Description of an Individual Course Unit

Study program	All, except Chemistry		
Module			
Type and level of studies	PhD studies		
Course title	Mathematical processing of experimental data		
Professor (for lectures)	Nada Miličić		
Professor/assistant (for practice)			
Professor/assistant (for LAB)			
Number of ECTS	5	**Type of the course (mandatory/elective)**	elective
Prerequisit	Credits from courses equivalent to Mathematics I and Mathematics II		
Objective of the course	The goal of this course is to teach students basic concepts and theoroms from the following areas: Probability Theory, Mathematical Statistics and Methods of Deriving Empirical Formulae.		
Learning outcomes of the course	This course provides knowledge that can be applied to other natural science and technical-technological courses taught in the department. The course is intended to enable students to successfully apply the acquired mathematical knowledge in solving techical and technological problems, as well as in mathematical processing of experimental data. ;		
Course Contents			
Theoretical contents	Probability – definition, characteristics, total probability theorem, Bayes' theorem, random variable, the most important discrete and continuous probability distributions, multidimensional random variables, the most important multidimensional distributions, numerical characteristics of distributions, numerical characteristics of multidimensional distributions, law of large numbers and central limit theorem of the calculus of probabilities; Statistics – random sample, examples of the most important statistics, tabular and graphical representation of statistical data, point estimation of distribution parameters, methods of obtaining point estimations , confidence intervals for parameters of normal distribution , parametric hypothesis testing, non-parametric tests, regression (linear, non-linear, multidimensional). Solving examples and tasks that illustrate various concepts presented in the theoretical contens as well as their mutual relations. Moreover, the practical examples give an opportunity to exercise applying acquired theoretical knowledge to problems of natural and technical-technological sciences.		
Practical part (practices, LAB, study research work)			
Literature			
1	Tom M. Apostol, Calculus, volume II, Blaisdell Publishing Company, 1964		
2	Bertsekas, Tsitsiklis, Introduction to Probability , MIT lecture notes, 2000		
3	Hogg, Craig, Introduction to Mathematical Statistics, Macmillan, 1978		
4			
5			

Lessons per week

Lectures	Practices	LAB	Study research work	Other activities
2				

Teaching Methods	Lectures

Grading methods (max. number of points is 100)

Pre-exam assesments	points	Final examination	points
activity during lectures		written exam	60
practical assesments		oral exam	
mid-term exams	40		
seminars			