

# CS488/688 - Introduction to Computer Graphics

Spring 2012

## Course Outline

School of Computer Science, University of Waterloo

Instructor: Gladimir V. G. Baranoski, DC3520

Email: gvgbaran@curumin.cs.uwaterloo.ca

Regular Office Hours: Friday (9:30-10:30AM)

**Lecture Times:** Tuesday and Thursday, from 8:30 to 9:50AM, MC4063.

### Schedule

Week	Date	Assignments/Project/Exams
2	May 10, Thursday	Assignment 0
4	May 24, Thursday	Assignment 1
6	June 7, Thursday	Assignment 2
7	<b>June 14, Thursday</b>	<b>Midterm Exam (8:30AM, Room: MC2035)</b>
8	June 21, Thursday	Assignment 3
9	June 28, Thursday	Assignment 4
10	July 5, Thursday	Project proposal
11	July 12, Thursday	Project revised proposal
12	<b>July 22, Sunday</b>	<b>Project code</b>
13	<b>July 23, Monday</b>	<b>Project demos</b>
13	<b>July 24, Tuesday</b>	<b>Project demos</b>
13	<b>July 24, Tuesday</b>	<b>Project report</b>

**Important Notes:** The deadline for electronic submission of assignment materials (*e.g.*, code) is **8:00AM** on the days specified above. The deadline for the project code **8:00PM** on the day specified above. Assignments and project materials submitted after these deadlines will receive **ZERO** marks. Assignments and project written documents (reports and proposals) should be handed in at the beginning (first five minutes) of the lectures given at the above specified due dates. Assignments will be returned in class after they have been marked.

### Course TAs:

- Matthew Thorne. Office hours: Tuesday, 2:00 to 3:00, CGL, DC.
- Zhujun Yao. Office hours: Wednesday, 2:00 to 3:00, CGL, DC.
- Contact via email: cs488@cgl.uwaterloo.ca

## Course Description

Software and hardware for interactive computer graphics. Implementation of device drivers, 3-D transformations, clipping, perspective, and input routines. Data structures, hidden surface removal, colour shading techniques, and some additional topics will be covered.

## Course Objectives

At the end of the course you should be able to:

- write interactive 3D computer graphics programs;
- understand how linear and perspective transformations are used in modeling and rendering in 3D computer graphics;
- understand the process of rendering, lighting, hidden surface removal, and other computer graphics techniques;
- write a simple ray tracer.

## Required Text

CS488/688 Course Notes.

## General Overview of Topics

- The Graphics Environment
- Mathematical Underpinnings
- Transformations
- Picking, Selecting, and Control Tasks
- Hidden Surfaces and Shading
- Ray Tracing
- Physically Based Rendering
- Splines
- Animation

## Marking Scheme

- Assignments: 24%
- Project: 26%
- Midterm: 20%
- Final: 30%

Students must average at least a 50% in both the programming portion of the course and in the examination portion of the course to pass the class. The instructor reserves the right, where appropriate, to adjust raw marks downward in the case of cheating and upward in other situations.

## Course Delivery and Expected Behavior

For this offering, class attendance will be particularly critical. Course delivery will consist mostly of traditional lectures with occasional use of slides and technical demonstrations. During the lectures, the use of personal computers (or other devices) for activities outside the scope of the course is not allowed. All assigned work will be individual.

## University Mandatory Information

**Academic Integrity:** In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check [www.uwaterloo.ca/academicintegrity/](http://www.uwaterloo.ca/academicintegrity/) for more information.]

**Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, [www.adm.uwaterloo.ca/infosec/Policies/policy70.htm](http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm). When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

**Discipline:** A student is expected to know what constitutes academic integrity [check [www.uwaterloo.ca/academicintegrity/](http://www.uwaterloo.ca/academicintegrity/) ] to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about 'rules' for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline, [www.adm.uwaterloo.ca/infosec/Policies/policy71.htm](http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm). For typical penalties check Guidelines for the Assessment of Penalties, at the following web site [www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm](http://www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm).

**Appeals:** A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) [www.adm.uwaterloo.ca/infosec/Policies/policy72.htm](http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm).

**Note for Students with Disabilities:** The Office for persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.