

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 | | Laboratory Practice 2 | | |
| Lecturer (for lectures) | | Nikolić B. Zorica, Ćirić G. Dejan, Milošević D. Nenad | | |
| Lecturer/associate (for exercises) | | | | |
| Lecturer/associate (for OFE) | | Cvetković M. Aleksandra, Panajotović S. Aleksandra, Anastasov A. Jelena, Eferica M. Predrag | | |
| Number of ECTS | 3 | Course status (obligatory/elective) | Obligatory | |
| Prerequisites | | | | |
| Gaining knowledge of equipment that can be used in the field of communication technologies and information processing. Special attention is paid to the practical knowledge and skills of using devices and software packages for acquisition, analysis, measurements and simulations. The goal for students is to work with equipment in laboratories dealing with communication technologies. | | | | |
| Course objectives | | | | |
| Theoretical and practical knowledge (skills), and the ability of students to use equipment, devices and software tools in the field of communication technologies. | | | | |
| Course outcomes | | | | |
| Course outline | | | | |
| Use of microcontroller platforms for data acquisition. Software radio, USRP, possibilities for use in laboratory conditions. Methods for estimating the probability of error for wireless systems. Measurement of signal-to-noise ratio, interference power and characterization of fading effects in wireless communications. Measurement of propagation parameters for free-space optical communications. Implementation of modulators and demodulators on hardware platforms. Practical realization of coders and decoders for error-control codes. Application of codes for correcting errors in wireless communications. Empower students to work with the EMONA hardware platform. Software signal processing. Measuring the sound level as well as its spectral analysis using hand-held devices. Application of the spectrum analyzer to determine the transfer characteristics of the tested device (e.g. filter or acoustic transducer in a mobile phone). Simulation of room acoustics with simulation software (EASE or other appropriate software). | | | | |
| Theoretical teaching | | | | |
| Practical classes consist of laboratory exercises and practical work in laboratories on equipment, devices and software packages, and these classes are related to teaching units that are listed in the theoretical teaching. | | | | |
| Practical teaching (exercises, OFE, study and research) | | | | |
| Textbooks/references | | | | |
| 1 | Maurizio Di Paolo Emilio, Data Acquisition Systems: From Fundamentals to Applied Design, Springer-Verlag New York, 2013 | | | |
| 2 | A. Breznik, Emona-101 Telecommunications Trainer User Manual, Emona Instruments Pty Ltd, 2010 | | | |
| 3 | F. A. Everest, K. C. Pohlmann: Master Handbook of Acoustics, 5th ed., McGraw Hill, New York, USA, 2009. | | | |
| 4 | G. Ballou: Handbook for sound engineers, 4th edition, Elsevier, Focal Press, Burlington, 2008 | | | |
| 5 | | | | |
| Number of classes of active education per week during semester/trimester/year | | | | |
| Lectures | Exercises | OFE | Study and research work | Other classes |
| 1 | 0 | 2 | 0 | 0 |
| Teaching methods | | | | |
| Lectures; Computational exercises; Laboratory exercises; Studio exercises; Consultations. | | | | |
| Grade (maximum number of points 100) | | | | |
| Pre-exam duties | | Points | Final exam | Points |
| Activity during lectures | | 10 | Written exam | |
| Exercises | | 35 | Oral exam | 35 |
| Colloquia | | 20 | | |
| Projects | | | | |