



**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																																																																		
Water Building Design **	2220104084		T=4 P=0 ECTS=6.36	1	July 18, 2024																																																																		
AUTHORIZATION	SP Developer		Course Cluster Coordinator	Study Program Coordinator																																																																			
	Yogie Risdianto, 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)																																																																						
	PO - 1	Students can complete residential drainage design assignments																																																																					
	PO - 2	Students can complete irrigation area design assignments																																																																					
	PLO-PO Matrix																																																																						
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PO Matrix at the end of each learning stage (Sub-PO)																																																																							
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Short Course Description	<p>The Water Building Design course is a civil engineering building design course in the field of water, especially drainage and irrigation. In this course, students are given design assignments using an assisted lecture system. There are two independently structured tasks regarding the settlement drainage master plan and irrigation area planning. The task of designing residential drainage buildings is to start from creating a drainage network system, calculating drainage time, calculating the area of the cutoff area, calculating the runoff coefficient to obtain the discharge, dimensions and depiction of the required channel work and water structures. The tasks of designing irrigation buildings include: irrigation network systems and patterns, irrigation demand discharge, channel dimensions, and depiction of channel work and required auxiliary buildings. Assistance is carried out face to face, either directly or online. Assessments are carried out to determine the achievement of course learning outcomes through structured assignment reports provided.</p>																																																																						
References	Main :																																																																						
	<ol style="list-style-type: none"> 1. Anonim. 2015. Kumpulan Materi Kuliah Drainase Teknik Sipil FT-Unesa 2015 . Surabaya: Unipres. 2. Jurnal Kajian Pendidikan Teknik Bangunan FT-Unesa. 3. Kusnan. 2015. Pengembangan Model Penanggulangan Banjir Kampus Unesa Ketintang . Surabaya: Unipres. 4. _____. 2012. Drainase Perkotaan . Surabaya: Unipres. 5. Suripin. Sistem Drainase Perkotaan yang Berkelanjutan . Semarang: Andi. 6. Varshney, R.M.1978. Engineering Hydrologi Irrigation Research Institute . 7. New Delhi: Central Water & Power Comission . 																																																																						
	Supporters:																																																																						

Supporting lecturer		Ir. Nurhayati Aritonang, M.T. Drs. Djoni Irianto, M.T. Danayanti Azmi Dewi Nusantara, 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	Know the explanation and division of tasks 1 Settlement Drainage Design	Students are able to understand the explanation and division of tasks 1 Settlement Drainage	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance, Questions and Answers, Reflection 1 X 50		Material: Development of drainage in an area Reference: <i>Suripin. Sustainable Urban Drainage Systems. Semarang: Andi.</i>	6%
2	Create a residential drainage network scheme in accordance with the site plan layout provided	Students are able to create a residential drainage network scheme according to the site plan layout provided	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance with 1 X 50 Report Draft		Material: Residential Drainage Design Reference: <i>Anonymous. 2015. Collection of 2015 FT-Unesa Civil Engineering Drainage Lecture Materials. Surabaya: Unipres.</i> Material: Residential Drainage Design Literature: <i>2012. Urban Drainage. Surabaya: Unipres.</i>	6%
3	Calculating Hydrology: Calculation of flow concentration time and rainfall intensity	Students are able to calculate hydrology: Calculation of flow concentration time and rainfall intensity	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance with 1 X 50 Report Draft		Material: Residential Drainage Design Library: <i>Suripin. Sustainable Urban Drainage Systems. Semarang: Andi.</i>	6%
4	Calculating Hydrology: Calculation of the area of breaking area and drainage coefficient	Students are able to calculate hydrology: Calculation of the area of breaking off areas and drainage coefficients	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance with 1 X 50 Report Draft		Material: Residential Drainage Design Reference: <i>Anonymous. 2015. Collection of 2015 FT-Unesa Civil Engineering Drainage Lecture Materials. Surabaya: Unipres.</i>	6%

