	Universitas Negeri Surabaya Faculty of Economics and Business Bachelor of Economics Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Economic Research Statistics	8722003110	Compulsory Study Program Subjects	T=1	P=2	ECTS=4.77	3	July 10, 2023

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
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Learning model	**Project Based Learning**

Program Learning Outcomes (PLO)

PLO study program that is charged to the course

PLO-4	Develop yourself continuously and collaborate.
PLO-5	Able to analyze overall economic theoretical concepts
PLO-8	Able to apply information technology in problem solving
PLO-9	Able to make decisions based on analysis of information and data in the fields of development planning, monetary economics and public economics

Program Objectives (PO)

PO - 1	Students are able to understand, explain and analyze using inferential statistics or other non-parametric statistics by utilizing science and technology in making appropriate decisions in the context of solving problems in their field of expertise

PLO-PO Matrix

P.O	PLO-4	PLO-5	PLO-8	PLO-9
PO-1	✔	✔	✔	✔

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	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔

Short Course Description	This course contains understanding of inferential statistics; probability; Sampling and sampling distribution; statistical estimation; hypothesis testing; Analysis of Variance; Chi Square Test; non-parametric statistics. By studying this subject, students are able to make appropriate decisions in the context of solving problems in their field of expertise, based on the results of information and data analysis.

References

Main :

1. Lind, Douglas A., William G. Marchal, and Samuel A. Wathen. Statistical techniques in business & economics. McGraw-Hill Education, 2017.
2. Sugiyono. 2019. Statistika untuk Penelitian. Penerbit Alfabeta: Bandung.
3. Supangat, A. 2007. Statistika. Penerbit Kencana: Jakarta.

Supporters:

1. Algifari. 2016. Statistika Induktif untuk Ekonomi dan Bisnis. Penerbit UPP AMP YKPN: Yogyakarta
2. Atmaja, L.S.. 2009. Statistika untuk Bisnis dan Ekonomi. Penerbit Andi: Yogyakarta

Supporting lecturer	Dr. Prayudi Setiawan Prabowo, S.E., M.E. Kukuh Arisetyawan, S.Pd., M.E. Wenny Restikasari, S.E., M.S.E.

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 understand the scope of inferential statistics material	No judgment	**Criteria:** Students can trace back memory (cognitive) regarding basic statistical concepts **Form of Assessment** : Project Results Assessment / Product Assessment	Interactive lectures and discussions, Students began to be divided into carrying out the 3 X 50 project	Interactive lectures and discussions, Students began to be divided into carrying out projects	**Material:** 1. Understanding Statistics 2. Division of Statistics: Descriptive Statistics and Inferential Statistics 3. Division of Inferential Statistics: Parametric and Non-Parametric Statistics **References:** *Lind, Douglas A., William G. Marchal, and Samuel A. Wathen. Statistical techniques in business & economics. McGraw-Hill Education, 2017.*	0%
2	Students are able to understand probability	1. Students are able to understand the meaning of Probability 2. Students are able to understand the probability value of an event 3. Students are able to calculate and determine probability values 4. Students are able to understand various types of probability	**Criteria:** According to scoring guidelines **Form of Assessment** : Project Results Assessment / Product Assessment	Interactive lectures and discussions 3 X 50	Interactive lectures and discussions	**Material:** 1. Understanding Probability 2. Probability Value of an event 3. Determining the probability value 4. Types of Probability **Literature:** *Lind, Douglas A., William G. Marchal, and Samuel A. Wathen. Statistical techniques in business & economics. McGraw-Hill Education, 2017.*	0%

