ERASMUS+

EU programme for education, training, youth and sport

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	**Fluid Mechanics**
Course code (if any)	P 501
Language of instruction	English
Brief course description	The students are introduced in the next topics: Properties of fluids. Real and ideal fluids. Viscosity. Determination of viscous force. Viscometer. Equation of jet trajectory. Forces in a fluid. Equation of motion of fluid particle. Compressibility of liquids. Criterions of incompressibility of flow. Equilibrium of fluid particle. Fluid statics in a gravitational field. Pascal's principle. Measurement of pressure. Manometers. Differential manometers. Hydraulic press. Barometers. Hydrostatic force on a plane surface. Hydrostatic force on a curved surface. Buoyant force. Measurement of density. Kinematics of fluid flow. Lagrangian and Eulerian descriptions of motion. Material derivative. Path lines and stream lines. Bernoulli's equation. Velocity measurement. Pitot and Prandtl-Pitot tube. Venturi tube. Siphon. Time for reservoir discharge. Fluid dynamics. Integral forms of basic laws of physics: Conservation of mass, Momentum principle. Moment of momentum, Conversation of energy. Basic laws for onedimensional flow. Modified Bernoulli equation. Graphical presentation of Bernoulli equation. Cavitation. Dimensional analysis of circulation about a body. Drag Dimensional analysis of flow in closed conduits (Darcy Weisbach equation). Hydraulic calculation of pipelines. Frictional losses. Minor losses. Energetic characteristics of hydraulic machines. Calculation of pressure drop, discharge and diameter of pipe. Calculation of friction in noncircular conduits.
Form of teaching	Lectures, 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	**6**
Class hours per week	3 hours of lectures + 2 hours of exercises
Minimum number of students	5
Period of realization	Winter semester
Lecturer	Full Prof. Dr. Marija Živić