

Specification for the book of courses

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|--|--|---|--------------------------------|----------------------|
| Study program | | Electrical Engineering and Computer Science | | |
| Module | | Electron Devices and Microsystems | | |
| Type and level of studies | | Undergraduate Academic Studies | | |
| The name of the course | | Measurements in Microelectronics | | |
| Lecturer (for lectures) | | Simić M. Milan | | |
| Lecturer/associate (for exercises) | | Jovanović R. Jelena | | |
| Lecturer/associate (for OFE) | | Đorđević-Kozarov R. Jelena | | |
| Number of ECTS | 5 | Course status (obligatory/elective) | Elective | |
| Prerequisites | No | | | |
| Course objectives | Education and introduction of students with basic theoretical and practical knowledge related to measurement of analog and digital microelectronics components and circuits basic parameters. | | | |
| Course outcomes | Training and capability of students for solving the practical problems from measurements in the area of microelectronics, on the basis of good knowing the measurement methods and techniques, with proper use of modern devices and equipment for measurement and testing of microelectronics components and circuits. | | | |
| Course outline | | | | |
| Theoretical teaching | Role and importance of microelectronics components and circuits parameter measurements. Metrological assurance of measurement process and accuracy of measurement results. Hardware components of system for measurement of microelectronics components and circuits parameters. Testing of DC and dynamic parameters of ADC and DAC circuits. Equipment for automated testing of microelectronics components and circuits (ATE). Using of virtual measuring instrumentation and LabVIEW software in the process of microelectronics components and circuits parameter measurements. | | | |
| Practical teaching (exercises, OFE, study and research) | Laboratory and demonstration exercises: training of students for practical use of measurement methods and devices for measurement and testing of microelectronics components and circuits, through engagement on laboratory and demonstration exercises. According to the instruction manual for work on laboratory exercises, students submit appropriate report about each completed laboratory exercise. | | | |
| Textbooks/references | | | | |
| 1 | Gordon W. Roberts, Friedrich Taenzler, Mark Burns, "An introduction to mixed-signal IC test and measurement, Second Edition", Oxford University Press, 2012. | | | |
| 2 | S. Tumanski, "Principles of Electrical Measurements, Chapter 6. Computer Measuring Systems, Virtual Measuring Systems", Taylor & Francis Group, 2006. | | | |
| 3 | Amir Afshar, "Principles of Semiconductor Network Testing", Elsevier Inc., 1995. | | | |
| 4 | J. G. Webster, "Measurement, Instrumentation and Sensors Handbook", CRC Press, 2014. | | | |
| 5 | W. Nawrocki, Measurement Systems and Sensors. London, Artech House, 2005. | | | |
| 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 | Lectures (theoretical teaching) with graphical presentation of material in the form of slides. Practical teaching in the form of laboratory and demonstration exercises. Everyday consultations for students with teacher or assistants. Individual work of students in the form of homework tasks and making of seminar papers. | | | |
| Grade (maximum number of points 100) | | | | |
| Pre-exam duties | Points | Final exam | | Points |
| Activity during lectures | 10 | Written exam | | 20 |
| Exercises | 20 | Oral exam | | 20 |
| Colloquia | 20 | | | |
| Projects | 10 | | | |