| | Universitas Negeri Surabaya<br>Faculty of Education,<br>Educational Technology Undergraduate Study Program | Document Code |
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# SEMESTER LEARNING PLAN

| Courses | CODE | Course Family | Credit Weight | | | SEMESTER | Compilation Date |
|---|---|---|---|---|---|---|---|
| EDUCATIONAL STATISTICS | 8620302204 | Compulsory Study Program Subjects | T=2 | P=0 | ECTS=3.18 | 3 | April 20, 2022 |

| AUTHORIZATION | SP Developer | Course Cluster Coordinator | Study Program Coordinator |
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| | Hirnanda Dimas Pradana, M.Pd. | Prof. Dr. Rusijono, M.Pd | Dr. Utari Dewi, S.Sn., M.Pd. |

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| **Learning model** | **Case Studies** |

**Program Learning Outcomes (PLO)**

**PLO study program which is charged to the course**

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| **PLO-5** | Able to master the theoretical concepts of design, development, utilization, management and evaluation in the fields of curriculum and educational technology |
| **PLO-9** | Able to produce creative products in the field of educational technology that are educational and market them to the user community |

**Program Objectives (PO)**

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| **PO - 1** | Students are able to demonstrate a responsible attitude in analyzing basic statistical concepts in education |
| **PO - 2** | Students are able to demonstrate independent performance in applying descriptive data analysis techniques in education to formulate and communicate information from data clearly as Educational Analysts |
| **PO - 3** | Students are able to apply inferential data analysis techniques in education to make decisions based on the results of statistical analysis based on the case study method (case method) |
| **PO - 4** | Students are able to master the concepts, structure and material in educational technology science by interpreting the results of statistical analysis critically to carry out their duties as Educational Analysts |

**PLO-PO Matrix**

| P.O | PLO-5 | PLO-9 |
|---|---|---|
| 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 | | | | | | | | | | | | | | | | |

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| **Short Course Description** | The Educational Statistics course is designed to provide a solid understanding of statistical concepts that are relevant in an educational context. Students will learn how to apply various statistical techniques to the analysis of educational data, make appropriate interpretations, and make decisions based on the results of statistical analysis. |
| **References** | **Main :** |

1. Riduwan. 2014. Pengantar Statistika Sosial. Bandung: Alfabeta
2. Rusijono, dkk. 2020. Handout Statistik Pendidikan . Surabaya: Teknologi Pendidikan FIP Unesa
3. Sanjaya, Wina. 2010. Metode Statistika. Jakarta: Kencana
4. Sudijono, Anas. 2015. Pengantar Statistik Pendidikan. Jakarta: Rajawali Pers.
5. Sudjana, Nana. 2010. Metode Statistik. Bandung: Tarsito
6. Sugiyono. 2010. Statistika Untuk Penelitian. Bandung: Alfabeta
7. Sugiyono. 2011. Metode Penelitian Kuantitatif, Kualitatif dan R&D. Bandung: Alfabeta
8. Yudiaatmaja, Fridayana. 2013. Analisis Regresi dengan Menggunakan Aplikasi Komputer Statistik SPSS. Jakarta: PT Gramedia Pustaka Utama
9. Hari Sugiharto, 2022. Handout Statistik Pendidikan Surabaya: Teknologi Pendidikan FIP Unesa

**Supporters:**

1. Winarsunu, Tulus. 2008. Statistik dalam Penelitian dan Psikologi. Malang: UMM Press.
2. Hadi, S. 2007. Statistik Pendidikan. Yogyakarta: Gajahmada University Press

