

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 <i>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</i>	WEEKLY TEACHING HOURS	CREDITS	
	5	8	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	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

<p>Learning outcomes <i>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.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i>
<p>After successful completion of the course, students will be able to:</p> <ul style="list-style-type: none"> • 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 <i>Face-to-face, Distance learning, etc.</i>	Face to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Communication with students through email and lesson's web page	
TEACHING METHODS <i>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</i>	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 <i>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</i>	<ul style="list-style-type: none"> • Written work and project (50%) • Laboratory work (20%) • Oral exams (20%) <p>The course is successfully completed when the grade in the individual assessments is at least pass.</p>	

(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