X 50	**Material:** Functional Requirements | Functional Requirements **Library:** *IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.*	5%

5	Students are able to analyze functional and non-functional requirements based on user stories [C3, A2] | Students are able to analyze functional and non-functional requirements based on user stories [C3, A2]	1.5.1 Students are able to explain the non-functional requirements of the system 2.5.2 Students are able to state the main non-functional requirements that support the digital business system environment to be developed	**Criteria:** Holistic rubric **Form of Assessment** : Practice / Performance	Lectures and Simulations | Discovery & Cooperative learning, Simulation-based learning 3 X 50	Lectures and Simulations | Discovery & Cooperative learning, Simulation-based learning 3 x 50	**Material:** Non-Functional Requirements | Non-functional requirements **Library:** *IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.*	5%
6	Students are able to compose use case scenarios/narratives from the functional requirements of the system [C3, A2, P2] | Students are able to compose use case narratives based on functional requirements system [C3, A2, P2]	1.6.1 Students are able to explain the components and structure of a use case scenario 2.6.2 Students are able to write use cases according to appropriate rules	**Criteria:** Holistic rubric **Form of Assessment** : Participatory Activities, Practice/Performance	Lectures and Simulations | Discovery & Cooperative learning, Simulation-based learning 3 X 50	Lectures and Simulations | Discovery & Cooperative learning, Simulation-based learning 3 x 50	**Material:** Use Case Narrative | Use Case Narrative **Bibliography:** *IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.* **Material:** Use Case Narrative **Reader:** *Ivar Jacobson. 2012. Use Case version 2.*	5%
7	Students are able to compose use case scenarios/narratives from the functional requirements of the system [C3, A2, P2] | Students are able to compose use case narratives based on functional requirements system [C3, A2, P2]	7.1 Students are able to compose use case narratives that are in line with the functional requirements of the system	**Criteria:** Holistic rubric **Form of Assessment** : Participatory Activities, Practice/Performance	Lectures and Simulations | Discovery & Cooperative learning, Simulation-based learning 3 X 50	Lectures and Simulations | Discovery & Cooperative learning, Simulation-based learning 3 x 50	**Material:** Description of Proposed Systems **Library:** *IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.*	5%
8	Students are able to present the correlation between high-level requirements, functional requirements, to use case narratives comprehensively [C3, P2, A3] Students are able to present the correlation between high-level requirements, functional requirements, to use case narratives comprehensively [C3, P2, A3]	Portfolio according to case	**Criteria:** Holistic rubric **Form of Assessment** : Participatory Activities, Portfolio Assessment	Lectures and Simulations | Discovery & Cooperative learning, Simulation-based learning 3 X 50	Lectures and Simulations | Discovery & Cooperative learning, Simulation-based learning 3 X 50	**Material:** IEEE ConOps Document Presentation **Library:** *IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.*	15%
9	Students are able to create system designs using UML diagrams such as Use Case Diagrams, Sequence Diagrams, and Activity Diagrams [C4, P2, A2] | Students are able to create UML diagrams such as use case diagrams, sequence diagrams, and activity diagrams [C4, P2, A2]	9.1 Students are able to create use case diagrams based on use case scenarios	**Criteria:** Holistic rubric **Form of Assessment** : Assessment of Project Results / Product Assessment, Practices / Performance	Project simulation 3 X 50	Project simulation 3 X 50	**Material:** Use Case Diagram **Reader:** *Roger S Pressman and Bruce R. Maxim. 2014. Software Engineering: A Practitioners Approach (8th edition).*	5%

