	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
Planing Steel	8320502137		T=2	P=0	ECTS=3.18	7	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	.....	.....	Dr. Gde Agus Yudha Prawira Adistana, 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	Planning industrial buildings or warehouses from steel construction completely includes planning the steel profile used, planning working loads, structural analysis calculations using the help of civil application software (SAP and others) and building planning drawings and detailed drawings
References	**Main :**

1. Segui, William T. 2007. Steel Design. Canada: Thomson.
2. McCormac, Jack C. 2008. Structural Steel Design. United States of America : Pearson International Edition.
3. Lam, Dennis, etc. 2004. Structural Steel Work
4. Cahyaka, Hendra Wahyu dan Irfan, Achmad. Gambar Teknik II. Buku Ajar Teknik Sipil UNESA.
5. Sugihardjo, R. Gambar-Gambar Ilmu Bangunan. Yogyakarta : Sugihardjo.
6. Setiawan, Agus. 2002. Perencanaan Struktur Baja dengan Metode LRFD (berdasarkan SNI 03-1729-2002). Jakarta: Erlangga.
7. NT, Suyono. 2007. Peraturan Pembebanan Indoensia untuk Gedung 13 1983.
8. SNI-03-1729-2002-tata-cara-perencanaan-struktur-baja-untuk-bangunan-gedung.
9. Peraturan Pembebanan Indonesia untuk Gedung tahun 1983

	Supporters:
Supporting lecturer	Muhammad Imaduddin, S.T., M.T. Dr. Gde Agus Yudha Prawira Adistana, S.T., 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	Students are able to design drawings of industrial/warehouse buildings	1. Describe the plan of an industrial / warehouse building. 2. Provide clear information on the function of buildings and rooms. 3. Describes the roof plan plan. 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 2 X 50			0%
2	Students are able to design drawings of industrial/warehouse buildings	1. Describe the plan of an industrial / warehouse building. 2. Provide clear information on the function of buildings and rooms. 3. Describes the roof plan plan. 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 2 X 50			0%
3	Students are able to calculate the load from the roof for planning trekking curtains and wind ties.	1. Describe the load working on the roof. 2. Calculate the amount of load acting on the roof based on the roof plan. 3. Creating models in computer programming for civil engineering.	**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 2 X 50			0%
4	Students are able to calculate structural analysis and control the profile of the trekking curtains and wind ties for safe conditions	1. Operate computer programs for civil engineering to obtain structural analysis results in the form of forces in moments and support reactions. 2. Calculating internal force capacity. 3. Calculate internal moment capacity. 4. Controlling deflection.	**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 2 X 50			0%
5	Students are able to calculate the planning loading of the trusses.	1. Describes the load that works from the roof to be distributed to the trusses. 2. Calculate the amount of load acting at each truss node. 3. Create a structural model in a structural analysis program using a computer.	**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 2 X 50			0%
6	Students are able to calculate the force of the rod on the truss and plan the connections.	1. Operate computer programs to model the stance by inputting loads and obtaining support reactions and bar forces. 2. Plan connections at truss node points. 3. Calculate the nominal strength of the connection. 4. Calculate the number or length of connections used.	**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 2 X 50			0%

7	Students are able to describe connections in trusses and control profiles for tension and compression members in truss planning	1. Describe the connections at the truss node points. 2. Controls the nominal strength of the profile in compression and tension members.	**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 2 X 50			0%
8	Students are able to plan profiles for single columns.	1. Determine the support reaction of the trusses to the load on the column. 2. Determines the profile to be used in the column. 3. Calculate support reactions in columns. 4. Controls the nominal strength of the profile against internal forces and moments.	**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 2 X 50			0%
9	Students are able to calculate loads for crane beam planning and model them in the civil engineering program for structural analysis	1. Calculate the working loads for crane beam construction. 2. Determine the direction of load distribution as a reference for calculating structural analysis. 3. Modeling beams and calculating support reactions as well as internal forces and moments acting on 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 2 X 50			0%
10	Students are able to calculate profile safety controls for crane beams.	Controls the nominal strength of the beam against the internal forces acting on the crane 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 2 X 50			0%
11	Students are able to determine warehouse portal planning loads and create a portal model.	1. Planning the load working on the portal. 2. Calculate the load acting on the portal (based on load analysis on the portal).	**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 2 X 50			0%
12	Students are able to model programming and operate programs to obtain MDN	1. Modeling a portal based on a plan drawing in a computer program for civil engineering. 2. Table the results of structural analysis calculations according to building plans	**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 2 X 50			0%
13	Students are able to calculate profile controls for portal elements.	1. Describe the internal forces and moments in each member. 2. Control profiles based on the results of structural analysis calculations 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 2 X 50			0%

14	Students are able to plan foundations for industrial/warehouse buildings.	1. Determine the load acting on the footing foundation. 2. Planning the size of the footing foundation. 3. Calculate the bearing capacity that the foundation can withstand. 4. Planning the reinforcement that will be used in the footing foundation.	**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 2 X 50			0%
15	Drawing details of industrial / warehouse buildings.	1. Draw details on the connection of the curtain to the truss. 2. Draw detailed plans for trusses and connections. 3. Draw column details and connections to the foundation. 4. Drawing of industrial/warehouse building portal details. 5. Draw details of the girder connections at each portal. 6. Draw details of the connection between the console beam and the column. 7. Drawing of crane beam details and connections.	**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 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.