

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		Digital TV Receivers and Services		
Lecturer (for lectures)		Marković V. Vera		
Lecturer/associate (for exercises)		Atanasković S. Aleksandar		
Lecturer/associate (for OFE)		Joković J. Jugoslav		
Number of ECTS	5	Course status (obligatory/elective)	Elective	
Prerequisites				
Course objectives				
The course provides fundamental knowledge in the field of digital television, transmission and reproduction of television content to the users. Digital TV technologies are being processed within the DVB standard, focusing on the architecture and design of software for digital TVs.				
Course outcomes				
Students will be able to analyze devices that receive and play digital TV content. Within the practical work, students analyze the real set-top box in accordance with the DVB-T2 standard. They will fully understand all the broadcasting phases, as well as content reproducing solutions and controls the processing of all components of digital TV content, including audio, video and graphics on the TV screen.				
Course outline				
Theoretical teaching				
The main advantages and disadvantages of digital transmission; Digital broadcasting and receiving techniques; Standards in DTV - DVB; Architecture of digital TV receivers; Input level; Transceiver Processor; Decoder; Output interfaces; Communication between integrated circuits; Digital TV software; Architecture of TV applications; Access control systems for content; Conditional access to DVB; Scrambling; Security features in hardware and software; System integration and practical aspects; Components of DTV receivers; DTV middleware; Convergence in Television and Two-way communication; Hybrid television; Television over IP; Internet Television and Over-The-Top Services; Actual standards: HbbTV, MHEG.				
Practical teaching (exercises, OFE, study and research)				
Practical exercises involve solving problems in areas that are covered by the content of the subject. Laboratory exercises through practical work include the characterization of the receiver and measurement of the digital TV signal transmitter.				
Textbooks/references				
1	Benoit, H., Digital Television - Satellite, Cable, Terrestrial, IPTV, Mobile TV in the DVB Framework, Focal Press, 2008			
2	Fischer, W. Digital Video and Audio Broadcasting Technology - A Practical Engineering Guide, Springer-Verlag, 2010.			
3	Benoit, H. "Digital Television - Satellite, Cable, Terrestrial, IPTV, Mobile TV in the DVB Framework", Focal Press, 2008			
4				
5				
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	1	1	0	0
Teaching methods				
Lectures, exercises, practical work in the laboratory, consultations				
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	Points
Activity during lectures			Written exam	30
Exercises		20	Oral exam	30
Colloquia				
Projects		20		