

Study Programme: Master academic studies in forensics			
Course Unit Title: Forensic Instrumental Analysis			
Course Unit Code: FH-14			
Name of Lecturer(s): Dr. Biljana Abramović, full professor; Dr. Daniela Šojić Merkulov, associate professor			
Type and Level of Studies: Master Academic Degree			
Course Status (compulsory/elective): elective			
Semester (winter/summer): summer			
Language of instruction: Serbian/English			
Mode of course unit delivery (face-to-face/distance learning): face-to-face			
Number of ECTS Allocated: 6			
Prerequisites: None			
Course Aims: Forensic Instrumental Analysis focuses on solving forensic related problems and applying analytical procedures that are defensible in front of a court. This course will cover methodology and instruments used for the analysis of substances of interest in the discipline of forensic science. Students will gain practical experience with modern instrumental techniques and methodologies used in the advanced forensic science laboratory.			
Learning Outcomes: After the successful completion of this course, a student is able to forensic purposes: <ol style="list-style-type: none"> 1. Cites examples of the application and the importance of instrumental analysis in forensics; 2. Demonstrates the acquired knowledge and understanding of principles and theory in the selection of the most appropriate physicochemical technique and methods for analyzing the concrete sample; 3. Correctly handles the instruments for physicochemical analysis of the given samples; 4. To give a realistic assessment of the scope of the applicability of a particular method and the validity of the result obtained; and 5. Reliably, precisely and accurately measured during the execution of the set of instrumental analysis and interpret experimental results and write reports had been prepared. 			
Syllabus: <i>Theory</i> Significance of physicochemical methods in criminology. Sampling and sample preparation. Methods and procedures. Atomic emission and absorption spectrometry. Molecular absorption spectrometry. Fluorimetry. Other optical methods. Mass spectrometry. Electroanalytical methods. Thermoanalytical methods of analysis. Instrumental separation methods (gas and liquid chromatography). Capillary electrophoresis. Microscopy (optical, SEM, TEM). Radiography. Defectoscopy and holographic analysis. Selection of the optimal method of analysis. Presentation of results of the analysis. <i>Practice</i> Practice follows lectures. Solving certain forensic problems using adequate instrumental techniques.			
Required Reading: <ol style="list-style-type: none"> 1. D. A. Ckoog, F. J. Holler, T. A. Nieman: <i>Principles of instrumental analysis</i>, Caunders golden sunburst series, Caunders college publishing, Philadelphia, 1998. 2. S. Bell, <i>Forensic Chemistry</i>, Person, Upper Saddle River, New Jersey, 2006. 			
Weekly Contact Hours: 5		Lectures: 2	
Practical work: 3			
Teaching Methods: Lectures, laboratory exercises, computational exercises, and consultations.			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Active class participation	10	written exam	20
Practical work	30	oral exam	10
Seminar(s)	30		