

DESCRIPTION OF THE COURSE

Name of the course: Heat transfer	Code: BIE51	Semester: 6
Type of teaching: Lectures, tutorials and laboratory work	Lessons per week: L – 1.5 hours; T – 1 hour; LW – 1 hour	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: The course is organised so that to build both theoretical background and practical skills necessary for understanding and further studies in the field of applied thermodynamics and heat transfer and theoretical predictions.

DESCRIPTION OF THE COURSE: The course consists of three parts: Thermodynamics, Applications and Heat transfer. The course program is correlated with the other subjects (inputs and outputs) related to Thermodynamics and heat transfer. First part of the course covers the following main topics: fundamental concepts of thermodynamics; basic definitions and units; conservation of mass and energy; properties of pure substances; ideal and actual gases; energy analysis of closed and open systems; the second law of thermodynamics and entropy; non-reacting ideal gas mixtures and ideal gas water vapour mixtures. Second part of the covers the following: internal combustion engines; vapour power systems; refrigeration and air-conditioning systems. The third part of the course deals with the basic modes of heat transfer (conduction, convection and radiation) and some combined modes of heat transfer as well as with heat exchangers (shell and tube heat exchangers and tube in tube heat exchangers).

PREREQUISITES: Fluid Mechanics and Physics.

TEACHING METHODS: Lectures, using slides, solving of problems, laboratory work from laboratory manual, protocols preparation and presentation.

METHOD OF ASSESSMENT: Three hours long exam at the end of the semester.

INSTRUCTIONAL LANGUAGE: English.

BIBLIOGRAPHY:

1. Burghardt M.D., J.A. Harbach, Engineering Thermodynamics, Harper Collins College Publishers, 1992, ISBN 0-06-041049-3;
2. Howell J.R., R.O. Buckius, Fundamentals of Engineering Thermodynamics, McGraw-Hill Book Company, 1987, ISBN 0-07-079663-7;
3. Ozisik M.N., Heat transfer a basic approach, McGraw-Hill Book Company, 1985, ISBN 0-07-047982-8.