	Daffodil International University **Department of Computer Science and Engineering (CSE)** **OBE Course Outline**		
Course Code:	CSE422		
Course Title:	Computer Graphics		
Program:	B.Sc. in CSE		
Faculty:	Faculty of Science and Information Technology (FSIT)		
Semester:	Summer	**Year:**	2020
Credit:	1.00	**Contact Hour:**	3hr/week
Course Level:	L4T2	**Prerequisite:**	CSE213L, CSE222L
Course Category:	Core Engineering		
Google Classroom Code:			

1. Course Rationale

Computer Graphics and Design - Foundation Level 2 provides applied learning opportunities for learners with an interest in computer graphics who are looking to foster a career within design-based industries and/or wish to prepare for further study in Computer Graphics and Design Level 3.

1.1.Course Objective

It allows learners to develop a practically based understanding of form and functional design contexts using computer graphics and associated digital technologies. Computer Graphics and Design - Foundation Level 2 engages learners in solving design challenges and presenting their ideas or solutions as digital graphic solutions. Design projects allow learners: to demonstrate their skills and understandings of design principles and processes; to understand problems; propose possibilities; and to develop creative solutions.

1.2.Course Outcomes (CO's)

CO1	**Able to demonstrate effective OpenGL programs to solve graphics programming issues including different shapes.**
CO2	**Able to implement Line Drawing Algorithm using DDA and Bresenham's Algorithm.**
CO3	**Able to implement Circle Drawing Algorithm using Mid Point Algorithm.**
CO4	**Able to implement 2D and 3D transformation**
CO5	**Able to implement colour modelling, shading and animation.**

1.3.Program Outcomes (PO's)

Program Outcomes are reported in Appendix-I.

1.4.CO-PO Mapping

PO's / CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2											
CO2		2	3		2							
CO3		2	3		2							
CO4		2	3		2							
CO5		2	3		2							

1.5. CO Assessment Scheme

Assessment Task	**CO's**					**Mark (Total=100)**
	CO1	**CO2**	**CO3**	**CO4**	**CO5**	
Attendance	--	--	--	--	--	10
Report/Project						25
Lab Performance						25
Lab Final						40
Total Mark						100

2. Strategies and approaches to learning

2.1. Teaching and Learning Activities (TLA)

TLA1	Demonstrations once a week according to the university policy using multimedia of different topics.
TLA2	Active discussion in class regarding efficient designing and solving of the logical and mathematical problems.
TLA3	Group discussion and presentation regarding diverse problems and corresponding lectures.
TLA4	Evaluation of class performances to reach each student in a class for every topic.

3. Course Schedule and Structure

3.1.Textbook

1. **OpenGL® Programming Guide, Seventh Edition**
   Dave Shreiner
   The Khronos OpenGL ARB Working Group

3.2.Reference Books

3.3.Course Plan/Lesson Plan

Lesson/ Labs	Lab Lesson	Topic	Teaching and Learning Activities (TLAi)	Textbook & Video Reference	Related CO's
1	Lab 1	Fundamental knowledge about OpenGl, installation and working with some basic built in functions.	TLA1	OpenGL and GLUT using CodeBlocks	
2	Lab 2	Working with different shapes by changing colors like star, home.	TLA1, TLA2, TLA4	OpenGL and GLUT using CodeBlocks	
3	Lab 3	Working with DDA line drawing algorithm -Exercise based on class discussion -Problem solving in the lab	TLA1, TLA2, TLA4	OpenGL and GLUT using CodeBlocks	
4	Lab 4	Working with Bresenham's Line Drawing algorithm -Exercise based on class discussion -Problem solving in the lab	TLA1, TLA2, TLA4	OpenGL and GLUT using CodeBlocks	
5	Lab 5	Working with Circle Drawing algorithm -Exercise based on class discussion -Problem solving in the lab	TLA1, TLA2, TLA4	OpenGL and GLUT using CodeBlocks	
6	Lab 6	Project Follow up	TLA3		
7	Lab 7	Working with 2D transformation -Exercise based on class discussion -Problem solving in the lab	TLA1, TLA2, TLA4	OpenGL and GLUT using CodeBlocks	
8	Lab 8	Working with 3D transformation -Exercise based on class discussion -Problem solving in the lab	TLA1, TLA2, TLA4	OpenGL and GLUT using CodeBlocks	
9	Lab 9	Working with color model, shading -Exercise based on class discussion -Problem solving in the lab	TLA1, TLA2, TLA4	OpenGL and GLUT using CodeBlocks	
10	Lab 10	Working with animation -Exercise based on class discussion -Problem solving in the lab	TLA1, TLA2, TLA4	OpenGL and GLUT using CodeBlocks	
11	Lab 11	Project presentation	TLA3		
12	Lab 12	(LAB FINAL)			

4. Assessment Methods

4.1. Grading System

Numerical Grade	Letter Grade	Grade Point
80-100	A+	4.00
75-79	A	3.75
70-74	A-	3.50
65-69	B+	3.25
60-64	B	3.00
55-59	B-	2.75
50-54	C+	2.50
45-49	C	2.25
40-44	D	2.00
Less than 40	F	0.00

5. Additional Support for Students

- Student Portal: http://studentportal.diu.edu.bd/
- Academic Guidelines https://daffodilvarsity.edu.bd/article/academic-guidelines
- Rules and Regulations of DIU https://daffodilvarsity.edu.bd/article/rules-and-regulation
- Career Development Center: https://cdc.daffodilvarsity.edu.bd/
- For general queries: http://daffodilvarsity.edu.bd/

Program Outcomes and Assessment

Program Outcomes (POs) are narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills and attitudes that students acquire while progressing through the program. The program must demonstrate that by the time of graduation, students have attained a certain set of knowledge, skills and behavioral traits to some acceptable minimum level. The BAETE specifically requires that students acquire the following graduate attributes.

PO1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem analysis:** Identify, formulate, research the literature and analyze complex engineering problems and reach substantiated conclusions using first principles of mathematics, the natural sciences and the engineering sciences.
PO3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety as well as cultural, societal and environmental concerns.
PO4	**Investigation:** Conduct investigations of complex problems, considering design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.
PO5	**Modern tool usage:** Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	**The engineer and society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.
PO7	**Environment and sustainability:** Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics, responsibilities and the norms of the engineering practice.
PO9	**Individual work and teamwork:** Function effectively as an individual and as a member or leader of diverse teams as well as in multidisciplinary settings.
PO10	**Communication:** Communicate effectively about complex engineering activities with the engineering community and with society at large. Be able to comprehend and write effective reports, design documentation, make effective presentations and give and receive clear instructions.
PO11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work as a

	member or a leader of a team to manage projects in multidisciplinary environments.
PO12	**Life-long learning:** Recognize the need for and have the preparation and ability to engage in independent, life-long learning in the broadest context of technological change.