5	Calculating Hydraulics: Planning drainage channel dimensional requirements	Students are able to calculate hydraulics: planning drainage channel dimensional requirements	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance with 1 X 50 Report Draft		Material: Residential Drainage Design Reference: <i>Anonymous. 2015. Collection of 2015 FT-Unesa Civil Engineering Drainage Lecture Materials. Surabaya: Unipres.</i>	6%
6	Calculating Hydraulics: Calculation of channel plan slope and elevation	Students are able to calculate hydraulics: calculating the slope of the channel plan and elevation	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance with 1 X 50 Report Draft		Material: Residential Drainage Design Library: <i>Suripin. Sustainable Urban Drainage Systems. Semarang: Andi.</i>	6%
7	Calculating Hydraulics: Detailed drawings of channel designs and supporting structures	Students are able to calculate hydraulics: detailed drawings of channel designs and complementary buildings	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance with 1 X 50 Report Draft		Material: Residential Drainage Design Library: <i>Suripin. Sustainable Urban Drainage Systems. Semarang: Andi.</i>	6%
8	Complete Assignment 1 Design of Residential Drainage Buildings	Students are able to complete Assignment 1 Residential Drainage Building Design Report	Criteria: UTS Form of Assessment : Project Results Assessment / Product Assessment	Final Assignment Report 1 X 50		Material: Residential Drainage Design Literature: <i>_____ 2012. Urban Drainage. Surabaya: Unipres.</i>	6%
9	Know the explanation and distribution of tasks 2 Irrigation Area Design	Students are able to understand the explanation and distribution of tasks 2 Irrigation Area Design	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance, Questions and Answers, Reflection 1 X 50		Material: Irrigation Area Design Reference: <i>Varshney, RM1978. Engineering Hydrology Irrigation Research Institute.</i>	6%
10	Create an irrigation network scheme according to the given layout	Students are able to create an irrigation network scheme according to the layout given	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance with 1 X 50 Report Draft		Material: Irrigation Area Design Reference: <i>Varshney, RM1978. Engineering Hydrology Irrigation Research Institute.</i>	6%

11	Calculate Irrigation Water Requirements for each channel	Students are able to calculate irrigation water requirements for each channel	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance with 1 X 50 Report Draft		Material: Irrigation Area Design Reference: Varshney, RM1978. Engineering Hydrology Irrigation Research Institute.	6%
12	Calculating Primary, Secondary and Tertiary Channel Dimension Requirements	Students are able to calculate Primary, Secondary and Tertiary Channel Dimension Requirements	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance with 1 X 50 Report Draft		Material: Irrigation Area Design Reference: Varshney, RM1978. Engineering Hydrology Irrigation Research Institute.	6%
13	Calculate the required crossing structures (culverts) in irrigation canals	Students are able to calculate the required crossing structures (culverts) in irrigation canals	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance with 1 X 50 Report Draft		Material: Irrigation Area Design Reference: Varshney, RM1978. Engineering Hydrology Irrigation Research Institute.	6%
14	Calculate the required crossing structures (gutters or siphons) on irrigation channels	Students are able to calculate the required crossing structures (gutters or siphons) in irrigation canals	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance with 1 X 50 Report Draft		Material: Irrigation Area Design Reference: Varshney, RM1978. Engineering Hydrology Irrigation Research Institute.	6%
15	Create drawings and site plans for Bendung	Students are able to create drawings and site plans for dams	Criteria: Full marks are obtained if you do the questions correctly and precisely Form of Assessment : Project Results Assessment / Product Assessment	Assistance with 1 X 50 Report Draft		Material: Irrigation Area Design Reference: Varshney, RM1978. Engineering Hydrology Irrigation Research Institute.	6%
16	Complete Assignment 2 Irrigation Building Design	Students are able to complete Assignment 2 Irrigation Building Design Report	Criteria: UAS Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment	Final Report Assignment 2 1 X 50			10%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	5%
2.	Project Results Assessment / Product Assessment	95%
		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.