

CS380 INTRODUCTION TO COMPUTER GRAPHICS

SPRING 2015

Course Description	This course provides an introduction to the foundations of 3D computer graphics. The goal of this course is to learn how to form images by computer. We will study the basic methods used to define shapes, materials and lighting when creating computer-generated images for use in film, games and other applications. Covered topics include affine and projective transformations, clipping and windowing, visual perception, scene modeling and animation, algorithms for visible surface determination, reflection models, illumination algorithms, and color theory in depth.
Time and Place	(Lecture) Wednesday and Friday 10:30AM—11:45AM, Rm. 114, N-1, KAIST (Lab) Wednesday 19:00–22:00, Rm. 201, N-1, KAIST
Instructor	Prof. Min H. Kim, Computer Science Dept., KAIST, minhkim@vclab.kaist.ac.kr
Teaching Assistant	Seung-Hwan Baek, Computer Science Dept., KAIST, shwbaek@vclab.kaist.ac.kr Yeong Beum Lee, Computer Science Dept., KAIST, yblee@vclab.kaist.ac.kr Joo Ho Lee, Computer Science Dept., KAIST, jhlee@vclab.kaist.ac.kr
Course Website	http://vclab.kaist.ac.kr/cs380/
Textbook	Steven J. Gortler (2012) <i>Foundations of 3D Computer Graphics</i> , MIT Press (available from the KAIST library)
Prerequisites	There are no official course prerequisites. Specifically, we assume some programming experience in C (or C++) and a basic knowledge of linear algebra. An exposure to calculus and image processing is useful, but it is not required.
Grading	<ul style="list-style-type: none">• Class participation: 10%• Midterm/final exam: 50% (25% each)• Programming assignments: 30%• Class quizzes: 10%
Policy	Unless a President's excuse is received, no assignment will be accepted for credit after its original due date. Plagiarism will not be tolerated by University rules.

TENTATIVE SCHEDULE

Week	Date	Lecture	Reading
1	(3/4, 3/6)	Course Information and Hello World	Appendix A
2	(3/11, 3/13)	Linear and Affine Transformations	Chapter 2, 3
3	(3/18, 3/20)	Frames and Respect	Chapter 4, 5
4	(3/25, 3/27)	HelloWorld 3D and Quaternions	Chapter 6, 7
5	(4/1, 4/3)	Arcball and Hierarchical Transformations	Chapter 8, 5
6	(4/8, 4/10)	Skinning and Color	Chapter 19
7	(4/15, 4/17)	Spline, Interpolation and Animation	Chapter 9, 23
8	(4/22)	<i>Midterm exam week</i>	
9	(4/29, 5/1)	Animation and Geometric Modeling	Chapter 23, 22
10	(5/6, 5/8)	Subdivision Surface and Projection	Chapter 22, 10
11	(5/13, 5/15)	Projection and Depth	Chapter 10, 11, 12
12	(5/20, 5/22)	From vertex to pixels, varying variables	Chapter 12, 13
13	(5/27, 5/29)	Reconstruction and sampling	Chapter 17, 18
14	(6/3, 6/5)	Shading and Ray Tracing	Chapter 14, 15
15	(6/10, 6/12)	Sampling	Chapter 18
16	(6/17)	<i>Final exam week</i>	
