UNESA	**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
Environmental Science	2220102019		T=2	P=0	ECTS=3.18	3	July 17, 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	UURI/PP/Ministry of the Environment. Clean water characteristics: physical, chemical, biological. Classification of water according to its purpose, protection of groundwater reservoirs, drinking water treatment installations (IPAM) and the function of each processing unit. Water pollution, EIA, waste water: sources and characteristics of waste water, waste water treatment plants (IPAL), the function of each domestic waste water treatment unit, the concept of environmentally friendly domestic waste water technology, septic tank design. Waste: sources and characteristics of waste, waste processing, landfill design, types, weaknesses and advantages, global warming, Amdal.
References	**Main :**

1. Asdak, Chay.2004. Hidrologi dan Pengelolaan daerah Aliran Sungai. Yogyakarta: Gadjah Mada Press.
2. Khiatuddin, Maulida. 2003. Melestarikan Sumberdaya Air dengan Teknologi rawa buatan. Yogyakarta: Gadjah Mada Press.
3. Mahida, UN. 1984. Pencemaran Air dan pemanfaatan Limbah Industri . Jakarta: Rajawali.
4. Soerjani, M, Ahmad R, dan Munir R. 1987. Lingkungan: Sumberdaya Alam dan Kependudukan dalam Pembangunan. Jakarta: UI Press.
5. Sugiharto, 1987. Dasar-dasar pengelolaan Air Limbah. Jakarta: UI Press.
6. Sumarwoto, Otto. 2004. Atur Diri Sendiri . Yogyakarta: Gadjah Mada Press.
7. Suratmo, Gunarwan. 1990. Analisis Mengenai Dampak Lingkungan . Yogyakarta: Gadjah Mada Press.
8. Suripin, 2001. Pelestarian Sumber Daya Tanah dan Air. Yogyakarta: Andi
9. Tcobonoglous Goerge, Theisen Hillary, Vigit Samuel, 1993. Integrated Solid Waste Management . New York: Mc Graw Hill
10. UU RI No 32/2009.
11. Winanti T. 2004. Dasar-dasar Teknik Lingkungan , Buku ajar.
12. Winanti T. 2005. Konservasi Air , Buku ajar.

	Supporters:
Supporting lecturer	Prof. Dr. Erina Rahmadyanti, 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	Understand the concept map of Environmental Science material	Can explain the role of Environmental Science in Civil Engineering	**Criteria:** Perfect score if answered correctly.	Lectures, discussions, questions and answers, examples in the form of 2 X 50 images			0%
2	Understanding UURI N0 32/2009	Cognitive: Students are able to explain the boundaries of terms in the living environment. Affective: Students pay good attention to lectures. Psychomotor: Students can explain in front of the class about terms in the living environment.	**Criteria:** Perfect score if answered correctly	Explaining article 2 in Republic of Indonesia Law No. 32/ 2009. Environmental Protection and Management 2 X 50			0%
3	Understand the meaning of natural resources (SDA).	1. Students can differentiate the properties of natural resources. 2. Students are able to conceptualize how to manage natural resources 3. Understand the meaning of natural resources (natural resources).	**Criteria:** Perfect score if answered correctly	Lectures, discussions, observing case examples, questions and answers. 2 X 50			0%
4	Water as a natural resource	1. Students can tell about the process of water availability on earth, threats and overcoming them 2. Students can explain the existence of water, water disturbances, water threats 3. Understand in detail the function of water in human life 4. Understand water problems, polluted water conditions, pollutant factors 5. Can link flood events in the rainy season with drought in the dry season. 6. Students can explain the existence of water, water disturbances, water threats	**Criteria:** Perfect score if answered correctly	Lectures, discussions, observing pictures, case examples, questions and answers. 2 X 50			0%

5	Water as a natural resource	1. Students can tell about the process of water availability on earth, threats and overcoming them 2. Students can explain the existence of water, water disturbances, water threats 3. Understand in detail the function of water in human life 4. Understand water problems, polluted water conditions, pollutant factors 5. Can link flood events in the rainy season with drought in the dry season. 6. Students can explain the existence of water, water disturbances, water threats	**Criteria:** Perfect score if answered correctly	Lectures, discussions, observing pictures, case examples, questions and answers. 2 X 50			0%
6	Water as a natural resource	1. Students can tell about the process of water availability on earth, threats and overcoming them 2. Students can explain the existence of water, water disturbances, water threats 3. Understand in detail the function of water in human life 4. Understand water problems, polluted water conditions, pollutant factors 5. Can link flood events in the rainy season with drought in the dry season. 6. Students can explain the existence of water, water disturbances, water threats	**Criteria:** Perfect score if answered correctly	Lectures, discussions, observing pictures, case examples, questions and answers. 2 X 50			0%

7	Floods, droughts, mitigation, conservation	Students can relate flood events in the rainy season to droughts in the dry season.	**Criteria:** Perfect score if answered correctly	Lectures, discussions, exercises to reveal cases around 2 X 50			0%
8	UTS	-	**Criteria:** -	- 2 X 50			0%
9	Waste	Understand waste: solid, liquid, gas. Source -2, events and consequences.	**Criteria:** Perfect score if answered correctly	Lectures, discussions, questions and answers, case examples. 2 X 50			0%
10	Solid waste and several alternative ways to deal with it.	Understand the limits of waste, sources of waste and the impact of waste generation, and the use of waste that has value	**Criteria:** Perfect score if answered correctly	Lectures, discussions, questions and answers, case examples. 2 X 50			0%
11	Liquid waste.	Students can understand the dangers of liquid waste, sources, threats and how to deal with them	**Criteria:** Perfect score if answered correctly	Lectures, discussions, questions and answers, case examples. 2 X 50			0%
12	Liquid waste processing, household scale, residential area/shop/market/restaurant scale, industry.	Students can explain demonstratively ways to manage liquid waste.	**Criteria:** Perfect score if answered correctly	Lectures, discussions, questions and answers, case examples. 2 X 50			0%
13	Global warming	Students can explain the occurrence of global warming, its causes and mitigation	**Criteria:** Perfect score if answered correctly	Lectures, discussions, questions and answers, case examples. 2 X 50			0%
14	Amdal	Students understand the importance of Amdal, when an Amdal must be carried out, the steps in carrying out an Amdal	**Criteria:** Perfect score if answered correctly	Lectures, questions and answers, 2 case examples. 2 X 50			0%
15	Paper presentation	Students can prepare papers and present them	**Criteria:** Perfect score if answered correctly	Students present one by one 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.