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| **Supporting lecturer** | Prof. Dr. Rusijono, M.Pd.<br>Dr. Hari Sugiharto Setyaedhi, M.Si.<br>Hirnanda Dimas Pradana, 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 | Students are able to analyze the role of statistics in improving understanding of educational data | 1. Students' ability to explain the role of statistics in improving understanding of educational data<br>2. Students' ability to actively participate in discussions and express their views<br>3. Students' ability to apply statistical concepts to the educational case studies provided. | **Criteria:**<br>1. Students analyze statistical concepts well in an educational context.<br>2. Students actively participate in class discussions and contribute relevant ideas.<br>3. Students can apply statistical concepts to analyze educational case studies well.<br><br>**Form of Assessment** :<br>Participatory Activities, Tests | 1. Students discuss the use of statistics in education and why understanding statistics is important in this context.<br>2. The lecturer briefly explains the basic concepts of statistics in education and its objectives in improving understanding of educational data.<br>3. Students are given an educational case study involving the use of statistics. They were asked to think about how statistics could be used to understand the data in the case study.<br>4. Students participate in small group discussions to discuss case studies and ways statistics can be applied to solve problems in educational contexts.<br>5. Each group presents the results of their discussion to the whole class.<br>2 X 50 | -<br>- | **Material:** mastering the basic concepts of statistics<br>**Reader:** *Riduwan. 2014. Introduction to Social Statistics. Bandung: Alphabeta* | 3% |

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| **2** | Students are able to identify types of data that are relevant in an educational context | 1. Students' ability to identify types of data that are relevant in an educational context.<br>2. Students' ability to identify types of data that are relevant in an educational context.<br>3. Student's ability to complete individual exercises. | **Criteria:**<br>1. Students can identify the type of data correctly in the examples given<br>2. Students participate actively in class discussions and make relevant contributions<br>3. Students can complete individual exercises correctly<br><br>**Form of Assessment** :<br>Participatory Activities, Tests | 1. The lecturer explains the types of data that are often used in educational statistics. This includes nominal data, ordinal data, interval data, and ratio data.<br>2. Students are given several examples of data relevant to education, and they are asked to identify the type of data used in each example.<br>3. Students participate in a class discussion about the importance of understanding data types in statistical analysis in education. They can share examples from their own experiences.<br>4. Students are given individual exercises to identify data types in several additional examples.<br>5. Several students are selected at random to present the results of their individual exercises to the class.<br>2 X 50 | -<br>- | **Material:**<br>Validity and reliability of research instruments<br>**Library:**<br>*Sanjaya, Vienna. 2010. Statistical Methods. Jakarta: Kencana* | 3% |

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| **3** | Students are able to design educational surveys and design effective questionnaires | 1. Students' ability to design effective educational surveys.<br>2. Students' ability to design questionnaires that suit the survey objectives.<br>3. Active participation in class discussions<br>4. Quality of presentation of group survey design | **Criteria:**<br>1. Students can design surveys that are effective and relevant to the given topic<br>2. Students can design questionnaires that are appropriate and easy for respondents to understand<br>3. Students participate actively in class discussions and make relevant contributions<br>4. Groups can present survey designs clearly and convincingly<br><br>**Form of Assessment** :<br>Participatory Activities | 1. The lecturer explains survey design in educational research, including the steps that need to be taken in designing an effective survey.<br>2. Students are given a case study involving the use of surveys in an educational context. They were asked to identify important elements in designing an educational survey.<br>3. Students participate in a class discussion about the importance of good survey design in educational research. They also discuss the use of questionnaires as a data collection tool.<br>4. Students work in groups to design an effective educational survey based on a given topic.<br>5. Each group presents the results of their survey design to the entire class and explains the reasoning behind the design decisions they made.<br>2 X 50 | -<br>- | **Material:**<br>Research Data<br>**Literature:**<br>*Sudijono, Anas. 2015. Introduction to Education Statistics. Jakarta: Rajawali Press.* | 3% |
| **4** | Mastering the concept of Data Presentation | 1. Students can present research data in the form of a frequency distribution table<br>2. Students can present research data in the form of a histogram<br>3. Students can present research data in polygon form<br>4. Students can present research data in piechart form | **Criteria:**<br>A = 86 - 100 (3.8 - 4.00) A- = 80 - 85 (3.7 - 3.79) B = 75 - 79 (3.6 - 3.69) B = 70 - 74 (3 .5 - 3.59) B- = 65 - 69 (3.4 - 3.49) C = 50 – 64 (3.00 – 3.39) D = 25 – 50 (2.00 – 2.99) E = < 25 (0 – 1.99)<br><br>**Form of Assessment** :<br>Test | Lectures, Questions and Answers, Discussions<br>2 X 50 | -<br>- | **Material:**<br>Presentation of Data<br>**Bibliography:**<br>*Sugiyono. 2010. Statistics for Research. Bandung: Alphabeta* | 4% |

