

School of Engineering and Computer Science

Te Kura Mātai Pūkaha, Pūrorohiko



Prescription

This course will introduce a physically based photo-realistic rendering pipeline including radiometry, reflectance models, lighting, scene acceleration structures, ray tracing, path tracing and other global illumination algorithms.

Course learning objectives

Students who pass this course should be able to:

1. Understand and use the computer graphics pipeline to generate photorealistic rendered images.
2. Understand the core structures and pipeline of a photo-realistic renderer.
3. Understand important concepts and theory of physically based rendering algorithms and be able to construct programs that use these algorithms.

Course content

2022: The course is primarily offered in-person, and there are components such as tests, labs, tutorials, and marking sessions which require in-person attendance. There will be remote alternatives for all the components of the course, but these are only available to students studying from outside the Wellington region. The remote option for tests will use a Zoom-based system for online supervision of the tests.

Students taking this course remotely must have access to a computer with camera and microphone and a reliable high speed internet connection that will support real-time video plus audio connections and screen sharing. Students must be able to use Zoom; other communication applications may also be used. A mobile phone connection only is not considered sufficient. The computer must be adequate to support the programming required by the course: almost any modern windows, macintosh, or unix laptop or desktop computer will be sufficient, but an Android or IOS tablet will not.

Withdrawal from Course

Withdrawal dates and process:

<https://www.wgtn.ac.nz/students/study/course-additions-withdrawals>

Lecturers

Dr Alex Doronin (Coordinator)

alex.doronin@vuw.ac.nz 04 463 9682

CO 330 Cotton Building (All Blocks), Gate 7, Kelburn Parade, Kelburn

Teaching Format

This course will be offered in-person and online. For students in Wellington, there will be a combination of in-person components and web/internet based resources. It will also be possible to take the course entirely online for those who cannot attend on campus, with all the components provided in-person also made available online.

During the trimester there will be three lectures per week. Some lecture time may be used for tutorials, presentations and guest lectures.

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: 28 February 2022 - 03 June 2022
- Break: 11 April 2022 - 24 April 2022
- Study period: 06 June 2022 - 09 June 2022
- Exam period: 10 June 2022 - 25 June 2022

Class Times and Room Numbers

28 February 2022 - 10 April 2022

- **Tuesday** 14:10 - 15:00 – 201, 83 Fairlie Tce, Kelburn
- **Wednesday** 14:10 - 15:00 – 201, 83 Fairlie Tce, Kelburn
- **Thursday** 14:10 - 15:00 – 201, 83 Fairlie Tce, Kelburn

25 April 2022 - 05 June 2022

- **Tuesday** 14:10 - 15:00 – 201, 83 Fairlie Tce, Kelburn
- **Wednesday** 14:10 - 15:00 – 201, 83 Fairlie Tce, Kelburn
- **Thursday** 14:10 - 15:00 – 201, 83 Fairlie Tce, 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:

- obtain at least 40% on the total of the three projects.

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 internally assessed through project assignments, final project and paper presentation.

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
Project 1 (16 hours)	TBC	CLO: 1,2,3	20%
Project 2 (16 hours)	TBC	CLO: 1,2,3	20%
Presentation and system of group project (group mark)	TBC	CLO: 1,2,3	10%
Report on group project (individual mark) (30 hours total on project)	TBC	CLO: 1,2,3	30%
Paper presentations (2 presentations, 35 mins each) (4 hours each)	TBC	CLO: 1,2,3	20%

Extensions

Individual extensions will only be granted in exceptional personal circumstances, and should be negotiated with the course coordinator before the deadline whenever possible. Documentation (e.g., medical certificate) may be required.

Submission & Return

All work is submitted through the ECS submission system, accessible through the course web pages. Marks and comments will be returned through the ECS marking system, also available through the course web pages.

Group Work

The Final Project is a group project.

Workload

In order to maintain satisfactory progress in CGRA 408, you should plan to spend an average of 10 hours per week on this paper. A plausible and approximate weekly breakdown for these hours would be:

- Lectures and tutorials: 2.5 hours
- Readings and presentations: 3.5 hours
- Projects: 4 hours

Teaching Plan

See https://ecs.wgtn.ac.nz/Courses/CGRA408_2022T1/LectureSchedule

Communication of Additional Information

All online material for this course can be accessed at https://ecs.wgtn.ac.nz/Courses/CGRA408_2022T1/

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: [28327](#)

Points: 15

Prerequisites: CGRA 350 or 352 or (CGRA 251 and 30 300-level CGRA/COMP/SWEN/NWEN points) or at least B- in CGRA 401 and 402

Duration: 28 February 2022 - 26 June 2022

Starts: Trimester 1

Campus: Kelburn