

School of Engineering and Computer Science

Te Kura Mātai Pūkaha, Pūrorohiko



Prescription

This course will develop programming and collaboration skills in the context of computer graphics. Students will programme each stage of a computer graphics pipeline and integrate the results into a complete graphics application.

Course learning objectives

Students who pass this course should be able to:

1. utilize script and programming languages (e.g., Python, C++) for constructing programs for 3D computer graphics, which may be written using a library such as OpenGL or as plug-ins for tools such as Maya and Unity
2. efficiently address and implement solutions to technically challenging problems in 3D computer graphics
3. justify a solution through effective written and oral communication, and practical demonstration
4. collaborate with other programmers and integrate multiple contributions into a complete software program

Course content

The course is based on the belief that Computer Graphics is best learned by doing. Implementing programs is a significant component of the course because many of the subtleties and difficulties encountered in Computer Graphics only become apparent when one actually tries to write programs and show the results on the display.

CGRA 402 consists of individual and group tasks for a project to design, implement, and evaluate solutions to complex computer graphics problems. Students will survey technical issues and problems in a sub-field of computer graphics of their choosing, design solutions to solve a particular problem, and implement a software program to evaluate the solution. Students will be placed in groups of two to four, to allow them to demonstrate that they can integrate code with one another. The lectures comprise mainly student presentations and discussion among students under the guidance of academic staff. The final results will be presented through an oral presentation and, where appropriate, a practical demonstration.

Required Academic Background

Students need excellent programming skills. Prior knowledge of computer graphics is highly recommended.

Withdrawal from Course

Withdrawal dates and process:

Lecturers

Neil Dodgson (Coordinator)

neil.dodgson@vuw.ac.nz 04 4636922

329 Cotton, Kelburn

Joshua Scott

joshua.scott@vuw.ac.nz

Teaching Format

During the trimester there will be a two hour session each week. Sessions will comprise moderated discussions and presentations from staff and students.

Student feedback

Student feedback on University courses may be found at:
www.cad.vuw.ac.nz/feedback/feedback_display.php

Dates (trimester, teaching & break dates)

- Teaching: 02 March 2020 - 07 June 2020
- Break: 13 April 2020 - 27 April 2020
- Study period: 08 June 2020 - 11 June 2020
- Exam period: 12 June 2020 - 27 June 2020

Class Times and Room Numbers

02 March 2020 - 22 March 2020

- **Tuesday** 16:10 - 18:00 – 104, Von Zedlitz, Kelburn

27 April 2020 - 07 June 2020

- **Tuesday** 16:10 - 18:00 – 104, Von Zedlitz, Kelburn

Set Texts and Recommended Readings

Required

There are no required texts for this offering.

Mandatory Course Requirements

In addition to achieving an overall pass mark of at least 50%, students must:

- Achieve at least 40% in final project.

If you believe that exceptional circumstances may prevent you from meeting the mandatory course requirements, contact the Course Coordinator for advice as soon as possible.

Assessment

This course will be assessed through presentations, a project proposal, two progress reports and a final project.

| Assessment Item | Due Date or Test Date | CLO(s) | Percentage |
|---|-----------------------|--------------|------------|
| Presentation (broad topic of interest) | Week 2 | CLO: 1,2,3,4 | 10% |
| Presentation (detailed topic of interest) | Week 3 or 4 | CLO: 1,2,3,4 | 10% |
| Proposal | Week 4 or 5 | CLO: 1,2,3,4 | 10% |
| Progress Report 1 | Week 7 | CLO: 1,2,3,4 | 15% |
| Progress Report 2 | Week 9 | CLO: 1,2,3,4 | 15% |
| Final Project | Week 12 | CLO: 1,2,3,4 | 40% |

Penalties

Any late submission after the due date will be penalized by 20 marks per day; each assignment will be marked out of 100.

Extensions

Approval to submit assignments late without penalty will only be granted in exceptional circumstances; arrangements should be made as early as possible.

Submission & Return

Any work for marking should be submitted electronically using the ECS Submission System. Other methods (e.g., email) are not accepted. All slides, reports, and materials related to the project must be submitted on time.

Group Work

The project is group work in groups of 2-4 students. The number of group members depends on the total number of enrolled students and the project topics. The proposal (assessment item 3) and a part of the final project (assessment item 6) are done and marked as group. Therefore, we strongly encourage student discussion. Well-integrated projects with good collaboration receive higher marks. However, most of the assessment is based on individual contributions. The group marks are no more than 15% and are limited to the proposal (10%), and a part of the final project (5%); the other 35% of the final project is assessed individually.

Required Equipment

While students may use the ECS computer systems, most past students have found it convenient to work

on their own computers.

Workload

In order to maintain satisfactory progress in CGRA 402, you should plan to spend an average of at least 10 hours per week on this paper. A plausible and approximate breakdown for these hours would be:

- Lectures/presentations: 2 hours per week
- Reading: in early weeks 8 hours; in later weeks 1-2 hours.
- Programming: in early weeks no programming, in later weeks 7-8 hours

Teaching Plan

See https://ecs.wgtn.ac.nz/Courses/CGRA402_2020T1/LectureSchedule

Communication of Additional Information

The main means of communication outside of lectures will be the CGRA 402 web area at https://ecs.wgtn.ac.nz/Courses/CGRA402_2020T1/. There you will find, among other things, this document, the lecture schedule and assignment handouts, and the CGRA 402 Forum. The forum is a web-based bulletin board system. Questions, answers, and comments can be posted to the forum. We highly recommend using it for student discussion.

Links to General Course Information

- Academic Integrity and Plagiarism: <https://www.wgtn.ac.nz/students/study/exams/integrity-plagiarism>
- Academic Progress: <https://www.wgtn.ac.nz/students/study/progress/academic-progress> (including restrictions and non-engagement)
- Dates and deadlines: <https://www.wgtn.ac.nz/students/study/dates>
- Grades: <https://www.wgtn.ac.nz/students/study/progress/grades>
- Special passes: Refer to the Assessment Handbook, at <https://www.wgtn.ac.nz/documents/policy/staff-policy/assessment-handbook.pdf>
- Statutes and policies, e.g. Student Conduct Statute: <https://www.wgtn.ac.nz/about/governance/strategy>
- Student support: <https://www.wgtn.ac.nz/students/support>
- Students with disabilities: https://www.wgtn.ac.nz/st_services/disability/
- Student Charter: <https://www.wgtn.ac.nz/learning-teaching/learning-partnerships/student-charter>
- Terms and Conditions: <https://www.wgtn.ac.nz/study/apply-enrol/terms-conditions/student-contract>
- Turnitin: <http://www.cad.vuw.ac.nz/wiki/index.php/Turnitin>
- University structure: <https://www.wgtn.ac.nz/about/governance/structure>
- VUWSA: <http://www.vuwsa.org.nz>

Offering CRN: [28326](#)

Points: 15

Prerequisites: Permission of Head of School;

Restrictions: COMP 472 in 2014-15

Duration: 02 March 2020 - 28 June 2020

Starts: Trimester 1

Campus: Kelburn