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| | | Course title: CONTROL OF TECHNOLOGY PROCESSES | | |
| Course code | Course status | Semester | Number of ECTS credits | Lecture hours |
| PA4101 | Mandatory | I | 5 | 3L+0E+1Lab |

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| Study program: Master studies, ELECTRICAL ENGINEERING, study program: Power systems and Control, department: Industrial electronics and Automatics (studies last for 10 semesters, 300 ECTS credits). Postgraduate studies, ELECTRICAL ENGINEERING, study program: Power systems and Control, department: Industrial electronics and Automatics (studies last for 8 semesters, 240 ECTS credits) | |
| Prerequisites: Theory of systems of automated control, Elements of systems of automated control, Discrete systems of automated control | |
| Course aims: Students will be introduced with basic elements of control of technology processes, basic methods of processes identification, technical conditions for regulation loops, criteria for adjusting of regulation loop, as well as with principles of formal projects of regulation loop and complex systems for control and monitoring of technology processes. | |
| Teacher(s) first and last names: PhD Milovan RADULOVIĆ – professor, Mimo Mirković dipl. ing., Aleksandar Vučinić dipl. ing. - assistants | |
| Studying method: Lectures, exercises, laboratory exercises, individual work, seminar work and practical assignments, consultations. | |
| Course synopsis: | |
| Preliminary week I week II week III week IV week V week VI week VII week VIII week IX week X week XI week XII week XIII week XIV week XV week XVI week Final week XVIII-XXI week | Preparation and semester enrolment. Introduction. Specifics of automated control of technology processes. (TEST 1) Experimental identification; Method of step and impulse signal. Method of simple and complex harmonic signal. Methods of passive experiment. Methods of object identification in loop with regulator. Identification of static characteristics (TEST 2) Methods of physical modeling. Selection of methods of experimental identification. Technical conditions for regulation systems in time range and range of amplitude - phase characteristics. I COLLOQUIUM Free week Criteria for optimal adjusting of regulator. Regulation loop as optimal noise filter. Synthesis and adjusting of simple regulation circuit. Information organs. Executive organs. Adjusting of linear regulators. (TEST 3) Commercial PID regulators Control loops with additional information. Principle of formal project of regulation loops. (TEST 4) II colloquium Analysis of loops common to many of technology processes Complex systems for control and monitoring of technology processes. (TEST 5) <i>Final exam</i> Administrative procedures Additional lessons, correction of the final exam and administrative procedures. |
| STUDENT WORKLOAD | |
| <u>per week</u> | <u>per semester</u> |
| Working hours: 5 credits x 40/30 = 6 hours and 40 minutes. Working hours structure: 3 hours for teaching 1 hour for exercises 2 hours and 40 minutes for individual work, including consultations. | Teaching and the final exam: (6hours and 40 minutes) x 16 = 106 hours and 40 minutes. Necessary preparation (before semester): 2 x (6hours and 40 minutes) = 13hours and 20 minutes. Total work hours for the course: 150hours Additional hours for preparing correction of the final exam, including the exam taking: up to 30hours. Work hours structure: 106hours and 40 minutes (lectures) + 13hours and 20 minutes (preparation) + 30hours (additional work) |
| Lessons attendance is mandatory for students, as well as doing tests, laboratory exercises and colloquiums | |
| Literature, B. Matic, Projektovanje automatskih sistema za upravljanje tehnološkim procesima, Svjetlost, Sarajevo, 1977. B. Wayne Bequette, Process Control, Prentice Hall, 2003. Curtis D. Johnson, Process Control Instrumentation Technology, Prentice Hall, 2003. | |
| The forms of knowledge testing and grading: - Tests 5x2 points. - Laboratory test 10 points, - Colloquiums 2x20 points (total 40points) - Final exam or seminar work: 40 points. Student gets the passing grade by collecting 51 points at least. | |
| Special remarks for the course : Lectures will be performed for group of 40 students, but laboratory exercises will be performed for group of 5 students. | |

Teacher(s) who provided the information: PhD Milovan RADULOVIĆ

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