	Universitas Negeri Surabaya Faculty of Engineering, Building Engineering Education Undergraduate Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Planning Concrete Construction	8320502142		T=2	P=0	ECTS=3.18	6	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Dr. Gde Agus Yudha Prawira Adistana, S.T., M.T.

Learning model	**Project Based Learning**
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	The task of planning a complete three-story concrete construction building includes calculations for slabs, stairs, longitudinal beams, portal cross-beam loading, earthquake calculations, statics using SAP, portal cross-beam calculations, column calculations, sloof calculations and foundation calculations. Along with complete working drawings. Initial floor plan planning can use student assignments that have been completed in drawing courses in the previous semester, for example S1 PTB uses CAD1, S1 TS uses MKBU, D3 TS uses CAD
References	**Main :**

1. Departemen PU,2013, Persyaratan Beton Struktural untuk Bangunan Gedung SNI 2847-2013, BSN Bandung LPMB
2. Gideon Kusuma,1993, Dasar-dasar Perencanaan beton Bertulang berdasarkan SKSNI 1991, Jakarta Erlangga
3. Edward G Nawy, 2009. Reinforced Concrete A Fundamental Approach. New York.Prentice Hall
4. Jack.C.Mc.Cormac.2013. Design of Reinforced Concrete.Russel H Brown.
5. ACI Structural Journal American Concrete Institute. 2015.

	Supporters:
Supporting lecturer	Dr. Gde Agus Yudha Prawira Adistana, S.T., M.T. Wahyu Dwi Mulyono, 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 design building drawings	1. Describe the building plan 2. Provide clear information on the function of buildings and rooms. 3. Describe the floor plan along with the elevation and completeness of the building such as entrance stairs, etc 4. Describe the cross-section and longitudinal sections of the building.	**Criteria:** Full marks are obtained if the drawing is carried out according to the provisions and the scale is correct	Group discussion Case study 1 X 1			0%
2	Students are able to design building drawings	1. Describe the building plan. 2. Provide clear information on the function of buildings and rooms. 3. Describe complementary buildings according to building requirements. 4. Describe the cross-section and longitudinal sections of the building.	**Criteria:** Full marks are obtained if the drawing is carried out according to the provisions and the scale is correct	Group discussion Case study 1 X 1			0%
3	Students are able to dimension beam and column plates. Calculate the load on the floor plate and distribute it to the beams.	1. Determine the dimensions of the beam and column plate structural elements correctly according to applicable regulations.2. Can define and calculate dead loads and live loads on floor plates.3. Create dead and live load distribution from plate to beam	**Criteria:** Full marks are obtained if the report is prepared correctly and can be read and the calculations are correct in accordance with the SNI guidebook and regulations.	Group discussion Case study 1 X 1			0%
4	Students are able to calculate building dimensions and calculate the load on the plate along with the load distribution on the beam	1. Describe the load acting on the plate towards the beam 2. Calculate the amount of dead and live load in accordance with the room planning. 3. Make a distribution calculation of the plate load towards the beam.	**Criteria:** Full marks are obtained if the report is prepared correctly and can be read and the calculations are correct in accordance with the SNI guidebook and regulations.	Group discussion Case study 1 X 1			0%

