

Program	Level of studies		First cycle	
	Program name		Physics	
Course name	PHYSICAL MEASUREMENTS I			
Course ID	Semester	Course status	ECTS	L+E
PHY1611	I	MANDATORY	6	3+2
Lecturer	Doc. dr. Amra Salčinović Fetić			
Aims and intended learning outcomes	<p>Course objective is to familiarize students with different experimental techniques and measuring methods of physical quantities as well as to develop their skills to independently conduct experiments, acquire and process data.</p> <p>Learning outcomes:</p> <ol style="list-style-type: none"> <li>1. Understands experimental techniques for examination of physical quantities in the fields of mechanics, thermal science and vacuum technique</li> <li>2. Is familiar with basic elements of vacuum system and their usage</li> <li>3. Can independently make assessments and calculations in order to plan an experiment as well as to correctly process results of the experiment</li> </ol>			
Course content				
<p>Importance of measurements in physics. Measurements and errors. International System of Units-definitions of base units. Classification of errors. Mean value. Direct measurements errors. Indirect measurements errors. Normal distribution. Data analysis based on normal distribution of random errors. Graphical analysis of data. Least square method. Measurements in mechanics. Measurements of mass. Cavendish experiment. Methods for measurements of acceleration due to gravity. Methods for determination of elastic properties. Tensometers. Methods for determination of torsion module. Methods for determination of moment of inertia. Temperature measurements. Formation of temperature scale. Types of thermometers. Thermocouples. Thermostats. Introduction to vacuum technique. Elements of the vacuum system. Production of vacuum. Types of vacuum pumps. Measurement of vacuum. Vacuum gauges.</p>				
Student workload (hours)		Grading		
Lectures and Exercises	75	Assessment method	Points	
Exam preparation	75			
Assignments		Midterm exam	50	
Consultation	150	Final exam	50	
Total		Total	100	
Literature				
<ol style="list-style-type: none"> <li>1. T. Čajkovski, D. Čajkovski: Fizikalna mjerenja, I i II, skripta</li> <li>2. V. Vučić: Mjerenja u fizici, Naučna knjiga, Beograd, 2003.g.</li> <li>3. S. Marić, Fizika, Svjetlost, Sarajevo, 2003. g.</li> <li>4. A. Saveljev, Fizika I i II</li> <li>5. W. F. Sears: Mehanika, talasno kretanje i toplota</li> <li>6. F.W.Sears: Elektricitet i magnetizam, Naučna knjiga, Beograd, 1963.</li> <li>7. G. Dimić, M. Mitrinović: Metrologija u fizici, Građevinska knjiga Beograd 1990.g</li> </ol>				
Remarks				