	Universitas Negeri Surabaya Faculty of Engineering Civil Engineering Undergraduate Study Program	Document Code

SEMESTER LEARNING PLAN

Courses		CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Structural Experiment Method *		2220102068		T=2	P=0	ECTS=3.18	7	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	....	....	Yogie Risdianto, S.T., M.T.

Learning model	Case Studies

Program Learning Outcomes (PLO)	PLO study program that is charged to the course
	Program Objectives (PO)
	PLO-PO Matrix

	P.O

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	Understanding the concept of structural research, structural modeling, dimensional analysis, dimensional analysis for dynamics, dimensional analysis of beams, Buckingham 19s Pi Theorem, Application to difficulties of Buckingham theory, Structural testing models, Instrumentation and data analysis, Identification of tools in the lab, Design of test objects in the lab , Making and testing test objects in the lab, Preparing reports

References	Main :

1. Sabnis G. M., Harris H.G.,White, Mirza. 1983. Structural Modeling and Experimental Techniques. London : Prentice-Hall.
2. Bambang Suhendro. 1991 Teori Model Struktur Dan Teknik Eksperimen. Yogyakarta PAU Universitas Gadjah Mada
3. Gere, J.M. 1987. Mechanic of Material. London : Wadsworth Incoporation
4. Suwarno Wirjomartono. 1986. Mekanika Teknik. Yogyakarta: Universitas Gajah Mada.
5. Tjokrodiharjo, S. 1997. Analisis Struktur III. Yogyakarta: Universitas Gajah Mada
6. Wang, C.K. 1987. Statically indeterminate Structures. NewYork : Mc Graw Hill.
7. Wang, C.K. 1990. Analisis Struktur Lanjutan, Jilid 1. New York : Mc Graw Hill.

Supporters:

Supporting lecturer	Dr. Suprapto, S.Pd., M.T. Muhammad Imaduddin, S.T., M.T. Mochamad Firmansyah Sofianto, S.T., M.Sc., M.T.

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	Explain the concept of structural research.	1. Explains several structural research concepts 2. Explain the mechanism of structural research 3. Explain orally the concept of structural research 4. Explain orally the mechanisms of structural research	**Criteria:** Full marks are obtained if you can do all the questions correctly	Collaborative Learning Approach (Discussion lecture and question and answer) 2 X 50			0%
2	Explain structural modeling.	1. Explain the meaning of structural modeling 2. Explain the various types of structural modeling 3. Explain orally the meaning of structural modeling 4. Explain orally the various types of structural modeling		Collaborative Learning Approach (Lecture discussion and question and answer) 10 X 50			0%
3	Explain structural modeling.	1. Explain the meaning of structural modeling 2. Explain the various types of structural modeling 3. Explain orally the meaning of structural modeling 4. Explain orally the various types of structural modeling		Collaborative Learning Approach (Discussion lecture and question and answer) 2 X 50			0%
4	Explaining the theory of structural modeling	1. Explain the meaning of structural modeling 2. Explain the various types of structural modeling 3. Explain orally the meaning of structural modeling 4. Explain orally the various types of structural modeling	**Criteria:** Full marks are obtained if you can do all the questions correctly	Collaborative Learning Approach (Discussion lecture and question and answer) 2 X 50			0%

5	Analyze dimensions for static and dynamic	1.Explain about static and dynamics 2.Explains dimensional analysis for static and dynamic 3.Explain the difference between dimensions and static 4.Explain verbally about static and dynamics 5.Analyze dimensions for static and dynamic	**Criteria:** Full marks are obtained if you can do all the questions correctly	Collaborative Learning Approach (Discussion lecture and question and answer) 2 X 50			0%
6	Analyzing dimensions of concrete blocks	1.Explain about concrete blocks 2.Explains dimensional analysis of concrete blocks 3.Explain the relationship between dimensions and concrete blocks 4.Explain verbally about concrete blocks 5.Explain verbally how to analyze the dimensions of concrete blocks 6.Analyzing dimensions of concrete blocks	**Criteria:** Full marks are obtained if you can do all the questions correctly	Collaborative Learning Approach (Discussion lecture and question and answer) 2 X 50			0%
7	Explaining Buckingham's Pi Theorem	1.Explaining Buckingham's Pi Theorem 2. Characterizing Buckinghams Pi Theorem 3.Explain orally the Buckinghams Pi Theorem 4.Explain orally the characteristics of Buckingham's Pi Theorem 5.Analyzing Buckingham's Pi Theorem		Collaborative Learning Approach (Discussion lecture and question and answer) 2 X 50			0%
8	U.S.S			2 X 50			0%

9	Applying Buckingham's Pi Theorem.	1. Explain the order of application of Buckingham's Pi Theorem 2. Applying Buckingham's Pi Theorem 3. Explain verbally the sequence of applications of Buckingham's Pi Theorem 4. Analyzing the difficulties of Buckinghams Pi Theorem	**Criteria:** Writing procedures for correct analysis of research results and completeness of reports	Collaborative Learning Approach (Discussion lecture and question and answer) 2 X 50			0%
10	Structural testing model	1. Explain the function of some test set ups 2. Explain about bending 3. Explain about sliding 4. Explain about torque 5. Explain about axial loads 6. Explain verbally the function of several test set ups 7. Testing bending 8. Testing shear 9. Testing axial 10. Testing torque	**Criteria:** Procedure for writing the correctness and completeness of the report	Collaborative Learning Approach (Discussion lecture and question and answer) 2 X 50			0%
11	Explains instruments and data analysis	1. Explain about the instrument 2. Explains data analysis 3. Explain the relationship between instruments and data analysis 4. Explain verbally about the instrument 5. Explain verbally about data analysis 6. Analyze data	**Criteria:** Full marks are obtained if you can do all the questions correctly	Collaborative Learning Approach (Lecture, discussion and question and answer) 2 X 50			0%
12	Identify tools in the Lab	1. Explain the function and use of Lab tools 2. Explains how to use the tools in the Lab 3. Identify Lab tools 4. Explain orally the function and use of Lab equipment 5. Explain verbally how to use Lab equipment.	**Criteria:** Procedure for writing the correctness and completeness of the report	Collaborative Learning Approach (practice and discussion) 2 X 50			0%

13	Designing test objects in the Lab	1.Explain the design of the test object 2.Explain how to design test objects 3.Explain orally the design of test objects in the Lab 4.Explain verbally how to design test objects in the lab		Collaborative Learning Approach (Lectures and discussions) 2 X 50			0%
14	Make test objects	1.Explain how to make test objects 2.Explain verbally how to make test objects		Collaborative Learning Approach (practice and discussion) 2 X 50			0%
15	Testing test objects Analyzing data and compiling reports	1.Explain how to test test objects 2.Explain verbally how to test test objects 3.Testing test objects 4.Explains how to analyze data and compile reports 5.Explain verbally about analyzing data and compiling reports 6.analyzing data and compiling reports	**Criteria:** Procedure for writing the correctness and completeness of the report	Collaborative Learning Approach (practice and discussion) 2 X 50			0%
16							0%

Evaluation Percentage Recap: Case Study

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.