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| | | Course title: MICROPROCESSORS IN INDUSTRY | | |
| Course code | Course status | Semester | Number of ECTS credits | Lecture hours |
| PA4202 | Mandatory | II | 5 | 3+0+1 |

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:
 No prerequisites required.

Course aims: Students will be introduced with possibilities of application and use of available software, as well as with basic knowledge about projects of hardware and software components of microprocessors/microcontrollers systems which are applied in industry.

Teacher(s) first and last names:
 PhD Milutin OSTOJIĆ, dipl. ing. - professor, MSc Boris MARKOVIĆ, dipl.ing. - assistant

Studying method:
 Lectures, laboratory exercises in computer room, individual work, practical assignments consultations

Course synopsis

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| Preliminary week | Preparation and semester enrolment. |
| I week | <i>Introduction. Examples of application of microcontrollers/microcomputers in industry.</i> |
| II week | <i>Architecture and organization of microcontrollers/microcomputers.</i> |
| III week | <i>Basic programs for programming of microcontrollers/microcomputers (I homework)</i> |
| IV week | <i>Advanced programs for programming of microcontrollers/microcomputers.</i> |
| V week | <i>Peripherals and interfaces of microcontrollers/microcomputers (A/D i D/A conversion) (II homework)</i> |
| VI week | I colloquium |
| VII week | <i>Digital data processing. (time frequency transformations)</i> |
| VIII week | <i>Algorithms for monitoring and control in real time. (III homework)</i> |
| IX week | <i>Interface cards for microcomputers.</i> |
| X week | <i>Sensors and measurements of characteristic physical inputs in industry using computers..</i> |
| XI week | <i>Software for control of technology processes. (IV homework)</i> |
| XII week | II colloquium |
| XIII week | <i>Connections and communications of microcontrollers/</i> |
| XIV week | <i>Internet and mobile phone as transmission media for remote control. (V homework).</i> |
| XV week | <i>Development directions of microcontroller control.</i> |
| XVI week | <i>Determination of seminar works for final exam.</i> |
| Final week | <i>Final exam</i> |
| XVIII-XXI week | Administrative procedures. |
| Additional lessons, correction of the final exam and administrative procedures. | |

STUDENT WORKLOAD

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| <u>per week</u> | <u>per semester</u> |
| Working hours: 5 credits x 40/30 = 6 hours and 40 minutes. | Teaching and the final exam: (6hours and 40 minutes) x 16 = 106 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. | 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 and laboratory exercises attendance is mandatory for students, as well as doing homework, colloquiums and seminar work.

Literature: Mikroprocesori u industriji (skripta), M. Ostojic, B. Markovic
 CD with material and laboratory exercises

The forms of knowledge testing and grading:

- Homework 5x1 points,
- Colloquium 2x 22.5 points (total 45 points)
- Final exam 50 points.

Student gets the passing grade by collecting 51 points at least.

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|-------------------------|-----------------|----------------|----------------|----------------|----------------|
| Mark | A | B | C | D | E |
| Number of points | 90 - 100 | 80 - 89 | 70 - 79 | 60 - 69 | 51 - 59 |

Special remarks for the course :If needed, the course can also be taught in English..

Teacher(s) who provided the information: PhD Milutin OSTOJIĆ
Note: Additional information on <http://www.bm.users.cg.yu/>