	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
Hydrology*		8320502029		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	Students understand and are able to explain the definition of hydrology and its use in the field of civil engineering. Students are able to explain the definition of rain, analyze rain data, and calculate average rainfall. Students are able to explain, analyze, and calculate evaporation, transpiration, and infiltration. Students understand and are able to carry out analysis of river discharge measurements (hydrometry) and discharge data Students understand and are able to analyze river flow hydrographs Students understand and are able to calculate flood designs Students understand and are able to analyze flood tracing Students understand and are able to explain the concept of flood control.

References	**Main :**

1. Buku : Arsyad, Sitanala. 1989. Konservasi Tanah dan Air. IPB Press. Bogor.
2. Asdak,C.1995. Hidrologi dan Pengelolaan Daerah Aliran Sungai. GajahMada University Press. Yogya.
3. Linsley, dkk. 1991. Teknik Sumber Daya Air. Erlangga Jakarta.
4. Martha, J.W. 1978. Mengenal Dasar-dasar Hidrologi. Nova. Bandung
5. Nurhayati Aritonang, 2014. Hidrologi Teknik. Hand Out Unesa. Surabaya.
6. Soewarno. 2000. Hidrologi Operasional. PT Gramedia. Jakarta
7. Sri Harto. 1998. Hidrologi Terapan. Yogyakarta: Gama T. Sipil.
8. Sholeh, M. 1995.Hidrologi TS-1421. Surabaya: FTSP ITS.
9. Sosrodarsono, Suyono dan Takeda Kensaku. 1986. Hidrologi untuk Pengairan. Jakarta: Erlangga.
10. Sosrodarsono, Suyono dan Takeda Kensaku. 1994.Perbaikan dan Pengaturan Sungai. Pradnya Paramita. Jakarta
11. Subarkah, I. 1979. Bangunan Air. Idea Dharma. Bandung.
12. Ripiningtati, 2000. Pengembangan Sumber Daya Air. Program Pascasarjana Universitas Brawijaya Malang
13. Wilson, E.M. 1993. Hidrologi Teknik. Jakarta: Erlangga.

	Supporters:

Supporting lecturer	INDIAH KUSTINI Drs. Djoni Irianto, 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	Able to define the meaning of hydrology and its use.	1. Explain the definition of hydrology. 2. Explain the meaning of hydrology 3. Explain the history of hydrology 4. Explain the use of hydrological applications	**Criteria:** Participation by asking/answering questions is awarded 5 points	Lectures, discussions, questions and answers. 2 X 50				0%
2	Be able to explain the definition of rain.	1. Explain the morphology of rainfall 2. Explain the capacity of rain 3. Explaining Intensity 4. Describes the duration of rainfall 5. Explain the types of rain 6. Explain the definition of rain 7. Explain the concept of rain 8. Explain the water balance 9. Explain the analysis of rain frequency	**Criteria:** Participation by asking/answering questions is awarded 5 points	Lectures, discussions, questions and answers. 2 X 50				0%
3	Able to explain analyzing rain data.	1. Explains testing rain data 2. Explain the principle of reliable rainfall 3. Explain rainfall	**Criteria:** Participation by asking/answering questions is awarded 5 points	Lectures, discussions, questions and answers. 2 X 50				0%
4	Able to explain and calculate average rainfall.	1. Explains the determination of average rainfall calculations based on the Arithmatic method 2. Explains the determination of average rainfall calculations based on the Thiessen method 3. Explains the determination of average rainfall calculations based on the Isohyet method	**Criteria:** Participation by asking/answering questions is given a score of 5 points. Assignment assessment sheet (attached)	Lectures, discussions, questions and answers, and assignments, 2 X 50 presentations				0%
5	Able to explain and analyze evaporation, transpiration and infiltration.	1. Explain the principles of evaporation, infiltration and hydrometry 2. Explain the mechanism of evaporation, infiltration.	**Criteria:** Participation by asking/answering questions is given a score of 5 points. Assignment assessment sheet (attached)	Lectures, discussions, questions and answers, and assignments, 2 X 50 presentations				0%

6	Able to calculate evaporation, transpiration and infiltration.	1. Explain how to calculate evaporation. 2. Explain how to calculate transpiration. 3. Explain how to calculate infiltration.	**Criteria:** Participation by asking/answering questions is awarded 5 points	Lectures, discussions, questions and answers, and assignment of practice questions, 2 X 50 presentations			0%
7	Able to understand river discharge measurement analysis (hydrometry).	Explains the analysis of river discharge measurements (hydrometry) as a basic input for water building design.	**Criteria:** Participation by asking/answering questions is given a score of 5 points. Assignment assessment sheet (attached)	Lectures, discussions, questions and answers, and assignments, 2 X 50 presentations			0%
8	Able to carry out analysis of debit data measurements.	Carry out analysis of debit data measurements.	**Criteria:** Participation by asking/answering questions is given a score of 5 points. Assignment assessment sheet (attached)	Lectures, discussions, questions and answers, and giving practice questions, 2 X 50 presentations			0%
9	UTS		**Criteria:** 1. Weight: 2. question no.1 20% 3. Question no.2 20% 4. Question no.3 10% 5. Question no.4 50% 6. Assignment assessment sheet (attached)	2 X 50			0%
10	Able to understand river flow hydrographs.	1. Explain the understanding of river flow hydrographs. 2. Determine the type of measurement scale	**Criteria:** Participation by asking/answering questions is awarded 5 points	Lectures, discussions, questions and answers, and assignments, 2 X 50 presentations			0%
11	Able to understand river flow hydrographs.	1. Explain the understanding of river flow hydrographs. 2. Determine the type of measurement scale	**Criteria:** Participation by asking/answering questions is awarded 5 points	Lectures, discussions, questions and answers, and assignments, 2 X 50 presentations			0%
12	Able to understand and analyze river flow hydrographs.	1. Able to understand river flow hydrographs 2. Able to analyze river flow hydrographs	**Criteria:** Participation by asking/answering questions is awarded 5 points	Lectures, discussions, questions and answers, and assignments, 2 X 50 presentations			0%
13	Able to understand and calculate design floods.	1. Explain flood calculations 2. Explain the method used to calculate the design flood	**Criteria:** The presentation score is 100 if tables, graphs, participation by asking/answering questions are given a value of 5 points	Lectures, discussions, questions and answers, and assignments, 2 X 50 presentations			0%
14	Able to understand and calculate design floods.	1. Explain flood calculations 2. Explain the method used to calculate the design flood	**Criteria:** The presentation score is 100 if tables, graphs, participation by asking/answering questions are given a value of 5 points	Lectures, discussions, questions and answers, and assignments, 2 X 50 presentations			0%

| 15 | Able to understand and analyze flood tracking. Able to explain the concept of flood control | 1. Explains flood tracking analysis. 2. Explain the flood search method. 3. Explain the concept of flood control. 4. Explain the definition of understanding the concept of flood | **Criteria:** Participation by asking/answering questions is awarded 5 points | Lectures, discussions, questions and answers, and presentations 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.