

Specification for the book of courses

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|--|---|--|--------------------------------|----------------------|
| Study program | Electrical Engineering and Computer Science | | | |
| Module | Communications and Information Technologies - Communications and Information Processing | | | |
| Type and level of studies | Undergraduate Academic Studies | | | |
| The name of the course | VoIP | | | |
| Lecturer (for lectures) | Milić N. Dejan, Nikolić B. Zorica | | | |
| Lecturer/associate (for exercises) | Cvetković M. Aleksandra, Anastasov A. Jelena | | | |
| Lecturer/associate (for OFE) | Cvetković M. Aleksandra, Anastasov A. Jelena | | | |
| Number of ECTS | 5 | Course status (obligatory/elective) | Elective | |
| Prerequisites | | | | |
| Course objectives | Basic knowledge about technologies that enable VoIP, as well as knowledge about possible realizations of specific systems. | | | |
| Course outcomes | Covered topics will enable students to find and apply in practice the solutions of engineering problems in area of voice transmission over internet protocol. | | | |
| Course outline | | | | |
| Theoretical teaching | Inner workings of VoIP and its significance in modern telecommunication networks. Techniques and algorithms for voice transmission. Waveform coders, vocoders and hybrid coders. Compression and coding standards for voice signals: G.711, G.721, G.726, G.729 и G.723.1. Compression based on speech analysis and synthesis. RTP and similar real time transport protocol. The concept of quality of service. VoIP system components. Call processing and CPL. Implementation of VoIP using TCP/IP. Services of call centers. | | | |
| Practical teaching (exercises, OFE, study and research) | Auditory exercises. Laboratory work will be organized according to number of students and their affinities. | | | |
| Textbooks/references | | | | |
| 1 | Alexander Raake, Speech Quality of VoIP: Assessment and Prediction, John Wiley & Sons, 2006 | | | |
| 2 | Pramode K. Verma, Voice over IP Networks: Quality of Service, Pricing and Security, Springer, 2011 | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| Number of classes of active education per week during semester/trimester/year | | | | |
| Lectures | Exercises | OFE | Study and research work | Other classes |
| 2 | 2 | 1 | 0 | 0 |
| Teaching methods | Theory classes, auditory and laboratory exercises, homework, consultations. | | | |
| Grade (maximum number of points 100) | | | | |
| Pre-exam duties | Points | Final exam | Points | |
| Activity during lectures | 5 | Written exam | 30 | |
| Exercises | 15 | Oral exam | 20 | |
| Colloquia | 30 | | | |
| Projects | | | | |