SYLLABUS

1. Course title:

Fundamentals of Telecommunications

2. Code:

TK203

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

[TK101] Signals and Systems

7. Class restrictions:

8. Duration / semester:

1 5

9. Weekly contact hours:

9.1. Lectures: 3

9.2. Seminars: 1

9.3. Laboratory/Practice classes: 1

10. Faculty:

Faculty of Electrical Engineering

11. Department/study program:

Electrical Engineering and Computer Science

12. Lecturer:

Ph.D. Nermin Suljanovic, full prof.

13. Lecturer's e-mail:

nermin.suljanovic@untz.ba

14. Web site:

(max. 50 characters)

15. Course aims:

Learn basic analog communication techniques and fully understand digital transmission of analog messages.

16. Learning outcomes:

Student will understand basic communication terms, gain knowledge about analog communication techniques and digital transmission of analog messages, apply mathematical models in analog communication system performance analysis, understand architecture of analog receivers, synchronization and functioning of phase-locked loop.

17. Course content:

Elements of communication systems. Modulation. Signal processing for modulation analysis. energy of modulated signals. Linear CW modulation (AM, DSB, SSB, VSB). Modulators. Exponential CW modulation (PM, FM, tone and multitone modulation). Receivers for CW modulation (superheterodyne receivers, direct conversion receivers, receiver specifications). Analog multiplexing systems. PLL and synchronization. Baseband digital transmission (PAM, PCM, Quantization noise, Nonuniform quantization and companding, Line codes, Regeneration). Hardware design of analog modulators and demodulators.

18. Learning methods:

Lecturing with projected presentations and necessary derivations on blackboard, with active student participation. Seminars include problem solving and use cases. Laboratory is based on experimental setups and numerical simulations.

19. Assessment methods:

Test and homeworks during semester and final exam.

20. Assessment components:

Midterm test and homeworks are 60% of the final grade. The final written test is 40%.

21. Required reading list:

B.P. Lathi, "Modern Digital and Analog Communication Systems", Oxford, 1998.
A.B.Carlson, P.B.Crilly, J.C. Rutledge, "Communication System", McGraw-Hill, 2002.
M.F. Pitz, "Fundamentals of Communication Systems", McGraw Hill, 2007.

22. Web sources:

(max. 687 characters)

23. Applicable starting from the academic year:

2016/17

24. Adopted in the Faculty/Academy session:

04.04.2016