NORTHWESTERN POLYTECHNIC

SCIENCE DEPARTMENT

COURSE OUTLINE – FALL 2023

CS 3110: Introduction to Computer Graphics – 3 (3-0-3) 6 Hours for 15 Weeks

Northwestern Polytechnic acknowledges that our campuses are located on Treaty 8 territory, the ancestral and present-day home to many diverse First Nations, Metis, and Inuit people. We are grateful to work, live and learn on the traditional territory of Duncan's First Nation, Horse Lake First Nation and Sturgeon Lake Cree Nation, who are the original caretakers of this land.

We acknowledge the history of this land and we are thankful for the opportunity to walk together in friendship, where we will encourage and promote positive change for present and future generations.

INSTRUCTOR:	Ubaid Abbasi	**PHONE:**	780-539-2976
OFFICE:	C-427	**E-MAIL:**	UAbbasi@nwpolytech.ca
OFFICE HOURS:	11:30-12:30 Monday or appointment by email		

CALENDAR DESCRIPTION:

Graphical input and output devices; segments; interactive input techniques; user interface design; windowing and clipping; 2D and 3D transformation; 3D modelling and viewing; hidden-line and hidden-surface removal.

PREREQUISITE(S)/COREQUISITE: CS1150 or CS2010

REQUIRED TEXT/RESOURCE MATERIALS:

WebGL Programming Guide: Interactive 3D Graphics Programming with WebGL by Kouichi Matsuda. ISBN: 978-0321902924.

Note: Additional handouts will be provided in class.

DELIVERY MODE(S):

This course includes 3-hours of lecture per week and a 3-hour lab per week

Lectures:	G111	Tuesday	11:30 - 12:50PM
	G111	Thursday	11:30 - 12:50PM
Labs:	G111	Tuesday	02:30 – 05:30PM

LEARNING OUTCOMES:

Students will be able to design and implement reasonably complex interactive 3D computer graphics applications, using WebGl with modelling, viewing, lighting, shading, texturing and rendering techniques.

TRANSFERABILITY:
UA, UC, UL, AU, KUC, GMU.

***Warning:** Although we strive to make the transferability information in this document up-to-date and accurate, **the student has the final responsibility for ensuring the transferability of this course to Alberta Colleges and Universities**. Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at Alberta Transfer Guide main page http://www.transferalberta.ca or, if you do not want to navigate through few links, at http://alis.alberta.ca/ps/tsp/ta/tbi/onlinesearch.html?SearchMode=S&step=2

** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. **Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability**

EVALUATIONS:

Your final grade will be determined in the following manner:

Lab Assignments	**20%**
Project	**20%**
Midterm Exam	**25%**
Final Exam	**35%**

GRADING CRITERIA: (The following criteria may be changed to suite the particular course/instructor)
Please note that most universities will not accept your course for transfer credit **IF** your grade is **less than C-**.

Alpha Grade	4-point Equivalent	Percentage Guidelines		Alpha Grade	4-point Equivalent	Percentage Guidelines

A+	4.0	95-100		C+	2.3	67-69
A	4.0	85-94		C	2.0	63-66
A-	3.7	80-84		C-	1.7	60-62
B+	3.3	77-79		D+	1.3	55-59
B	3.0	73-76		D	1.0	50-54
B-	2.7	70-72		F	0.0	00-49

COURSE SCHEDULE/TENTATIVE TIMELINE:

1	Introduction and Overview of OpenGL, WebGL
2	2D Geometric Modeling, Shaders and Transforms
3	Scan Conversion and Clipping
	Quiz (topics 1 through 3)
4	3D Geometric Modeling Transforms
5	3D Viewing Transforms
6	OpenGL 3.3, Windowing systems, and GLEW
	Midterm
7	Lighting and Shading with the programmable graphics pipeline using GLSL 3.0+
8	Texturing
9	Data Structures and Complex Models
10	Buffers, Blending, Mirrors, and Shadows
	Final Exam (topics 1 through 10)

STUDENT RESPONSIBILITIES:

STATEMENT ON PLAGIARISM AND CHEATING:

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the College Calendar at http://www.gprc.ab.ca/programs/calendar/ or the College Policy on Student Misconduct: Plagiarism and Cheating at https://www.gprc.ab.ca/about/administration/policies