10	Students are able to create system designs using UML diagrams such as Use Case Diagrams, Sequence Diagrams, and Activity Diagrams [C4, P2, A2] | Students are able to create UML diagrams such as use case diagrams, sequence diagrams, and activity diagrams [C4, P2, A2]	10.1 Students are able to create sequence diagrams based on use case scenarios	**Criteria:** Holistic rubric **Form of Assessment** : Practice / Performance	Project simulation 3 X 50	Project simulation 3 X 50	**Material:** Sequence Diagram **Bibliography:** *Roger S Pressman and Bruce R. Maxim. 2014. Software Engineering: A Practitioners Approach (8th edition).*	5%
11	Students are able to create system designs using UML diagrams such as Use Case Diagrams, Sequence Diagrams, and Activity Diagrams [C4, P2, A2] | Students are able to create UML diagrams such as use case diagrams, sequence diagrams, and activity diagrams [C4, P2, A2]	11.1 Students are able to create activity diagrams from manual business processes converted into systems	**Criteria:** Holistic rubric **Forms of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment, Practices / Performance	Project simulation 3 X 50	Project simulation 3 X 50	**Material:** Sequence Diagram **Bibliography:** *Roger S Pressman and Bruce R. Maxim. 2014. Software Engineering: A Practitioners Approach (8th edition).*	5%
12	Students are able to create system analysis and design based on business ideas in a cohesive and comprehensive manner [C4, P3, A2] | Students are able to create system analysis and design based on business ideas cohesively and comprehensively [C4, P3, A2]	12.1 Students are able to describe the current system	**Criteria:** Holistic rubric **Form of Assessment** : Practice / Performance	Project simulation 3 X 50	Project simulation 3 x 50	**Material:** Operational Scenario **Library:** *IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.*	5%
13	Students are able to create system analysis and design based on business ideas in a cohesive and comprehensive manner [C4, P3, A2] | Students are able to create system analysis and design based on business ideas cohesively and comprehensively [C4, P3, A2]	13.1 Students are able to justify changes towards digital business systems	**Criteria:** Holistic rubric **Form of Assessment** : Project Results Assessment / Product Assessment	Case-based method 3 X 50	Case-based method 3 x 50	**Material:** Justification of Changes **Bibliography:** *IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.*	5%
14	Students are able to create system analysis and design based on business ideas in a cohesive and comprehensive manner [C4, P3, A2] | Students are able to create system analysis and design based on business ideas cohesively and comprehensively [C4, P3, A2]	14.1 Students are able to create operational concepts for digital business systems and analyze potential impacts in the future | 14.1 Students are able to create an operational concept of proposed system and analyze the impact for future digital business	**Criteria:** Holistic rubric **Form of Assessment** : Project Results Assessment / Product Assessment	Project simulation 3 X 50	Project simulation 3 X 50	**Material:** Description of Proposed System **Library:** *IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.*	10%
15	Students are able to create system analysis and design based on business ideas in a cohesive and comprehensive manner [C4, P3, A2] | Students are able to create system analysis and design based on business ideas cohesively and comprehensively [C4, P3, A2]	15.1 Students are able to complete the IEEE | operations concept document 15.1 Students are able to complete IEEE ConOps document	**Criteria:** Holistic rubric **Form of Assessment** : Participatory Activities, Portfolio Assessment	Project simulation 3 X 50	Project simulation 3 x 50	**Material:** IEEE ConOps Book Compilation **Library:** *IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.*	5%

16	Students are able to present a complete operational concept document for a digital business system idea based on a certain framework [C4, A3, P3] | Students are capable to present the IEEE Concept of operations document properly [C4, A3, P3]	Accuracy in presentation/demo of framework-based case resolution	**Criteria:** Holistic rubric **Form of Assessment** : Project Results Assessment / Product Assessment, Portfolio Assessment	Demo project 3 X 50	Demo project 3 x 50	**Materials:** Complete ConOps documents **Library:** *IEEE. 1998. IEEE 1362-1998 - Concept of Operations (ConOps) Document.*	10%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	31.67%
2.	Project Results Assessment / Product Assessment	24.17%
3.	Portfolio Assessment	15%
4.	Practice / Performance	29.17%
		100%

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.