DESCRIPTION OF THE COURSE

Name of the course: **Mathematics IV**	Code: BIE43	Semester: 5
Type of teaching: Lectures and tutorials	Lessons per week: L –2 hours; T –1.5 hours	Number of credits: 4

COURSE STATUS IN THE CURRICULUM: Compulsory for the students specialty Industrial Engineering BEng programme of the English Language Faculty of Engineering.

AIMS AND OBJECTIVES OF THE COURSE: To provide the technique of modelling and solving problems concerning Statistics and Optimization.

DESCRIPTION OF THE COURSE: The programme is organised in two parts. The first one is a short course on Probability and Statistics. One introduces the basic notion for events, the basic formulas in Probability theory, random variables, probability distributions; chi-square test, estimation, hypotheses testing. The second part is devoted to nonlinear optimization problems: unconstrained and constrained optimization problems and corresponding numerical methods, special cases of optimization problems. Software packages like MATLAB, LINDO, LINGO and GINO are used.

PREREQUISITES: Mathematics.

TEACHING METHODS: Lectures, Seminars, Case studies.

METHOD OF ASSESSMENT: One three-hours assessment at the end of semester (70%) plus One test assessment (15%) plus individual home work (15 %).

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Papoulis A., Random Variables and Stochastic Processes. Mc Graw-Hill Co., N.Y., 1984;
2. Crawshaw J., J. Chambers, A Concise Course in A-level Statistics. Stanley Thorues Ltd, 1990;
3. Shishkov B.B., Statistical Methods in Signal Transmission. Technical University of Sofia, 1992;
4. Arora J.S., Introduction to Optimum Design. McGraw-Hill Co., Singapore, 1989;
5. Fletcher R., Practical Methods of Optimization. Second Edition, John Wiley and Sons, 1991;
6. Taha H.A., Operations Research – an Introduction. Fourth Edition, Macmillan Publishing Company, 1989.