	Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Master of Science Education Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Science Mathematics	8410100109		T=0	P=0	ECTS=0	0	July 18, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	....	....	Dr. Eko Hariyono, S.Pd., M.Pd.

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	This course discusses the understanding and application of basic mathematical concepts in the field of science, especially the application of mathematical models (vectors, matrices, differentials, integrals and differential equations) in science and determining solutions analytically to support the development of science competencies and their applications. Learning is carried out using Socratic question and answer strategies, case analysis.

References	Main :	

1. Boas.Mery L. 2005.Mathematical Methods in the Physical Sciences.Third Edition.
2. Kreyszig, E. 1995.Advanced Engineering Mathematics.John Wiley & Sons.
3. Strauss. W.A. 1992.Partial Differential Equations.John Wiley & Sons.

	Supporters:	

Supporting lecturer	Dr. I Gusti Made Sanjaya, M.Si. Prof. Tjipto Prastowo, Ph.D. Dr. Mohammad Budiyanto, S.Pd., M.Pd.

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 mathematical orientation of science	Explain the targets for achieving science mathematics	**Criteria:** Participation assessment	Presentation and discussion 2 X 50			0%

2	Understand the use of linear functions and systems of linear equations in the field of science and science education	Analyzing the application of linear functions and linear equation systems in science and science education	**Criteria:** Assessment of assignments and participation	Presentation, discussion and practice questions 2 X 50			0%
3	Understand the use of quadratic functions in science and science education	Analyzing quadratic functions and their application in science and science education	**Criteria:** Assessment of assignments and participation	Presentation, discussion and practice questions 2 X 50			0%
4	Understand the use of non-linear systems in science and science education	Implementing a non-linear system in science and science education	**Criteria:** assignment assessment and participation	Presentation, discussion and practice questions 2 X 50			0%
5	Understand the use of exponential functions and logarithmic functions in the field of science and science education	Analyzing the application of exponential functions and logarithmic functions in science and science education	**Criteria:** Assessment of assignments and participation	Presentation, discussion and practice questions 2 X 50			0%
6	Understand the use of matrix algebra in science and science education	Analyzing the application of matrix algebra in science and science education	**Criteria:** Assessment of assignments and participation	Presentation, discussion and practice questions 2 X 50			0%
7	Understanding the use of determinants in science and science education	Analyzing determinants and their application in science and science education	**Criteria:** Assessment of assignments and participation	Presentation, discussion and practice questions 2 X 50			0%
8	Midterm exam	Midterm exam	**Criteria:** Midterm Exam Scores	mid-semster exam 2 X 50			0%
9	Understanding linear programs in science and science education	Analyze linear programming and its application in science and science education	**Criteria:** Assessment of assignments and participation	Presentation, discussion and practice questions 2 X 50			0%
10	Understanding probability and statistics in science and science education	Analyzing statistical probability and its application in science and science education	**Criteria:** Assessment of assignments and participation	Presentation, discussion and practice questions 2 X 50			0%
11	Understanding limits and continuity in science and science education	Analyzing limits, continuity, and their application in science and science education	**Criteria:** Assessment of assignments and participation	Presentation, discussion and practice questions 2 X 50			0%
12	Understand the idea of derivatives, differential equations, and their application in science and science education	Analyze the idea of derivatives, differential equations, and their application in science and science education	**Criteria:** Assessment of assignments and participation	Presentation, discussion and practice questions 2 X 50			0%

13	Understanding partial differential and total differential equations in science and science education	Analyzing partial differential-total differential equations and their application in science and science education	**Criteria:** Assessment of assignments and participation	Presentation, discussion and practice questions 2 X 50			0%
14	Understanding the integral in science and science education	Analyzing integrals in science and science education	**Criteria:** Assessment of assignments and participation	Presentation, discussion and practice questions 2 X 50			0%
15	Understand various integration methods in science and science education	Evaluate the results of normal-unnatural integration with various integration methods in science and science education	**Criteria:** Assessment of assignments and participation	Presentation, discussion and practice questions 2 X 50			0%
16	Final exams	Final exams	**Criteria:** Final Semester Exam Scores	Final Exam Semester 2 X 50			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.