

<b>Course title: Optical Networks</b>
Course code: 41088
ECTS credits: 6
Requirements: None
<b>Basic information</b>
Level of studies: Master applied studies
Year of study: 1
Trimester: 2
Goal: Providing system knowledge in the field of information transmission techniques in transport, "core" and access optical networks. Practical introduction to the elements and subsystems that make up the optical network and ways to control the quality of signal transmission.
Outcome: Students should be able to demonstrate a detailed understanding of advanced transmission technologies across different optical infrastructures, and the elements of optical transmission that are necessary in engineering practice.
<b>Contents of the course</b>
Theoretical instruction
Light signal guidance mechanisms. Optical signal transmission media. Transmission and structural characteristics of optical cables. Standardization and legislation in optical networks. Perturbation of the optical signal in the transmission medium. Optical signal regeneration mechanisms. Development of optical networks. Basic characteristics of PDH networks, SDH / SONET networks. Optical signal multiplexing. Signal multiplexing in the TDM time domain. Signal multiplexing in the frequency domain WDM, CWDM, DWDM. Perspectives of IP transmission via DWDM. FTTx technology. Passive optical networks, APON, BPON, GPON and their implementation to the end user. Connecting and continuing optical fibers and cables in optical networks. connection. Optical signal couplers and splitters. Advanced technologies in the development of signal transmission over optical infrastructure.
Practical instruction (Problem solving sessions/Lab work/Practical training)
Control of signal transmission parameters in optical networks; Measurement of connection quality in optical networks.
Optical route control in real transmission conditions.

<b>Textbooks and References</b>
V. Alwayn, "Optical Network Design and Implementation", Cisco Press, Indianapolis, USA, 2004.
R. Ramaswami, K. N. Sivarajan, G. H. Sasaki, "Optical Networks: A Practical Perspective", Morgan Kaufmann Elsevier, Burlington, MA, USA, 2009.
P. Kaminov, T. Li, Optical Fiber Telecommunications, Academic Press, San Diego, 2003.
<b>Number of active classes (weekly)</b>
Lectures: 4
Practical classes: 2
Other types of classes:
<b>Grading (maximum number of points: 100)</b>
<b>Pre-exam obligations: Points</b>
Activities during lectures:
Activities on practical exercises: 10
Seminary work:
Colloquium: 50
<b>Final exam: 50 Points</b>
Written exam: 50
Oral exam:
<b>Lecturer</b>
Nikola Slavković, PhD