



**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
Concrete Technology and Practicum	2220102132		T=2	P=0	ECTS=3.18	3	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)

PLO-PO Matrix

P.O
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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** This course provides an understanding of basic knowledge and testing of concrete materials including cement, fine aggregate, coarse aggregate, water and additives. The process of making a concrete mix design based on the DOE method. Concrete maintenance. Properties of fresh concrete include workability, gravel separation, and water separation. Concrete properties include compressive strength, tensile strength, flexural strength and shrinkage. Concrete mix planning includes characteristic concrete compressive strength, standard deviation of average compressive strength, type of cement used, shape and size and gradation of fine and coarse aggregate, cement water factor, minimum cement amount, number of test objects, compression test and processing. data. Learning is carried out using the direct learning method.

**References**

**Main :**

- Kardiyono Tjokrodimulyo. 1996. Teknologi Beton . Yogyakarta: Nafiri.
- Paul Nugraha dan Antoni. 2004. Teknologi Beton . Penerbit Andi.
- Tri Mulyono. 2003. Teknologi Beton . Penerbit Andi.
- Sutikno1. 2014. Diktat Teknologi Beton . Surabaya: Unipress. Unesa.
- Sutikno2. 2013. Jobsheet Teknologi Beton . Surabaya: Unipress. Unesa.
- Jack C. Mc Cormac and Russell Brown. 2008. Design of Reinforced Concrete . New York: Wiley.
- Irving Kett. 2010. Engineered Concrete: Mix Design and Test Methods . 2nd ed. USA: CRC Press.
- Anonim1.1989. Pedoman Beton 1989 . Bandung: LPMB.
- Anonim2. 1971. PBI 1971 N .I-2: Peraturan Beton Indonesia . Jakarta: Departemen Pekerjaan Umum.
- Anonim3. 2003. American Standard and Testing Materials (ASTM) . USA: ASTM International.

**Supporters:**

**Supporting lecturer** Arie Wardhono, S.T., M.MT., M.T., Ph.D.  
 Meity Wulandari, S.T., M.T.

Week-	Final abilities of each	Evaluation	Help Learning, Learning methods, Student Assignments, [ Estimated time]	Learning materials [ References	Assessment Weight (%)

	learning stage (Sub-PO)	Indicator	Criteria & Form	Offline ( offline )	Online ( online )	1	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Students are able to explain the content and material of concrete technology and practicum	Explain the content and material of concrete technology and practicum	<b>Criteria:</b> ---	Lectures, discussions and questions and answers 2 X 50			0%
2	Students are able to explain the basic concepts of concrete and its constituent materials	1.Explain the meaning of concrete 2.Explain the materials that make up concrete	<b>Criteria:</b> Full marks are obtained if you are able to discuss and answer correctly	Lectures, discussions and questions and answers 2 X 50			0%
3	Students are able to understand cement and its properties, as well as cement testing methods	1.Explain the meaning of cement and its properties 2.Explain cement testing methods	<b>Criteria:</b> Full marks are obtained if you are able to discuss and answer questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
4	Students are able to understand aggregates and their properties, as well as aggregate testing methods	1.Explain the meaning of fine aggregate and its properties 2.Explain the meaning of coarse aggregate and its properties 3.Explain fine aggregate testing 4.Explain coarse aggregate testing	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
5	Students are able to understand water in concrete and its properties, as well as additive materials in concrete	1.Explain the meaning of water in concrete and its properties. 2.Explain the meaning of additive materials in concrete and their properties	<b>Criteria:</b> Full marks are obtained if you are able to discuss and answer correctly	Lectures, discussions and questions and answers 2 X 50			0%

6	Students are able to explain the properties of concrete and fresh concrete	1.Explain the properties of concrete 2.Explain the properties of fresh concrete	<b>Criteria:</b> Full marks are obtained if you are able to discuss and answer questions correctly	Lectures, discussions and questions and answers 2 X 50			0%
7	Students are able to understand the concrete mix design method	Explain the concrete mix design method	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly	Lectures, discussions, questions and answers, exercises and presentations 2 X 50			0%
8	Midterm Exam (UTS)	Able to do UTS correctly	<b>Criteria:</b> Full marks are obtained if you do all the questions correctly	Written test 2 X 50			0%
9	Students are able to carry out concrete technology practicum according to the job sheet	Carry out concrete technology practicum according to the job sheet	<b>Criteria:</b> The report has been signed by the technician and lecturer. The report has been bound in full.	Practical demonstration and direct learning 2 X 50			0%
10	Students are able to carry out concrete technology practicum according to the job sheet	Carry out concrete technology practicum according to the job sheet	<b>Criteria:</b> The report has been signed by the technician and lecturer. The report has been bound in full.	Practical demonstration and direct learning 2 X 50			0%
11	Students are able to carry out concrete technology practicum according to the job sheet	Carry out concrete technology practicum according to the job sheet	<b>Criteria:</b> The report has been signed by the technician and lecturer. The report has been bound in full.	Practical demonstration and direct learning 2 X 50			0%
12	Students are able to carry out concrete technology practicum according to the job sheet	Carry out concrete technology practicum according to the job sheet	<b>Criteria:</b> The report has been signed by the technician and lecturer. The report has been bound in full.	Practical demonstration and direct learning 2 X 50			0%
13	Students are able to carry out concrete technology practicum according to the job sheet	Carry out concrete technology practicum according to the job sheet	<b>Criteria:</b> The report has been signed by the technician and lecturer. The report has been bound in full.	Practical demonstration and direct learning 2 X 50			0%
14	Students are able to carry out concrete technology practicum according to the job sheet	Carry out concrete technology practicum according to the job sheet	<b>Criteria:</b> The report has been signed by the technician and lecturer. The report has been bound in full.	Practical demonstration and direct learning 2 X 50			0%
15	Students are able to carry out concrete technology practicum according to the job sheet	Carry out concrete technology practicum according to the job sheet	<b>Criteria:</b> The report has been signed by the technician and lecturer. The report has been bound in full.	Practical demonstration and direct learning 2 X 50			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.