Course title	Mathematical Statistics
Volume *(number of credit points)*	4
Volume *(number of contact hours)*	64
Number of lectures	32
Number of seminars, practical and laboratory works	32
Course level: 1-4 – bachelor; 5-6 – master; 7 – doctoral; T – further education	3
Prerequisites	Probability Theory
Science field, science sub-field	Mathematics
Equivalent course	-

COURSE DESIGNER(S)

Name	*Surname*	*Personal ID No*
Victorija	Carkova	200540-10107

COURSE ABSTRACT

The aim of the Mathematical Statistics course is to provide grounding for mathematical speciality students in the aspects of statistics and in particular statistical modelling that are of relevance to practical work; to explain the main concepts and methods of the mathematical statistics for parameter estimation, statistical inference, prediction, and statistical hypotheses testing; to acquaint with methods and algorithms of regression analysis and analysis of variances; to teach students to use statistical computer technology software and to discuss the obtained results.

RESULTS

On completion of the course the students should be able to perform the statistical data analysis, to formulate and to test the statistical hypotheses, to make good use the computer mathematical technology for parameter estimation and statistical inference.

REQUIREMENTS FOR AWARDING CREDIT POINTS

Laboratory work (10%). Practical work (30%). Resulting test –exam (60%).

COURSE PLAN

No.	*Topic*	*Planned amount in hours*
1.	**Fundamental Elements of Statistics**	**8**
2.	**Point estimation**	**4**
3.	**Methods of point estimation**	**4**
4.	**Statistics based on the normal distribution**	**4**
5.	**Confidence intervals for parameters of the distribution of random variable**	**8**
6.	**The main procedure of hypothesis testing**	**4**
7.	**Parameterical hypotheses testing**	**4**

8.	**Nonparametric statistics**	**4**
9.	**Introduction to correlation and regression analysis**	**4**
10.	**Problems of correlation analysis**	**4**
11.	**One factor linear regression**	**4**
12.	**Estimation and forecasting with regression line**	**4**
13.	**Multiple regression models**	**4**
14.	**Nonlinear regression**	**4**

LITERATURE

Basic textbooks

1.	**V.Carkova. Mathematical statistics. R: LU, 1979**
2.	**O.Krastiņs, Probability theory and mathematical statistics. R: Zvaigzne, 1978.**
3.	**Mathematical tables. R:LU, 1977**
4.	**R.Iman, W.Conover. A Modern Approach to Statistics. NY: Wiley,1983**

Further reading

1.	**J.McClave, T. Sincich. Statistics. NJ: Pearson Int.Edition, 3-th edition, 2003**
2.	**Ya-lun Chou Ststistical Analysis. NY: Holt, Rinehart and Winston Inc., 1969.**

Periodicals, internet resources and other sources

1.	**http://www.itl.nist.gov/div898/handbook/index.htm**
2.	**http://www.minitab.com/training/courses**
3.	**http://www.maths.murdoch.edu.au/units/mas284/resources/resources.html#UnitNotes**
4.	**http://www.pp.rhul.ac.uk/~cowan/stat_course_03.html**
5.	**http://www.statsoft.com/**