



UNIVERSITY OF NIŠ

Course Unit Descriptor

Faculty

Faculty of Mechanical Engineering

GENERAL INFORMATION

Study Program	Mechanical Engineering		
Study Module (if applicable)	-		
Course Title	Thermal Measurements		
Level of Study	<input checked="" type="checkbox"/> Bachelor	<input type="checkbox"/> Master's	<input type="checkbox"/> Doctoral
Type of Course	<input type="checkbox"/> Obligatory	<input checked="" type="checkbox"/> Elective	
Semester	<input type="checkbox"/> Autumn	<input checked="" type="checkbox"/> Spring	
Year of Study	III		
Number of ECTS Allocated	6		
Name of Lecturer/Lecturers	Gradimir S. Ilić , Predrag M. Živković		
Teaching Mode	<input checked="" type="checkbox"/> Lectures	<input type="checkbox"/> Group tutorials	<input type="checkbox"/> Individual tutorials
	<input checked="" type="checkbox"/> Laboratory work	<input 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)

Introduce students to the methods of measuring of micro, macro and integral fluid flow and parameters.

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

Parameters defining fluid flow: macro-flow parameters (pressure, temperature, flow velocity...); micro flow parameters (turbulent intensity, Reynolds stresses, turbulent momentums...); integral flow parameters (heat and mass flow...); counters. Measuring transducers. Static and dynamic properties of measuring transducers. Resistant-strain gauges; capacitive, inductive, induction, photoelectric gauges. Flow pressure measurements. Static and dynamic flow pressure. Pressure gauges. Flow velocity measurements. Pitot and Pitot-Prandtl tube. Cylindrical tube. Hot wire anemometry. CTA hot wire system for measurement of the flow velocity and turbulent intensity. Laser-Doppler anemometry. Doppler shift. Flow measurement and counters. Dumping elements (orifices, nozzles, sleeves, Venturi tube). Flow temperature measurements. Static and dynamic temperatures. Temperature sensors. Optical methods (Schlieren, Shadowgraph, Mach-Zender, Particle image velocimetry...). Optic and radiation pyrometers. Thermocouple thermometry. Moisture measurement. Psychrometric method. Sensitivity equations. Flow composition measurements. Gas analysers.

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	10	Written Examination	0
Practical Teaching	15	Oral Examination	50
Seminar	25	Overall Sum	100

***Final examination mark is formed in accordance with the Institutional documents**