COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF SCIENCES
ACADEMIC UNIT	DEPARTMENT OF PHYSICS
LEVEL OF STUDIES	UNDERGRADUATE
COURSE CODE	504

		SEMESTER	6, 8

COURSE TITLE	INTRODUCTION TO TELECOMMUNICATIONS

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**
	4	4
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special background, skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (Greek)
COURSE WEBSITE (URL)	http://www.telecomlab.gr/lessons/504

(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*

The course aims to introduce students to the concepts of Digital Telecommunications. After successful completion of the course, students are expected to:

- Have acquired knowledge of basic transmission and reception signal concepts as well as factors that affecting the design of a digital telecommunication system.
- Identify trigonometric Fourier series of periodic signals and calculate channel capacity.
- Design a digital telecommunication system. Evaluate parameters that affect the system's performance.
- Have acquired knowledge in coding concepts and multiple access techniques.

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*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*

Working independently

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Production of free, creative and inductive thinking

(3) SYLLABUS

Time and frequency domain representation of signals, spectrum analysis.

Communications networks, network hierarchy. Channels parameters, signal, noise, interference, distortion.

Multi-Level signalling, Channel Capacity, Baseband data transmission, Intersymbol interference, Eye diagrams, Raised cosine filtering, Matched filtering.

Partial response signalling. Gain, phase and group delay distortion. Interference and noise

2-Level Digital Modulation (ASK, FSK, PSK). Multi-Level Digital Modulation

Source, Channel, Block etc coding coding.

Multi-User Digital Modulation Techniques (FDMA). Time division multiple access (TDMA). Code division multiple access (CDMA). Combined multiple access systems.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face teaching
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Course webpage is used for providing the lecture notes and the communication with the 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	26
Practice	26
study and analysis of bibliography	25
Directed study	20
Examinations	3
Course total	100

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.

Practice (40%)
- Problem solving exercises on the course content

Written examinations at the end of semester (60%), comprising questions of knowledge and understanding of the course content (25%) as well as problem solving exercises (75%).

Prerequisite for participation in the final examination are passing marks on the Practice. The course is successfully completed when passing the final examination.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Digital Communications, 1st Edition/2000: Bateman A, ISBN: 978- 960-8050-03-7, Tziolas Editions (in Greek)
- Digital and Analog Communication Systems, 1st Edition/1979, ,K. Sam Shanmuga, ISBN: 960-7258-30-4, Pneumatikos Editons (in Greek)
- Communication Systems, 5th Edition/2010, Simon Haykin, Michael Moher, ISBN: 978-960-7182-68-5, Papasotiriou Editions.