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| **5** | Mastering the Concept of Central Tendency | 1. Students can calculate the mean<br>2. Students can calculate the mode<br>3. Students can calculate the median | **Criteria:**<br>A = 86 - 100 (3.8 - 4.00) A- = 80 - 85 (3.7 - 3.79) B = 75 - 79 (3.6 - 3.69) B = 70 - 74 (3 .5 - 3.59) B- = 65 - 69 (3.4 - 3.49) C = 50 – 64 (3.00 – 3.39) D = 25 – 50 (2.00 – 2.99) E = < 25 (0 – 1.99)<br><br>**Form of Assessment** :<br>Test | Lectures, Questions and Answers, Discussions<br>2 X 50 | -<br>- | **Material:** Central Tendency<br>**Bibliography:** *Sudjana, Nana. 2010. Statistical Methods. Bandung: Tarsito* | 4% |
| **6** | Mastering the concept of Variability | 1. Students can calculate Range<br>2. Students can calculate the standard deviation<br>3. Students can calculate Variance | **Criteria:**<br>A = 86 - 100 (3.8 - 4.00) A- = 80 - 85 (3.7 - 3.79) B = 75 - 79 (3.6 - 3.69) B = 70 - 74 (3 .5 - 3.59) B- = 65 - 69 (3.4 - 3.49) C = 50 – 64 (3.00 – 3.39) D = 25 – 50 (2.00 – 2.99) E = < 25 (0 – 1.99)<br><br>**Form of Assessment** :<br>Test | Lectures, Questions and Answers, Discussions<br>2 X 50 | -<br>- | **Material:** Variability concept<br>**Reader:** *Sugiyono. 2011. Quantitative, Qualitative and R&D Research Methods. Bandung: Alphabeta* | 4% |
| **7** | Mastering the concept of techniques for identifying normality of data distribution | 1. Students can identify the normality of data distribution using the Skewness technique<br>2. Students can identify the normality of data distribution using the Chi-Squared technique | **Criteria:**<br>A = 86 - 100 (3.8 - 4.00) A- = 80 - 85 (3.7 - 3.79) B = 75 - 79 (3.6 - 3.69) B = 70 - 74 (3 .5 - 3.59) B- = 65 - 69 (3.4 - 3.49) C = 50 – 64 (3.00 – 3.39) D = 25 – 50 (2.00 – 2.99) E = < 25 (0 – 1.99)<br><br>**Form of Assessment** :<br>Test | Lectures, Questions and Answers, Discussions<br>2 X 50 | -<br>- | **Material:** Techniques for identifying normality of data distribution<br>**Reference:** *Rusijono, et al. 2020. Education Statistics Handout. Surabaya: Unesa FIP Educational Technology* | 4% |
| **8** | UTS | Mastering the concept of techniques for identifying normality of data distribution | **Criteria:**<br>A = 86 - 100 (3.8 - 4.00) A- = 80 - 85 (3.7 - 3.79) B = 75 - 79 (3.6 - 3.69) B = 70 - 74 (3 .5 - 3.59) B- = 65 - 69 (3.4 - 3.49) C = 50 – 64 (3.00 – 3.39) D = 25 – 50 (2.00 – 2.99) E = < 25 (0 – 1.99)<br><br>**Form of Assessment** :<br>Participatory Activities | Case Study<br>2 X 50 | -<br>- | **Material:** Techniques for identifying normality of data distribution<br>**Reference:** *Rusijono, et al. 2020. Education Statistics Handout. Surabaya: Unesa FIP Educational Technology*<br><br>**Material:** Mastering the concept of non-parametric data analysis<br>**Reader:** *Sugiharto Day, 2022. Surabaya Education Statistics Handout: Unesa FIP Educational Technology* | 25% |

