

Study program: Computer technologies			
Course title: Web Programming			
Professor/assistant: Slavimir N. Stošović			
Type of course: elective			
ECTS credits: 6			
Pre-requisites: -			
Aims of the course: To prepare students to: - understand basic concepts of multilevel web-based applications based on a particular server language, - understand the possibilities of web application frameworks, - apply the state-of-the-art technology for design of commercial Internet applications, - use a web framework to develop a web application, - analyze the complexity of the implemented web application and optimize it accordingly.			
Learning outcomes: By mastering the subject, a student will be able to: - understand, formulate and present various types of Internet applications, - establish the relationship between the frontend and the backend of web application frameworks, - structure, formulate and design a multi-layer web application with the necessary complexity using the most effective methods and technologies, - develop a multi-layer web application with the required complexity using one selected web framework, - evaluate and execute complexity analysis and, if necessary, optimize the developed web application.			
Syllabus <i>Theoretical part</i> Basic web application concepts. Concepts and application of three-layer and multilayer applications. Rich internet applications. Client web browser overview. Overview of template languages and their use. Dynamic generation of web pages using server template engine. Overview of service web templates. Ajax technology. Using a web server. HTTP protocol. MVC architectural form. Concept and use of Web Services. REST architecture. Designing and writing API documentation. Work with sessions. Authentication using OAuth protocol. Connecting to a database. Object-relational mapping. Web application security. <i>Practical part:</i> Practice, other forms of study and research work Practical exercises follow theoretical lessons. Students will be able to create a web application in a selected web template through the project task, which will be upgraded step by step at each time of the exercise.			
Literature 1. E. Williams, D. Lane, Web aplikacije i baze podataka, O'Reilly, 2013. 2. Java Web Services up and running Second Edition, Martin Kalin, O'Reilly, 2013. 3. Laravel up and running a Framework for building Modern PHP Apps, Matt Stauffer, O'Reilly Media, 2016.			
Number of active classes			Other forms of teaching:
Lectures: 30	Practical classes: 15+15	Research work:	
Teaching methods Theoretical and practical classes are performed in the classroom with presentations, simulations and video files. Consultations are an integral form of teaching in this subject.			
Grading system (maximum 100 points), grading scale from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.			
Pre-exam obligations	points	Final exam	points
activity during theoretical lectures	10	written exam	20
practical training	20	oral exam	10
colloquium(s)/seminar papers	30+10		
Sum	70	Sum	30