Faculty of Mechanical Engineering / / TWO-PHASE FLOM

Course:	TWO-PHASE FLOM			
Course ID	**Course status**	**Semester**	**ECTS credits**	**Lessons** (Lessons+Exercises+Laboratory)
7277	Optional	2	8	4+0+0
Programs				
Prerequisites	None			
Aims	ECTS goals are the introducing students to: 1. Fundamental laws of two phase flow; 2. Methodologies for calculating two phase fluid flow properties; 3. Onedimensional flow of a two-phase mixture; 4. Special cases of thin liquid layer flow over a solid surface 5. Two-phase flow in tubes with circular cross section			
Learning outcomes	Students will become profficient in solving engineering problems which involve transport phenomena with two-phase fluid flow calculations.			
Lecturer / Teaching assistant	Prof dr Milan Šekularac Prof dr Uroš Karadžić			
Methodology	Lectures; Excercises; Seminar / projects			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Fundamental laws governing two phase flow			
I week exercises	Examples			
II week lectures	Onedimensional flow of two phase mixture. Equations for onedimensional two phase flow			
II week exercises	Examples			
III week lectures	Heat equation for two phase mixture in onedimensional flow case			
III week exercises	Examples			
IV week lectures	Special cases of a lower density phase motion in a stationary denser phase, and vice versa			
IV week exercises	Examples			
V week lectures	Flow of a thin liquid layer over a solid surface			
V week exercises	Examples			
VI week lectures	Two phase mixutre flow in tubes of circular cross section			
VI week exercises	Examples			
VII week lectures	Laminar flow of a liquid phase in a ring-shaped flow pattern in tubes of circular cross section			
VII week exercises	Examples			
VIII week lectures	Turbulent flow of a liquid phase in a ring-shaped flow pattern in tubes of circular cross section			
VIII week exercises	Examples			
IX week lectures	Lokart Martineli method to calculate pressure drop			
IX week exercises	Examples			
X week lectures	CFD,approaches to simulate two phase flows			
X week exercises	Examples			
XI week lectures				
XI week exercises				
XII week lectures				
XII week exercises				
XIII week lectures				
XIII week exercises				
XIV week lectures				
XIV week exercises				

XV week lectures	
XV week exercises	
Student workload	

Per week	**Per semester**
8 credits x 40/30=10 hours and 40 minuts 4 sat(a) theoretical classes 0 sat(a) practical classes 0 excercises **6 hour(s) i 40 minuts** of independent work, including consultations	Classes and final exam: **10 hour(s) i 40 minuts x 16 =170 hour(s) i 40 minuts** Necessary preparation before the beginning of the semester (administration, registration, certification): **10 hour(s) i 40 minuts x 2 =21 hour(s) i 20 minuts** Total workload for the subject: **8 x 30=240 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) **48 hour(s) i 0 minuts** Workload structure: **170 hour(s) i 40 minuts (cources), 21 hour(s) i 20 minuts (preparation), 48 hour(s) i 0 minuts (additional work)**
Student obligations	
Consultations	
Literature	1. Dečan Ivanović, Dvofazni tok, University of Montenegro 2. M.Ishi, i dr, Thermo-Fluid Dynamics of Two-Phase Flow, Springer 2011
Examination methods	
Special remarks	
Comment	

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