

CS3388B COMPUTER GRAPHICS

Course Information

Computer graphics are everywhere, from computer-animated movies and games, to virtual reality and telepresence. This course will introduce the student to the fundamental mathematical and computational concepts of Computer Graphics. Many topics are approached, including hardware, output primitives such as line drawing, 2D and 3D transformations, clipping algorithms, 3D representations, hidden surface and line removal techniques, splines, ray tracing, and more, if time allows. The programming environment for this course is Python 3.7 with PyCharm IDE.

Course Prerequisites

- Computer Science 2212 or Software Engineering 2205 or 2250, and Linear Algebra 1600 or Applied Mathematics 1411
- Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

Course Schedule

- [CS3388 Course Schedule](#)

Course Outline

- [CS3388 Introduction to Computer Graphics](#)
- [CS3388 Bresenham's Line, Circle, and Ellipse Drawing](#)
- [CS3388 2D Transformations](#)
- [CS3388 2D Clipping Algorithms](#)
- [CS3388 3D Transformations and Projections](#)
- [CS3388 Polygon Meshes and Generic Surfaces](#)
- [CS3388 Curve and Surface Design with Splines](#)
- [CS3388 Lighting Models](#)
- [CS3388 Ray Tracing Principles](#)
- [CS3388 Advanced Ray Tracing](#)
- [CS3388 Color Models](#)
- [CS3388 Fractals](#)

Student Evaluation (dates are tentative)

- [CS3388 Assignment 1](#) 10% due January 24
- [CS3388 Assignment 2](#) 10% due February 13
- [CS3388 Assignment 3](#) 10% due March 6
- [CS3388 Assignment 4](#) 10% due April 3
- [CS3388 Midterm Examination](#) 20%, Monday March 2 2020, 12:30pm-2:30pm
- [CS3388 Final Examination](#) 40%

Assignment Submission Guidelines

- [CS3388-Assignment Submission Guidelines](#)

Programming Assignment Marking Scheme

- [CS3388-Programming Assignment Marking Scheme](#)

Recommended Course Text

- Computer Graphics Using OpenGL, 3rd Edition, F.S. Hill and S.M. Kelley, © 2007 Prentice Hall, ISBN 0-13-149670-0.

Course Protocol

- All assignments will be made available on the course web site. The availability of assignments will be announced in class. Students are responsible for checking their UWO e-mail on a regular basis.
- Assignments must be submitted through OWL.
- The late penalty for all assignments is 20% per day late, for a maximum of 2 days, after which assignments will not be marked. Weekends count as one day of lateness.
- Unless stated otherwise, assignments are **to be completed by individuals**, not groups. Students may discuss approaches to problems among themselves; however, the actual work **must be an individual effort**. Collaboration that results in assignments that are more than coincidentally alike is unacceptable.
- Simple electronic calculators without communication capabilities may be used during the midterm and final examinations.

Academic Offences

- Rights and Responsibilities of undergraduate students are described at the [University Secretariat](#).
- Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the [definition of what constitutes a scholastic offence](#).
- All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between the [University of Western Ontario and Turnitin.com](#).
- Computer-marked multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.
- Assignments that are judged to be the result of academic dishonesty (such as unacceptable collaboration, copying another student's assignment, allowing another student to copy, or altering of assignment results) will be handled in accordance with the following *Plagiarism Policy: The maximum penalty for the first offence is -100% for the assignment in question. (For example, if you cheat on an assignment worth 12%, you will receive a grade of 0 on the assignment, and will be penalized another 12%; your final mark in the course could not exceed 76%.)* Offences are kept on file.

Accessibility

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

Policy on Accommodation for Medical Illness

- Academic accommodation for work representing 10% or more of the student's overall grade in the course shall be granted only in those cases where there is documentation indicating that the student was seriously affected by illness and could not reasonably be expected to meet his/her academic responsibilities. Documentation shall be submitted, as soon as possible, to the Office of the Dean of the student's home Faculty, together with a request for relief specifying the nature of the accommodation being requested.
- Once the petition and supporting documents have been received and assessed, appropriate academic accommodation shall be determined by the Dean's office in consultation with the student's instructor(s). (See the full policy for the forms that the student must submit to the Dean's office, and for examples of academic accommodation.)
- A student seeking academic accommodation for any work worth less than 10% of the overall grade in a course must contact the course instructor.
- You are encouraged to read the UWO policy on [Student Absences due to Illness](#).

Student Services

- [Registrar Services](#)
- [Student Development Services](#)
- [Learning Skills Services](#)
- [Accessibility Services](#)
- [Students' Council](#)
- Students who are in emotional/mental distress should refer to MentalHealth@Western for a complete list of options about how to obtain help.

Course Website

- www.csd.uwo.ca/faculty/beau/CS3388/index.html

Course Lectures

- Classes are held on Mondays from 12:30pm to 2:30pm in NCB-117 and on Wednesdays from 12:30am to 1:30pm in NCB-114

Course Assistants

- **Jason Brasse** (jbrasse2@uwo.ca), **Consulting Hours: Tue. 1:30pm to 2:30pm in MC385**
- **Kyle Windsor** (kwindsor@uwo.ca), **Consulting Hours: TBA**

Office Hours

- By appointment only

Professor

- **[Dr. Steven S. Beauchemin](#)**
Associate Professor
Middlesex College 28C
[Department of Computer Science](#)
[The University of Western Ontario](#)
London ON N6A 5B7
Phone: (519) 661-2073
Fax: (519) 661-3515
E-Mail: sbeauche@uwo.ca
URL: www.csd.uwo.ca/faculty/beau/

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