SYLLABUS

1. Course title:

Optical Telecommunications

2. Code:

TK302

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

[TK101] Signals and Systems, [TK102] Introduction to Electronics

7. Class restrictions:

Students of Faculty of Electrical Engineering, Study program "Electrical Engineering and Computer Science" with fulfi

8. Duration / semester:

1 6

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. Aljo Mujčić, Full professor

13. Lecturer's e-mail:

aljo.mujcic@untz.ba

14. Web site:

(max. 50 characters)

15. Course aims:

The aim of this course is to provide students with the theoretical and practical knowledge in the areas of generation, modulation, transmission, detection and processing of optical signals. Based on the fundamental theoretical knowledge, students also will gain knowledge about the design of optical communication system used in point to point links and in the optical access networks.

16. Learning outcomes:

At the end of the semester/course successful students, who during the whole educational period continuously perform their duties, will be able to:
1. understand the fundamental operation of components for the generation, transmission and detection of optical signals.
2. design optical communication system used for point to point links, with and without wavelengths division multiplexing,
3. basic concept of optical access networks.

17. Course content:

Overview of optical communication systems. Introduction to optics. Optical fibers: wave propagation in optical fibers; coupling into and out of fibers; characteristics. Dispersion in optical communication systems. Optical sources and transmitters. Optical detectors and receivers. Optical amplifiers. Optical networks, multiplexing. Optical link design. Dense and Coarse Wavelength Division Multiplexing. Introduction to optical access networks.

18. Learning methods:

Lecturing with projected presentations and necessary derivations on blackboard, with active student participation. Seminars include problem solving and use cases based on light generation, transmission and detection. Laboratory experiments cover these topics and verify lecture theory. Laboratory is based on experimental sessions including optical components, fibers and numerical simulations of optical communication components and systems..

19. Assessment methods:

Continuous assessment during the semester including the two tests during the semester, and the final exam. From two tests during the course students can collect a maximum of 50 points (25 points for each test). The first test is done in the 8th week of the semester and includes the material presented in the first 7 weeks of the semester. The second test is done in the last week of the semester and includes the material presented in the second part of the semester. Final examinations are taken in writing. On the final exam student can achieve a maximum of 50 points.

20. Assessment components:

Final grade is based on the total number of points earned by completing tests during semester and a final exam. The student can achieve a maximum of 100 points according to the following scale:
The first test 25
The second test 25
Total points during semester 50
The final exam counts for 50 points
Total 100

21. Required reading list:

1. A. Mujčić, Optičke telekomunikacije – prezentacije za predavanja,
2. Govind P. Agrawal , Fiber-Optic Communication Systems, 4rd Edition, (Wiley), 2010.
3. Gerd Keiser, Optical Fiber Communications, McGraw-Hill, 4 edition, 2010.

22. Web sources:

(max. 687 characters)

23. Applicable starting from the academic year:

2016/2017

24. Adopted in the Faculty/Academy session:

04.04.2016