Course Title	**Multimedia**
Course Code	**ACSC375**
Course Type	**Computer Elective**
Level	Bachelor (1ˢᵗ Cycle)
Year / Semester	3, 4 (Fall/Spring)
Teacher's Name	Dr. Stephania Loizidou Himona

ECTS	5	Lectures / week	3	Laboratories / week	

Course Purpose and Objectives	The purpose of this course is to give students a broad foundation in issues related to creating multimedia and hypermedia applications. Topics to be covered include history and philosophy of hypermedia, principles of human-computer interaction, multimedia programming, optimizing for CD-ROMs and the WWW, digital representation and editing of media (audio, graphics, video), media compression and transmission, and delivery of multimedia applications.
Learning Outcomes	By the end of the course, the students should be able to: 1. Develop a broad foundation in issues related to multimedia/ hypermedia 2. Widen a broad foundation in the different emerging applications of multimedia as well as hypermedia 3. Enhance knowledge on issues related to HCI, optimisation, digital representation and editing media, compression/decompression (video and audio) as well as transmission 4. Distinguish and make clear the connections between Computer Graphics, Multimedia, VR, Expert Systems, Artificial Intelligence, Simulation and/or Animation Develop small multimedia applications in computer labs that simulate the different application areas covered in (2) above, using the concepts of (3) above.

Prerequisites	ACSC288, ACSC382, ACOE312	Required	

Course Content	
	Basics An Overview of Multimedia, definition. Media types and characteristics (images, audio, animation, video etc). Application areas – storage – DVD, MM databases, transmission (conferencing, streaming etc). Multimedia Authoring. Case Studies. Basic Programming. **Hypermedia** Principles of User Interface (including GUIs). User Interface & Screen Design. Navigation Techniques. Storyboarding & Story Development. **Audio & Video Processing** Digital audio representation and processing. Fundamentals of digital video. Java 3D API. **Synchronization** Synchronizing multiple media streams. Responding to media events. Multithreaded programming. **Compression** Lossless compression algorithms. Huffman coding. Arithmetic coding. LZW algorithm. Loose compression algorithms. **Multimedia storage, communication, standards** Multimedia storage devices. RAID, CD, DVD etc. Network multimedia. Multimedia databases. MP3, JPEG, MPEG4, MPEG7, MPEG21. **Applications** Visualizing Quantitative Information. Form vs. Function. Appropriate Applications of Multimedia – When should a book be a book? Accommodating Multiple Views. **Media** Basic Electronic Imaging. Image File Formats. Importing/Exporting between Programs. Scanning for Screen & Printer. Traditional & Computer Animation. Sound Processing, Representation of Sound Waves. Recording, Mixing and Editing. The Movie Image: Digitizing Video. Video Editing & Production. **Design Issues** History & Impact of Typography. Page Layout Techniques. Basic Design Principles. Colour Theory Principles. **Publishing for the Future**

	The WWW as a Culture. Designing for the Web. The HTML Language & its Future. ● **Related Issues** A Philosophical Perspective of multimedia. The Impact of Technology on Learning. The Presentation of Information. The Impact of Technology on Art. Copyright, Ethics & Society.
Teaching Methodology	This is a project based course. Lectures will be given 3 times a week in a classroom where the concepts and technologies are covered. The lectures are available online for the students (e-learning platform) and they will be presented using PowerPoint slide presentations. In addition to this, supplement papers related to the topic will be given to the students to study. Students will be advised to use the reference books for further reading and practice. For every subject that will be presented, homework will be assigned in order to reinforce the material. Students will use the textbook, reference textbooks and supplemental papers to solve the homework problems. Example problems will be solved during lectures in order to help the students understand the material better. Students are assessed continuously and their knowledge is checked through the midterm exam and homework. They are prepared for final exam, by revision on the matter taught, problem solving and concept testing and are also trained to be able to deal with time constraints and revision timetable. A final group project will be assigned after the midterm is completed. The groups will be between 3-4 students and they will be divided based on their expertise and interest. A number of lecture hours will be devoted to assigning and assisting in the development of the project. The students will show their weekly progress to the professor during office hours. The Lab hours will originally be used to develop the homework assignment programs. Towards the end of the term, the lab hours will be used to aid the students in the development of the final project.
Bibliography	1. Multimedia: Making it Work, Ninth edition, Tay Vaughan, McGraw Hill Education 2014 2. Multimedia Communication Technology. Representation, transmission and identification of multimedia signals, Springer 2004 3. Java Media Framework API Guide, java.sun.com/products/java-media/jmf 4. Java Sound Programmers Guide, java.sun.com/documentation/ 5. D.J. Bovier Getting Started with Java 3D API. Sun Microsystems, 2001 6. Java Speech API Programmers Guide, Sun Microsystems, 1998
Assessment	Coursework 20% Lab work 20% Final Exam 60%

| Language | English |