Program	Level	Second cycle		
	Name of the program	Mathematics Education		

COURSE				
Course title	**Teaching Research Methods**			
Course code	Semester	Course status	ECTS	Contact hours (L+AE+LE)
EDU 511	III	Mandatory course	5	2+0+1
Lecturer				
Course Goals	The goal of this course is to develop basic competencies for planning, implementation and evaluation of educational research.			
Learning Outcomes	- able to describe the most important determinants of qualitative, quantitative and combined paradigms in educational research. - able to describe ways of identifying research problems and effective literature research. - understand the basic concepts of descriptive and inferential statistics, and perform elementary statistical calculations. - identify statistical tests that are adequate for examining certain research hypotheses. - evaluate the characteristics of research instruments used in the research of mathematics and informatics in education. - describe various quantitative and qualitative methods used in research education in mathematics and informatics, and consider the potential of various research designs.			

COURSE CONTENT

- A research problem. Identification and analysis of relevant literature. Hypothesis in quantitative research
- Experiment planning and design.
- Parametric statistical tests.
- Variance hypothesis testing.
- Comparison of parameters of basic sets.
- Analysis of variance (ANOVA). Kruskal-Wallis and Friedman test.
- Non-parametric tests. Sign test. Rank test. Mann-Whitney-Wilcoxon test. Runs test.
- $\chi 2$-test. Kolmogorov-Smirnov test.
- Regression analysis and models. Multiple linear regression model.
- Time series.
- Trend model. Statistical software SPSS.
- Analysis and presentation of the results of qualitative research - examples from an educational research field in mathematics and computer science.

LITERATURE

[1] Mužić, V. (2004). Uvod u metodologiju istraživanja odgoja i obrazovanja. Zagreb: Educa.
[2] Kelly, A. E., & Lesh, R. A. (Eds.). (2012). Handbook of research design in mathematics and science education. Routledge.
[3] Ary, D., Jacobs, L. C., Irvine, C. K. S., & Walker, D. (2018). Introduction to research in education. Boston: Cengage Learning.
[4] Šošić, I.: Primijenjena statistika, Školska knjiga, Zagreb, 2004
[5] H.T.Nguyen, G.S.Rogers, Fundamentals of Mathematical Statistics, Springer Verlag, 1989.
[6] A.Sen,M.Srivastava, Regression analysis, Springer Verlag, 1990.
[7] Ž.Pauše, Uvod u matematičku statistiku, Školskaknjiga, Zagreb, 1993.

STUDENT WORKLOAD (hours in a semester)

Lectures	30	Exercises	15	Individual work	80	T o t a l	125

GRADING			REMARKS	
Criterion	Maximum points	Minimum points		

Midterm exams	60	30
Final exam	40	25
T o t a l	100	55