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| **9** | Mastering the concept of techniques for identifying Normal Curves in data distribution | Students can identify the normal curve of data distribution using the Skewness technique. Students can identify the normality of data distribution using the Chi-Squared technique | **Criteria:**<br>A = 86 - 100 (3.8 - 4.00) A- = 80 - 85 (3.7 - 3.79) B = 75 - 79 (3.6 - 3.69) B = 70 - 74 (3 .5 - 3.59) B- = 65 - 69 (3.4 - 3.49) C = 50 – 64 (3.00 – 3.39) D = 25 – 50 (2.00 – 2.99) E = < 25 (0 – 1.99)<br><br>**Form of Assessment** :<br>Participatory Activities | 1. Lecture 2. Question and Answer 3. Discussion<br>2 X 50 | -<br>- | **Material:**<br>Techniques for identifying Normal Curves in data distribution<br>**Reference:**<br>*Hadi, S. 2007. Education Statistics. Yogyakarta: Gajahmada University Press* | 4% |
| **10** | Mastering the concepts of population and sample | 1. Students are able to explain the meaning of population<br>2. Students are able to explain the meaning of the sample<br>3. Students are able to explain the advantages of research using samples<br>4. Students are able to explain various sampling techniques<br>5. Students are able to determine the sample size using the Krejcie Table and Harry King's Nomogram | **Criteria:**<br>A = 86 - 100 (3.8 - 4.00) A- = 80 - 85 (3.7 - 3.79) B = 75 - 79 (3.6 - 3.69) B = 70 - 74 (3 .5 - 3.59) B- = 65 - 69 (3.4 - 3.49) C = 50 – 64 (3.00 – 3.39) D = 25 – 50 (2.00 – 2.99) E = < 25 (0 – 1.99)<br><br>**Form of Assessment** :<br>Test | 1. Lecture 2. Question and Answer 3. Discussion<br>2 X 50 | -<br>- | **Material:**<br>population and sample concepts<br>**References:**<br>*Winarsunu, Tulus. 2008. Statistics in Research and Psychology. Malang: UMM Press.* | 4% |
| **11** | Mastering the concept of validity and reliability of research instruments | 1. Students are able to calculate the empirical validity of measuring instruments<br>2. Students are able to calculate the reliability of measuring instruments | **Criteria:**<br>A = 86 - 100 (3.8 - 4.00) A- = 80 - 85 (3.7 - 3.79) B = 75 - 79 (3.6 - 3.69) B = 70 - 74 (3 .5 - 3.59) B- = 65 - 69 (3.4 - 3.49) C = 50 – 64 (3.00 – 3.39) D = 25 – 50 (2.00 – 2.99) E = < 25 (0 – 1.99)<br><br>**Form of Assessment** :<br>Test | 1. Lecture 2. Question and Answer 3. Discussion<br>2 X 50 | -<br>- | **Material:**<br>Validity and reliability of research instruments<br>**References:**<br>*Winarsunu, Tulus. 2008. Statistics in Research and Psychology. Malang: UMM Press.* | 4% |
| **12** | Mastering the concept of Hypothesis | 1. Students can prepare a null hypothesis and a working hypothesis<br>2. Students can identify various hypothetical errors<br>3. Students can find out various ways of testing hypotheses | **Criteria:**<br>1. Activeness and mastery of material<br>2. A = 86 - 100 (3.8 - 4.00) A- = 80 - 85 (3.7 - 3.79) B = 75 - 79 (3.6 - 3.69) B = 70 - 74 (3 .5 - 3.59) B- = 65 - 69 (3.4 - 3.49) C = 50 – 64 (3.00 – 3.39) D = 25 – 50 (2.00 – 2.99) E = < 25 (0 – 1.99)<br><br>**Form of Assessment** :<br>Test | 1. Lecture 2. Question and Answer 3. Discussion<br>2 X 50 | -<br>- | **Material:**<br>Hypothesis concept<br>**Bibliography:**<br>*Yudiaatmaja, Fridayana. 2013. Regression Analysis Using the SPSS Statistical Computer Application. Jakarta: PT Gramedia Pustaka Utama* | 3% |

