

School of Engineering and Computer Science

Te Kura Mātai Pūkaha, Pūrorohiko



Prescription

This course presents techniques used to design advanced, integrated renewable energy solutions for given situations. The design of nano- and micro-grids will be analysed, with students applying this knowledge to designing, constructing and testing a fit-for-purpose renewable energy system. This course also presents the concept of systems engineering, introducing systems thinking principles.

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.wgtn.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

Jim Hinkley

jim.hinkley@vuw.ac.nz 04 4635515

227 Alan MacDiarmid Building, 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.

The first half of the trimester will consist of weekly in-person lectures and a lab sessions, which will also be recorded and available online. In the second half of the trimester, the emphasis will shift to practical work, during which time lectures will be replaced with additional in-person lab time and in-person tutorials.

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: 13 July 2020 - 18 October 2020
- Break: 17 August 2020 - 30 August 2020
- Exam period: 19 October 2020 - 25 October 2020

Class Times and Room Numbers

13 July 2020 - 16 August 2020

- **Monday** 14:10 - 15:00 – 524, Old Kirk, Kelburn
- **Wednesday** 14:10 - 15:00 – 524, Old Kirk, Kelburn
- **Friday** 14:10 - 15:00 – 524, Old Kirk, Kelburn

31 August 2020 - 18 October 2020

- **Monday** 14:10 - 15:00 – 524, Old Kirk, Kelburn
- **Wednesday** 14:10 - 15:00 – 524, Old Kirk, Kelburn
- **Friday** 14:10 - 15:00 – 524, Old Kirk, 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, to demonstrate achievement of all the CLOs of the course.

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
Case study: Nanogrid/Microgrid analysis		CLO: 1,2,4	30%
Renewable energy system control assignment		CLO: 1,2	20%
Design proposal		CLO: 1,2,4	30%
Group presentation and demonstration, with group assessment		CLO: 3,4	10%
Individual project report		CLO: 1,2,3,4	10%

Penalties

Work submitted after the due date will incur a penalty of 10% of the full mark per working day. Late work will not be marked after the model solutions have been made available or if more than one week late.

Extensions

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

Submission & Return

Assignments should be submitted via the ECS submission system, accessible through the course web pages.

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

Communication of Additional Information

All online material for this course can be accessed at https://ecs.wgtn.ac.nz/Courses/RESE412_2020T2/

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: [31165](#)

Points: 15

Prerequisites: RESE 313

Duration: 13 July 2020 - 25 October 2020

Starts: Trimester 2

Campus: Kelburn