SYLLABUS

1. Course title:

Signals and Systems

2. Code:

TK101

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

[MAT1] Mathematics 1

7. Class restrictions:

8. Duration / semester:

1 3

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:

Gain knowledge about basic signals, linear-time invariant (LTI) systems and transformations used in signals and systems analysis and synthesis.

16. Learning outcomes:

Student will learn basic principles of signal processing, become capable to clasify signals and systems, analyse LTI systems, compute response of LTI systems to an arbitrary input, use Laplace transform in system analysis, understand Fourier transform and anlyse systems in frequency domain, understand sampling and signal reconstruction.

17. Course content:

Classifications of signals. Classifications of systems. Properties of systems. Basic signals. Basic operations on signals. Linear-time invariant (LTI) systems. Impulse response. Convolution. Other properties of LTI systems. Systems described by linear differential equations. Laplace transform. Region of convergence. Properties of LT. Transfer function. System properties analysis in s-domain. Inverse Laplace transform. Fourier series. Properties. Amplitude and phase characteristics. Fourier transform. Properties. Frequency response. Filters. Sampling theorem. Signal reconstruction. Description of discrete-time linear shift-invariant systems. Convolution sum. Circular convolution.

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 sessions and numerical simulations.

19. Assessment methods:

Two tests during semesters and final test.

20. Assessment components:

Two tests during semester are 50%.of the final grade The final written test is 50%.

21. Required reading list:

- Suljanović, Mujčić, Hasanović,"Signali i sistemi", Hamidović, 2010.
- Oppenheim et al, "Signals and Systems", 2th ed., Prentice-Hall, 1996.
- S. Haykin, "Signals and Systems", 4th ed.,John Wiley&Sons, 2002.

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