

# COURSE GUIDE 2019-2020



Dean, Prof. Daniela Tărniceriu

## 1. Program info

1.1 Higher education institution	"Gheorghe Asachi" Technical University of Iasi
1.2 Faculty / Department	Electronics, Telecommunications and Information Technology
1.3 Department	Telecommunications and Information Technologies
1.4 Field	Electronic Engineering, Telecommunications and Information Technology
1.5 Study level	Bachelor's Degree Studies
1.6 Study program / Qualification	Telecommunications Systems and Technologies

## 2. Course info

2.1 Course name: Optical Communications						Code: EDOS409T	
2.2 Course organizer (lecturer)			Professor Irinel Casian Botez				
2.3 Teaching assistants			Lecturer Daniel MATASARU				
2.4 Year of study	4	2.5 Semester	1	2.6 Assesement	C	2.7 Type of subject	ED

## 3. Estimated total time (hours per semester for teaching activities)

3.1 Number of hours per week	4	3.2 lecture	3	3.3 seminar/laboratory	1
3.4 Total number of hours in curricula	56	3.5 lecture	42	3.6 seminar/laboratory	14
Time distribution					hours
Textbook, course support, references and course notes study					18
Library, electronic platforms and on site documentation					9
Seminar/laboratory preparation, homework, reports, portfolios and essays					9
Tutoring					8
Assessment					6
Other activities					14
3.7 Total individual study hours	64				
3.9 Total hours per semester	120				
3.10 Number of credit points	5				

## 4. Prerequisites (where applicable)

4.1 curricula type	Electromagnetism, Electronic Circuits and Devices, Quantum Physics
4.2 competence type	

## 5. Infrastructure (where applicable)

5.1. for lectures	Video Projector
5.2. for laboratories	Experimental Bench



## 6. Specific competences

Professional competences	<ul style="list-style-type: none"> <li>- Electromagnetic radiated propagation</li> <li>- Evaluate specifications of Optical Devices</li> <li>- Software tools usage</li> </ul>
Transversal competences	Efficiently use of the information sources, communication and training resources.

## 7. Course targets (as resulting from 6. Specific competences table)

7.1 Course main target	In-depth knowledge of the theoretical, methodological and practical developments specific to optical communication (optical fibers, LED, LASER, Photodiodes, Optical link, optical networks, optical EDA software)
7.2 Course specific targets	<ul style="list-style-type: none"> <li>- Demonstrate that it has acquired sufficient knowledge to understand the notions studied</li> <li>• Understand critically, explain and interpret the theoretical, methodological and practical developments specific to optical devices and circuits</li> <li>• Apply the basic methods and principles correctly in obtaining the optimal solution regarding the requirements of the specification sheet.</li> </ul>

## 8. Contents

8. 1 Lectures	Teaching methods	Notes
Electromagnetic Optics	Combination of the lecture, explanation, and debate.	1 lecture
Optical Resonator		1 lecture
Photonics		1 lecture
Guided optical waves		2 lectures
Optical Fibers		2 lectures
Optical Transmitters		2 lectures
Optical Receivers		2 lectures
Optical Link		2 lectures
Optical Networks		1 lecture
References: 1.Casian Botez Irinel, „Telecomunicații pe fibră optică”, Ed. Tehnopres , 2004, ISBN 973-702-077-4, 190pag. 2.Irinel Casian-Botez, “Comunicații pe fibră optică” , Ed. “Gh. Asachi”, Iași 1996, 144 pag., ISBN: 973-9178-40-5. 3.Govind P. Agrawal, "Fiber-Optic Communications Systems", Third Edition, 2002, John Wiley & Sons, Inc., ISBNs: 0-471-21571-6.		
8. 2 Laboratory	Teaching methods	Notes
1. Transmission of analogue DC signals through optical fiber	Experimental Banch	
2. Operating the optical transmitter in pulse mode		
3. Determination of the parameters of the puls optical transmitter		
4.Determination of the parameters of the pulse optical receiver		
5.Transmission of the audio signals through fiber optic		
6. Impulse modulation of an optical carrier with a DC voltage		
7. Puls Amplitude Modulation and transmission through optical fiber		



**9. Course contents corroboration with the expectations of the epistemic community representatives, professional associations and relevant employers in the field of the program**

In determining the content of the discipline and the methods of teaching / examination, the discipline holders have consulted both Romanian and foreign academic counterparts with whom they have links. It also takes into account the opinion and expectations of the main industrial actors in Romania, with whom they have constant collaborations. The objectives of the discipline are in perfect harmony with the curriculum, transmitting information and forming skills necessary for future specialists in the field of electronics, telecommunication and information technology. The program was designed to integrate the subject into the curriculum for the specialization of Telecommunications Technologies and Systems, and to be in concordance with the curriculum content of prestigious universities in the country and abroad.

**10. Assessment**

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Percentage of final grade
10.4 Final Evaluation	<ul style="list-style-type: none"> <li>- The level of assimilation of specialized language</li> <li>- Correctness and completeness of knowledge</li> <li>- Logical consistency and appropriate use of optical concepts</li> </ul>	Final evaluation: Classical, two-hour, problems.	60%
10. Half-yrly evaluation	<ul style="list-style-type: none"> <li>Knowing of the equipment and how to use specific instruments;</li> <li>evaluating tools or achievements, processing and interpreting results</li> </ul>		40%
10.6 Minimum performance standard			
<ul style="list-style-type: none"> <li>Knowing the fundamental elements of theory, solving a simple problem.</li> </ul>			

Completion date:  
09.09.2019

Course organizer signature,  
Prof.dr.ing. Casian Botez Irinel

Teaching assistant signature,  
Lecturer Matasaru Daniel

Department approval date,

Department director signature,  
Associat Professor Luminita Scripcaru

**16. SEP. 2019**