INSTITUTION	NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS						
SCHOOL	SCHOOL OF SCIENCE						
DEPARTMENT	INFORMATICS AND TELECOMMUNICATIONS						
COURSE LEVEL	UNDERGRADUATE						
COURSE TITLE	**Computer Music**						
COURSE CODE	**ΕΠ21**		**Semester**	**8**	**ECTS**	**4**	
TEACHING HOURS per week	**THEORY**	**2**	**SEMINAR.**	**1**	**LABORATORY**		
COURSE TYPE	**Select one of the following and delete the rest** Electives (ΠΜ) **K** | **E1** | **E2** | **E3** | **E4** | **E5** | **E6** | | | | | | B/E *Fill the table as in the curriculum:* Track (A-Computer Science, B- Computer Engineering) / Specialization Compulsory (Y) / Core Specialization (B)/ Elective Specialization (E)						
URL	https://eclass.uoa.gr/courses/D86/						
EXPECTED PRIOR KNOWLEDGE/ PREREQUISITES AND PREPARATION:	K11						
TEACHING AND EXAMINATIONS LANGUAGE:	GREEK / ENGLISH (Project's Essay and Presentation)						
THE COURSE IS OFFERED TO ERASMUS STUDENTS	NO						

COURSE CONTENT
Historical background, audiovisual, microphones and speakers, analogue to digital signal conversion, dithering, audio and music file formats, analogue and digital mixers / consoles, effect algorithms, sequencers and samplers, Digital Audio Workstations (DAW), mastering, music synthesis algorithms, music information retrieval, MIDI interfaces and Open Sound Control interactive systems, digital virtual instruments, algorithmic audio module design, human-machine interface in digital music environments, introduction to music information retrieval methodologies, digital signal processing systems. MATLAB and Pure Data examples for every chapter of the course.

STUDENT LEARNING OBJECTIVES
The purpose of the course is to become familiar with modern methods of using computers in music signals and systems. The course focuses on the use of computers and computer science in the processing / creation of digital audio signals so that an integrated digital music platform can be constructed. Examples of digital audio design and sound processing systems will be presented. At the same time, laboratory exercises will be performed in the recording studio with the aim of applying the theory to systems consisting of software and hardware.

<table>
<tr><th colspan="2">TEACHING AND LEARNING METHODS - ASSESSMENT</th></tr>
<tr><td>TEACHING METHOD</td><td>In Class (Face to Face)</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</td><td>Learning process supported by the e-class platform
Email communication
Utilization of Specialized Software (MATLAB (https://www.mathworks.com/products/matlab.html), PURE DATA (https://puredata.info))</td></tr>
<tr><td>TEACHING ORGANIZATION
Describe in detail the way and methods of teaching:
Enhanced Lectures,
Online Lectures,
Seminars,
Tutorial,
Laboratory,
Laboratory Exercise,
Study & analysis of literature,
Practice (Positioning),
Interactive teaching,
Developing a project,
Individual / group work
Telework (reference to tools) etc.

Details of the student's study hours for each learning activity and hours of non-guided study are shown to ensure that the total workload at the semester corresponds to the ECTS</td><td>The theory is presented with power-point slides that are available in e-class. The programming examples are presented during lectures.
<table><tr><th>Activity</th><th>Student Workload (hours)</th></tr><tr><td>Lectures</td><td>39</td></tr><tr><td>Midcourse Project</td><td>23</td></tr><tr><td>Final Project</td><td>38</td></tr><tr><td>Total Course</td><td>100</td></tr></table></td></tr>
</table>

ASSESSMENT OF STUDENTS *Description of the assessment process* *Assessment Methods, Formative or Concluding, Multiple Choice Test, Quick Response Questions, Test Development Questions, Problem Solving, Written Work, Report / Report, Oral Examination, Public Presentation, Laboratory Work, Other / Other* *Fully defined evaluation criteria are mentioned and if and where they are accessible to students.*	Evaluation method is based on two Projects: a) Midcourse and b) Final. Both of the Projects include: I. code 30% II. Public Presentation 40% III. Written Essay 30% Students have to upload both of the projects to the e-class in predefined deadlines.

Assessment methods	*Number*	*Percentage*
Midcourse Essay	1	30%
Final Essay	1	70%

LITERATURE AND STUDY MATERIALS / READING LIST

- Διονύσης Πολίτης "Μουσική πληροφορική", Κλειδάριθμος, 2007 (ISBN: 978-960-461-030-3)
- Θεόδωρος Λώτης και Ταξιάρχης Διαμαντόπουλος "Μουσική Πληροφορική & Μουσική με Υπολογιστές", Ελληνικά Ακαδημαϊκά Ηλεκτρονικά Συγγράμματα και Βοηθήματα, 2015 (ISBN: 978-960-603-408-4)
- T. Giannkopoulos, A. Pikrakis "Introduction to Audio Analysis, A MATLAB Approach" Academic Press, 2014 (ISBN: 978-0-08-099388-1)