5	Students are able to calculate reinforcement in floor plates of all types in buildings	1. Describes the loads acting on the floor and roof plates. 2. Calculate the internal forces that occur. 3. Make detailed drawings of reinforcement correctly	**Criteria:** Full marks are obtained if the report is prepared correctly and can be read and the calculations are correct in accordance with the SNI guidebook and regulations along with the accuracy of the detailed drawings of the reinforcement.	Group discussion Case study 1 X 1			0%
6	Students are able to calculate the equivalent static static load	1. Calculate the total building weight from dead load and live load 2. Calculate the earthquake shear force of the building base 3. Makes load distribution easy to each floor	**Criteria:** Full marks are obtained if the report is prepared correctly and can be read and the calculations are correct in accordance with the SNI guidebook and regulations.	Group discussion Case study 1 X 1			0%
7	Students can calculate internal forces in building structures with the help of computer programs	1. Make a building model with precision2. Create structural dimensions and material criteria 3. Make load classifications and their combinations based on SNI4 regulations. Entering the equivalent static earthquake load into the portal5. Analyzing internal forces obtained from computer programs	**Criteria:** Full marks are obtained if the report is prepared correctly and can be read and the calculations are correct in accordance with the SNI guidebook and regulations.	Group discussion Case study 1 X 1			0%
8	Students are able to calculate and describe details of bending reinforcement and shear reinforcement in beams	1. Calculating flexible reinforcement according to procedures and SNI 2. Calculate shear reinforcement according to procedures and SNI 3. Describe the details of the bending and shear reinforcement of the beam	**Criteria:** Full marks are obtained if the report is prepared correctly and can be read and the calculations are correct in accordance with the SNI guidebook and regulations.	Group discussion Case study 1 X 1			0%
9	Students are able to calculate and describe column reinforcement correctly	1. Retrieving styles in computer modeling results correctly 2. Calculate column bending reinforcement according to SNI procedures and regulations 3. Calculate column shear reinforcement according to SNI procedures and regulations	**Criteria:** Full marks are obtained if the report is prepared correctly and can be read and the calculations are correct in accordance with the SNI guidebook and regulations.	Group discussion Case study 1 X 1			0%

10	Students can calculate and describe stair reinforcement in low-rise buildings	Able to calculate correctly according to the load and engineering mechanics, calculate reinforcement correctly, and draw correctly	**Criteria:** Full marks are obtained if the report is prepared correctly and can be read and the calculations are correct in accordance with the SNI guidebook and regulations.	Group discussion Case study 1 X 1			0%
11	Students can calculate shallow or deep foundations in low-rise concrete buildings	Analyze the load at the base of the column, determine the type of foundation, calculate the foundation requirements, and describe the details	**Criteria:** Full marks are obtained if the report is prepared correctly and can be read and the calculations are correct in accordance with the SNI guidebook and regulations.	Group discussion Case study 1 X 1			0%
12	Students can calculate poer/pilecap	1. Modeling the load of the superstructure and the reaction of the foundation 2. Calculate the internal force that occurs 3. Calculating flexible reinforcement 4. Calculate the shear strength of materials to determine the need for shear reinforcement 5. make detailed drawings of reinforcement	**Criteria:** Full marks are obtained if the report is prepared correctly and can be read and the calculations are correct in accordance with the SNI guidebook and regulations.	Group discussion Case study 1 X 1			0%
13	Students are able to calculate the sloof of multi-storey concrete buildings	1. Can explain and describe the external loads that occur 2. Can calculate internal forces according to engineering mechanics and assumptions of working forces 3. Can calculate bending and shear sloof reinforcement4. Can describe the details of the reinforcement	**Criteria:** Full marks are obtained if the report is prepared correctly and can be read and the calculations are correct in accordance with the SNI guidebook and regulations.	Group discussion Case study 1 X 1			0%
14	Students can make detailed drawings of low-rise concrete building construction	1. Drawing of full floor slab details 2. Draw block details 3. Draw column details 4. Draw the details of the stairs 5. Drawing poer details 6. Drawing sloof details 7. Draw connection details.	**Criteria:** Full marks are obtained if the report is prepared correctly and can be read and the calculations are correct in accordance with the SNI guidebook and regulations.	Group discussion Case study 1 X 1			0%

15	Students are able to describe longitudinal and cross sections of complete multi-storey concrete buildings	1. Draw details on column beam connections 2. Draw column details 3. Draw column details and connections to the foundation. 4. Draw block details 5. Draw details of the connection between the main beam and the child beam 6. Draw details of the connection between the console beam and the column. 7. Drawing of poer, sloof and foundation details	**Criteria:** Full marks are obtained if the report is prepared correctly and can be read and the calculations are correct in accordance with the SNI guidebook and regulations.	Group discussion Case study 1 X 1			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 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.