



Τμήμα Ηλεκτρολόγων Μηχανικών &
Μηχανικών Υπολογιστών
Ελληνικό Μεσογειακό Πανεπιστήμιο

Msc Informatics Engineering

Advanced Multimedia and Computer Graphics

Course Objectives

The course aims to give students the cutting edge knowledge on creating applications enhanced with multimedia (video, audio, text) and graphics. The course covers in theory and practice of the novel technologies of multimedia and especially on the internet environment. The course studies important topics related to platforms and protocols streaming technologies and web3D technologies. In the course laboratory there is an internship in graphics and multimedia on the internet and in the use of cutting-edge technologies.

Upon successful completion

Upon successful completion of the course the student:

- 1.Knows the methodologies of design and development of multimedia and graphic applications on the internet.
- 2.Uses cutting-edge technologies and tools used to develop multimedia and computer graphics applications in a browser environment and the Internet.
- 3.Integrates knowledge from different areas, such as usability and user-machine interface, internet technologies and computer systems, etc.
- 4.Designs and develops innovative applications required to serve the specialized needs of companies operating in the field of online games, telecommunications, information, entertainment, etc.

Lecture Units

- Introduction. Internet, protocols and servers.
- Introduction to web programming on the browser side
- Multimedia technology with emphasis on the internet
- Real-time applications using streaming technology
- Three dimensional technology on the internet
- Sound and virtuality.
- Advanced topics in graphics
- Physics in graphics and multimedia applications
- Coexistence of graphics and multimedia in applications
- Applications in education, entertainment, social networks and telecommunications, etc

Technological Outline

- Internet technology
- Image and video Compression & Standards
- Audio standards
- Vector graphics
- 3D graphics and rendering
- Light and sound in 3D rendering
- Video inside 3D
- Virtual worlds and applications
- Mixed reality, augmented reality
- 3D sound, auralization

References

The course is based on literature from scientific journals and selected topics from handbooks

- “HTML5 and Javascript Projects,” Jeanine Meyer, APRESS
- “Foundation Game Design with HTML5 and Javascript” , Rex Van Der Spuy, APRESS
- www.w3.org SVG, Declarative 3D, WEBRTC
- www.x3dom.org
- www.web3d.org
- www.threejs.org
- Multimedia Tools and Applications, Journal, Editor Springer
- International Journal of Interactive Multimedia and Artificial Intelligence (UNIR), open access

Evaluation

The course evaluation is mainly based on small project reports and exercises during the semester and a final project where you will develop an application or make a literature research of your choice.

Course program

The course lectures will be every Thursday 17:15 in 205 classroom

Later for having access to computers we will move to Multimedia Lab

We schedule to have courses up to 27th of January when you are expected to present your final project