

SEMESTER LESSON PLAN

APPLIED STATISTICS







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**MASTER PROGRAM IN EDUCATIONAL PSYCHOLOGY
SCHOOL OF POSTGRADUATE STUDIES
UNIVERSITAS PENDIDIKAN INDONESIA
2021/2022**

	SEMESTER LESSON PLAN	Doc No.:
	Applied Statistics	Revision :
		Date: 1 February 2022
		Page: 8
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SEMESTER LESSON PLAN		
1. Course Identity Name of Study Program: Educational Psychology Course Name : Applied Statistics Code : PS701 Classification : Core Competency Courses of Postgraduate Credit (s) : 3 Program : Master Program Semester : 2 Prerequisite : - Status : Compulsory Course Lecturer(s) and Lecturer Code : Dr. Tina Hayati Dahlan, S.Psi., M.Pd., Psikolog. (2537) Dr. Eka Sakti Yudha, M.Pd. (2674)		

2. Course Descriptions

This course covers the basic concepts of statistics, as well as the application of descriptive and inferential statistics. Basic concepts and descriptive statistics include tables and graphs, measures of central symptoms, variation, and correlation and regression; while inferential statistics include probability distribution, normal distribution, and hypothesis testing. Hypothesis testing is carried out through two approaches, namely parametric and non-parametric statistical analysis, which included one-group, two-group, k-group comparison tests, as well as correlation and regression tests.

3. Learning Outcomes

- A Demonstrate scientific, educative, and religious attitudes and behaviors, which contribute to improving the quality of life in society, nation, and country based on culture, norms, and academic ethics.
- K3 Comprehend the principles and models of teaching, learning, assessment, and educative interventions and their applications to promote, prevent, and improve the quality of educational practice as well as to increase the well-being of all parties involved
- GS1 Integrate learning and innovation skills, tacit knowledge, ICT competency, and life skills into lifelong learners' behavior to facilitate their career development.
- GS2 Develop logical, critical, systematic, and creative thinking and apply them in conducting and publishing interdisciplinary research that takes into account humanities values in accordance with the educational psychology expertise.

4. Course Learning Outcomes

- 12.5.1 Able to understand the basic concepts and the use of statistics in research and everyday life
- 12.5.2 Able to present data in the form of tables and graphs and to interpret them

<p>12.5.3 Able to understand the concept of central symptom measurement and choose the right central symptom measurement for a research activity</p> <p>12.5.4 Able to understand the concept of size dispersion and variation</p> <p>12.5.5 Able to understand the concept of simple linear and multivariate regression</p> <p>12.5.6 Able to understand the concept of simple, bivariate, and partial correlation</p> <p>12.5.7 Able to understand the concept of opportunity distribution</p> <p>12.5.8 Able to understand parameter estimation and hypothesis testing through parametric statistics</p> <p>12.5.9 Students can understand and use the test for the difference in the average of two populations</p> <p>12.5.10 Able to understand and use analysis of variance and post ANOVA analysis.</p> <p>12.5.11 Able to understand and use hypothesis testing for correlation and regression tests.</p> <p>12.5.12 Able to understand and use nonparametric statistical analysis.</p>
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5. Learning Plan Description

Meetings	Objectives	Topics	Learning Strategy	time	Assessment	References
1	Student understands the goals, directions, and targets of lectures; knows the learning resources used; knows the topics to be studied; knows the tasks that must be done; and know the learning outcomes assessment system.	Course modul of Applied Statistics, a brief review of the overall material.	<ul style="list-style-type: none"> - Reflective learning - Class discussion - Lecture - Question and answer 	150 minutes	Exercises	Course modul of Applied Statistics
2	Students can understand the use of statistics in research and everyday life; understand the definition and types of statistics;	Basic concepts of statistics	<ul style="list-style-type: none"> - <i>Flipped learning</i> - Lecture - Discussion 	150 minutes	Exercises	<ul style="list-style-type: none"> • Furqon (2004)

	understand the scale of measurement; and understand the use of computers in statistics.		<ul style="list-style-type: none"> - Question and answer - Group exercise 			
3	Students can make frequency distributions and graphs manually or by using <i>software</i> on a computer, and understand how to interpret tables and graphs.	Tables and graphs	<ul style="list-style-type: none"> - <i>Flipped learning</i> - Lecture - Discussion - Question and answer - Group exercise 	150 minutes	Exercises	<ul style="list-style-type: none"> • Furqon (2004) • Howell, David C (2010) • Purbayu, Budi S (2005)
4	Students can understand the concept of central symptom size; able to calculate the mode, median, mean, and mean of some samples; able to understand the relationship between mode, median and average; and able to calculate quartiles, deciles, and percentiles.	Central symptom size	<ul style="list-style-type: none"> - <i>Flipped learning</i> - Lecture - Discussion - Question and answer - Group exercise 	150 minutes	Exercises	<ul style="list-style-type: none"> • Furqon (2004) • Howell, David C (2010) • Shavelson, Richard J (1988) • Purbayu, Budi S (2005)
5	Students can conceptually understand dispersion and variation measures and ways to calculate ranges, interquartile ranges, average deviations, variances, standard deviations, and standard scores	Size dispersion and variation	<ul style="list-style-type: none"> - <i>Flipped learning</i> - Lecture - Discussion - Question and answer - Group exercise 	150 minutes	Exercises	<ul style="list-style-type: none"> • Furqon (2004) • Howell, David C (2010) • Purbayu, Budi S (2005)
6	Students can understand the slope of lines and intersections, simple and multivariate linear regression models and	Simple and multivariate linear regression	<ul style="list-style-type: none"> - <i>Flipped learning</i> - Lecture - Discussion 	150 minutes	Exercises	<ul style="list-style-type: none"> • Furqon (2004) • Howell, David C (2010)

