Jordan University of Science and Technology

Faculty of Computer & Information Technology

Computer Science Department

CS481 Computer Graphics - JNQF Level: 7

First Semester 2023-2024

Course Catalog
3 Credit Hours. This 3-hour credit course includes an overview of Computer Graphics applications; Graphics Output Primitives and its attributes; 2D and 3D Geometric Transformations; 2D Viewing and Clipping; Graphical User Interface and its attributes; Introduction to OpenGL programming and its applications; Example applications will be developed in lectures using C++ and OpenGL to demonstrate the techniques being presented.

Text Book	
Title	Computer Graphics with OpenGL
Author(s)	Donald Hearn, M. Pauline Baker, and Warren R. Carithers
Edition	4th Edition
Short Name	text book
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
reference 1	Computer Graphics with OpenGL	Donald Hearn, M. Pauline Baker, and Warren R. Carithers	4th Edition	
programming guide	OpenGL Programming Guide	John Kessenich, Graham Sellers, and Dave Shreiner	9th Edition	

Instructor	
Name	**Dr. Dana ElRushaidat**
Office Location	-

Office Hours	Sun : 10:30 - 11:30 Sun : 12:30 - 14:00 Mon : 10:00 - 11:00 Tue : 10:30 - 11:30 Tue : 12:30 - 13:30 Thu : 10:30 - 11:30
Email	dmelrushaidat@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Tue, Thu : 09:30 - 10:30 Room: G2121

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
1732841	CS284 Analysis And Design Of Algorithms	Prerequisite / Study
1733850	CS385 Fundamentals Of Multimedia	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Introduction to Computer Graphics	From **text book**, From **reference 1**
Week 2	Hardware, various graphics devices, raster images vs vector images	From **text book**
Week 3	Introduction to OpenGL	From **text book**, From **programming guide**
Weeks 4, 5	Line drawing, scan conversion OpenGL primitives and drawing routines	From **text book**, From **reference 1**, From **programming guide**
Week 6	2D transformation	From **text book**, From **reference 1**, From **programming guide**
Week 7	3D transformation	From **text book**, From **reference 1**, From **programming guide**
Weeks 8, 9	viewing and projection	From **text book**, From **reference 1**, From **programming guide**
Week 10	point and line clipping	From **text book**, From **reference 1**
Week 11	OpenGL Menu and keyboard functions	From **text book**, From **programming guide**

Weeks 12, 13	Texture mapping and OpenGL texture functions	From **text book**, From **programming guide**
Week 14	Lighting and shading	From **text book**, From **programming guide**
Week 15	Introduction to scientific visualization	
Week 16	Final exam	From **text book**, From **reference 1**

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Cover and Learn about computer graphics and its broad applications in various aspects of our day-to-day life. Learn about the difference between raster images and vector images. [1SO1] [1L7K1]	20%	
Cover and understand the algorithms used in computer graphics to build 2D/3D complex models from basic output primitives. Cover the basics for designing GUI . [1SO1] [1L7K1]	20%	
Cover the techniques used in computer graphics for geometric transformations in 2D and 3D. Understand the viewing pipeline, how clipping works, what goes behind the scenes for images to look the way they do, and how to manipulate parameters to control the model view. [1SO1] [1L7K1]	20%	
Cover the techniques used for texture mapping, lighting, and more advanced topics including an introduction to scientific visualization. [1SO1] [1L7K1]	20%	
Practice implementing using OpenGL and C++, 2D and 3D models to practice all the topics related to transformation, camera projection, viewing, texture mapping, etc. [1SO2] [1L7C2]	20%	

Relationship to Program Student Outcomes (Out of 100%)					
SO1	SO2	SO3	SO4	SO5	SO6
80	20				

Relationship to NQF Outcomes (Out of 100%)	
L7K1	L7C2
80	20

Policy	
Attendance	Attendance is very important for the course. By university policy, students missing more than 20% of total classes are subject to dismissal. Penalties may be assessed without regard to the student's performance. Attendance will be recorded at the beginning or end of each class.