Program	Level of studies		First cycle	
	Program name		Physics	
Course name	EXPERIMENTAL METHODS IN MODERN PHYSICS			
Course ID	Semester	Course status	ECTS	L+E
PCM7211	VII	MANDATORY	2	2+0
Lecturer	Doc.dr. Maja Đekić			
Aims and intended learning outcomes	Course objective is to familiarize students with experimental methods in modern physics. Learning outcomes: 1. Student is familiar with measuring techniques in physics 2. Student is familiar with diagnostic techniques in physics 3. Student is capable of choosing appropriate measuring and diagnostic techniques for concrete problem.			

Course content
INTRODUCTION: Review and importance of experimental methods in modern physics. MICROSCOPY METHODS: Optical microscope and its limitations. Electron microscope. Historic introduction and parts of electron microscope. Types of electron microscope. Electron-sample interaction. SCANNING PROBE MICROSCOPY. Atomic force microscopy (AFM). Historic introduction and parts of AF microscope. AF microscope working principle. AFM advantages and disadvantages. SPECTROSCOPY. Importance of spectroscopy. Types of spectroscopy Spectroscope parts. Atomic and molecular spectroscopy. THERMAL ANALYSIS METHODS. Importance and types. Differential thermal analysis. Differential scanning calorimetry. Thermogravimetry. X-RAY METHODS. Generation of X-rays. X-ray diffraction. X-ray microscope. Computerized tomography. CRYOGENICS. Importance of low temperatures in physics. Discovery of superconductivity and superfluidity. Obtaining of low temperatures.

Student workload (hours)		Grading	
Lectures and Exercises	30	Assessment method	Points
Exam preparation	15	Test	20
Assignments	5	Paper	30
Other	5	Project	20
Total	50	Final exam	30
		Total	100

Literature
1. M. Furić “Moderne eksperimentalne metode, tehnike i mjerenja u fizici”, Školska knjiga Zagreb 2. S. Lukić-Petrović, F. Skuban, D. Petrović, G. Štrbac, I. Gut “Eksperimentalne tehnike karakterizacije materijala”

Remarks