

Course title: Fundamentals of Telecommunications
Course code: 41073
ECTS credits: 7
Requirements: None
Basic information
Level of studies: Undergraduate applied studies
Year of study: 2
Trimester: 1
Goal: Developing basic understanding of information theory and digital transmission technologies.
Outcome: After completion of the course, students should be able to determine sampling frequency of a signal, and draw signal spectrum in simple systems. They should be able to distinguish different digital modulation methods and multiple access techniques. They should use linear system basic knowledge to determine frequency characteristics of compensation filters.
Contents of the course
Theoretical instruction
1. Simple signals, time domain, frequency domain, spectrum.
2. Random variables, probability density functions, moments, uniform and Gaussian variables
3. Thermal noise, speech signal
4. Sampling theorem, folded spectrum, quantization noise, oversampling, sample and hold circuit
5. Types of coders
6. FDMA, TDMA, CDMA
7. Detection of binary signals in the presence of noise, error probability, error correcting codes.
8. Intersymbol interference, optimal receiver, matched filter
9. Equalization, transversal filter
10. OOK, ASK, BPSK, M-PSK, FSK, MSK, GMSK, QAM
Practical instruction (Problem solving sessions/Lab work/Practical training)
1.
2.
3.
Textbooks and References

1. M. L. Dukic, Principi telekomunikacija, Akademska misao, Beograd, 2008.
2. C. Shannon, A Mathematical Theory of Communications, 1948
3. I. Reljin, Digitalne telekomunikacije (skripta), Visoka ICT
4. I. S. Stojanovic, Osnovi telekomunikacija, Naucna knjiga, Beograd, 1990.
Number of active classes (weekly)
Lectures: 4
Practical classes: 3
Other types of classes:
Grading (maximum number of points: 100)
Pre-exam obligations: Points
Activities during lectures:
Activities on practical exercises:
Seminary work: 15
Colloquium: 50
Final exam: Points
Written exam: 35
Oral exam:
Lecturer
Miroslav Đorđević, PhD
Associate