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| **13** | Master the concept of Product-Moment Correlation and Spearman's Ranking | Students can calculate Product-Moment correlation and Spearman's ladder | **Criteria:**<br>A = 86 - 100 (3.8 - 4.00) A- = 80 - 85 (3.7 - 3.79) B = 75 - 79 (3.6 - 3.69) B = 70 - 74 (3 .5 - 3.59) B- = 65 - 69 (3.4 - 3.49) C = 50 – 64 (3.00 – 3.39) D = 25 – 50 (2.00 – 2.99) E = < 25 (0 – 1.99)<br><br>**Form of Assessment** :<br>Practice / Performance | 1. Lecture 2. Question and Answer 3. Discussion<br>2 X 50 | -<br>- | **Material:** Product-Moment Correlation and Spearman's Ranking<br>**Reference:** *Sugiyono. 2011. Quantitative, Qualitative and R&D Research Methods. Bandung: Alphabeta* | 4% |
| **14** | Master the concept of analysis of variance using the t test and F test | Students can analyze data using a variance analysis approach | **Criteria:**<br>A = 86 - 100 (3.8 - 4.00) A- = 80 - 85 (3.7 - 3.79) B = 75 - 79 (3.6 - 3.69) B = 70 - 74 (3 .5 - 3.59) B- = 65 - 69 (3.4 - 3.49) C = 50 – 64 (3.00 – 3.39) D = 25 – 50 (2.00 – 2.99) E = < 25 (0 – 1.99)<br><br>**Form of Assessment** :<br>Practice / Performance | 1. Lecture 2. Question and Answer 3. Discussion<br>2 X 50 | -<br>- | **Material:** Variance analysis using t test and F test<br>**Reference:** *Hari Sugiharto, 2022. Surabaya Education Statistics Handout: FIP Unesa Educational Technology* | 3% |
| **15** | Master the concept of nonparametric data analysis | Students can analyze nonparametric data using the Mc Nemar Test and Sign Test techniques | **Criteria:**<br>A = 86 - 100 (3.8 - 4.00) A- = 80 - 85 (3.7 - 3.79) B = 75 - 79 (3.6 - 3.69) B = 70 - 74 (3 .5 - 3.59) B- = 65 - 69 (3.4 - 3.49) C = 50 – 64 (3.00 – 3.39) D = 25 – 50 (2.00 – 2.99) E = < 25 (0 – 1.99)<br><br>**Form of Assessment** :<br>Practice / Performance | 1. Lecture 2. Question and Answer 3. Discussion<br>2 X 50 | -<br>- | **Material:** Mastering the concept of non-parametric data analysis<br>**References:** *Rusijono, et al. 2020. Education Statistics Handout. Surabaya: Unesa FIP Educational Technology* | 3% |
| **16** | UAS | Master the concept of nonparametric data analysis | **Criteria:**<br>A = 86 - 100 (3.8 - 4.00) A- = 80 - 85 (3.7 - 3.79) B = 75 - 79 (3.6 - 3.69) B = 70 - 74 (3 .5 - 3.59) B- = 65 - 69 (3.4 - 3.49) C = 50 – 64 (3.00 – 3.39) D = 25 – 50 (2.00 – 2.99) E = < 25 (0 – 1.99)<br><br>**Form of Assessment** :<br>Participatory Activities | Case Study<br>2 X 50 | -<br>- | **Material:** Mastering the concept of non-parametric data analysis<br>**References:** *Rusijono, et al. 2020. Education Statistics Handout. Surabaya: Unesa FIP Educational Technology*<br><br>**Material:** Mastering the concept of non-parametric data analysis<br>**Reader:** *Sugiharto Day, 2022. Surabaya Education Statistics Handout: Unesa FIP Educational Technology* | 25% |

**Evaluation Percentage Recap: Case Study**

| No | Evaluation | Percentage |
|---|---|---|
| 1. | Participatory Activities | 60% |
| 2. | Practice / Performance | 10% |
| 3. | Test | 30% |
| | | 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.