FUTURE UNIVERSITY IN EGYPT جامعة المستقبل

Faculty of Computers and Information Technology

Computer Graphics

Information :

Course Code :	DM341	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Digital Media Technology

Instructor Information :

Title	Name	Office hours
Lecturer	Heba Hamdy Ali Hussien	1
Lecturer	Heba Hamdy Ali Hussien	1
Teaching Assistant	Mahmoud Magdy Mohamed Abdo	
Teaching Assistant	Mona Mohamed Mohamed Ali Almakhton	
Teaching Assistant	Mahmoud Magdy Mohamed Abdo	

Area Of Study :

ÅUse and adopt fundamental and basic mathematics in transformation for 2D and 3D drawing.
ÅUse all available principles and tools to optimize line drawing.
ÅComprehend deeply the basic concepts of computer graphics to be ready for further and continuous learning.
ÅShow a complete understanding of drawing curves and design a solution for these requirements.
ÅDevelop and evaluate the texture and lighting techniques.
ÅCompare and evaluate different methods to perform filling areas

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 ï rotation ï scaling ï general transformations ï composite transformations); Three dimensional object representation and Projections; Three dimensional modeling and transformations (translation ï rotation ï scaling ï sheer ï reflection ï composite); Three dimensional Viewing and Camera Model. Visible surface detection algorithms; Reflection and illumination models.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Describe the projection of 3-D views on 2-D plane using parallel and perspective projection.
2 -	Identify the difference between 2-D and 3-D transformations
3 -	Explain the principles and techniques of lighting to a seen based on local reflection model
b.Intellectual Skills: :	
1 -	Analyze complex computation problems with less computational approaches, and decompose a complex problem to set of tasks
2 -	Propose a set of alternative solutions to implement transformation of shapes
3 -	Differentiate between the computer generated pictures and raster images

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c.Professional and Practical Skills: :	
1 -	Apply effective information to design and implement graphics based applications in 2D and 3D views using OPENGL
2 -	Apply effective information to perform transformations and its inverse to the 2D and 3D pictures
3 -	Deploy effective supporting tools to implement texture and lighting models on pictures
d.General and Transferable Skills: :	
1 -	Communicate with others and work in a team and involvement in group discussion and seminars
2 -	Write technical Report

ABET Course outcomes :	
1 -	Use and adopt fundamental and basic mathematics in transformation for 2D and 3D drawing.
2 -	Use advanced techniques and tools to optimize line drawing.
3 -	Demonstrate adequate understanding of basic concepts of computer graphics to be ready for further and continuous lifelong learning.
4 -	Demonstrate adequate understanding of drawing curves and design a solution for these requirements.
5 -	Develop and evaluate texture and lighting techniques.
6 -	Compare and evaluate different methods to perform filling areas.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Computer generated picture elements, attributes and uses.	4	2	2
Mapping real window with coordinates to a device window.	4	2	2
Rastering line segment, polyline and polygon.	4	2	2
Graphics Output Primitives	4	2	2
General functions drawing and 2D transformations.	4	2	2
Filling Region Techniques	4	2	2
Parallel and Perspective Projections	4	2	2
3D Transformations	4	2	2
Mid Term Exam	2		
Textures	4	2	2
Lightening	4	2	2
Clipping and Containments	4	2	2
Project Presentation	4	2	2
Final Exam	2		

Teaching And Learning Methodologies :
Interactive Lectures including Discussions
Tutorials
Practical Lab Sessions
Self-Study (Project / Reading Materials / Online Material / Presentations)
Case Studies

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Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	5.00	4	
Final Exam	40.00	14	
Midterm Exam (s)	20.00	9	
Others (Participations)	5.00		
Practical Exam	10.00	11	
Quizzes	10.00	5	
Team Work Projects	10.00	12	

Course Notes :

An Electronic form of the Course Notes and all the slides of the Lectures is available on the Students Learning Management System (Moodle)

Web Sites :

IEEE Computer Graphics and Applications.
https://www.computer.org/cga/

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