CPCS-391 Syllabus

Catalog Description

CPCS-391 Computer Graphics (I)
Credit: 3 (Theory: 3, Lab: 0, Practical: 1)
Prerequisite: CPCS-204 , CPCS-212
Classification: Department Required

The objective of this course is to study the hardware and software principles of interactive raster graphics. Topics include an introduction to the basic concepts of computer graphics, 2-D and 3-D modeling and transformations, viewing transformations, projections, rendering techniques, graphical software packages, and graphics systems. Students will use a standard computer graphics API to reinforce concepts and study fundamental computer graphics algorithms.

Class Schedule

Meet 50 minutes 3 times/week or 80 minutes 2 times/week

Lab/Tutorial 90 minutes 1 times/week

Textbook

Donald Hearn, M. Pauline Baker, Warren Carithers, , "Computer Graphics with OpenGL", Pearson Education; 4 edition (2011)

ISBN-13 9780132484572 **ISBN-10** 0132484579

Grade Distribution

Week	Assessment	Grade %
6	Exam 1	20
12	Exam 2	20
14	Group Project	20
15	Graded Lab Work	20
16	Exam	20

Topics Coverage Durations

Topics	Weeks
Overview of Graphics Systems (Ch.1 & Ch. 2)	1
Graphics Output Primitives (Ch. 3)	3
Attributes of Graphics Primitives (Ch. 4)	1
Geometric Transformations (Ch. 5)	2
Two-Dimensional Viewing (Ch. 6)	2
Three-Dimensional Viewing (Ch. 7)	3
Illumination Models and Surface-Rendering Methods (Ch. 10)	3

Last Articulated

February 19, 2018

Relationship to Student Outcomes

a	b	c	d	e	f	g	h	i	j	k
x	x	x								

Course Learning Outcomes (CLO)

By completion of the course the students should be able to

1. Compare various computer graphics hardware & software tools (a)
2. Compare different drawing algorithms (a)
3. **Apply drawing algorithms to draw lines, circles and ellipse (b)**
4. **Apply filling algorithms to fill polygons (b)**
5. Recognize the problem of Antialiasing (a)
6. Compare (2D & 3D) geometric transformations (a)
7. **Compose 2D &3D transformations to transform shapes (b)**
8. Identify viewing transformation (a)
9. Compare various clipping algorithms for lines & polygons (a)
10. **Apply clipping algorithms on lines & polygons (b)**
11. Compare current 3D projections types (a)
12. Compare illumination models & their effects on shapes (a)
13. **Apply illumination models on shapes (b)**
14. Use OpenGL to practice studied theoretical concepts (c)
15. Design & develop a project that implements a graphic topic or applies a new tool (c)

Coordinator(s)

Dr. Mohamed Dahab, Associate Professor