West Virginia University	**CS 470 Introduction to Computer Graphics**
Computer Science and	Section 1, 3 credit hours
Electrical Engineering	MWF 2:00pm – 2:50pm, AER-E 135
Fall 2019	

Instructor	Gianfranco Doretto	357 Advanced Engineering Research Building
	gidoretto@mix.wvu.edu	293-9133
	Office hours: Wednesday 3:00pm-4:00pm or by appointment (send email)	

Required Texts
Interactive Computer Graphics: A Top-Down Approach with Shader-Based OpenGL, 6/E
Edward Angel, *University of New Mexico* & Dave Shreiner, *ARM, Inc.,*
ISBN-10: 0132545233 • ISBN-13: 9780132545235 , ©2012 • Addison-Wesley

Recommended Texts
OpenGL Programming Guide: The Official Guide to Learning OpenGL, Versions 4.5, 9th Edition
J. Kessenich, G. Sellers & D. Shreiner, Pearson Education, Inc., 2017
ISBN-10: 0-13-449549-7, ISBN-13: 978-0-13-449549-1

Communication and Supplementary Materials
Course announcements, homework, study aids, and supplementary reading will be posted on
eCampus. Students should regularly check the eCampus course page, and their MIX email.

For class discussion we will be using Piazza. The system is highly catered to getting you help fast
and efficiently from classmates, the TA, and myself. Rather than emailing questions to the
teaching staff, I encourage you to post your questions on Piazza. If you have any problems or
feedback for the developers, email team@piazza.com.

Find our class page at: https://piazza.com/wvu/secondsemester2019/cs470/home

Course Content
This course is an introduction to computer graphics, with an emphasis on interactive 3D computer
graphics. The course will cover the general principles, methods and technologies associated with
planning; designing and implementing interactive graphics based software and systems. Much of
the course will focus on learning and using OpenGL to implement these computer graphics ideas
and principles.

Course Learning Outcomes
The goals of this course are that, at the completion of the course and the activities that are part of
the course, the successful student should:
- Have an understanding of the general principles behind computer graphics, the
  technologies employed to realize computer graphic systems, and the mathematics and
  algorithms needed to create computer graphics software.
- Understand the general principles of designing interactive computer graphic software.
- Be able to design, code and implement computer graphics software in OpenGL.
- Understand how to model physical and conceptual objects and systems and represent
  them with computer graphics based visualizations.
- Be able to use computer graphics software for 3D design and visualization.

Knowledge and skills developed in this course will be demonstrated by students through the
completion of homework, the completion of course projects, the performance of project

demonstrations, performance on course quizzes and examinations and participation in class discussions.

Course Prerequisites
CS 201 or CS 210 with a minimum grade of C- or consent for non-majors.

Course Recommendations
MATH 251; Knowledge in C++/C programming.

Tentative Course Topics
Generally, this course will cover and discuss the topics listed below. The actual topics covered may evolve somewhat over the semester based on the need to elaborate on specific issues and subtopics.

- Overview of course, course syllabus and requirements
- 3D Graphics applications. Hands-on with 3D modeling and visualization
- Graphics principles, concepts and methods; modeling
- Quick start in using OpenGL
- Introduction to graphics programming
- Creating and transforming 3D objects and scenes
- Viewers and viewing 3D graphics
- Lighting and Shading
- Shaders
- Mapping and textures
- Modeling

Course Format
This course will be conducted, to a large degree, in a lecture/discussion format. Primarily that means that the course requires an engaged participation on the part of the student. In addition to assigned readings, lectures and exercises, learning will occur through active discovery, discussion and independent investigation. On occasion class lectures and discussion may be conducted remotely via eCampus or other on-line tools.

Evaluation   Homework Assignments (50%), Midterm (25%), Final project (25%).

Grading		
	90% - 100%	A
	80% - 89.99%	B
	70% - 79.99%	C
	60% - 69.99%	D
	< 60%	F

Homework Policy
Homework problems will be distributed to the class on a regular basis. They will mostly involve C++ programming and use of OpenGL. You may discuss homework with other students, but each student must write up code and solutions on their own, and without assistance from anyone. Code for homework and projects will be turned in electronically.

Attendance
You must attend class promptly and regularly. *Any unexcused absence forfeits the right of the student to make up the work missed.* You are responsible for all material presented in class, including announcements about course procedures. In addition to text material, tests will include

material presented only in class, so performance will indirectly reflect attendance. There is much evidence to support the claim that you will do better in the class if you attend regularly.

Important note: Late days for turning in homework are not allowed. Exams may only be made up with an excused absence, which must be requested and approved before the exam.

Statler College Smart Device Policy
The use of programmable calculators or smart devices (including smart-phones, smart watches, tablets, cameras, wearable devices, etc.) on exams and quizzes is prohibited unless specifically indicated by the instructor.

Statler College Sanction Policy for Academic Integrity Offenses
http://catalog.wvu.edu/graduate/collegeofengineeringandmineralresources/#masterstext

Intellectual Property Statement
All course materials, including lectures, class notes, quizzes, exams, handouts, presentations, and other materials provided to students for this course are protected intellectual property. As such, the unauthorized purchase or sale of these materials may result in disciplinary sanctions under the Campus Student Code.

Adverse Weather Commitment
In the event of inclement or threatening weather, everyone should use his or her best judgment regarding travel to and from campus. Safety should be the main concern. If you cannot get to class because of adverse weather conditions, you should contact me as soon as possible. Similarly, if I am unable to reach our class location, I will notify you of any cancellation or change as soon as possible (by one hour before class starts, using MIX and eCampus) to prevent you from embarking on any unnecessary travel. If you cannot get to class because of weather conditions, I will make allowances relative to required attendance policies, as well as any scheduled tests, quizzes, or other assessments.

Inclusivity Statement
The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Disability Services (293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see http://diversity.wvu.edu.

Integrity Statement
The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code at http://www.arc.wvu.edu/admissions/integrity.html. Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.