

School of Engineering and Computer Science

Te Kura Mātai Pūkaha, Pūrorohiko



Prescription

This course is based around a group project to develop an integrated renewable energy system, using the knowledge gained over the previous courses in the programme. Example projects include a solar-aided racing cart and a practical nano- or micro-grid for a remote household.

Course learning objectives

Students who pass this course will be able to:

1. Design advanced, integrated renewable energy solutions for given problems
2. Critically analyse renewable energy solutions and specific improvement opportunities
3. Build renewable energy systems
4. Justify solutions to different stakeholders through effective written and oral communication

Course content

RESE412 is about the design, construction and analysis of renewable energy powered systems. It will give students the opportunity to learn the methodology used to accurately size renewable energy systems for a given task. Using this knowledge, students will work in groups to develop a real world integrated renewable energy system and reflect on the process and results. Students will also learn to design and manage complex systems over their life cycles, through the use of systems engineering.

Withdrawal from Course

Withdrawal dates and process:

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

Lecturers

Daniel Burmester (Coordinator)

daniel.burmester@vuw.ac.nz 04 4639998

404 Alan MacDiarmid Building, Kelburn

Alan Brent

alan.brent@vuw.ac.nz 04 4635960

413 Alan MacDiarmid Building, Kelburn

Jim Hinkley

jim.hinkley@vuw.ac.nz 04 4635515

227 Alan MacDiarmid Building, Kelburn

Teaching Format

The first half of the trimester will consist of weekly lectures and a lab session. In the second half of the trimester, the emphasis will shift to practical work, during which time lectures will be replaced with additional lab time and tutorials.

Dates (trimester, teaching & break dates)

- Teaching: 08 July 2019 - 13 October 2019
- Break: 19 August 2019 - 01 September 2019
- Study period: 14 October 2019 - 17 October 2019
- Exam period: 18 October 2019 - 09 November 2019

Class Times and Room Numbers

08 July 2019 - 18 August 2019

- **Tuesday** 16:10 - 17:00 – 119, Cotton, Kelburn
- **Thursday** 16:10 - 17:00 – 119, Cotton, Kelburn
- **Friday** 16:10 - 17:00 – 118, Cotton, Kelburn

02 September 2019 - 13 October 2019

- **Tuesday** 16:10 - 17:00 – 119, Cotton, Kelburn
- **Thursday** 16:10 - 17:00 – 119, Cotton, Kelburn
- **Friday** 16:10 - 17:00 – 118, Cotton, 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:

- Participate in the group presentations/demonstration.

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

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
Design proposal		CLO: 1,2,4	35%
Case study: Nanogrid/Microgrid analysis		CLO: 1,2,4	15%
Group presentation and demonstration, with group assessment		CLO: 3,4	15%
Individual project report		CLO: 1,2,3,4	35%

Workload

RESE412 is a 15pt course and therefore has a nominal workload of 150 hours. An average week may take the following format:

- Lectures: 2 hours
- Reading and preparation: 1 hour
- Laboratory work: 3 hours
- Project work and assignments: 4 hours

Teaching Plan

Week 1

- Lecture
- Renewable energy resources
 - Introduction to renewable energy sources

Week 2

- Lecture
- Understanding the practical behaviour of renewable energy sources and systems.

Week 3

- Lecture
- Renewable energy system design

Week 4

Lecture ▪ Renewable energy system design

Week 5

Lecture ▪ Systems engineering

Week 6

Lecture ▪ Systems engineering

Week 7

Lecture ▪ Practical lab sessions

Week 8

Lecture ▪ Practical lab sessions

Week 9

Lecture ▪ Practical lab sessions

Week 10

Lecture ▪ Practical lab sessions

Week 11

Lecture ▪ Practical lab sessions

Week 12

Lecture ■ Practical lab sessions

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/
- 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: [31165](#)

Points: 15

Prerequisites: RESE 313

Duration: 08 July 2019 - 10 November 2019

Starts: Trimester 2

Campus: Kelburn