

Faculty of Computers & Information Technology

Computer Graphics

Information :

Course Code : ITC 341

Level : Undergraduate

Course Hours : 3.00- Hours

Department : Department of Computer Science

Instructor Information :

Title	Name	Office hours
Professor	Khaled Mohamed Hosny Mohamed Emam	1
Teaching Assistant	Mahmoud Magdy Mohamed Abdo	6

Area Of Study :

Introduction, history and survey of graphics applications. Overview of graphics systems and output devices. Output primitives including points, lines, circles, splines, area filling, and character generation. Attributes of output primitives. Two – dimensional transformations, windowing and clipping. Interactive input methods. Introduction to three-dimensional graphics. Principals of Color

Description :

Introduction to Computer Graphics; Overview of Graphics systems; Line drawing algorithms; Circle drawing algorithms; Ellipse drawing algorithms; Area filling algorithms; Polygon filling algorithms; Line clipping algorithms; Polygon clipping algorithms; Two dimensional transformations; (translation – rotation – scaling – general transformations – composite transformations); Three dimensional object representation and Projections; Three dimensional modeling and transformations (translation – rotation – scaling – sheer – reflection – composite); Three dimensional Viewing and Camera Model. Visible surface detection algorithms; Reflection and illumination models; Rendering algorithms for 3-D objects; Parametric representation of 3-D objects ; Shadows algorithms; 2-D texture mapping ; 3-D texture mapping; Ray tracing; Volume rendering; Anti-Aliasing ; Introduction to fractals; 3-D computer animation ; Color Space in Computer Graphics.

Course outcomes :

a.Knowledge and Understanding: :

1 - To understand the principles of computer graphics

b.Intellectual Skills: :

1 - Understand the mathematics, algorithms design, and Programming skills needed to develop graphics applications

c.Professional and Practical Skills: :

1 - Use OpenGL programming language, and associated libraries, to develop graphics objects

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to Graphics	4	2	2

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Topic	No. of hours	Lecture	Tutorial / Practical
Display Technology	4	2	2
Output primitives	4	2	2
Attributes of graphics primitives	4	2	2
Geometric transformation-1	4	2	2
Geometric transformation -2	4	2	2
Midterm -1	3	1	2
2-D Viewing	4	2	2
3-D Concept	4	2	2
Midterm-2	3	1	2
3_D Object Representation	4	2	2
3-D Transformation geometric & Modeling	4	2	2
3-D Viewing	4	2	2
Graphics Color	4	2	2

Teaching And Learning Methodologies :

Lectures
Exercises
Presentation
Projects
Open Discussion
E. Learning
Web-Site searches
Self Studies
Case Study

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	5.00	4	
Attendance	5.00	2	
Final Exam	40.00	12	
Midterm Exam I	15.00	7	
Midterm Exam II	15.00	10	
Project	20.00	11	To develop graphics objects

Recommended books :

1. Francis S. Hill, Jr., Computer Graphics Using OpenGL, 2nd edition, Prentice Hall, 2000.
2. Foley J., Van Dam, A., Feiner, S., Hughes, J., C Edition, Interactive Computer Graphics: Principles and Practice, 2nd edition, Addison – Wesley, 1996.