Program	Level	First cycle
	Name of the program	Mathematics Education

COURSE

Course title	**Statistical methods**			
Course code	Semester	Course status	ECTS	Contact hours (L+AE+LE)
AMAT 601	I	Elective course	7	2+0+0
Lecturer				
Course Goals	The course aims to teach students more about advanced statistical methods they can use in future research.			

COURSE CONTENT

Basic conncept., Bayes theorem, sensitivity. Specificity Borel-Cantelli theorem, Random variables, distribution functions, density Examples (Bernoulli, binomial, etc.), multidimensional normal distribution Expectation, variance, independence, correlation Moment generatrix functions, characteristic functions Convergence of random variables (almost certain, in probability, in p -norms, in the distribution), Weak and strong law of large numbers, Theorem of central limes Empirical distribution, Quantiles Regression, Empirical distribution, Quantiles Hypotheses, Test power, Maximum likelihood test, t-test, F-test, Non-parametric tests.

LITERATURE

[1] Fedorov, V. V., Theory of Optimal Experiments, Academic Press, New York 1972.
[2] Lin'kov, Y. N., Lectures in Mathematical Statistics, Parts 1 and 2, Translations of Mathematical Monographs Vol. 229, American Mathematical Society, Providence, R.I., 2005.
[3] Loève, M., Probability Theory I and II, 4th edition, Graduate Texts in Mathematics Vol.45 – 46, Springer-Verlag, New York 1977, 1978.
[4] Pázman, A., Foundations of Optimum Experimental Design, Mathematics and its Applications (East European Series), Reidel Publ. Comp., Dordrecht 1986..
[5] Resnick, S. F., Adventures in Stochastic processes, Birkhäuser, Basel 1992.
[6] Ross, S., Stochastic Processes, John Wiley, New York 1996.
[7] Schuss, Z., Theory and Applications of Stochastic Processes, an Analytical Approach, Applied Mathematical Sciences Vol. 170, Springer-Verlag 2010.
[8] Seber, G.A.F., and Wild, G. A., Nonlinear Regression, John Wiley & Sons, New York 1989.
[9] Shiryaev, A. N., Probability, 2nd ed., Graduate Texts in Mathematics Vol. 95, Springer-Verlag, New York 1996.

STUDENT WORKLOAD (hours in semester)

Lectures	30	Tutorial	0	Individual work	70	T o t a l	100

GRADING			REMARKS	
Criterion	Maximum points	Minimum points		
Test 1	25	15		
Test 2	25	10		
Project	-	-		
Laboratory assignments	-	-		
Final exam	50	30		
T o t a l	100	55		