



MINISTRY OF EDUCATION AND CULTURE
UNIVERSITAS NEGERI SURABAYA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF NATURAL SCIENCES

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Undergraduate Programme in Science Education

Module Handbook

Module Name:	<i>Statistik Pendidikan</i> (Statistics of Education)
Module Level:	Bachelor degree/Undergraduate Programme
Course Code:	8420103168
Abbreviation, if applicable:	Statpen
Courses included in the module, if applicable:	Not applicable
Semester/term	V/third year (junior)
Module coordinator(s):	Dr. Elok Sudiby, M.Pd.
Lecturer(s):	Dr. Elok Sudiby, M.Pd. Dra. Martini, M.Pd. Muhamad Arif Mahdiannur, S.Pd., M.Pd.
Language:	<i>Bahasa Indonesia</i> (Indonesian Language)
Classification within the curriculum:	Compulsory / Elective
Teaching format/class hours per week during the semester:	3 contact hours of lectures (Indonesia credit semester or <i>sks</i> *)
Workload:	3 x 50 minutes lectures, 3 x 60 minutes structured activity, 3 x 60 minutes individual activity, 14 weeks per semester, 119 total hours per semester ~ 4.77 ECTS**
Credit point:	3 <i>sks</i> (4.77 ECTS)
Requirements:	-
Learning goals/competencies:	<p>Course Learning Outcomes (CLOs): After taking this course, students will be able to:</p> <ol style="list-style-type: none"> 1. Explain dan apply descriptive statistics concepts and formulation to analyse data from science education research; 2. Explain dan apply inferential statistics basic concept and formulation to analyse and evaluate based-on data obtained from science education research; 3. Explain and apply the formulation to evaluate the effectiveness of an intervention in science education research based-on pre-test and post-test results (gain score analysis, normalized gain, normalized change, loss score analysis, normalized loss, Cohen's d, and weighted linear regression index); and 4. Explain and apply the basic concept and formulation of minimal completeness criteria in science education research practices in Indonesia.
Content:	Descriptive statistics (maximum, minimum, mean, mode, median, standard deviation, and standard error); inferential statistics: parametric and non-parametric (normal distribution, hypothesis testing, regression, ANOVA, and multivariate statistics); the formulation to evaluate the effectiveness of an intervention in science

	education research based-on pre-test and post-test results (gain score analysis, normalized gain, normalized change, loss score analysis, normalized loss, Cohen's d, and weighted linear regression index); and science education research practices in Indonesia.												
Attribute Soft skill:	Discipline, collaboration, responsibility, and argumentation in the natural classroom setting												
Study/exam achievements:	Students are considered to be competent and pass if at least get 40% of the maximum final grade. The final grade (NA) is calculated based on the following weight: <table border="1" data-bbox="683 589 1370 813"> <thead> <tr> <th>Assessment Components</th> <th>Percentage Contribution</th> </tr> </thead> <tbody> <tr> <td>Participation</td> <td>20%</td> </tr> <tr> <td>Assignment</td> <td>30%</td> </tr> <tr> <td>Mid-semester test</td> <td>20%</td> </tr> <tr> <td>Final semester test</td> <td>30%</td> </tr> <tr> <td>Total</td> <td>100%</td> </tr> </tbody> </table>	Assessment Components	Percentage Contribution	Participation	20%	Assignment	30%	Mid-semester test	20%	Final semester test	30%	Total	100%
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Learning Methods:	Constructivist, student-centred approach, lecturing, discussion, and presentation (structured activities)												
Form of Media:	LCD, PowerPoint slides, and worksheets												
Literature (primary references):	<ol style="list-style-type: none"> 1. Quirk, T.J., 2016. <i>Excel 2016 for educational and psychological statistics: A guide to solving practical problem</i>. Springer. 2. Abbott, M.E., 2011. <i>Understanding educational statistics using Microsoft Excel® and SPSS®</i>. Wiley. 3. Hake, R.R., 1998. Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics course. <i>American Journal of Physics</i>, 66 (1). 4. Marx, J.D. and Cumming, K., 2007. Normalized change. <i>American Journal of Physics</i>, 75, 87-91. 5. Dellwo, D.R., 2010. Course assessment using multi-stage pre/post testing and the component of normalized change. <i>Journal of Scholarship of Teaching & Learning</i>, 10. 6. Direnga, J., Timmermann, D., Brose, A., and Kautz, C., 2014. A statistical method for assessing teaching effectiveness based on non-identical pre- and post-tests. <i>SEFI 2014 Proceedings</i>. 												
Notes:	<p>*1 sks in learning process = three contact hours that consist of: (a) scheduled instruction in a classroom or laboratory (50 minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes) according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 50 Year 2018.</p> <p>**1 sks = 1,59 ECTS</p>												