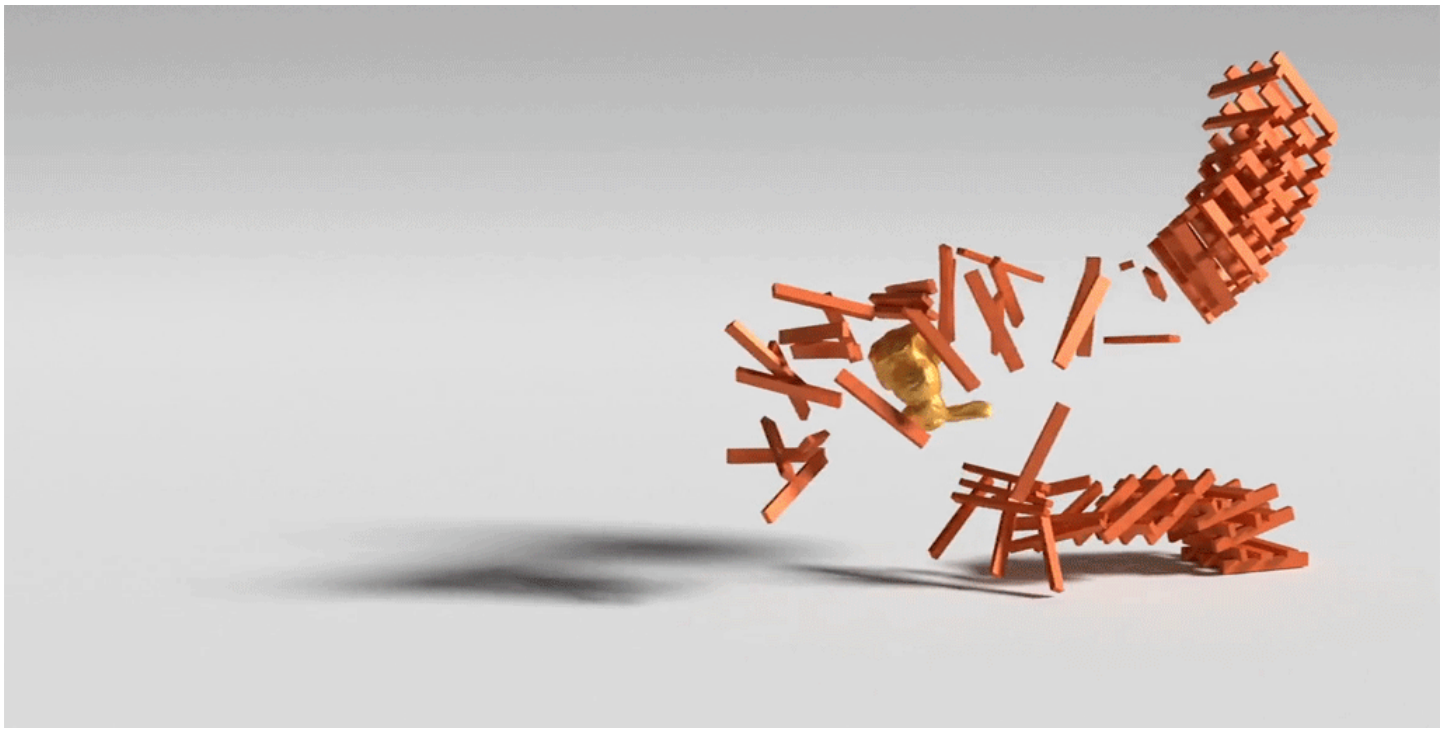
Computer Graphics CSC317 *Fall 2022*



CSC317H1F LEC 0101 2001 Monday 11:00-13:00, UC 140 Tutorial: Wednesday 11:00-12:00, UC 140

CSC317H1F LEC 0201 2101 Monday 15:00-17:00, AH 400 Tutorial: Wednesday 16:00-17:00, AH 400

Prof. Karan Singh karan@dgp.toronto.edu

Office hours: BA 5258, Mondays 13:00-15:00 or by appointment

Course Overview

This course introduces the basic concepts and algorithms of computer graphics. It covers the basic methods needed to model and render 3D objects, including much of the following: graphics displays, basic optics, affine and perspective transformations, windows and viewports, visibility, illumination and reflectance models, parametric representations, curves and surfaces, texture mapping, graphics hardware, ray tracing, graphics toolkits, animation systems.

