CS315 Computer Graphics  
Syllabus Spring 2020

**Place & Time**  
Mondays (2:00 - 2:50 PM), Wednesdays (2:00 - 2:50 PM) and Fridays (2:00 - 2:50 PM), Th 409.

**Course Website**  
Materials for this course are available at  
[http://cs.pugetsound.edu/~xichen/](http://cs.pugetsound.edu/~xichen/)

**Instructor**  
Dr. Xi Chen (xichen@pugetsound.edu, office: Thompson Hall 600)

**Office Hours**  
MWF 3:00 - 4:00pm

If you cannot make any of the below times, you can contact me for a more convenient appointment.

**Course Description**  
The primary goal of this course is to introduce students to the theory and practice of 2D and 3D interactive computer graphics.

**Course Objectives**

- To learn the fundamentals of computer graphics hardware systems and organization of graphics software systems.
- To learn to use mathematical transformations and vector techniques in the production of computer graphics.
- To learn both fundamental and advanced algorithms for computer graphics.
- To learn to write graphics programs using WebGL to represent 2D and 3D interactive data models.

We will use WebGL for homework assignments. However, no prior experience in JavaScript is expected. Fortunately, learning JavaScript is quite simple and we will learn it along with applying WebGL throughout this semester.
Textbook
The recommended textbook for this class is *Interactive Computer Graphics: A Top-Down Approach with WebGL*, 7th edition, by Edward Angel and Dave Shreiner. This textbook is suitable for undergraduate students in computer science and engineering, for students in other disciplines who have good programming skills, and for professionals interested in computer animation and graphics using the latest version of WebGL.

Course Outline
The general topics we will cover this semester (although in no particular order) include:

- Introduction to graphics display devices
- Introduction to Javascript and WebGL
- Introduction to shading language, vertex shader, and fragment shader
- Graphics primitives, windows, viewports, clipping, 2D viewing in WebGL
- Interactive graphics, user input, animation
- Vector tools for graphics, geometric transformations, homogeneous coordinates
- 3D Viewing, Camera Analogy, perspective projections, orthographic projections
- Modeling Shapes with Polygonal Meshes, extruded shapes, surfaces of revolution
- Modeling with lighting and material mapping

Homework
We will have regular homework assignments. You are welcome to work together in designing a solution to a homework problem, but all answers and programming code should be your own work. Please list all students you worked with on each assignment.
Exams
The midterm and final exams will be distributed as take-home exams. They will involve some programming. Exams are open-textbook and notes, but you may not consult the Internet, or people other than your instructor.

Late Policy
Each homework will have a particular weight and due date. It is expected that you complete all assignments and turn in all necessary information upon the due date. My policy will be to deduct 2% for each day that an assignment is turned in late. I may stop to accept your submission after I explain the solution in class or upload the solution to the course page. So, please try your best to finish your assignments on time. Such a policy is intended to encourage you to plan accordingly and reward those who do.

Grading
Your grade will be assigned according to the following percentages:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>93+</td>
</tr>
<tr>
<td>A-</td>
<td>90..92.9</td>
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<tr>
<td>B+</td>
<td>88..89.9</td>
</tr>
<tr>
<td>B</td>
<td>83..87.9</td>
</tr>
<tr>
<td>B-</td>
<td>80..82.9</td>
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<tr>
<td>C+</td>
<td>78..79.9</td>
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<tr>
<td>C</td>
<td>77.9..73</td>
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<tr>
<td>C-</td>
<td>70..72.9</td>
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<td>D+</td>
<td>69..65.9</td>
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<td>64..55.9</td>
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<td>D-</td>
<td>59..45.9</td>
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<td>F</td>
<td>0..45.9</td>
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</table>

Your course grade will be determined according to the following policy:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Homeworks</td>
<td>55%</td>
</tr>
<tr>
<td>Take-home midterm exam</td>
<td>20%</td>
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<tr>
<td>Final exam</td>
<td>25%</td>
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*** The instructor reserves the right to alter the above grading scheme.

In Class Computer Use
Please use computers responsibly during class - do not write personal emails, web surf for non-academic purposes, play computer games, etc. while in class.

Academic Honesty
Cheating is not tolerated. A first cheating offense will earn a grade of zero on the assignment or exam, and a second offense will receive a failing grade for the course.

Communication
This syllabus outlines course policies, and of course such policies can either be modified. But things work best when there is an open, two-way communication between both you and me. If you are having issues with the class, an assignment, etc. please talk to me. I value frank and open communication far more than any written policy.
Academic Accommodations
If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Peggy Perno, Director of the Office of Accessibility and Accommodations, 105 Howarth, 253.879.3395. She will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Classroom Emergency Response Guidance
Please review university emergency preparedness, response procedures and a training video posted at www.pugetsound.edu/emergency/. There is a link on the university home page. Familiarize yourself with hall exit doors and the designated gathering area for your class and laboratory buildings.

If building evacuation becomes necessary (e.g. earthquake), meet your instructor at the designated gathering area so she/he can account for your presence. Then wait for further instructions. Do not return to the building or classroom until advised by a university emergency response representative.

If confronted by an act of violence, be prepared to make quick decisions to protect your safety. Flee the area by running away from the source of danger if you can safely do so. If this is not possible, shelter in place by securing classroom or lab doors and windows, closing blinds, and turning off room lights. Lie on the floor out of sight and away from windows and doors. Place cell phones or pagers on vibrate so that you can receive messages quietly. Wait for further instructions.