COURSE OUTLINE

(1) GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	INFORMATICS AND COMPUTER ENGINNERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE		**SEMESTER**	**7th, 9th**
COURSE TITLE	TELECOMMUNICATION SYSTEMS		
INDEPENDENT TEACHING ACTIVITIES if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits		**WEEKLY TEACHING HOURS**	**CREDITS**
	Lectures	3	
	Practice Exercises	1	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		4	5
COURSE TYPE general background, special background, specialised general knowledge, skills development	Specialised general knowledge Skills development		
PREREQUISITE COURSES:	Computer Networks I & II, Signals and Systems, Digital Communications		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes, in English		
COURSE WEBSITE (URL)			

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
- Guidelines for writing Learning Outcomes

Upon successful completion of the course, the student will have achieved:

- deepening and consolidating at a high level the knowledge in the scope of the knowledge subject of Telecommunication Systems
- the acquisition of knowledge regarding the methodology of problem solving and the methodology of analysis, synthesis and design of complex Telecommunication Systems and their applications

Specifically, the student must:

- To understand the structure and operation of telecommunication systems and information transmission.
- To know expertly and in depth about queuing theory, packet dropping, coding and error correction.
- To know network architectures, signaling, communication protocols and dimension switching (circuit/packet) networks.
- Draw Trellis diagrams
- To design combined source, channel and modulation coding systems as a whole.
- To acquire specialized skills for solving Telecommunication Systems problems with the aim of obtaining a basis for the production of research and innovation in the region.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	Project planning and management Respect for difference and multiculturalism Respect for the natural environment
Adapting to new situations	Showing social, professional and ethical responsibility and sensitivity to gender issues
Decision-making	Criticism and self-criticism
Working independently	Production of free, creative and inductive thinking
Team work	……
Working in an international environment	Others…
Working in an interdisciplinary environment	…….
Production of new research ideas	

Autonomous/Teamwork
Work in an interdisciplinary environment
Promotion of free, creative and inductive thinking

(3) SYLLABUS

Basic principles of telecommunication systems. Signals and Systems, filters. Analog Signal Transmission, Amplitude, Frequency, Angle Modulation (ASK, FSK, PSK, OPSK, QAM, OFDM Multiplexing, DMT). Harmonic modulation, Digital Signal Processing to deal with linear and non-linear phenomena in propagation-transmission. Queuing theory, performance (Erlangs, queuing delay, packet drop probability), coding (Trelis, comparison codes, error correction), principles of multiplexing (PDH, SDH). Theory of motion. Switching principles. Switching techniques (distinction of space and time). Signalling principles.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY Face-to-face, Distance learning, etc.	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY Use of ICT in teaching, laboratory education, communication with students	• Posting material of the theoretical part of the course (notes, lecture slides, exercises, exam topics, etc.) on the e-learning platform (e-class). • Use of e-mail and announcements on the e-learning platform to communicate with students
TEACHING METHODS The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS	**Activity** / **Semester workload** Lectures: 39 Practice Exercises: 13 Group and Individual Studies/Assignments: 25 Independent Study: 48 **Total Course** (25 workload hours per credit unit): **125**
STUDENT PERFORMANCE EVALUATION Description of the evaluation procedure Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other Specifically-defined evaluation criteria are given, and if and where they are accessible to students.	I. Written final exam including: • Theoretical part (40%) • Solving exercises/problems (40%) II. Studies – Assignments (20%) A grade of at least 5/10 on the Written Final Exam is required for successful completion of the lesson. The exam material and the evaluation process are communicated to the students in the lecture hall and in the e-class.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Telecommunication Systems, (3rd edition), Karagiannidis G., Tziola Publications (2016)
2. Basic Principles of Communication Systems, Michael P. Fitz, Kleidaritmos EPE (2012), Athens
3. Introduction to Telecommunications, Kottis P., Tziola Publications (2014)
4. Principles of Telecommunication Systems, H. Taub, D.L. Schilling, A. Tziola & Sons Publications, 2010 (3rd edition)

5. Communication Systems, S. Haykin, A. Papasotiriou & Co., 2010, Athens

- Related academic journals:
  - Telecommunications & Computer Networks, Alexopoulos A., Lagogiannis G., Self-published (2003)
  - 2. Analog and Digital Communications, Hsu Hwei P., Tziola Publications (2002)
  - 3. Communication Systems, Carison/Grilly, Fountas Publications, (2014), Athens
  - 4. Communication Systems, J.G. Proakis, M. Salehi, EKPA Publications (2002), Athens