	equations, find <i>slope</i> and <i>intercept values</i> , calculate linear regression equations, and calculate the sum of squares.		<ul style="list-style-type: none"> - Question and answer - Group exercise 			<ul style="list-style-type: none"> • Shavelson, Richard J (1988) • Purbayu, Budi S (2005)
7	Students can understand the joint distribution between two or more variables, the correlation coefficient, several ways of calculating correlations, interpreting correlation coefficients, and correlations and causal relationships.	Simple, bivariate, and partial linear correlations	<ul style="list-style-type: none"> - Class discussion - Search for articles from indexed/credited scientific journals according to research topics/variables - instrument adaptation - <i>Mini research</i> - Data processing - Preparation of reports 	150 minutes	Exercises	<ul style="list-style-type: none"> • Furqon (2004) • Howell, David C (2010) • Shavelson, Richard J (1988) • Purbayu, Budi S (2005)
8	MIDTERM EXAM					
9	Students can understand the concept of normal distribution and its characteristics, standard normal distribution, normal curve area, and abnormal distribution.	Opportunity distribution	<ul style="list-style-type: none"> - Group exercise - Discussion of practice questions - Question and answer 	150 minutes	Exercises	<ul style="list-style-type: none"> • Furqon (2004) • Howell, David C (2010) • Shavelson, Richard J (1988) • Purbayu, Budi S (2005)

10	Students can understand the differences between descriptive statistics and inferential statistics, the purpose of inferential statistics, populations, samples and <i>sampling techniques</i> , and sample distribution.	Inferential statistics	<ul style="list-style-type: none"> - <i>Flipped learning</i> - Lecture - Discussion - Question and answer - Group exercise 	150 minutes	Exercises	<ul style="list-style-type: none"> • Furqon (2004) • Howell, David C (2010) • Shavelson, Richard J (1988) • Purbayu, Budi S (2005)
11	Students can understand the estimation of population parameters, hypothesis testing, confidence levels, hypothesis testing, and confidence intervals.	Parameter estimation and hypothesis testing	<ul style="list-style-type: none"> - <i>Flipped learning</i> - Lecture - Discussion - Question and answer - Group exercise 	150 minutes	Exercises	<ul style="list-style-type: none"> • Furqon (2004) • Howell, David C (2010) • Shavelson, Richard J (1988) • Purbayu, Budi S (2005)
12	Students can understand and use the difference test of two population averages both for correlated data and for uncorrelated data.	<i>t-test</i>	<ul style="list-style-type: none"> - <i>Flipped learning</i> - Lecture - Discussion - Question and answer - Group exercise 	150 minutes	Exercises	<ul style="list-style-type: none"> • Furqon (2004) • Howell, David C (2010) • Shavelson, Richard J (1988) • Purbayu, Budi S (2005)
13	Students can understand and use analysis of variance, research design and underlying assumptions, ANAVA calculations, and post ANAVA analysis.	Analysis of variance and post ANOVA	<ul style="list-style-type: none"> - <i>Flipped learning</i> - Lecture - Discussion - Question and answer - Group exercise 	150 minutes	Exercises	<ul style="list-style-type: none"> • Furqon (2004) • Howell, David C (2010) • Shavelson, Richard J (1988) • Purbayu, Budi S (2005)

14	Students can understand and use hypothesis testing for simple, partial, and bivariate linear correlation tests, as well as simple and multivariate linear regression.	Hypothesis testing for correlation and regression tests	<ul style="list-style-type: none"> - Group presentation - Discussion of practice questions - Question and answer 	150 minutes	Exercises	<ul style="list-style-type: none"> • Furqon (2004) • Howell, David C (2010) • Shavelson, Richard J (1988) • Purbayu, Budi S (2005)
15	Students can understand and use nonparametric statistical analysis in research	Nonparametric statistics	<ul style="list-style-type: none"> - Lecture - Discussion of practice questions - Question and answer 			<ul style="list-style-type: none"> • Furqon (2004) • Howell, David C (2010) • Shavelson, Richard J (1988) • Purbayu, Budi S (2005)
16	FINAL EXAMS					

6. References

1. Edward, AL (1984). *An Introduction to Linear Regression and Correlation* (2nd edition) New York: WH Freeman and Company.
2. Furqon. (2004). *Statistika Terapan Untuk Penelitian*. Bandung: Alfabeta.
3. Howell, David C. (2010). *Statistical Methods for Psychology* (7th edition). Belmont: Wadsworth
4. Purbayu, Budi S. and Ashari. (2005). *Statistical Analysis with Microsoft Excel and SPSS*. Yogyakarta: Andi.
5. Shavelson, Richard J. (1988). *Statistical Reasoning for the Behavioral Sciences* (2nd edition). Massachusetts: Allyn and Bacon, Inc.
6. Sigel, Sidney. (1985) *Nonparametric Statistics*. Jakarta: Gramedia Pustaka Utama.

7. Attachment

Appendix 1. *Teaching Materials*.....

Appendix 2. *Assessment Instrument*.....