

DESCRIPTION OF THE COURSE

Name of course: Manufacturing Design II	Code: BIE60	Semester: 7
Method of teaching: Lectures and laboratory work. Semester project	Lessons per week: L –2 hours; LW –2 hours	Number of credits: 5

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 give the students knowledge about the design of basic units used in modern machine-building industry and in high degree automated machinery; computer aided analysis practice, CNC programming, basic principles of machine tool design.

COURSE DESCRIPTION: General principles of machine design; Concurrent engineering; Functional characteristics of machine tools; Work accuracy; Stiffness; Thermal deflections; Technical performances of production machinery; Main and feed drives – requirements, kinds of drives; Spindle systems; Linear drives; Beds and bodies – materials, requirements; Guideways; Lubrication of production machines; Forms of flexible manufacturing automation; Subsystems of flexible manufacturing structures and their components; Technological design for flexible manufacturing structures; Program composition tool nose compensation, tool offset, manual programming; Canned and multiple repetitive cycles; Computer programming for CNC machines using programming languages FAPT and GEOPATH.

PREREQUISITES: Mechanics; Applied Geometry and Engineering Graphics; Materials Science; Strength of Materials; CAD; Industrial Manufacturing Systems; Manufacturing Design I.

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

METHODS OF ASSESSMENT: Proportion of marks: Test - 40%; Project - 60%.

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Dimitrov L. Principles of Mechanical Engineering Design, Technical University of Sofia, 2001;
2. Shigley, J., Ch. Mischke. Mechanical Engineering Design, 6th ed., McGraw Hill, 2001;
3. Otto K.N., L. Kristen. Product Design: Techniques in Reverse Engineering and New Product Development. Prentice Hall, 2001;
4. Boothroyd G., P. Dewhurst. Product Design for Manufacturing and Assembly. M.Dekver 1994.