

COURSE OUTLINE (SYLLABUS) FOR CS3388B

1. Course Information

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 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 name and number:** Computer Graphics, CS3388B
- **Course schedule:** Normally, classes would be held on Tuesdays from 3:30pm to 5:30pm and on Thursdays from 4:30pm to 5:30pm. This course will be delivered asynchronously with weekly class notes to read and study, in association with a non-mandatory one-hour long weekly Zoom meeting on Tuesdays from 3:30pm to 4:30pm, where questions on course materials and assignments will be addressed.
- **Tutorials:** Teaching assistants will also provide weekly on-line consultation hours (days and times TBA)

List of Prerequisites

- (Computer Science 2211A/B or Computer Science 2101A/B) or (Software Engineering 2203A/B, Software Engineering 2205A/B and Software Engineering 2250A/B). Mathematics 1600A/B or Applied Mathematics 1411A/B
- 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.

2. Instructor Information

- **Name:** Dr. Steven Beauchemin, Associate Professor of Computer Science
- **Contact:** sbeauche@uwo.ca
- **Office Hours:** Weekly Zoom meeting, Tuesdays 3:30pm to 4:30pm

Students must use their Western (@uwo.ca) email addresses when contacting their instructor.

3. Course Syllabus, Schedule, and Delivery Mode

Topics covered in this course include:

- Introduction to Computer Graphics
- Points and Vectors
- 2D Transformations
- 2D Clipping Algorithms
- 3D Transformations and Projections
- Polygon Meshes and Generic Surfaces
- Curve and Surface Design with Splines
- Lighting Models
- Ray Tracing Principles
- Advanced Ray Tracing
- Color Models
- Fractals

Classes Begin: January 11

Reading Week: February 13-21

Classes End: April 12

The delivery mode is asynchronous, with a non-mandatory one-hour Zoom meeting on Tuesdays from 3:30pm to 4:30pm

4. Course Materials

Weekly course notes, and problem sets with their solutions are available on OWL. There are no required textbooks for this course. Students should check OWL (<http://owl.uwo.ca/>) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class. Students are responsible for checking OWL on a regular basis, as all course material will be posted to OWL. If students need assistance, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

Technical Requirements

- Stable internet connection
- Computer with working microphone and webcam
- Python 3.7 and PyCharm educational version

5. Methods of Evaluation

The overall course grade will be calculated as listed below:

- Assignments (4) 40% (Due dates TBA)
- Midterm Exam 20% (through OWL, 2 hours, multiple choice format, date and time TBA)
- Final Exam 40% (through OWL, 3 hours, multiple choice format, date and time TBA)

Note that ProctorTrack will not be used for examinations.

Accommodated Evaluations

Assignments will be accepted with a maximum of 2 days (48 hours) of lateness, with a penalty of -10% for each late day. For example, an assignment that is late by 23 hours will receive a -10% penalty, whereas an assignment late by 24 hours plus one second will receive a -20% penalty. Assignments submitted after 48 hours from the deadline will not be marked.

No extensions will be given for assignments; however, if a student has serious medical or compassionate grounds, they should take supporting documentation to the Office of the Dean of their faculty and their instructor will be contacted.

Students using a Self-Reported Absence for an assignment will be able to submit the assignment late and without penalty for up to two days (48 hours). In addition, students using a Self-Reported Absence for the midterm examination will have the weight of the midterm shifted onto the final examination. See **Academic Consideration for Student Absence**.

Academic Consideration for Student Absence

Students will have up to two (2) opportunities during the regular academic year to use an on-line portal to self-report an absence during the semester, provided the following conditions are met: the absence is no more than 48 hours in duration, and the assessment for which consideration is being sought is worth 30% or less of the student's final grade. Students are expected to contact their instructors within 24 hours of the end of the period of the self-reported absence, unless noted on the syllabus. Students are not able to use the self-reporting option in the following circumstances:

- for exams scheduled by the Office of the Registrar (e.g., December and April exams)
- absence of a duration greater than 48 hours,
- assessments worth more than 30% of the student's final grade,
- if a student has already used the self-reporting portal twice during the academic year

If the conditions for a Self-Reported Absence are *not* met, students will need to provide a Student Medical Certificate if the absence is medical or provide appropriate documentation if there are compassionate grounds for the absence in question. Students are encouraged to contact their Faculty academic counselling office to obtain more information about the relevant documentation.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs,

see: [https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic Consideration for absences.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.pdf) and for the Student Medical Certificate (SMC),

see: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

6. Accommodation and Accessibility

Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The Academic Accommodation for Students with Disabilities policy can be found at: [https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic Accommodation_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf)

Religious Accommodation

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the Western Multicultural Calendar: <https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (see http://www.registrar.uwo.ca/examinations/exam_schedule.html).

7. Academic Policies

The website for Registrar Services is <http://www.registrar.uwo.ca>.

In accordance with policy, <http://www.uwo.ca/its/identity/activatenonstudent.html>, the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

Contingency plan for an in-person class pivoting to 100% online learning

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

All of the remote learning sessions for this course will be recorded. The data captured during these recordings may include your image, voice recordings, chat logs and personal identifiers (name displayed on the screen).

Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

Scholastic offences are taken seriously, and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

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 (<http://www.turnitin.com>).

8. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on add/drop courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Student Accessibility Services (SAS) at (519) 661-2147 if you have any questions regarding accommodations.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Learning-skills counsellors at the Student Development Centre (<http://www.sdc.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Students who are in emotional/mental distress should refer to Mental Health@Western (http://www.health.uwo.ca/mental_health) for a complete list of options about how to obtain help.

Additional student-run support services are offered by the USC, <http://westernusc.ca/services>.