							Document Code
	Universitas Negeri Surabaya **Faculty of Engineering** **, Information Technology Education Undergraduate Study Program**						

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Discrete mathematics	8320703048		T=3	P=0	ECTS=4.77	4	July 17, 2024

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
	Naim Rochmawati	....	Drs. Bambang Sujatmiko, M.T.

Learning model	Case Studies

Program Learning Outcomes (PLO)	**PLO study program which is charged to the course**	
	PLO-8	Mastering the concepts and implementation in developing software engineering, games, intelligent multimedia, and network computer engineering.
	PLO-12	Able to implement science, technology, engineering, and mathematics (STEM) and informatics knowledge into research in education.
	Program Objectives (PO)	
	PO - 1	Students can apply the concept of Set Theory to solve everyday problems
	PO - 2	Students can apply the concepts of relations and functions in the application of sets
	PO - 3	Students can apply graph concepts and their use in the field of information technology
	PO - 4	Students can explain the concept of trees and use tree algorithms in the field of information technology
	PLO-PO Matrix	

P.O	PLO-8	PLO-12
PO-1		
PO-2		
PO-3		
PO-4		

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
PO-1																
PO-2																
PO-3																
PO-4																

Short Course Description	Discrete Mathematics is a basic science in informatics learning, because basically informatics is a collection of scientific and technical disciplines that process discrete objects. Discrete mathematics provides a mathematical foundation for courses in algorithms, data structures, databases, computer networks, computer security and so on. The material in this course is Set Theory, Relations and Functions, Graph Theory, Trees.
References	**Main :**

1. Jean Gallier. 2016. Discrete Mathematics, Second Edition In Progress. Springer.
2. Kenneth H. Rosen. 2012. Discrete Mathematics and Its Applications Seventh Edition. Monmouth University. Mc Graw Hill.
3. Seymour Lipschutz. 2007. Theory and Problems of Discrete Mathematics Third Edition. Mc Graw Hill.

Supporters:	

Supporting lecturer	Naim Rochmawati, S.Kom., M.T. Harun Al Rosyid, S.T., M.T. Rindu Puspita Wibawa, S.Kom., M.Kom.

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 basic concepts of discrete mathematics	1.Explaining The Foundations: Logic and Proofs 2.Explain Basic Structures: Sets, Functions, Sequences, Sums, and Matrices	**Criteria:** for offline lectures:	Lectures, discussions 3 X 50	watching learning videos, reading PPTs, doing assignments		0%
2	Understand the basic concepts of discrete mathematics	1.Explaining The Foundations: Logic and Proofs 2.Explain Basic Structures: Sets, Functions, Sequences, Sums, and Matrices	**Criteria:** -	Lectures, discussions 3 X 50			0%
3	Understand the concept of Algorithms and Number Theory and Cryptography	1.Explain the concept of Algorithm 2.Explains the concept of Number Theory and Cryptography 3.Applying Algorithm and Number Theory and Cryptography concepts to real cases	**Criteria:** -	Lectures, discussions 3 X 50			0%
4	Understand the concept of Algorithms and Number Theory and Cryptography	1.Explain the concept of Algorithm 2.Explains the concept of Number Theory and Cryptography 3.Applying Algorithm and Number Theory and Cryptography concepts to real cases	**Criteria:** -	Lectures, discussions 3 X 50			0%

5	Understand the concept of induction and recursion and the concept of counting	1.Explain induction and recursion 2.Explain counting 3.Applying the concepts of induction and recursion and counting to real life cases	**Criteria:** -	lecture, discussion 3 X 50			0%
6	Understand the concept of induction and recursion and the concept of counting	1.Explain induction and recursion 2.Explain counting 3.Applying the concepts of induction and recursion and counting to real life cases	**Criteria:** -	lecture, discussion 3 X 50			0%
7	Understand the concept of Discrete Probability and Advanced Counting Techniques	1.Explain Discrete Probability 2.Explaining Advanced Counting Techniques 3.Applying Discrete Probability and Advanced Counting Techniques in real life	**Criteria:** -	lecture, discussion 3 X 50			0%
8	Understand the concept of Discrete Probability and Advanced Counting Techniques	1.Explain Discrete Probability 2.Explaining Advanced Counting Techniques 3.Applying Discrete Probability and Advanced Counting Techniques in real life	**Criteria:** -	lecture, discussion 3 X 50			0%
9	UTS	UTS	**Criteria:** -	UTS 3 X 50			0%
10	Understand the concept of Relations and Graphs	1.Explain the concept of Relations 2.Explain the concept of Graphs 3.Applying Relations and Graphs to real life	**Criteria:** -	Lectures, discussions 3 X 50			0%
11	Understand the concept of Relations and Graphs	1.Explain the concept of Relations 2.Explain the concept of Graphs 3.Applying Relations and Graphs to real life	**Criteria:** -	Lectures, discussions 3 X 50			0%

12	Understand the concept of Relations and Graphs	1.Explain the concept of Relations 2.Explain the concept of Graphs 3.Applying Relations and Graphs to real life	**Criteria:** -	Lectures, discussions 3 X 50				0%
13	Understand the Tree concept and implement it in real life	1.Explain the concept of trees 2. Implementing trees for case resolution	**Criteria:** -	lecture, discussion 3 X 50				0%
14	Understand the Tree concept and implement it in real life	1.Explain the concept of trees 2. Implementing trees for case resolution	**Criteria:** -	lecture, discussion 3 X 50				0%
15	Understand the Tree concept and implement it in real life	1.Explain the concept of trees 2. Implementing trees for case resolution	**Criteria:** -	lecture, discussion 3 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.