



UNIVERSITY OF NIŠ

Course Unit Descriptor

Faculty

Faculty of Mechanical Engineering

GENERAL INFORMATION

Study Program	Mechanical Engineering		
Study Module (if applicable)	-		
Course Title	Numerical simulation of fluid flow		
Level of Study	<input type="checkbox"/> Bachelor	<input type="checkbox"/> Master's	<input checked="" type="checkbox"/> Doctoral
Type of Course	<input type="checkbox"/> Obligatory	<input checked="" type="checkbox"/> Elective	
Semester	<input checked="" type="checkbox"/> Autumn	<input type="checkbox"/> Spring	
Year of Study	II		
Number of ECTS Allocated	10		
Name of Lecturer/Lecturers	dr Zivan Spasić, dr Jasmina B. Bogdanović-Jovanović		
Teaching Mode	<input checked="" type="checkbox"/> Lectures	<input type="checkbox"/> Group tutorials	<input type="checkbox"/> Individual tutorials
	<input type="checkbox"/> Laboratory work	<input checked="" type="checkbox"/> Project work	<input checked="" type="checkbox"/> Seminar
	<input type="checkbox"/> Distance learning	<input type="checkbox"/> Blended learning	<input type="checkbox"/> Other

Purpose and Overview (max. 5 sentences)

Students should acquire knowledge in theory of fluid flow through profile cascades, acquiring skills in the methodology of modelling and numerical solving of flow through the profile cascades, using appropriate software. The main aim is enabling students to formulate independently and on scientific principles, models of flow through straight and circular profile cascades.

Syllabus (brief outline and summary of topics, max. 10 sentences)

1) Types of turbomachinery cascades and their roles in flow modeling. 2) Direct and indirect task of the theory of flow through the turbomachinery cascades. 3) The schematization of flow through the cascades. 4) One-dimension flow model. 5) Two-dimension flow model. 6) Flow through the axial-flow profile cascades. 7) Flow through the radial profile cascades. 8) Model of two mutually dependent two-dimensional flow. 9) The flow averaging to the circular component and calculation of flow in the meridional surface. 10) Calculation of flow according to the axisymmetrical flow surfaces. 11) Three-dimension flow model. 12) Averaged Navier-Stokes equations for turbulent flow and constitutive (additional) equations. 13) Numerical solution of the flow equations using adequate CFD softwares.

Language of Instruction

- Serbian (complete course) English (complete course) Other _____ (complete course)
- Serbian with English mentoring Serbian with other mentoring _____

Assessment Methods and Criteria

Pre exam Duties	Points	Final Exam	Points
Activity During Lectures	5	Written Examination	Max 40, depending on Teaching Colloquia
Practical Teaching	5	Oral Examination	50
Teaching Colloquia	40	Overall Sum	100
*Final examination mark is formed in accordance with the Institutional documents			