Syllabus
CSC321 Computer Graphics
Professor Leon Tabak
Block 4
November 28, 2016 to December 21, 2016

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1 Our meeting times and places

- My office is in Law 206C.

- You may call me in my office at (319) 895–4294.

- You may send me electronic mail at l.tabak@ieee.org.

- I will be in my office and available to meet with you Monday through Friday from 2:00 p.m. until 2:30 p.m.

- We will all meet together in the laboratory in the mornings and afternoons.

	Where	When
Classroom	Law Hall 113	9 a.m. to 11 a.m.
Laboratory	Law Hall 113	1 p.m. to 2 p.m.

2 Textbooks

- Learning Three.js—the JavaScript 3D Library for WebGL (Second Edition), Jos Dirksen, PACKT Publishing, 2015, ISBN 978–1–78439–221–5

3 Etiquette for the Classroom

Please show respect to your classmates, to me, and to the seriousness of our enterprise by exercising the following courtesies:

- Please give your attention to whomever is speaking. You cannot view unrelated pages on the Web and be part of our class' discussion at the same time.

- You learn from your classmates. Be generous in offering help to classmates in the laboratory. Take interest in your classmates' work. Encourage them. Compliment them for work that is well done. Give them a good audience when they stand at the front of the room to present their work. Show these courtesies to all of your classmates.

- Please do not interrupt the class by late entries or early departures. If you anticipate a need to be absent from all or part of one of our meetings, please notify me in advance of your anticipated absence.

- You may listen to music while working in the laboratory so long as you are still able to hear your name when called and you do not disturb neighbors.

- Please refrain from bringing food or drink into the classroom or laboratory. We can make reasonable exceptions for eating that is not noisy and foods that do not have strong smells.

  Acceptable beverages and foods include water, tea, and granola bars. Bringing breakfast to class is not courteous.

  Please clean up crumbs and spills. Please dispose of empty containers and leftovers.

- Please dress as you might for an employer in the software engineering industry. Please keep your shoes on. Wearing hoods, hats, or sunglasses (except when there is a medical reason for shielding the eyes) that hide your face is not courteous.

- Imagine that you are seeking employment. How will you present yourself to your prospective employer?

  Imagine that you are now employed in a software engineering firm. How will you speak to your teammates, the head of your team, and your company's clients?

  Imagine that your grandmother has purchased the company for which you work. She has joined you in the company's conference room to hear and see you walk through the code that you have written for the company (her company).

  Are there some words that you will keep out of your vocabulary during this hour?

4 Policies

Cornell College is committed to providing equal educational opportunities to all students. If you have a documented learning disability and will need any accommodation in this course, you *must* request the accommodation(s) from the instructor of the course and no later than the third day of the term. Additional information about the policies and procedures for accommodation of learning disabilities is available on Cornell College's Web site.

Please also familiarize yourself with the college's statement on academic honesty and its policies for dropping courses.

5 Goals

We will give special attention to three of Cornell College's Educational Priorities and Outcomes:

- Knowledge—you will gain familiarity with protocols for data commmunication, you will learn how layers of abstraction make the design of complex systems easier, and you will learn how to use a variety of tools for diagnosing problems on networks and building applications that use networks.

- Reasoning—-you will learn how to trace the passage of a message from sender to receiver.

- Citizenship—in this project-oriented course you will learn how to collaborate with classmates. You will learn with one another and from one another.

6 Grades

Written work will be due on each day of the term except for the first day and the last day. Printed copies and electronic copies of your papers will be due at 9 a.m.

Experience presenting work to peers will be a central part of the course. Practice asking your teammates questions during their presentations, critiquing their decisions, and suggesting improvements to their code will also be an important part of your education during this term. We will schedule one day in each week of the term for you to present your work.

	Activity	Points
	Daily work	20
	Graded exercise 1 (Friday, 02 December 2016)	20
	Graded exercise 2 (Friday, 09 December 2016)	20
	Graded exercise 3 (Friday, 16 December 2016)	20
+	Graded exercise 4 (Wednesday, 21 December 2016)	20
		100

7 Topics

We may edit this list during the term.

1. introduction/review of basic skills with Linux, HTML, CSS

2. programming with JavaScript

    (a) scopes of variables and functions
    (b) objects
    (c) prototypes

    (d) functional programming

    (e) models of object-oriented design and programming

    (f) preferred style

    (g) documentation

    (h) unit testing

3. vector and matrix arithmetic

    (a) sum of two vectors

    (b) difference of two vectors

    (c) product of a scalar (number) and a vector

    (d) dot product of two vectors

    (e) cross product of two vectors

    (f) normalization of a vector

    (g) product of a vector and a matrix

    (h) product of two matrices

4. geometric transformations

    (a) rotation

    (b) scaling

    (c) translation

    (d) perspective

5. geometric modeling

    (a) points, line segments, rectangles, ellipses, arcs, cubic curves

    (b) splines

    (c) quadric surfaces

    (d) surfaces of revolution

    (e) extrusions

    (f) meshes

    (g) composition with unions, intersections, and differences—constructive solid geometry

6. color

    (a) RGB—red, green, blue

    (b) HSV—hue, saturation, value

    (c) additive vs. subtractive color

    (d) transparency