

COURSES OFFERED IIN ENGLISH FALL SEMESTER 2019-2020

Winter Semester 2019/2020

συμπεριλαμβάνει περιγραφή του μαθήματος , τις πιστωτικές μονάδες , τη σχετική βιβλιογραφία αν υπάρχει, όνομα διδάσκοντα, ηλεκτρονική διεύθυνση όπου είναι δυνατόν ή ότι άλλο κρίνετε εσείς ως απαραίτητη πληροφορία.

CS426 Computer Graphics

Type: Restricted choice

Level: Undergraduate

Credit: 7,5 ECTS units

Instructor: Y. Chrysanthou /

Objectives: Introduction to the basic principles of digital image synthesis. Explain how a 3-dimensional virtual world is defined starting from the geometry, the materials, the lights and cameras and how the 2-dimensional resulting image is produced by going through the graphics pipeline. Provision of both the theoretical foundations as well as practical skills through the use of industry standards, such as OpenGL or DirectX.

Content: Scene construction, scene hierarchies, camera specification, projections of primitives, clipping, visible surface determination, polygon rasterisation (z-buffer), texture mapping, local and global illumination, shadows, ray tracing, radiosity, real-time acceleration techniques.

Prerequisites: CS132

Bibliography:

1. M. Slater, A. Steed and Y. Chrysanthou, *Computer Graphics and Virtual Environments: From Realism to Real-Time*, Addison-Wesley, 2001.
2. P. Shirley, M. Ashikhmin and S. Marschner, *Fundamentals of Computer Graphics*, 3rd Revised Edition, 2009.

Teaching methods: Lectures (3 hours weekly) and Laboratory sessions (2 hours weekly).

Assessment: Final exam, midterm exam and homework.

CS445 Digital Image Processing

Type: Restricted Choice

Level: Undergraduate

Semester: Fall

Credit: 7,5 ECTS units

Instructor: C. Pattichis

Objectives: Introduction to the basic principles of Digital Image Processing: Digital Image and Video. Analysis and implementation of image and video processing and analysis algorithms and their

application in industrial and biomedical systems. Content: Binary Image Representation. Image Histogram and Point Operations. Discrete Fourier Transform. Linear Image Filtering. Non Linear Image Filtering Pipeling. Image Compression. Image Analysis I. Image Analysis II. Digital Video Processing.

Prerequisites: CS132, MAS016

Bibliography:

1. R. C. Gonzalez and R. E. Woods, *Digital Image Processing*, 2nd Edition, Addison-Wesley, 2002.

Teaching methods: Lectures (3 hours weekly) and Laboratory sessions (2 hours weekly).

Assessment: Final exam, midterm exam and homework (laboratory exercises, additional exercises, final project).

<https://www.cs.ucy.ac.cy/docs/prospectus-en.pdf>