3	Students are able to understand sampling and sampling distribution	1. Students are able to understand the meaning of Sampling Distribution 2. Students are able to understand sample probability 3. Students are able to understand Sample Probability 4. Students are able to understand the sampling distribution of the mean 5. Students are able to understand sampling distribution from proportion 6. Students are able to understand the sampling distribution of differences and additions	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities, Project Results Assessment / Product Assessment	Interactive lectures and discussions 3 X 50	Interactive lectures and discussions	**Material:** 1. Understanding Sampling Distribution 2. Probability samples 3. Non Probability Samples 4. Sampling distribution from the mean 5. Sampling distribution from proportion 6. Sampling distribution from differences and additions **References:** *Lind, Douglas A., William G. Marchal, and Samuel A. Wathen. Statistical techniques in business & economics. McGraw-Hill Education, 2017.*	5%
4	Students are able to understand and analyze statistical estimates	1. Students are able to understand and analyze the meaning and basic concepts of estimation 2. Students are able to understand and analyze Population Mean estimates 3. Students are able to understand and analyze population percentage estimates 4. Students are able to understand and analyze Population Variance estimates	**Criteria:** According to scoring guidelines **Form of Assessment** : Project Results Assessment / Product Assessment	Interactive lectures and discussions 3 X 50	Interactive lectures and discussions	**Material:** . Understanding and Basic Concepts of Estimation 2. Estimation of Population Mean 3. Estimation of Population Percentage 4. Estimation of Population Variance **References:** *Lind, Douglas A., William G. Marchal, and Samuel A. Wathen. Statistical techniques in business & economics. McGraw-Hill Education, 2017.*	0%
5	Students are able to study, apply and analyze hypothesis testing	1. Students are able to understand the meaning of hypothesis 2. Students are able to understand the formulation of a hypothesis 3. Students are able to understand the general	**Criteria:** According to scoring guidelines **Form of Assessment** : Project Results Assessment / Product Assessment, Test	Interactive lectures and discussions 3 X 50	Interactive lectures and discussions	**Material:** 1. Understanding and Basic Concepts of Estimation 2. Estimating the Population Mean 3. Estimating Population Percentages 4. Estimating Population Variance **References:** *Lind, Douglas A., William G. Marchal, and*	5%

		steps in hypothesis testing 4. Students are able to understand and analyze hypothesis testing regarding the mean with large samples (n≥30) 5. Students are able to understand and analyze hypothesis testing regarding the mean with small samples (n<30) 6. Students are able to understand and analyze Hypothesis tests regarding Proportions 7. Students are able to understand and analyze Two Mean Difference Hypothesis tests with Large Samples (n1; n2 ≥30) 8. Students are able to understand and analyze Two Mean Difference Hypothesis tests with Small Samples (n1; n2< 30) 9. Students are able to understand and analyze Two Mean Difference Hypothesis tests for Paired Observations 10. Students are able to understand and analyze the Two Proportion Difference Hypothesis test				*Samuel A. Wathen. Statistical techniques in business & economics. McGraw-Hill Education, 2017.* **Material:** 1. Understanding and Basic Concepts of Estimation 2. Estimation of Population Mean 3. Estimation of Population Percentage 4. Estimation of Population Variance **Library:** *Algifari. 2016. Inductive Statistics for Economics and Business. UPP AMP YKPN Publisher: Yogyakarta*	
6	Students are able to study, apply and analyze hypothesis testing	1. Students are able to understand the meaning of hypothesis 2. Students are able to understand the formulation	**Criteria:** According to scoring guidelines **Form of Assessment** : Test	Interactive lectures and discussions 3 X 50	Interactive lectures and discussions	**Material:** . Understanding Hypothesis 2. Formulating a Hypothesis 3. General Steps in Hypothesis Testing 4. Test a hypothesis regarding the	5%

