COMP 464 – Computer Graphics I Fall 2017

California State University Channel Islands
Computer Science Program
Fall 2017, August 28 – December 8

Instructor: David Claveau david.claveau@csuci.edu
Office hours: Mon., Wed., 1:00-2:00, or by appointment, SIE 1141
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Course description:

This course introduces computer graphics. Topics include: fundamental concepts of computer graphics; graphics devices; graphics languages; interactive systems; applications to art, science, engineering and business; trade-offs between hardware and software implementations.
Units: 3
Prerequisites: COMP350 Software Engineering, MATH240 Linear Algebra

Textbook:

Interactive Computer Graphics A Top-Down Approach with OpenGL, Edward Angel and Dave Shreiner Sixth Edition, Addison-Wesley 2012, ISBN-10: 0132545233.
http://www.cs.unm.edu/~angel/BOOK/INTERACTIVE_COMPUTER_GRAPHICS/SIXTH_EDITION/

Course Topics:

- Introduction to computer graphics hardware and software
- Introduction to graphics programming
- Geometric objects and transformations
- Viewing
- Lighting and shading
- Advanced topics in modeling and rendering

Learning Outcomes:

After completing this course, students should:
1. understand the basic design and operation of computer graphics systems,
2. be able to design and implement programs that use standard graphics libraries to generate 2-D and 3-D graphic images.
3. be able to communicate the results of their work in a clear and professional manner.

Grading:

Midterm Exam	20%
Final Exam	20%
Assignments (3)	30%
Project	30%

Student Code of Conduct:

http://www.csuci.edu/studentlife/judicial-affairs/student-code-of-conduct.htm

Students with Disabilities:

Students with disabilities requesting accommodation should make requests to Disability Resource Programs, Bell Tower 1541, (805) 437-3331. All requests for accommodations require advance notice to avoid a delay in services. Please discuss approved accommodations with faculty.
http://www.csuci.edu/drp/

Relevant Literature:

In addition to our textbook there are many resources available online and through the CI library system. These include the following publications:

IEEE Journals, Transactions and Magazines (http://ieeexplore.ieee.org/xpl/periodicals.jsp):
Computer Graphics and Applications (CG&A)
Transactions on Multimedia (TMM)
Computer
Proceedings of the IEEE

ACM Journals, Transactions and Magazines (http://dl.acm.org/):
Transactions on Graphics (TOG)
Transactions on Computer-Human Interaction (TOCHI)
Computers in Entertainment (CIE)
Communications of the ACM

Elsevier (http://www.sciencedirect.com/):
Computers and Graphics
Graphical Models

Notes on the Project:

Students should work either individually or in teams of two. A set of possible topics will be discussed in class. Students can choose one of these topics or propose a topic of their own. The project involves the design and implementation of a program using C++ and OpenGL. The program will be demonstrated by the students to the class during a scheduled demo session. Also, each team will prepare a video and a brief document describing the project..

Schedule:

Week	Monday (10:00-11:50)		Wednesday (9:00-11:50)	
1	A28	Introduction	A30	Lab Introduction
2	S4		S6	OpenGL Programming
3	S11	3-D Modeling	S13	3-D Modeling
4	S18	3-D Object Transformations	S20	3-D Object Transformations
5	S25	Viewing	S27	Viewing
6	O2	Projection	O4	Projection
7	O9	Review	O11	**Midterm Exam**
8	O16	Lighting and Shading	O18	Lighting and Shading
9	O23	Lighting and Shading	O25	Lighting and Shading
10	O30	Texture Mapping	N1	Texture Mapping
11	N6	Texture Mapping	N8	Texture Mapping
12	N13	Environment Mapping	N15	Environment Mapping
13	N20	Bump Mapping	N22	Bump Mapping
14	N27	Hierarchical Modeling	N29	Hierarchical Modeling
15	D4	**Final Exam**	D6	**Demos**