Faculty of Civil Engineering / / ENGINEERING HYDROLOGY

Course:	ENGINEERING HYDROLOGY			
Course ID	**Course status**	**Semester**	**ECTS credits**	**Lessons** (Lessons+Exercises+Laboratory)
11939	Mandatory	1	5	2+1+1
Programs				
Prerequisites				
Aims	Acquiring basic knowledge of hydraulics with emphasis on application in construction			
Learning outcomes	1. After completing this course, the student will be able to: 2. Calculate the hydrostatic force on flat and curved surfaces 3. Calculate the friction force and all energy losses in the pipeline 4. Perform hydraulic calculation of short structures: foundations, sharp-edged spillways, practical profile spillways, evacuation organ overflows 5. Calculates the hydraulics of a wide threshold, manhole overflow, bridge narrowing 6. Calculates various types of rapid flow, as well as lateral overflow			
Lecturer / Teaching assistant				
Methodology	Lectures, exercises, colloquiums			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Introduction. Characteristics of fluids.			
I week exercises	Introduction. Characteristics of fluids.			
II week lectures	Hydrostatics. Change in pressure depending on the position. Pressure measurements.			
II week exercises	Hydrostatics. Change in pressure depending on the position. Pressure measurements.			
III week lectures	Hydrostatic forces on solid boundary surfaces.			
III week exercises	Hydrostatic forces on solid boundary surfaces.			
IV week lectures	The effect of pressure on flat and curved surfaces - pressure force.			
IV week exercises	The effect of pressure on flat and curved surfaces - pressure force.			
V week lectures	Basic concepts of fluid dynamics. The equation of conservation of mass. Dynamic equation (Equation of momentum)			
V week exercises	The equation of conservation of mass. The momentum equation.			
VI week lectures	Energy equation.			
VI week exercises	Energy equation.			
VII week lectures	Friction. Energy losses.			
VII week exercises	Friction. Energy losses.			
VIII week lectures	Friction during uniform flow in a pipe. Local energy losses.			
VIII week exercises	Friction during uniform flow in a pipe. Local energy losses.			
IX week lectures	COLLOQUIUM I			
IX week exercises	COLLOQUIUM I			
X week lectures	Hydrodynamic resistances			
X week exercises	Hydrodynamic resistances			
XI week lectures	Shape resistances.			
XI week exercises	Shape resistances.			
XII week lectures	Flow in open streams. Hydraulic jump.			
XII week exercises	Flow in open streams. Hydraulic jump.			
XIII week lectures	Uneven flow. Level line shapes.			
XIII week exercises	Uneven flow. Level line shapes.			
XIV week lectures	Highlighting below the constitution. Overflow over a wide threshold			

XIV week exercises	Highlighting below the constitution. Overflow over a wide threshold
XV week lectures	colloquium II
XV week exercises	colloquium II
Student workload	Classes and final exam: 6 hour(s) i 40 minutes x 16 =106 hour(s) i 40 minutes Necessary preparation before the beginning of the semester administration, registration, certification): 6 hour(s) i 40 minutes x 2 =13 hour(s) i 20 minutes Total workload for the subject: 5 x 30=150 hour(s) Additional work for exam preparation in the exam period, including taking the remedial exam from 0 to 30 hours (remaining time he first two items to the total load for the item) 30 hour(s) i 0 minutes Workload structure: 106 hour(s) i 40 minutes (courses), 13 hour(s) minutes (preparation), 30 hour(s) i 0 minutes (additional work)

Per week	**Per semester**
5 credits x 40/30=6 hours and 40 minuts 2 sat(a) theoretical classes 1 sat(a) practical classes 1 excercises **2 hour(s) i 40 minuts** of independent work, including consultations	Classes and final exam: **6 hour(s) i 40 minuts x 16 =106 hour(s) i 40 minuts** Necessary preparation before the beginning of the semester (administration, registration, certification): **6 hour(s) i 40 minuts x 2 =13 hour(s) i 20 minuts** Total workload for the subject: **5 x 30=150 hour(s)** Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) **30 hour(s) i 0 minuts** Workload structure: **106 hour(s) i 40 minuts (cources), 13 hour(s) i 20 minuts (preparation), 30 hour(s) i 0 minuts (additional work)**
Student obligations	Weekly 6.0 credits x 40/30 = 8 hours Total workload for the subject 6.0x30 = 180 hours
Consultations	
Literature	D. Prodanović: Mehanika fluida za studente Građevinskog fakulteta. Građevinski fakultet u Beogradu.2007. G.Hajdin: Mehanika fluida-Uvodjenje u hidrauliku.Građevinski fakultet, Beograd. 2001. Č.Maksimović. Zbirka zadataka iz mehanike fluida. Građevinski fakultet, Beograd, 1995. Dopunska literatura : B. Batinić : Hidraulika, Građevinski fakultet, Beograd, 1993. M. Radojković:Stacionarno strujanje u otvorenim tokovima prizmatičnog preseka,Građevinski fakultet, BG,1978 B. Batinić, M. Radojković: Zbirka rešenih ispitnih zadataka iz hidraulike", Građevinski fakultet, Beograd, 1981
Examination methods	Knowledge is checked continuously during the semester and at the final exam. The maximum possible number of points is 100, the colloquium 50 points and the final exam 50 points
Special remarks	One part of the exercises must be done in the hydraulic laboratory. Laboratory practice requires mandatory attendance.
Comment	Additional information about the subject can be obtained from the subject teacher, associate, head of the study program and from the vice dean for teaching

Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points