		of a hypothesis 3. Students are able to understand the general steps in hypothesis testing 4. Students are able to understand and analyze hypothesis testing regarding the mean with large samples (n≥30) 5. Students are able to understand and analyze hypothesis testing regarding the mean with small samples (n<30) 6. Students are able to understand and analyze Hypothesis tests regarding Proportions 7. Students are able to understand and analyze Two Mean Difference Hypothesis tests with Large Samples (n1; n2 ≥30) 8. Students are able to understand and analyze Two Mean Difference Hypothesis tests with Small Samples (n1; n2< 30) 9. Students are able to understand and analyze Two Mean Difference Hypothesis tests for Paired Observations 10. Students are able to understand and analyze the Two Proportion Difference Hypothesis test				mean with a Large Sample (n≥30) 5. Test a hypothesis regarding the mean with a Small Sample (n<30) 6. Test a Hypothesis Regarding Proportions 7. Hypothesis test for difference between two means with a large sample (n1;n2 ≥30) 8. Test hypothesis for difference between two means with a small sample (n1;n2< 30) 9. Test hypothesis for difference between two means for paired observations 10. Test hypothesis for difference Two Proportions **Bibliography:** *Lind, Douglas A., William G. Marchal, and Samuel A. Wathen. Statistical techniques in business & economics. McGraw-Hill Education, 2017.*	
7	Students are able to study, apply and analyze	1. Students are able to understand	**Criteria:** 1. Criteria: - Scoring guidelines Test	Interactive lectures and discussions 3 X 50	Interactive lectures and discussions	**Material:** Understanding Hypothesis 2. Formulation of	0%

	hypothesis testing	the meaning of hypothesis 2. Students are able to understand the formulation of a hypothesis 3. Students are able to understand the general steps in hypothesis testing 4. Students are able to understand and analyze hypothesis testing regarding the mean with large samples (n≥30) 5. Students are able to understand and analyze hypothesis testing regarding the mean with small samples (n<30) 6. Students are able to understand and analyze Hypothesis tests regarding Proportions 7. Students are able to understand and analyze Two Mean Difference Hypothesis tests with Large Samples (n1; n2 ≥30) 8. Students are able to understand and analyze Two Mean Difference Hypothesis tests with Small Samples (n1; n2< 30) 9. Students are able to understand and analyze Two Mean Difference Hypothesis tests for Paired Observations 10. Students are able to understand and analyze the Two Proportion	technique -oral test -written test 2. According to scoring guidelines **Form of Assessment** : Participatory Activities			Hypothesis 3. General Steps in Hypothesis Testing 4. Test hypothesis regarding the mean with a Large Sample (n≥30) 5. Test hypothesis regarding the mean with a Small Sample (n<30) 6. Test Hypothesis Regarding Proportions 7. Hypothesis Testing Differences between Two Means with Large Samples (n1;n2 ≥30) 8. Hypothesis Testing Differences between Two Means with Small Samples (n1;n2< 30) 9. Hypothesis Testing Differences **Literature:** *Supangat, A. 2007. Statistics. Kencana Publisher: Jakarta.*		

		Difference Hypothesis test					
8	UTS	Able to solve assigned problems using inferential statistics ranging from probability analysis to testing hypotheses	**Criteria:** According to scoring guidelines **Form of Assessment** : Project Results Assessment / Product Assessment	UTS 3 X 50		**Material:** 1-7 **Bibliography:** *Lind, Douglas A., William G. Marchal, and Samuel A. Wathen. Statistical techniques in business & economics. McGraw-Hill Education, 2017.*	20%
9	Students are able to understand and analyze Variance Analysis	1. Students are able to understand the meaning of Variance Analysis 2. Students are able to understand and analyze One Way Anova 3. Students are able to understand and analyze two-way Anova	**Criteria:** According to scoring guidelines **Form of Assessment** : Project Results Assessment / Product Assessment	Interactive lectures and discussions 3 X 50	Interactive lectures and discussions	**Material:** 1. Understanding Variance Analysis 2. One-Way Anova 3. Two-way Anova **Reader:** *Sugiyono. 2019. Statistics for Research. Alphabeta Publisher: Bandung.*	0%
10	Students are able to understand and analyze Variance Analysis	1. Students are able to understand the meaning of Variance Analysis 2. Students are able to understand and analyze One Way Anova 3. Students are able to understand and analyze two-way Anova	**Criteria:** 1. Criteria: - Scoring guidelines Test technique -oral test -written test 2. According to scoring guidelines **Form of Assessment** : Project Results Assessment / Product Assessment	Interactive lectures and discussions 3 X 50	Interactive lectures and discussions	**Material:** 1. Understanding Variance Analysis 2. One-Way Anova 3. Two-way Anova **Reader:** *Sugiyono. 2019. Statistics for Research. Alphabeta Publisher: Bandung.*	0%
11	Students are able to understand and analyze the Chi Square Test	1. Students are able to understand the meaning of the Chi Square test 2. Students are able to calculate, understand and analyze Chi Square values	**Criteria:** According to scoring guidelines **Form of Assessment** : Project Results Assessment / Product Assessment	Interactive lectures and discussions 3 X 50	Interactive lectures and discussions	**Material:** 1. Understanding the Chi Square test 2. Calculating the Chi Square value **Reference:** *Supangat, A. 2007. Statistics. Kencana Publisher: Jakarta.*	0%
12	Students are able to understand and analyze the Chi Square Test	1. Students are able to understand the meaning of the Chi Square test 2. Students are able to calculate, understand and analyze Chi Square values	**Criteria:** According to scoring guidelines **Form of Assessment** : Project Results Assessment / Product Assessment	Interactive lectures and discussions 3 X 50	Interactive lectures and discussions	**Material:** 1. Understanding the Chi Square test 2. Calculating the Chi Square value **Reference:** *Supangat, A. 2007. Statistics. Kencana Publisher: Jakarta.*	0%

