

Fall Semester 2020

COURSE INFORMATION						
Course Code	: CSE 413	Lecture Contact Hours	: 3.00			
Course Title	: Computer Graphics	Credit Hours	: 3.00			
PRE-REQUISITE						
N/A						
CURRICULUM STRUCTURE						
Outcome Based Education (OBE)						
SYNOPSIS/RATIONALE						
This course deals with the fundamentals of computer graphics. This will emphasize the most basic algorithms and concepts in computer graphics that form the foundation for most modern graphics systems. It also deals with interactive 3D computer graphics, 2D algorithms, rendering, clipping, modelling and transformation, projection and so many graphics sectors.						
OBJECTIVE						
<p>1. This course is designed to provide a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends.</p> <p>2. A thorough introduction to computer graphics techniques, focusing on 3D modelling, image synthesis, and processing.</p>						
LEARNING OUTCOMES& GENERIC SKILLS						
No.	Course Learning Outcome	Bloom's Taxonomy	CP	CA	KP	Assessment Methods
CO1	Remembering, understanding and applying the algorithms used to create a variety of digital images and effects.	C1,C2,C3	1		1, 5	T, F, ASG
CO2	Remembering and evaluating the demonstration of three main subjects within computer graphics like modelling, clipping, projection and animation.	C1, C5	1		1, 2	Mid Term Exam,F
CO3	Remembering the mechanisms of selecting and analysing the fundamentals such as digital image representation, color perception, image formation and image processing.	C1, P4	1	5	3	Mid Term Exam, T, F
(CP- Complex Problems, CA-Complex Activities, KP-Knowledge Profile, T – Test ; PR – Project ; Q – Quiz; ASG – Assignment; Pr – Presentation; R - Report; F – Final Exam)						
COURSE CONTENT						
Introduction to computer graphics and its applications; Principles of raster image generation; Light and Color models; Graphics Pipeline; Coordinate Convention; Scan Conversion; Clipping; Modelling Transformations; Viewing Transformations; Projection Transformations; Polygons and Polygon Meshes; Curves and Surfaces; Hidden Lines and Surface Removal; Ray Tracing.						

SKILL MAPPING

No.	Course Learning Outcome	PROGRAM OUTCOMES (PO)											
		1	2	3	4	5	6	7	8	9	10	11	12
CO1	Remembering, understanding and applying the algorithms used to create a variety of digital images and effects.	H											
CO2	Remembering and evaluating the demonstration of three main subjects within computer graphics like modelling, clipping, projection and animation.				H								
CO3	Remembering the mechanisms of selecting and analysing the fundamentals such as digital image representation, color perception, image formation and image processing.		H										

(H – High, M- Medium, L-low)

TEACHING LEARNING STRATEGY

Teaching and Learning Activities	Engagement (hours)
Face-to-Face Learning	
Lecture	42
Practical / Tutorial / Studio	-
Student-Centred Learning	-
Self-Directed Learning	
Non-face-to-face learning	84
Revision	21
Assessment Preparations	-
Formal Assessment	
Continuous Assessment	2
Midterm Examination	1
Final Examination	3
Total	153

TEACHING METHODOLOGY

Lecture and Discussion, Co-operative and Collaborative Method, Problem Based Method

COURSE SCHEDULE

Week	Lecture	Topics	LECTURER
1	Lec 1 Lec 2	Introduction, Graphics Pipeline	Lec Anika
2	Lec 3 Lec 4	Graphics Hardware, Color Models	
3	Lec 5 Lec 6	Coordinate Convention	
4	Lec 7 Lec 8	Scan Conversion	
5	Lec 9 Lec 10	Scan Conversion	
6	Lec 11 Lec 12	2D Viewing Transformations	
7	Lec 13 Lec 14	3D Viewing Transformations	
8	Lec 15 Lec 16	Clipping	
9	Lec 17 Lec 18	Clipping	
10	Lec 19 Lec 20	Projection	Lec Iyolita
11	Lec 21 Lec 22	Projection	
12	Lec 23 Lec 24	Hidden Lines and Surface Removal	
13	Lec 25 Lec 26	Hidden Lines and Surface Removal	
14	Lec 27 Lec 28	Curves and Surface Design	
15	Lec 29 Lec 30	Curves and Surfaces Design	
16	Lec 31 Lec 32	Polygons and Polygon Meshes	
17	Lec 33 Lec 34	Polygons and Polygon Meshes	
18	Lec 35 Lec 36	Ray Tracing	

ASSESSMENT STRATEGY

			CO	Blooms Taxonomy
Components		Grading		
Continuous Assessment (40%)	Test 1-3	20%	CO 1	C1, C2, C3
			CO 2	C1, C5
			CO 3	C1, P4
	Class Participation	5%		
	Mid term	15%	CO 2	C1, C5
CO 3			C1, P4	
Final Exam		60%	CO 1	C1, C2, C3
			CO 2	C1, C5
			CO 3	C1, P4
Total Marks		100%		

(CO = Course Outcome, C = Cognitive Domain, P = Psychomotor Domain, A = Affective Domain)

REFERENCE BOOKS

1. Theory and Problems of Computer Graphics - Zhigang Xiang, Roy A. Plastock
2. Computer Graphics Principle and Practice - James D Foley, Van Dam
3. Computer Graphics C Version - Donald Hearn, M. Pauline Baker

REFERENCE SITE

Google Classroom