COURSE OUTLINE

(1) GENERAL

SCHOOL	OF SCIENCES		
ACADEMIC UNIT	PHYSICS DEPARTMENT		
LEVEL OF STUDIES	GRADUATE		
COURSE CODE	M424	**SEMESTER**	2
COURSE TITLE	Digital Signal Processing		

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**
	5	8
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*	Specialised general knowledge, skills development
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	www.telecomlab.gr/SHT/m424

(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*

After successful completion of the course, students will be able to:

- Explain and apply the basic concepts of continuous time sampling.
- Analyze discrete time sequences using DFT
- Specify digital filter specifications
- Design infinitive and finite impulse response digital filters
- Implement practical signal processing problems based on programming languages (Matlab, Embedded C)

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 in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

Search, analysis and synthesis of data and information, using the necessary technologies. Autonomous work. Production of new research ideas. Production of free, creative and inductive thinking

(3) SYLLABUS

- Signals and systems
- Discrete time Fourier transform
- Sampling and reconstruction of signals
- Window functions
- FIR, IIR filters

(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*	Communication with students through email and lesson's web page
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
Laboratory training	39
Project	50
laboratory work	30
Self-Study	30
Study	22
Written Exams	3
Course total	***200***

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*	• Written work and project (50%) • Laboratory work (20%) • Oral exams (20%) The course is successfully completed when the grade in the individual assessments is at least pass.

given, and if and where they are accessible to students.	

(5) ATTACHED BIBLIOGRAPHY

- ΣΗΜΑΤΑ ΚΑΙ ΣΥΣΤΗΜΑΤΑ ΜΕ MATLAB, Εκδότης Τζιολας , ISBN 9789604185788, 2019
- Tan, L. and Jiang, J. (2019) Digital Signal Processing: Fundamentals and Applications. London, UK: Academic Press.
- Oppenheim, A., & Schafer, R. (2010). *Discrete-time signal processing*. Upper Saddle River (N.J.): Prentice-Hall
- Reay, D. (2012). Digital signal processing and applications with the OMAP-L138 eXperimenter. Hoboken, N.J.: Wiley
- Ingle, V., & Proakis, J. (2012). *Digital signal processing using MATLAB*. Stanford: Cengage Learning.
- M. H. Hayes, Ψηφιακή Επεξεργασία Σήματος, (Σειρά Schaum) Εκδόσεις Τζιόλα, Θεσσαλονίκη, 2000
- Slides - Lesson Notes