13	Students are able to understand and analyze other non-parametric statistics	1. Students are able to understand and analyze the Mann-Whitney test 2. Students are able to understand and analyze the Wilcoxon test 3. Students are able to understand and analyze the Friedman test 4. Students are able to understand and analyze the Kruskal-Wallis test	**Criteria:** According to scoring guidelines **Form of Assessment** : Project Results Assessment / Product Assessment	Interactive lectures and discussions 3 X 50	Interactive lectures and discussions	**Materials:** 1. Mann-Whitney test 2. Wilcoxon test 3. Friedman test 4. Kruskal-Wallis test **References:** *Lind, Douglas A., William G. Marchal, and Samuel A. Wathen. Statistical techniques in business & economics. McGraw-Hill Education, 2017.*	0%
14	Students are able to understand and analyze other non-parametric statistics	1. Students are able to understand and analyze the Mann-Whitney test 2. Students are able to understand and analyze the Wilcoxon test 3. Students are able to understand and analyze the Friedman test 4. Students are able to understand and analyze the Kruskal-Wallis test	**Criteria:** According to scoring guidelines **Form of Assessment** : Practice / Performance	Interactive lectures and discussions 3 X 50	Interactive lectures and discussions	**Materials:** 1. Mann-Whitney test 2. Wilcoxon test 3. Friedman test 4. Kruskal-Wallis test **References:** *Lind, Douglas A., William G. Marchal, and Samuel A. Wathen. Statistical techniques in business & economics. McGraw-Hill Education, 2017.*	30%
15	Students are able to understand and analyze other non-parametric statistics	1. Students are able to understand and analyze the Mann-Whitney test 2. Students are able to understand and analyze the Wilcoxon test 3. Students are able to understand and analyze the Friedman test 4. Students are able to understand and analyze the Kruskal-Wallis test	**Criteria:** According to scoring guidelines **Form of Assessment** : Participatory Activities	Interactive lectures and discussions 3 X 50	Interactive lectures and discussions	**Materials:** 1. Mann-Whitney test 2. Wilcoxon test 3. Friedman test 4. Kruskal-Wallis test **References:** *Atmaja, LS. 2009. Statistics for Business and Economics. Andi Publisher: Yogyakarta*	5%

16	UAS	Accurate answer analysis results	**Criteria:** According to scoring guidelines **Form of Assessment** : Project Results Assessment / Product Assessment	UAS 3 X 50		**Material:** 9-15 **Bibliography:** *Algifari. 2016. Inductive Statistics for Economics and Business. UPP AMP YKPN Publisher: Yogyakarta*	30%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	7.5%
2.	Project Results Assessment / Product Assessment	55%
3.	Practice / Performance	30%
4.	Test	7.5%
		100%

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.