

<b>Course unit title:</b>	Multimedia Systems
<b>Course unit code:</b>	CSW271
<b>Type of course unit:</b> (Compulsory/optional)	Optional
<b>Level of course unit:</b> (First, second or third cycle)	Bachelor (1st cycle)
<b>Year of study:</b>	2
<b>Semester when the unit is delivered:</b>	3 or 4
<b>Number of ECTS credits allocated:</b>	6
<b>Name of lecturer(s):</b>	TBA
<b>Learning outcomes of the course unit:</b>	
<p>Upon successful completion of this course students should be able to:</p> <ul style="list-style-type: none"> <li>• Discuss the basic principles of multimedia systems and their constituents</li> <li>• Apply the basic principles for multimedia authoring</li> <li>• Recall basic techniques for digital data acquisition</li> <li>• Discuss and analyze the methods of multimedia compression</li> <li>• Discuss and analyze methods of multimedia distribution</li> </ul>	
<b>Mode of delivery:</b>	Face-to-face
<b>Prerequisites and co-requisites:</b>	CSC133
<b>Recommended optional program components:</b>	None
<b>Course contents:</b>	
<p><b>Objective:</b> Multimedia has become an indispensable part of modern computer technology. In this course, students will be introduced to principles and current technologies of multimedia systems. Issues in effectively representing, processing, and retrieving multimedia data such as sound and music, graphics, image and video will be addressed. The students will gain hands-on experience in those areas by implementing some components of a multimedia streaming system as their term project. Latest Web technologies and some advanced topics in current multimedia research will also be discussed.</p>	

**Description:****Multimedia Content Creation:**

Introduction to Multimedia Systems, Digital Data Acquisition: Signals, Sampling, Aliasing, Filtering and Fourier Theory. Media representation and formats: Digital Images, Video and Audio, along with Graphics. Color theory: Trichromaticity theory, the color problem, color calibration, gamma correction, and other issues. Multimedia systems inter- and intra-media processing, multimedia authoring paradigms and their user interfaces, Multimedia services and content management.

**Multimedia Compression:**

Overview of compression, the need for compression, basics of information theory, a taxonomy of compression, lossless vs. lossy compression, practical issues. Image compression, redundancy and relevance of image data, classes of image compression techniques, Lossless, Transform, Wavelet-based, and Fractal Image coding, Transmission Issues. Video compression, complexity of motion compensation, video coding standards. Audio compression theory, audio as waveform, compression using psychoacoustics, model-based and event list audio compression. 2D- and 3D- graphics objects, Mesh compression and multi-resolution techniques

**Multimedia Distribution:**

Multimedia networking, the OSI layer, LANs, WANs, modes of communication, Multimedia networking performance and quality of service, standards and protocols. Multimedia wireless networking, wireless generations and standards, problems. Digital rights management, watermarking, encryption, the media industry,

**Contemporary topics:**

Multimedia databases, recent trends in multimedia, frameworks, and other material that the instructor deems relevant and necessary.

**Recommended or required reading:**

Havaladar, P. and Medioni, G. Multimedia Systems: Algorithms, Standards, and Industry Practices. Course Technology. 2009

Chapman, N. and Chapman, J. Digital Multimedia. Wiley. 2009

Vaughan, T. Multimedia: Making it work. McGraw-Hill Osborne Media. 2010

**Planned learning activities and teaching methods:**

Class Instruction:

42 Hours

Consultation:

30 Hours

<b>Assessment methods and criteria:</b>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding-right: 20px;">Examinations</td> <td style="text-align: center;">40%</td> </tr> <tr> <td>Class Participation</td> <td style="text-align: center;">5%</td> </tr> <tr> <td>Assignments</td> <td style="text-align: center;">15%</td> </tr> <tr> <td>Project</td> <td style="text-align: center;">40%</td> </tr> <tr> <td></td> <td style="text-align: center;">100%</td> </tr> </table>	Examinations	40%	Class Participation	5%	Assignments	15%	Project	40%		100%
Examinations	40%										
Class Participation	5%										
Assignments	15%										
Project	40%										
	100%										
<b>Language of instruction:</b>	English										
<b>Work placement(s):</b>	No										
<b>Place of Teaching:</b>	Regular Classroom European University Cyprus, Nicosia										