

Course Unit Descriptor

Study Programme: Master academic studies of forensic
Course Unit Title: Computers application in road accidents expertise
Course Unit Code: SF-05
Name of Lecturer(s): Assistant Professor Nenad Ruškić, Associate Professor Zoran Papić
Type and Level of Studies: Master Academic Degree
Course Status (compulsory/elective): Elective
Semester (winter/summer): Summer
Language of instruction: English
Mode of course unit delivery (face-to-face/distance learning): Face-to-face
Number of ECTS Allocated: 6
Prerequisites: None
Course Aims: Acquiring theoretical and practical knowledge in the application of modern software tools for the various types of traffic accident analysis and reconstruction.
Learning Outcomes: After acquiring knowledge, the student is able to: <ol style="list-style-type: none">1. independently applies specialized software tools used in the field of road accident forensic research;2. uses software packages for the road accidents simulation and reconstruction;3. uses animation and visualization techniques in the court procedures.
Syllabus: <i>Theory</i> Computer programs used for road accident research, simulation and reconstruction - a historical overview. The working principle. Kudlich-Slibar simulation model. PC crash software package. Basics of the model. Working with vehicle databases. Working with the drawing module and importing the accident scene bitmaps. Analysis of the collision process and parameters which are relevant to the vehicles movement during the after-collision phase. Kinematic analysis. Dynamic analysis. Application of energy method for the road accident analysis. Multibody model. Accidents involving pedestrians and cyclists. Vehicle rollover. Visualization of simulation results through diagrams and animations. Working with EES databases. Road accidents simulations using the VirtualCrash software packages. Basics of photogrammetry. Creation of a accident scene using PC Rect. 3D photogrammetry. Photomodeler software package application in the field of forensic analysis. 3D modeling of the vehicles and the place of impact. <i>Practice</i> Practical application of computers using specialized software packages for road accidents analysis, simulation, and reconstruction. Case studies analysis.
Required Reading: <ol style="list-style-type: none">1. Kostić, S., Ekspertize saobraćajnih nezgoda, FTN Novi Sad, 2009.2. Wach, W., PC-CRASH, Handbook, Institute of Forensic Research Publishers, Krakow 2001.3. Wach, W., Simulation of Vehicle Accidents using PC-CRASH, Institute of Forensic Research Publishers, Krakow 2011.4. Burg, H., Moser, A., Handbook of Accident Reconstruction, DSD - Dr. Steffan Datentechnik GmbH, Linz, Austria, 2013.

Weekly Contact Hours: 5(75)	Lectures: 3(45)		Practical work: 2(30)
Teaching Methods: Lectures, experimental exercises and consultations.			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Active class participation	10	written exam	30
Practical work	10	oral exam	20
Seminar(s)	20	practical exam	10
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			