

Course title: Basics of analogue telecommunications

Course code	Course status	Semester	Number of ECTS credits	Lecture hours
131105029	Mandatory	V	6	3+1+1

Study program:

Basic academic studies, ELECTRICAL ENGINEERING, study program: Electronics, Telecommunications and Computer engineering (studies last for 6 semesters, 180 ECTS credits).

Prerequisites: No prerequisites required.

Course aims:

Students learn basic elements of signal and system analysis. Analogue modulation methods (AM, FM and PM), and quality of signal transmission in analogues systems are studied.

Teacher(s) and assistant(s):

Assistant professor Zoran Veljović - teacher

MSc Enis Kočan - assistant

MSc Maja Ilić - assistant

Teaching method: Lectures (which include exercises), laboratory exercises and consultations.

Course synopsis:

Preliminary weeks	Preparation and semester enrollment
I week	Introduction. Nature of the messages and signals. Periodic signals analysis.
II week	Non-periodic signals analysis. Random signals. Significance of the harmonic signal analysis.
III week	Signal transmission through the linear systems. Signal distortion.
IV week	System bandwidth influence on the signal distortion.
V week	Modulations. Amplitude modulations (AM). Amplitude modulation-Conventional amplitude modulation (AM-CAM).
VI week	First test
VII week	Free week
VIII week	AM with two side lobes. AM with one side lobe. Demodulation of AM signals.
IX week	Angle modulation. Spectrum of the angle modulated signals.
X week	Frequency modulators. Demodulation of the frequency modulated signals.
XI week	Random noise. Characteristics of the narrow-band noise.
XII week	Second test
XIII week	Noise influence on transmission of the amplitude modulated signals.
XIV week	Noise influence on transmission of the angle modulated signals.
XV week	Midterm correction.
XVI week	Final exam
Final week	Administrative procedures.
XVIII-XXI week	Additional lessons, correction of the final exam and administrative procedures.

STUDENT WORKLOAD

Per week	Per semester
6 credits x 40/30 = 8 hours	
Work hours structure:	Teaching and final exam: (8 hours)x16= 128 hours
3 hours for teaching	Necessary preparation (before semester): 2x(10 hours)= 20 hours
1 hour for exercises	Total work hours for the course: 6x30 hours= 180 hours
1 hour for laboratory exercises	Additional hours: for preparing correction of final exam, including an exam taking (up to 32 hours).
3 hours for individual work, including consultations	Work hours structure: 128 hours (lectures) + 20 hours (preparation) + 32 hours (additional work)

Lessons attendance is mandatory for students, as well as doing laboratory exercises, control tests, and both final tests.

Literature: Ilija Stojanović, Osnovi telekomunikacija, Naučna knjiga, 1990

Zorka Stojanović i ostali, Zbirka zadataka iz Osnova telekomunikacija, Naučna knjiga, 1998

The forms of knowledge testing and grading:

- Activity on the lessons carries 8 points,
- Preparation, finishing and defense of laboratory exercises carry 12 points (3 points for each of the 4 exercises),
- Each test carries 15 points (30 points total)
- Final exam carries 50 points.

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

Special remarks for the course: The teaching is organized for student groups with 40 students and laboratory exercises for groups with 5 students maximum.

Teacher(s) who provided the information: PhD Zoran Veljović, assistant professor

Remark: