



**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																																																																																			
Green and Smart Infrastructure	2220102147	Compulsory Study Program Subjects	T=2	P=0	ECTS=3.18	3	August 1, 2023																																																																																			
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator																																																																																				
	Lynda refnitasari, S.Si., M.URP.		Prof. Dr. Erina Rahmadyanti, S.T., M.T.			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)																																																																																									
	PO - 1	Able to describe the concept and transformation of green infrastructure (CPL-2A) (CPL-4A)																																																																																								
	PO - 2	Able to understand the relationship between green infrastructure and sustainable development goals (CPL-2A) (CPL-3B) (CPL-4A)																																																																																								
	PO - 3	Have knowledge about the components of green infrastructure (CPL-1A) (CPL-1B) (CPL-2B) (CPL-3A) (CPL-3B)																																																																																								
	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	In this course the learning process carried out is related to the concept and objectives of green infrastructure; transformation process from gray infrastructure to green infrastructure; components that are part of green infrastructure; as well as the goals of sustainable development (sustainable development net goals) and linking their relationship with smart and green infrastructure.																																																																																									
References	Main :																																																																																									
	<ol style="list-style-type: none"> 1. Ditjen Cipta Karya, Kementerian Pekerjaan Umum dan Perumahan Rakyat. 2018. Green Infrastructure. 2. Dover, John W. 2015. Green Infrastructure: Incorporating Plants and Enhancing Biodiversity in Buildings and Urban Environments. New York : Routledge. 3. Karyono, Tri Harso. 2010. Green Architecture: Pengantar Pemahaman Arsitektur Hijau di Indonesia. Jakarta : Rajawali Pers. 4. Sinnett, D., Smith, N., dan Burgess, Sarah. 2015. Green Infrastructure: Planning, Design, and Implementation. UK : EE Publishing Limited. 5. Wonoraharjo, S. dan Sutjahja, Inge M. 2018. Bangunan Gedung Hijau untuk Daerah Tropis. Bandung : ITB Press. 																																																																																									
	Supporters:																																																																																									
Supporting lecturer	Prof. Dr. Erina Rahmadyanti, S.T., M.T. Lynda Refnitasari, S.Si., M.URP																																																																																									

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 contents of the RPS, lecture contracts, assessment criteria as well as the position and urgency of courses in achieving CPL		Criteria: Observation of student activities in class	Presentation and question and answer method 2 X 50			0%
2	Able to explain the concept and objectives of green infrastructure	1.Explain the concept of green infrastructure 2.Explain the goals of green infrastructure	Criteria: Observation of student activities in class Form of Assessment : Participatory Activities	Lectures, discussions and questions and answers 2 X 50		Material: Green Infrastructure Library: <i>Directorate General of Human Settlements, Ministry of Public Works and Public Housing. 2018. Green Infrastructure.</i>	3%
3	Able to identify the transformation from gray infrastructure to green infrastructure	Explains the history of the implementation of gray infrastructure in Indonesia	Criteria: Observation of student activities in class Form of Assessment : Participatory Activities	Lectures, discussions and questions and answers 2 X 50		Material: Transformation of green infrastructure from gray infrastructure Reader: <i>Karyono, Tri Harso. 2010. Green Architecture: An Introduction to Understanding Green Architecture in Indonesia. Jakarta : Rajawali Press.</i>	3%
4	Able to identify the transformation from gray infrastructure to green infrastructure	Explaining the transformation from implementing gray infrastructure to green infrastructure in Indonesia	Criteria: Observation of student activities in class Form of Assessment : Participatory Activities	Lectures, discussions and questions and answers 2 X 50		Material: Transformation of green infrastructure from gray infrastructure Reader: <i>Karyono, Tri Harso. 2010. Green Architecture: An Introduction to Understanding Green Architecture in Indonesia. Jakarta : Rajawali Press.</i>	5%
5	Have knowledge about sustainable development goals (sustainable development goals)	Explain the history of the birth of the concept of sustainable development	Criteria: Observation of student activities in class Form of Assessment : Participatory Activities	Lectures, discussions and questions and answers. 2 X 50		Material: Sustainable development Reader: <i>Karyono, Tri Harso. 2010. Green Architecture: An Introduction to Understanding Green Architecture in Indonesia. Jakarta : Rajawali Press.</i>	5%

