

M095	Statistical practice	L	P	S	ECTS 6
		1	1	2	

Course objectives. To introduce students to problems of statistical analysis, data visualization techniques and descriptive statistics. To develop skills for the application of basic statistical models. Special focus will be on the applications of the models.

Prerequisites. Probability.

Course content.

1. Descriptive statistics. Methods for categorical and numerical data.
2. Statistical inference based on a single sample (estimation of mean, variance and cumulative distribution function, confidence interval estimation, hypothesis testing for mean, variance and distributions).
3. Statistical inference based on two samples (testing differences between distributions, independence tests based on contingency tables, measures of correlation and association, simple linear regression).
4. Statistical inference based on more than two samples (ANOVA, multivariate regression).

LEARNING OUTCOMES

No.	LEARNING OUTCOMES
1.	Understand statistical models used for statistical inference.
2.	Apply statistical methods and properties of statistics used for statistical inference.
3.	Analyse real data by using different models and methods.
4.	Use computers and appropriate software for data analysis.
5.	Critically study and apply new literature for statistical inference.
6.	Understand benefits and limitations of statistical data analysis in applications.
7.	Explore data with the goal of drawing conclusions from data.
8.	Present results of a statistical analysis to laity and professional.

RELATING THE LEARNING OUTCOMES, ORGANIZATION OF THE EDUCATIONAL PROCESS AND ASSESSMENT OF THE LEARNING OUTCOMES

TEACHING ACTIVITY	ECTS	LEARNING OUTCOME **	STUDENT ACTIVITY*	EVALUATION METHOD	POINTS	
					min	max
Attending lectures and exercises	1	1-8	Lecture attendance, discussion, team work and independent work on given tasks	Attendance lists, tracking activities	0	4
Homework	1	1-8	Analysis of data independently	Checking the appropriateness of the statistical methods and models	0	4
Written exam (Mid-terms)	2	1-8	Preparing for written exam	Evaluation	25	46
Final exam	2	1-8	Revision	Oral exam	25	46

TOTAL	6				50	100
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Teaching methods and student assessment. Attending lectures, exercises and seminars is required. Statistical software is used for exercises (e.g. R). After the completion of lectures, exercises, seminars and a finished seminar work, students take an exam in a written and oral form. Acceptable results achieved in mid-term exams throughout the semester replace the written part of the exam. Students can improve their final grade by actively solving homework problems.

Can the course be taught in English: Yes

Basic literature:

1. Ž. Pauše, Uvod u matematičku statistiku, Školska knjiga, Zagreb, 1993.
2. M. Benšić, N. Šuvak, Primijenjena statistika, Sveučilište J.J. Strossmayera, Odjel za matematiku, Osijek, 2013.

Recommended literature:

1. J. Pitman, Probability, Springer, 1993.
2. L.E. Bain, M. Engelhardt, Introduction to Probability and Mathematical statistics, Brooks/Cole, Cengage Learning, 1992.
3. N. Elezović - Statistika i procesi, Element, Zagreb, 2007.
4. F. Daly, D.J. Hand, M.C. Jones, A.D. Lunn, K.J. McConway, Elements of Statistics, Addison-Wesley, Wokingham, England, 1995.
5. G. McPherson, Applying and Interpreting Statistics, A comprehensive Guide, Springer, 2001.
6. G. M. Clarke, D. Cooke, A Basic Course in Statistics, Arnold, London, 1992.