

# NWEN406 (2018) - Distributed Computing in Grids and Clouds

## Prescription

The course focuses on the design and use of distributed systems for high end computing. In particular we look at the aggregation of geographically distributed computing resources to form massive distributed computing platforms. These platforms can then be applied to solve large problems in science and industry - protein docking, seismology medicine, astronomy, particle physics, climate prediction etc. Topics in this course typically include: e-Science, clusters, grids and clouds, service oriented architectures, workflow management, utility computing and grid economies.

## Course learning objectives

Students who pass this course will be able to:

1. Describe what a large scale distributed computing system is, what it does, and how it is designed and constructed,
2. Explain the underlying design principles and assumptions found in a range of compute and storage solutions for cloud computing.
3. Outline and apply alternative programming models for large scale distributed systems,
4. Identify and discuss Grid and cloud security threats and countermeasures.

## Withdrawal from Course

Withdrawal dates and process:

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

## Lecturers

  
**Aaron Chen** (Coordinator)

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405 Alan MacDiarmid Building, Kelburn

## Teaching Format

During the trimester there will be two class meetings per week and a seminar schedule will be established in week 1.

## Student feedback

Student feedback on University courses may be found at:

[www.cad.vuw.ac.nz/feedback/feedback\\_display.php](http://www.cad.vuw.ac.nz/feedback/feedback_display.php)

## Dates (trimester, teaching & break dates)

- Teaching: 05 March 2018 - 08 June 2018
- Break: 23 April 2018 - 27 April 2018
- Study period: 11 June 2018 - 14 June 2018
- Exam period: 15 June 2018 - 04 July 2018

# Class Times and Room Numbers

## 05 March 2018 - 25 March 2018

- **Friday** 15:10 - 16:00 – 201, 83 Fairlie Tce, Kelburn

## 05 March 2018 - 01 April 2018

- **Wednesday** 15:10 - 17:00 – 201, 83 Fairlie Tce, Kelburn

## 02 April 2018 - 22 April 2018

- **Friday** 15:10 - 16:00 – 201, 83 Fairlie Tce, Kelburn

## 09 April 2018 - 22 April 2018

- **Wednesday** 15:10 - 17:00 – 201, 83 Fairlie Tce, Kelburn

## 30 April 2018 - 10 June 2018

- **Wednesday** 15:10 - 17:00 – 201, 83 Fairlie Tce, Kelburn
- **Friday** 15:10 - 16:00 – 201, 83 Fairlie Tce, Kelburn

# Set Texts and Recommended Readings

## Required

All readings will be made available via the ECS course web page.

# Mandatory Course Requirements

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

- Make a reasonable attempt of the two projects so that they are exposed to the practical aspects of distributed computing.
- Make two seminar presentations and submit the corresponding reports.

*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 and externally assessed through two seminar reports, two projects and a final examination.

2 x seminar reports.	Due one week after assigned seminar. A schedule for seminar reports will be developed in conjunction with the class during the first week of teaching.	CLO: 1,2,3,4	20%
Report on Hadoop project using ECS systems.	Week 7	CLO: 4	25%
Report on distributed systems project using Amazon cloud.	Week 12	CLO: 4,5	25%
Final examination (2 hours).	Scheduled during trimester 1 examination period.	CLO: 1,2,3,4,5	30%

## Penalties

In fairness to other students, work submitted after any deadline will incur a penalty for lateness. Late work handed in when you have run out of grace is discounted 10% per day late. For example if an assignment is out of 20 and the assignment receives 50% then one day late means the mark will be out of 18 and the

student will receive 50% of 18. On the other hand, if it is two days late, then the mark will be out of 16 and the student will receive 50% of 16.

## Extensions

The cutoff for on-time submission is midnight on the due date. Each student will have 5 'grace days' which you may choose to use on any assignment or assignments during the course. There will be no penalty applied for these grace days. You do not need to apply for these - any grace days you have left will be automatically applied to assignments that you submit late. The grace days are intended to cover minor illnesses or other personal reasons for being late. You should only ask for extensions in the case of more significant or longer lasting problems (and you may need documentation). Do not waste grace days on procrastination.

## Submission & Return

Submission and return of work will be done via the ECS online submission system. Please refer to the ECS Wiki page for NWEN 406 at [https://ecs.victoria.ac.nz/Courses/NWEN406\\_2018T1/](https://ecs.victoria.ac.nz/Courses/NWEN406_2018T1/).

## Marking Criteria

Details about the assessment requirements and marking criteria will be posted on the ECS course website.

## Group Work

There is no group work in this course.

## Workload

In order to maintain satisfactory progress in NWEN 406, you should plan to spend an average of 10 hours per week on this paper. A plausible and approximate breakdown for these hours would be:

- Class meetings: 3
- Seminar preparation: 3
- Project and assignment work: 4

## Teaching Plan

See: [https://ecs.victoria.ac.nz/Courses/NWEN406\\_2018T1/LectureSchedule](https://ecs.victoria.ac.nz/Courses/NWEN406_2018T1/LectureSchedule)

## Communication of Additional Information

The primary means of communication outside of lectures is the NWEN 406 web site at [https://ecs.victoria.ac.nz/Courses/NWEN406\\_2018T1/](https://ecs.victoria.ac.nz/Courses/NWEN406_2018T1/). There you will find, among other things, more details about course requirements, the course schedule (with links to copies of the lecture slides), details and resources for the project work, the NWEN 406 Forum, ways of getting help, and the assignment submission system. The forum is a web-based bulletin board system. Questions, comments, and responses can be posted to the forum.

## Links to General Course Information

- Academic Integrity and Plagiarism: <https://www.victoria.ac.nz/students/study/exams/integrity-plagiarism>
- Academic Progress: <https://www.victoria.ac.nz/students/study/progress/academic-progress> (including restrictions and non-engagement)
- Dates and deadlines: <https://www.victoria.ac.nz/students/study/dates>
- Grades: <https://www.victoria.ac.nz/students/study/progress/grades>
- Special passes: Refer to the Assessment Handbook, at <https://www.victoria.ac.nz/documents/policy/staff-policy/assessment-handbook.pdf>
- Statutes and policies, e.g. Student Conduct Statute: <https://www.victoria.ac.nz/about/governance/strategy>
- Student support: <https://www.victoria.ac.nz/students/support>
- Students with disabilities: [https://www.victoria.ac.nz/st\\_services/disability/](https://www.victoria.ac.nz/st_services/disability/)
- Student Charter: <https://www.victoria.ac.nz/learning-teaching/learning-partnerships/student-charter>

- Terms and Conditions: <https://www.victoria.ac.nz/study/apply-enrol/terms-conditions/student-contract>
- Turnitin: <http://www.cad.vuw.ac.nz/wiki/index.php/Turnitin>
- University structure: <https://www.victoria.ac.nz/about/governance/structure>
- VUWSA: <http://www.vuwsa.org.nz>

**Offering CRN:** [18592](#)

**Points:** 15

**Prerequisites:** NWEN 301; NWEN 302 or 303

**Duration:** 05 March 2018 - 04 July 2018

**Starts:** Trimester 1

**Campus:** Kelburn