

Incoming student mobility

Name of UNIOS University Unit: Mechanical Engineering Faculty in Slavonski Brod

COURSES OFFERED IN FOREIGN LANGUAGE FOR ERASMUS+ INDIVIDUAL INCOMING STUDENTS

Department or Chair within the UNIOS Unit	Department of Energetics
Study program	Mechanical Engineering
Study level	Undergraduate (bachelor)
Course title	Thermodynamics
Course code (if any)	P 305
Language of instruction	English
Brief course description	The students are introduced in the next topics: First law of thermodynamics, the basic definitions of thermal state, system, energy. Equilibrium and non-equilibrium processes. The mass conservation law. The ideal gases and ideal non compressible matter. The thermal equation of the ideal gas. Polytropic change state in closed systems. (Work, heat and change of internal energy.) Polytropic change state in open systems. (Power, heat rate flow, and change of enthalpy. Cycles. Clockwise (heat engines) and counter clockwise (refrigerators and heat pumps). Carnot, Otto and Diesel cycle as an ideal gas cycles. The second law of thermodynamics. Reversible and irreversible processes in closed and open systems. Real gases (vapors.) Evaporation. The characteristic reversible processes with vapor in closed and open systems. The vapor cycles. Carnot and Rankine cycles. Refrigeration cycles. Vapor compression refrigeration cycles. Basis of heat transfer: conduction, convection and radiation. Steady state heat conduction: plane wall and cylinder. Convection. Radiation, black body, real surfaces. Net radiation heat transfer: nearly surfaces; two surface enclosure.
Form of teaching	Lectures and exercises. During the teaching session tests are provided to assess the knowledge.
Form of assessment	Written and oral exam. Partial exams (three parts) during semester can replace written exam.
Number of ECTS	7
Class hours per week	3 hours of lectures + 3 hours of exercises

ERASMUS+

EU programme for education, training, youth and sport

Minimum number of students	5
Period of realization	Summer semester
Lecturer	Full Prof. Dr. Marija Živić