	Universitas Negeri Surabaya Faculty of Engineering, Electrical Engineering Undergraduate Study Program	Document Code

SEMESTER LEARNING PLAN

Courses		CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
PROBABILITY AND STATISTICS		2020103271	Compulsory Study Program Subjects	T=0	P=0	ECTS=0	4	April 1, 2023
AUTHORIZATION		**SP Developer**		**Course Cluster Coordinator**			**Study Program Coordinator**	
		Dr. Lusia Rakhmawati, M.T. Dr. Rina Harimurti, S.Pd., M.T.		Prof. Dr. I Gusti Putu Asto B., M.T.			Dr. Lusia Rakhmawati, 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 apply basic knowledge of Probability and Statistics to gain a thorough understanding of engineering principles
	PO - 2 — Able to communicate effectively both verbally and in writing regarding basic topics of Probability and Statistics
	PO - 3 — Able to apply basic Probability and Statistics methods and skills needed to solve problems in the engineering field
	PO - 4 — Able to work in cross-disciplinary and cultural arts teams
	PO - 5 — Able to understand the need for lifelong learning in the field of Probability and Statistics related to relevant current issues
	PLO-PO Matrix

P.O
PO-1
PO-2
PO-3
PO-4
PO-5

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																
PO-5																

Short Course Description	This course provides an understanding and mastery of the basic concepts of statistics and probability, enumeration of sample points, distribution concepts, calculations of frequency distribution distribution tables, central symptom measurements and location measurements, deviation measurements, moment-skewness and kurtosis, probability theory, sampling, hypothesis testing, analysis regression and correlation as well as non-parametric statistics.

References	**Main :**

1. Frederick J Gravetter and Larry B Wallnau, Essentials of Statistics for the Behavioral Sciences 8th Edition, 2014, Wadsworth Cengage Learning
2. Sudaryono, Statistika Probabilitas 13 Teori & Aplikasi, Andi, 2012
3. Johnson, James L, Probability and Statistics for computer science, wiley interscience, English, 2011

Supporters:	
1. Hadi, Sutrisno. 1980. Statistik I, II, dan III. Yogyakarta: Fakultas Psikologi UGM	

Supporting lecturer	Prof. Dr. I Gusti Putu Asto Buditjahjanto, S.T., M.T. Dr. Lusia Rakhmawati, S.T., M.T. Rifqi Firmansyah, S.T., 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	Students can explain, identify and analyze Statistics and Opportunity Theory	1. Distinguish between statistics and statistics 2. understand the use of probability theory in statistics	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 1 **Bibliography:** *Frederick J Gravetter and Larry B Wallnau, Essentials of Statistics for the Behavioral Sciences 8th Edition, 2014, Wadsworth Cengage Learning*	5%
2	Students can determine measurement values in statistics	1. Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2. Create box plots and stem plots 3. Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%
3	Students can understand Opportunity Theory	1. Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2. Create box plots and stem plots 3. Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%
4	Students can understand and calculate Conditional Probabilities	1. Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2. Create box plots and stem plots 3. Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%

5	Students can understand Counting Technique	1.Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2.Create box plots and stem plots 3.Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%
6	Students can understand random variables (VR)	1.Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2.Create box plots and stem plots 3.Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%
7	Students can understand random variables (VR)	1.Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2.Create box plots and stem plots 3.Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%
8	Students can complete UTS	1.Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2.Create box plots and stem plots 3.Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%
9	Students can understand Probability Distributions Distribution Functions (FD)	1.Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2.Create box plots and stem plots 3.Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%
10	Students can understand Probability Distributions Distribution Functions (FD)	1.Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2.Create box plots and stem plots 3.Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%

11	Students can determine the chances of an event through FD	1. Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2. Create box plots and stem plots 3. Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%
12	Students can determine VR moments and expectations.	1. Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2. Create box plots and stem plots 3. Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%
13	Students can determine VR moments and expectations.	1. Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2. Create box plots and stem plots 3. Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%
14	Students can understand Discrete VR Distribution	1. Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2. Create box plots and stem plots 3. Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%
15	Students can understand Discrete VR Distribution	1. Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2. Create box plots and stem plots 3. Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%
16	Students can complete the UAS	1. Calculates: mean, median, mode, range, lower/middle/upper quartile, variance, standard deviation 2. Create box plots and stem plots 3. Determining outliers and distribution differences	**Criteria:** Evaluation Rubric **Form of Assessment** : Participatory Activities	Contextual Instruction 3 X 50		**Material:** Meeting material 2 **Literature:** *Sudaryono, Probability Statistics 13 Theory & Applications, Andi, 2012*	5%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	80%
		80%

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.