6	Have knowledge about sustainable development goals (sustainable development goals)	Explain the components of sustainable development goals and their application in Indonesia	Criteria: Observation of student activities in class Form of Assessment : Participatory Activities	Lectures, discussions and questions and answers. 2 X 50		Material: Sustainable development Reader: Karyono, Tri Harso. 2010. <i>Green Architecture: An Introduction to Understanding Green Architecture in Indonesia.</i> Jakarta : Rajawali Press.	3%
7	Able to understand and explain the implementation of green infrastructure	Able to analyze the relationship between the implementation of smart and green infrastructure to support sustainable development goals	Criteria: Observation of student activities in class Form of Assessment : Participatory Activities	Lectures, discussions and questions and answers 2 X 50		Material: Examples of implementing green infrastructure Reference: Directorate General of Human Settlements, Ministry of Public Works and Public Housing. 2018. <i>Green Infrastructure.</i> Material: Application of green infrastructure to improve environmental quality Reference: Dover, John W. 2015. <i>Green Infrastructure: Incorporating Plants and Enhancing Biodiversity in Buildings and Urban Environments.</i> New York : Routledge.	3%
8	UTS	Able to do exam questions well and correctly	Criteria: Perfect score if answered correctly Form of Assessment : Test	- 2 X 50			20%

9	Able to identify the application of green infrastructure	Identifying the implementation of green infrastructure in Indonesia	<p>Criteria: Observation of student activities in class</p> <p>Form of Assessment : Participatory Activities</p>	Lectures, discussions, questions and answers, and 2 X 50 case examples		<p>Material: Implementation of green infrastructure in Indonesia</p> <p>Reference: <i>Directorate General of Human Settlements, Ministry of Public Works and Public Housing. 2018. Green Infrastructure.</i></p> <hr/> <p>Material: Green buildings</p> <p>References: <i>Wonoraharjo, S. and Sutjahja, Inge M. 2018. Green buildings for tropical areas. Bandung: ITB Press.</i></p> <hr/> <p>Material: Green architecture</p> <p>Reader: <i>Karyono, Tri Harso. 2010. Green Architecture: An Introduction to Understanding Green Architecture in Indonesia. Jakarta : Rajawali Press.</i></p>	3%
10	Able to identify the application of green infrastructure	Identifying the application of green infrastructure in other countries	<p>Criteria: Observation of student activities in class</p> <p>Form of Assessment : Participatory Activities</p>	Lectures, discussions, questions and answers, and 2 X 50 case examples		<p>Material: Green infrastructure</p> <p>References: <i>Dover, John W. 2015. Green Infrastructure: Incorporating Plants and Enhancing Biodiversity in Buildings and Urban Environments. New York : Routledge.</i></p> <hr/> <p>Material: Implementation of green infrastructure in the UK</p> <p>References: <i>Sinnett, D., Smith, N., and Burgess, Sarah. 2015. Green Infrastructure: Planning, Design, and Implementation. UK : EE Publishing Limited.</i></p>	5%

11	Able to understand environmentally friendly materials	1.Explain examples of environmentally friendly materials 2.Explain the advantages and disadvantages of each example	Criteria: Perfect score if answered correctly Form of Assessment : Project Results Assessment / Product Assessment	Assignment 2 X 50		Material: Environmentally friendly materials in green buildings References: <i>Wonoraharjo, S. and Sutjahja, Inge M. 2018. Green Buildings for Tropical Regions. Bandung: ITB Press.</i>	5%
12	Able to carry out field activities in the form of observing the implementation of green infrastructure	Plan field activities	Criteria: Group activity assessment Form of Assessment : Participatory Activities	Discussion regarding group division and plans for implementing 2 X 50 observations		Material: Application of green infrastructure in urban areas Reference: <i>Directorate General of Human Settlements, Ministry of Public Works and Public Housing. 2018. Green Infrastructure.</i>	5%
13	Able to carry out field activities in the form of observing the implementation of green infrastructure	Carrying out field observation activities	Criteria: Group activity assessment	Asynchronous: carrying out observation activities according to the location determined by each group		Material: Application of green infrastructure in urban areas Reference: <i>Directorate General of Human Settlements, Ministry of Public Works and Public Housing. 2018. Green Infrastructure.</i>	5%
14	Able to carry out field activities in the form of observing the implementation of green infrastructure	Carrying out field observation activities	Criteria: Group activity assessment	Asynchronous: carrying out observation activities according to the location determined by each group		Material: Application of green infrastructure in urban areas Reference: <i>Directorate General of Human Settlements, Ministry of Public Works and Public Housing. 2018. Green Infrastructure.</i>	5%
15	Able to carry out field activities in the form of observing the implementation of green infrastructure	Carrying out field observation activities	Criteria: Group activity assessment	Asynchronous: carrying out observation activities according to the location determined by each group		Material: Application of green infrastructure in urban areas Reference: <i>Directorate General of Human Settlements, Ministry of Public Works and Public Housing. 2018. Green Infrastructure.</i>	5%
16	UAS	Able to present the results of activities well and correctly	Criteria: Group activity assessment Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment	Presentation of the results of 2 X 50 field observation activities			40%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	55%
2.	Project Results Assessment / Product Assessment	25%
3.	Test	20%
		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** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities 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.