

		Course title: ELECTRICAL DRIVES		
Course code	Course status	Semester	Number of ECTS credits	Lecture hours
PA 4106	Mandatory	I	6	3L+2E+1Lab

Study program:

Master studies, ELECTRICAL ENGINEERING, study program: Power systems and Control department: Industrial electronics and Power systems (studies last for 10 semesters, 300 ECTS credits).
 Postgraduate studies, ELECTRICAL ENGINEERING, study program: Power systems and Control, department: Industrial electronics and Power systems (studies last for 8 semesters, 240 ECTS credits)

Prerequisites:

No prerequisites required.

Course aims:

Students will be introduced with problems regarding electrical drives, their application and project phases.

Teacher(s) first and last names:

PhD Djordje Jovanovic - professor, MSc Tanja Stankovic - assistant

Studying method:

Lectures, exercises, laboratory exercises, individual work on practical tasks, consultations.

Course synopsis:

Preliminary week	Preparation and semester enrolment.
I week	Introduction: Basic structure of electrical drives. Mechanic of drive.
II week	Static of drive: Equation of movement, mechanical characteristics, quadrants.
III week	Static mechanical characteristics of DC motors.
IV week	Generator's, contra current and electrodynamic breaking of DC motor.
V week	Speed regulation of DC drive.
VI week	I colloquium;
VII week	Drives with thyristor and transistor rectifiers and choppers.
VIII week	Introduction: AC electric drives.
IX week	Static mechanic characteristics of AC induction drive.
X week	Mechanical characteristics AC induction motor in breaking regimes.
XI week	Speed regulation of induction motor with autonomic invertors of voltage and current.
XII week	Speed regulation with cycle-converters and semiconductor cascades.
XIII week	II colloquium;
XIV week	Electric drives with synchronous motors.
XV week	Selection of electric motor power rating. Overload protection. Protection against power supply network influence.
XVI week	Final exam
Final week	Administrative procedures.
XVIII-XXI week	Additional lessons, correction of the final exam and administrative procedures.

STUDENT WORKLOAD

<u>per week</u>	<u>per semester</u>
Working hours: 6 credits x 40/30 = 8 hours.	Teaching and the final exam: (8hours) x 16 = 128hours.
Working hours structure: 3 hours for teaching 1 hour for exercises 4 hours for individual work, including consultations.	Necessary preparation (before semester): 2 x (8hours) = 16hours. Total work hours for the course: 176hours Additional hours for preparing correction of the final exam, including the exam taking: up to 36hours. Work hours structure: 128hours (lectures) + 16hours (preparation) + 36hours (additional work)

Lessons and laboratory exercises attendance is mandatory for students, as well as doing homework and colloquiums .

Literature:

1. Vučković V.: Električni pogoni, ETF, Beograd, 1997.
2. Jurković B.: Elektromotorni pogoni, Školska knjiga, Zagreb, 1978.
3. Čilikin M.G. i dr.:Teorija avtomatizirovanog elektroprivoda, Energija, Moskva, 1979.

The forms of knowledge testing and grading:

- Home exercises carry 5x1 points.
- Laboratory exercises carry 5 points.
- I and II colloquium carries 20 points (40 points total).
- Final exam carries 50 points

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

Special remarks for the course

Lessons and exercises are performed for groups of 40 students, and laboratory exercises are performed for groups of 10 students.

If needed, the course can also be taught in English

Teacher(s) who provided the information: PhD Djordje Jovanovic

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