COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF FINE ARTS		
ACADEMIC UNIT	DEPARTMENT OF FINE ARTS AND ART SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**ΕΤΕΠ627**		**6th, 8th**
COURSE TITLE	Computer Science for the Arts V		

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**
	3	3
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*	Skills development
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
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, students are expected to:

- Understand the parallel evolution of Informatics and Art.
- Grasp the basic principles of Informatics.
- Create artistic work using Informatics.
- Apply audiovisual artistic creation as a way of perceiving events beyond sensory stimuli.
- Develop a critical approach to the use of Artificial Intelligence in their artistic work.

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
Adapting to new situations
Decision-making
Working independently
Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues

Team work *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Criticism and self-criticism* *Production of free, creative and inductive thinking* *……* *Others…* *…….*

Students are expected to acquire the following general competences:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology.
- Working independently - Team work.
- Project planning and implementation of contemporary Art projects.
- Production of new research ideas.
- Production of free, creative and inductive thinking.
- Working in an interdisciplinary environment.

(3) SYLLABUS

Informatics, due to its explosive growth in recent decades, has become a significant tool for artists. It is used in a wide range of expressive forms, including : Video Art, Internet Art, 2D and 3D animation, interactive installations, mapping projection, holographic projection, sound environments, audiovisual effects, and many other forms of contemporary artistic creation. The purpose of the lab-based course cluster "Informatics: Multimedia Art Applications" is to enable students to use technology as a means of expression to create artworks that go beyond simple multimedia presentation and move into more interactive forms such as Interactive Multimedia (interaction with the viewer) and Hypermedia (promoting a high degree of interaction between artwork and user). Part of the syllabus and deliverables (original artistic work) are organically connected to the syllabus and produced work of the workshop “Painting–3D Representations with New Technologies.”

The course “Informatics for the Arts V” focuses on the study, design, and implementation of interactive audiovisual installations using Arduino and Processing software. Emphasis is placed on exploring the potential for interaction between the artwork and the viewer through the integration of digital technologies and sensory data within artistic environments. The use of sensors via the Arduino platform enables the recording of parameters from the physical environment (such as motion, temperature, sound, or light), which are converted into digital information and communicated to Processing through the serial port. At the same time, the Processing software offers video processing capabilities, either from live camera input or video files, providing multiple possibilities for creating real-time audiovisual compositions.

This course builds upon the knowledge students have acquired in the courses “Informatics for the Arts II” and “Informatics for the Arts III,” encouraging them to delve deeper into the technical and artistic potential of these technologies and to explore their integration for the creation of interactive artworks. The interaction between viewer and artwork is positioned at the core of the artistic intent, as the audience’s active participation can significantly influence the trajectory, form, or development of the installation. In this way, the course introduces students to contemporary forms of new media art, fostering the development of original creative expressions. Furthermore, it presents the possibilities of utilizing Artificial Intelligence and emphasizes the necessity for the user-artist to adopt a critical perspective toward digital tools and emerging technologies.

(4) TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face. The teaching methodology is student-centered and constructive, based on active engagement through cooperative group methods (respecting diversity and equal opportunities), building on students' prior knowledge (including alternative conceptions discussed through dialogue), aiming at investigative-discovery learning, interdisciplinary approaches, development of critical and creative thinking, and metacognition.</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>In order to achieve the educational objectives, Information and Communication Technologies (ICT) are employed, along with appropriate technical infrastructure, which includes a video projector, computers for the use of Processing and Arduino software, Arduino platforms with the necessary peripheral components, internet connectivity, and other supportive applications. ICT is integrated into the teaching process, laboratory-based training, and communication with students, enhancing their active participation, interaction, and creative engagement.</td></tr>
<tr><td>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</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>25</td></tr>
<tr><td>Laboratory Practice</td><td>25</td></tr>
<tr><td>Project</td><td>25</td></tr>
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<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>75</td></tr>
</table>
</td></tr>
<tr><td>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</td><td>As part of the course, students are required, by the end of the semester, to present an interactive audiovisual installation. The project may be developed individually or in groups, depending on the complexity and scope of the creative proposal. The development of the work is based on the use of Arduino and Processing software. Throughout</td></tr>
</table>

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.	the semester, emphasis is placed on the gradual development of the project, with a systematic presentation of all stages of the process — from the initial concept and artistic inspiration to design, technical implementation, and final presentation. This structure encourages the active participation of students, promoting collaboration, critical thinking, and an experimental approach.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Arduino

*- Banzi, M. & Shiloh, M. (2014). *Getting Started with Arduino* (3rd Ed.). Maker Media.*
*- Blum, J. (2013). *Exploring Arduino*. Wiley.*
*- Bouras, A. & Kappos, G. (2021). *Arduino: Algorithms, Programming, and Applications*. Kleidarithmos Editions.*
*- Margolis, M. (2011). *Arduino Cookbook* (2nd Ed.). O'Reilly.*
*- Monk, S. (2013). *Programming Arduino: Getting Started with Sketches* (2nd Ed.). McGraw-Hill.*
*- Papazoglou, P. & Lionis, S.P. (2021). *Developing Applications with Arduino* (3rd Ed.). Tziolas Editions.*
- https://create.arduino.cc/projecthub
- https://forum.arduino.cc
- https://www.arduino.cc
- https://www.arduino.cc/en/Guide

Processing

Casey Reas & Ben Fry, Getting Started with Processing, O'Reilly Media, 2015
Casey Reas & Ben Fry, Processing: A Programming Handbook for Visual Designers and Artists, MIT Press, 2014
Christiane Paul, Digital Art, Thames & Hudson, 2023
Daniel Shiffman, Learning Processing: A Beginner's Guide to Programming Images, Animation, and Interaction, Morgan Kaufmann, 2015
Daniel Shiffman, The Nature of Code, 2012
John Maeda, Design by Numbers, MIT Press, 1999
Lev Manovich, The Language of New Media, MIT Press, 2001
Stephen Wilson, Information Arts: Intersections of Art, Science, and Technology, MIT Press, 2003
https://natureofcode.com
https://openprocessing.org
https://processing.org
https://thecodingtrain.com

Interactive Installations & New Media Art

Deligiannis, J. (2007). The Information Society and the Role of Interactive Multimedia (1st ed.). Nikos Thermos & Co IKE.
Deligiannis, J. (2010). The Information Society and the Role of Interactive Multimedia (2nd ed.). Nikos Thermos & Co IKE.
Dixon, S. (2007). Digital Performance: A History of New Media in Theater, Dance, Performance Art, and Installation. MIT Press.
Grau, O. (2003). Virtual Art: From Illusion to Immersion. MIT Press.
Paul, C. (2015). Digital Art (3rd ed.). Thames & Hudson.
Popper, F. (2007). From Technological to Virtual Art. MIT Press.
Tribe, M., & Jana, R. (2006). New Media Art. Taschen.
Wilson, S. (2002). Information Arts: Intersections of Art, Science, and Technology. MIT Press.

Museums and Art Centers

MoMA – Department of Media and Performance Art: https://www.moma.org/research-and-learning/departments/media-and-performance-art
Rhizome: https://rhizome.org
Tate Modern – Digital and Interactive Art: https://www.tate.org.uk/art/art-terms/i/interactive-art