DESCRIPTION OF THE COURSE

Name of the course: **Materials and Technologies Selection**	Code: BIE68-3	Semester: 8
Type of teaching: Lectures and laboratory work	Lessons per week: L –2 hours; LW –1.5 hours	Number of credits: 4

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

AIMS AND OBJECTIVES OF THE COURSE: To complete the knowledge of engineering module Materials Science - Materials Technologies- Material and Technology Selection. To give the students procedures for material and process selection in mechanical design by systematic scheme of isolating the optimal subset of materials and technologies among the full enormous ranges.

DESCRIPTION OF THE COURSE: The main topics concern: Design as a structural-functional process. New interpretation of engineering properties. Materials Selection Charts. Graphical Representation of the Functional Connections between Materials. Properties and Criteria for Complex Evaluation in Selection Charts; Functional Relationships between Materials, Technologies, Structures and Properties Materials properties profiles diagrams. Procedure of Materials and Technology Selection. Optimization of Relationship between Materials - Technologies - Structures - Properties as a key of Mechanical Design.

PREREQUISITES: Materials Sciences, Materials Technologies, Mechanics.

TEACHING METHODS: Lectures, using slides, case studies, laboratory and course work from laboratory manual, work in teams, protocols and course work description preparation and defence.

METHOD OF ASSESSMENT: Exam in the end of the term.

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. M.F.Ashby, Materials Selection in Mechanical Design, Butterworth Heinemann Ltd, 1995;
2. J.A.Charles, FAA Crane, Selection and Use of Engineering Materials, Butterworth & Co.Ltd, 1989;
3. R.Honeycombe, H.K.D.H.Bhadeshia, Microstructures and Properties, Hodder Headline PLC, 1995;
4. Niebel B.W., A.B. Draper, R.A.Wysk, Modern Manufactoring Process Engineering, McGraw-Hill Publ. Company, 1986.