SCIENCE DEPARTMENT

COURSE OUTLINE – FALL 2021

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

Grande Prairie Regional College respectfully acknowledges that we are located on Treaty 8 territory, the traditional homeland and gathering place for many diverse Indigenous peoples. We are honoured to be on the ancestral lands of the Cree, Dene/Beaver and Métis, whose histories, languages, and cultures continue to influence our vibrant community. We are grateful to have the opportunity to work, learn, and live on this land.

INSTRUCTOR:	Ubaid Abbasi	**PHONE:**	780-539-2976
OFFICE:	C-427	**E-MAIL:**	UAbbasi@gprc.ab.ca
OFFICE HOURS:	11:30-12:30 Wednesday 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:	H211	Tuesday	04:00 - 05:20PM
	H211	Thursday	04:00 - 05:20PM
Labs:	J101	Friday	08:30 – 11:20AM

COURSE OBJECTIVES:

- Understand the mathematics used in computer graphics
- Be able to use WebGL, OpenGL and GLSL

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	90-100		C+	2.3	67-69
A	4.0	85-89		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