

COURSE GUIDE 2019-2020

Dean, Prof. Daniela Tărniceanu



1. Program info

1.1 Higher education institution	"Gheorghe Asachi" Technical University of Iași
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: Introduction to Communications							Code: EDIS302				
2.2 Course organizer (lecturer)			Assoc. Prof. Luminița Scripcariu								
2.3 Teaching assistants			Assoc. Prof. Luminița Scripcariu								
2.4 Year of study		3	2.5 Semester		1	2.6 Assessment		C	2.7 Type of subject		DIS

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					34
Library, electronic platforms and on site documentation					14
Seminar/laboratory preparation, homework, reports, portfolios and essays					7
Tutoring					7
Assessment					2
Other activities					-
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	• No
4.2 competence type	• cognitive competencies on mathematics, physics and signals, circuits and systems

5. Infrastructure (where applicable)

5.1. for lectures	• Conference room with video projector, projection shield and blackboard. The student is required to answer teachers' questions, solve the proposed exercises and deliver a written sheet with the results.
5.2. for laboratories	• Computer networks with specific software programs installed (Matlab with Communication Toolbox, Simulink, Orcad), oscilloscope, signal generators, cables (UTP, FTP, coaxial). The laboratory activities are compulsory and each student presents a written report at the end of each class.

6. Specific competences

			ECTS ⁱ	5	ECTS Distribution ⁱⁱ
Professional competences	CP1	to explain the principles of communication systems			0.25
	CP2	to process data			0.25
	CP3	to design software algorithms			0.35
	CPS1	to use specific telecommunication software programs (MATLAB, Simulink, Orcad)			0.4
	CPS2	to identify, model and analyze analog and digital modulation techniques			0.25
	CPS3	to synthesize and simulate data codec			0.25
	CPS4	to implement data coding algorithms in a programming language			0.25
	CPS5	to identify and analyze types, characteristics and specific perturbations of different communication channels			0.25
Interdisciplinary competences	CPS6	to design, measure and test radio links			0.25
	CPS7	to design and analyze synchronization circuits			0.25
	CPS8	to design and implement equalizer algorithms			0.25
	CT1	developing teamwork abilities			0.4
	CT2	to communicate correctly			0.2
	CT3	to learn and continuous study			0.2
	CT4	to solve problems			0.2
	CT5	to develop technical creativity			0.3
	CTS5	to use specific computer software			0.4
	CTS6	to use specific telecommunications terms			0.3

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

7.1 Course main target	Forging the abilities needed in order to approach the design and implementation of the technologies used in telecommunication applications.
7.2 Course specific targets	<ol style="list-style-type: none"> 1. Acquiring theoretical knowledge on telecommunications. 2. Completing simple projects by using specific telecommunication software programmes

8. Contents

8.1 Lectures	Teaching methods	Notes
Chapter 1. Principles of Communication Systems	Oral presentation of theory and numerical examples, Solving exercises, case studies.	3 hours
Chapter 2. Data Coding (Compaction, Compression, Encryption, Error-Correction, Line Coding)	Oral presentation of theory and numerical examples, Solving exercises, case studies.	9 hours
Chapter 3. Modulation Techniques (analogical, digital)	Oral presentation of theory and numerical examples, Solving exercises, case studies.	9 hours
Chapter 4. Communication Channel. Wireless Systems	Oral presentation of theory and numerical examples, Solving exercises, case studies.	9 hours
Chapter 5. Perturbations on communication channels	Oral presentation of theory and numerical examples, Solving exercises, case studies.	6 hours
Chapter 6. Synchronization Techniques	Oral presentation of theory and numerical examples, Solving exercises, case studies.	3 hours
Chapter 7. Equalizers	Oral presentation of theory and numerical examples, Solving exercises, case studies.	3 hours
8.2 Laboratory	Teaching methods	Notes
Basic Notions on Matlab, Simulink or ORCAD	Software applications	2 hours
Discrete Informational Source Analysis	Software applications, code design	2 hours
Encryption Techniques. RSA Algorithm	Software applications, code design	2 hours
Measuring Telecommunication Cables	Hardware applications, Cable Parameters Measuring, Signal Visualization	2 hours
Digital Modulation Techniques	Software applications	2 hours
Spread Spectrum Systems. Telemetric application	Software applications, numerical cases analysis	2 hours
Final Test	quiz and testing practical abilities	2 hours

References:

1. Luminița Scripcariu, "Sisteme de comunicatii digitale", Ed. "Gh. Asachi" Iași, ISBN 973-99210-3-5, 1999.
2. Alexandru N.D., Introducere în telecomunicații, Iași: CERMI, 2004;
3. E-course on <http://telecom.etti.tuiasi.ro/telecom/staff/lscipca/discipline%20predate/discipline%20predate.htm>
4. Slides: <http://edu.etti.tuiasi.ro> (Moodle).

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

The course is intended to provide basic knowledge and abilities to students which can work for telecommunication service providers.

10. Assessment

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Percentage of final grade
10.4 Lectures	Basic Communication System Theory knowledge and application	Theory Quiz (3/8)	80 % (minimum grade is 5)
	Problem solving capabilities	Problem Solving Test (3/8)	
	Short Tests	Solving in class proposed exercises (2/8)	
	Oral Evaluation (optional)	3-5 questions or 1-2 exercises to solve (maximum +1/8)	
10.5 Laboratory	Operating on specific software programmes	- discussions student – teacher - evaluating software operating student abilities	20% (minimum grade is 5)
	Using specific equipments	- presentation of experimental results	

10.6 Minimum performance standard

The student must be present at all evaluation meetings. Obtaining at least 45 % of the total points is mandatory.

Completion date: 09/12/2019

Course organizer signature,
Assoc. Prof. Luminita Scripcariu

Teaching assistant signature,
Assoc. Prof. Luminita Scripcariu

Department approval date,

Department director signature,
Assoc. Prof. Luminita Scripcariu

16. SEP. 2019

