

<b>Study program / course:</b> Mechanical Engineering			
<b>Type and level of study:</b> Basic academic studies			
<b>Course:</b> Fluid Mechanics			
<b>Lecturer:</b> Savić R. Slobodan			
<b>Status of course:</b> Obligatory, joint for all modules, III semester			
<b>Number of ECTS:</b> 7			
<b>Precondition:</b> None			
<b>The objective of the course</b> The objective of the course in Fluid Mechanics is to introduce basic laws of fluid at rest and in movement. Basic knowledge is acquired in the most important areas of fluid mechanics: statics and kinematics of fluid, dynamics of perfect fluid in relation with basic planar flow, viscous fluid dynamics, similarity theory and dimensional analysis, and turbulent flow. Students study practical fluid flow problems with basics in theory of hydraulic resistance, hydraulic calculation of piping, fluid outflow and fluid outflow through openings. They also acquire general information on components of hydraulic and pneumatic systems.			
<b>The outcome of the course</b> Upon completion of the course, the students should be able to: understand physical phenomena and fluid flow laws, recognize possibilities of technical and technological application of the considered phenomena of fluid flow, individually perform simple calculations in the field of applied fluid mechanics, recognize and differentiate schemes of simple hydraulic and pneumatic systems. Thanks to comprehensive theoretical approach to fluid flow problems and the knowledge acquired in this field, students are enabled to understand the syllabus of other similar courses.			
<b>Syllabus</b> <i>Theoretical studies</i> Introduction. Physical properties of the fluid and forces that influence the fluid. Fluid at rest. Fluid kinematics. Perfect fluid dynamics. Viscous fluid dynamics. Similarity theory and dimensional analysis. Turbulent flow. One-dimensional flow dynamics. Basics in the theory of hydraulic resistances. Hydraulic calculation of piping. Hydraulic impact. Fluid outflow through openings. Components of hydraulic and pneumatic systems. <i>Practical classes: Sessions, Other forms of teaching, Research studies</i> During audio sessions, students learn how to apply the acquired theoretical knowledge to solution of concrete problems of liquid and air in rest or movement. In laboratory sessions, students participate in experimental determination of characteristics of the blends incorporated in delivery piping, determination of resistance coefficient due to friction and resistance coefficient of the valve.			
<b>Recommended reading</b> 1. Obrović, B.: <i>Fluid Mechanics</i> , Faculty of Mechanical Engineering, Kragujevac, 2007. 2. Voronjec, K., Obradović, N.: <i>Fluid Mechanics</i> , Građevinska knjiga, Belgrade, 1976. 3. Obrović, B., Savić, S.: <i>Hydraulics - Basics</i> , Faculty of Mechanical Engineering, Kragujevac, 2005. 4. Obrović, B., Milovanović, M.: <i>Fluid Mechanics - Collection of solved problems</i> , Faculty of Mechanical Engineering, Kragujevac, 1997.			
The number of hours of active teaching:			Other classes: 1
Theory: 2	Practical classes: 1.6	Other forms of teaching: 0.4	Research study: 0
<b>Methods of teaching</b> Lectures, audio sessions, laboratory sessions, individual work.			
<b>Evaluation of knowledge (maximum 100 points)</b>			
<b>Pre-final exam obligations</b>	<b>Points</b>	<b>Final exam</b>	<b>Points</b>
Activities during the classes:	5	Oral exam	30
Practical classes:	5		
Colloquiums:	60		