

Specification for the book of courses

Study program	Electrical Engineering and Computer Science			
Module	Communications and Information Technologies - System Engineering and Radio-Communications			
Type and level of studies	Undergraduate Academic Studies			
The name of the course	Developing Applications for Communication Systems			
Lecturer (for lectures)	Stanković Ž. Zoran, Dončov S. Nebojša			
Lecturer/associate (for exercises)	Milijić R. Marija			
Lecturer/associate (for OFE)	Milijić R. Marija			
Number of ECTS	5	Course status (obligatory/elective)	Elective	
Prerequisites				
Course objectives	Acquiring theoretical and practical knowledge related to the usage of the Python programming language for the development of applications for communication systems.			
Course outcomes	Knowledge of the Python programming language and functional programming. Ability to apply Python programming language for the development of communication protocols and protocol-oriented applications for communications devices based on microcontroller platforms. Ability to use the Python programming language for the development of applications for analysis and modeling of communication devices.			
Course outline				
Theoretical teaching	Organization of data and objects, use of operators and control structures in the Python development environment. Function definition and organization of the module. Standard module libraries. Lambda operator and functional programming in Python environment. Object-oriented approach for the development of communication protocols. Programming of TCP, UDP and XML-RPC client-server communications. Application of the Python environment in the programming of communication devices based on the Raspberry Pi platform (realization of GPIO, serial and ethernet communication with external acquisition devices). Application of the Python environment for the antenna modeling, EM propagation modeling in the indoor and outdoor environment and modeling and analyzing of the wireless communication systems.			
Practical teaching (exercises, OFE, study and research work)	Auditory exercises: Solving practical problems that demonstrate the organization of data and objects, the use of operators, control structures, and functions in the Python development environment. Laboratory exercises: Practical computer work in Python development environment and the development of specific software applications for communication systems (development of protocol-oriented applications for communication devices based on the Raspberry Pi platform, development of applications for communication system equipment modeling).			
Textbooks/references				
1	W. Chun, Python: application programming, Mikro knjiga, 2014.			
2	S. Lott, Functional Python Programming, Packt Publishing Ltd, 2015.			
3	Sai Yamanoor, Srihari Yamanoor, Python Programming with Raspberry Pi, Packt Publishing Ltd, 2017.			
4	W. Donat, Learn Raspberry Pi Programming with Python, Apress, 2014.			
5	Bert van Dam, Raspberry Pi, Agencija EHO, 2014.			
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	1	2	0	0
Teaching methods	Lectures, auditory exercises, practical laboratory work, homework, consultations			
Grade (maximum number of points 100)				
Pre-exam duties	Points	Final exam	Points	
Activity during lectures	5	Written exam	20	
Exercises	35	Oral exam	20	
Colloquia	20			
Projects				