

Study program: Urban Engineering				
Type and level of studies: Basic academic studies				
Course unit: Fluid Mechanics				
Teacher in charge : Slobodan R. Savić				
Language of instruction: English				
ECTS: 7				
Prerequisites: None				
Semester: Summer Semester				
Course unit objective The main course objective is to introduce concepts, principles, laws, observations, and models of fluids at rest and in motion, as well as to apply all these equations to analyze fluid problems by making good assumptions and learn systematic engineering method to solve practical fluid mechanics problems.				
Learning outcomes of Course unit Upon successful completion of this course the students will gain a fundamental physical and mathematical understanding of fluid mechanics. By this, it is implied that the student will be able to correctly apply the course content (given in an outline below) to new situations so as to evaluate potential industrial applications of fluid theory through both physical induction and mathematical analysis/computation.				
Course unit contents <i>Theoretical classes</i> Introduction to Fluid Mechanics - Physical properties of fluids (density, compressibility, viscosity, friction, specific heat capacity, thermal conductivity). Eulerian and Lagrangian description of fluid motion. Fluid statics - pressure distribution, hydrostatic forces on surfaces. Conservation of mass, energy, and momentum equations (Euler equation), Bernoulli's equation. Dimensional analysis and similarity. Laminar and turbulent flow – Navier-Stokes equations, Reynolds' equations. Flow in pipes Pipe systems, flow through series and parallel pipes, head loss, friction losses. Fluid outflow. <i>Practical classes</i> Practical training designed to reinforce the syllabus and answer any questions the student may have regarding specific areas				
Literature F. M. White, Fluid Mechanics (7th Edition), Mcgraw Hill, 2011 Y. Nakayama, R.F. Bouche, Introduction to Fluid Mechanics, Arnold, London, 1999.				
Number of active teaching hours				Other classes
Lectures: 2	Practice: 2	Other forms of classes: -	Independent work: -	
Teaching methods				
Examination methods (maximum 100 points)				
Exam prerequisites		No. of points:	Final exam	No. of points:
Student's activity during lectures		10	oral examination	30
Practical classes/tests		40	written examination	-
Seminars/homework		20		
Grading system				
Grade	No. of points		Description	
10	91 - 100		Excellent	
9	81 - 90		Exceptionally good	
8	71 - 80		Very good	
7	61 - 70		Good	
6	51 - 60		Passing	
5	0 - 50		Failing	