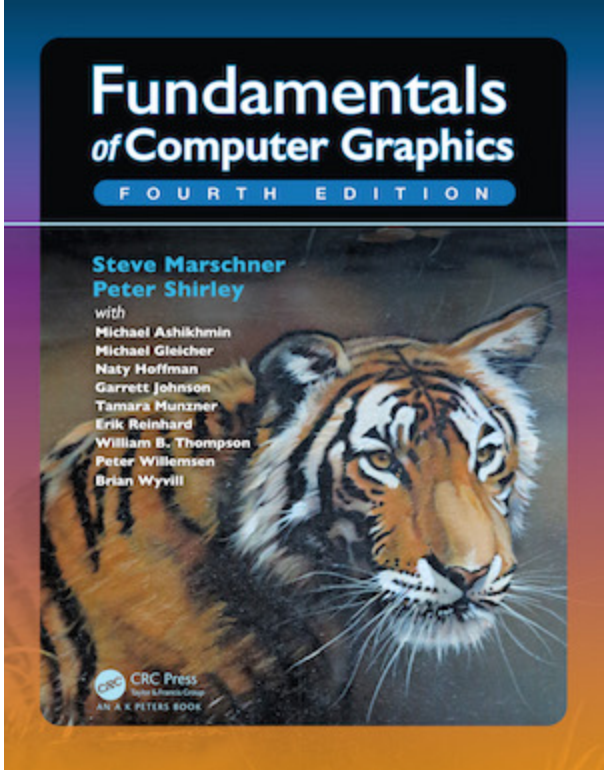
Prerequisites: C/C++ Programming, Linear Algebra, Calculus,(course codes.

Discussion Board

Please post your questions about the lectures, readings, and assignment due dates on the Quercus discussion board. We will monitor this board and attempt to answer questions as they appear. Near deadlines responses may take longer, so please start assignments early. If your question is not being answered, you may ask it again at the tutorial or office hours.

For questions specific to each assignment, please post your questions as a GitHub issue on the assignment repository.

Required Textbook



This class involves ***required reading*** from:

Fundamentals of Computer Graphics, Fourth (or Fifth) Edition, Steve Marschner, Peter Shirley, et al. 2015.

Digital e-book are available at CRC Press.

Marking Scheme

%	Item
9%	Assignment 1
9%	Assignment 2
9%	Assignment 3
9%	Assignment 4
9%	Assignment 5
9%	Assignment 6
9%	Assignment 7
9%	Assignment 8
12%	4 Quercus quizzes
16%	Take home term test

Lecture Schedule

Week	Topic / Event	Slides	Videos
1 (12/09)	• Introduction • Raster Images(Chapter 3) • Assignment 1 (Raster Images) due 21/09 (for students on the waitlist: zip your `src` directory and send to the TA email address (csc317tas@cs.toronto.edu) so that you get a timestamp)	introduction raster	
2 (19/09)	• Ray Casting(Sections 4.1-4.4) • Assignment 2 (Ray Casting) due 28/09	raycast	raycast
3 (26/09)	• Ray Tracing(Sections 4.5-4.9) • Quiz1 • Assignment 3 (Ray Tracing) due 05/10	raytrace	raytrace
4 (03/10)	• Bounding Volume Hierarchy(Section 12.3) • Assignment 4 (Bounding Volume Hierarchy) due 12/10	bounding-volume	
5 (17/10)	• Meshes(Section 12.1 & skim Chapter 11) • Quiz2 • Assignment 5 (Meshes) due 26/10	meshes	
6 (24/10)	• Transformation, Projection and Shading(Review Chapters 6,7,8.1,8.2 & Read Sections 11.4,11.5 & 17) • Assignment 6 (Shader Pipeline) assigned due 02/11	transforms and shading slides	
7 (31/10)	TBD		
8 (14/11)	TBD		
9 (21/11)	• Kinematics(Sections 15.1-15.5 & 16.1-16.4) • Quiz3 • Assignment 7 (Kinematics) due 28/11	kinematics	

Week	Topic / Event	Slides	Videos
10 (28/11)	• Mass Spring Systems(Section 16.5 & "Fast Simulation of Mass-Spring Systems" [Tiantian Liu et al. 2013]) • Assignment 8 (Mass-Spring Systems) due 5/12	mass-spring	
11 (5/12)	• Advanced Topics Creative Visual Communication • Quiz4		
12 (8/12)	• Summary • 🏆 Showcase 🏆 • Take home test		

Academic Honesty (required reading)

Assignment Policies

Assignments must be submitted electronically, using MarkUs.

Code that you submit to us must work on the CS Teaching Lab machines in order to earn credit.

0.007% off for every minute late.

All assignments must be completed individually.

Academic Honesty

Any code must belong to the student submitting it. Submitted assignments will be automatically analyzed to identify suspicious levels of code similarity. Consequences of committing an academic offence can be severe.

By enrolling in this course, students acknowledge that they have read and understand the University of Toronto's definitions and policy on Academic Integrity.