



2012

Trimester 2

COURSE OUTLINE

Course Code BILD 321

SUSTAINABLE ENGINEERING SYSTEMS DESIGN

GENERAL

Core; Trimester Two; 15 points

ASSESSMENT

100% internal by assignment

CLASSTIMES AND LOCATIONS

LECTURES & TUTORIALS: Mondays 14.40 - 16.30, Room VS 3.18

Fridays 14.40 - 16.30, Room VS 2.04 **(3.18 in 1st Week only)**

COORDINATOR

Coordinator

George Baird
Room: VS3.16
Phone: 463-6231
Office Hours: by appointment
Email: George.Baird@vuw.ac.nz

Associate

Michael Donn

Tutor details will be provided at start of course

COURSE SYNOPSIS

Following on from consideration of conventional environmental engineering systems (in BILD 231), this course will explore the interaction between buildings and the environment in the achievement of comfort, performance and sustainability; and the design of appropriate sustainable engineering systems at the building scale. Topics to be covered include: passive design solutions such as thermal chimneys and advanced natural ventilation; efficiency options related to appliances and equipment such as HVAC and lighting systems; and renewable energy generation alternatives such as wind turbines and photovoltaic arrays.

AIMS OF THE COURSE

The main aims of this course are for you:

1. To obtain **knowledge and comprehension** of:
 - a. a range of basic sustainable engineering systems.
 - b. the philosophies and strategies of sustainable engineering systems design.
2. To **develop your ability**:
 - a. to understand the design of complex sustainable engineering installations.
 - b. to apply your knowledge of sustainable engineering systems to the design of a medium-scale building in its broader context.

COURSE LEARNING OBJECTIVES

Knowledge

By the end of the course you should be able to:

- Understand and describe the basic features of the main types of sustainable engineering systems.
- Understand the main strategies or approaches to the design of sustainable engineering systems.

Creative & Critical Thinking

By the end of the course, if you have passed, you will have learned to:

- Appraise the sustainable engineering installations of existing complex buildings.
- Understand the main issues, challenges and opportunities for the application of sustainable engineering systems in the built environment.

Communication

By the end of the course, students who have passed this course, will have learned to:

- Write a concise description of a selected sustainable engineering system or systems, together with examples of their application in the built environment.
- Employ appropriate representational media and software applications to convey essential research findings and design outcomes in relation to the integration of sustainable engineering systems into the built environment.

Leadership

By the end of the course, students who have passed this course, will have learned to:

- Conduct themselves appropriately and confidently while undertaking the design of the sustainable engineering systems for a medium-scale building and presenting their proposals to the client.

GRADUATE SKILLS

<i>Graduate Skills</i>	<i>Taught</i>	<i>Practised</i>	<i>Assessed</i>
Knowledge			
• Information literacy	✓	✓	✓
Creative and Critical Thinking			
• Problem solving	✓	✓	✓
• Critical evaluation	✓	✓	✓
• Work autonomously		✓	✓
• Creativity and innovation		✓	✓
Communication			
• Effective communication (written)	✓	✓	✓
• Effective communication (oral)	✓	✓	✓
• Effective communication (graphic)	✓	✓	✓
• Work effectively in a team setting		✓	
Leadership			
• Ethical behaviour in social / professional / work environments		✓	
• Responsible, effective citizenship		✓	
• Commitment to responsibilities under the Treaty of Waitangi		✓	

COURSE CONTENT

This course will cover the theory and practice of sustainable engineering system design and provide opportunities for problem solving at the building and urban scale.

Sustainable design issues will be reviewed at a technical and building system scale.

Particular emphasis will be placed on passive design, energy efficiency, and renewable energy, in relation to Net Zero Energy Building solutions.

Students will review current sustainable engineering systems and apply one or more of them in the course of a live project.

COURSE DELIVERY

Course delivery will be via lectures and seminars mainly, interspersed with tutorial sessions and class presentations.

The course has two 2-hour lecture/seminar sessions per week.

The intention is to involve both in-house academics and external practitioners in the delivery of lectures/seminars focussing on their area of specialisation, together with the clients for the live project.

Students should anticipate spending a considerable amount of time working on their specific research and design tasks; and a significant amount of time in presentations and critiques.

The VUW Blackboard site will be used for course resources – files, announcements, project briefs, course information, project discussion boards and the like.

ASSIGNMENTS/PROJECTS

Two project assignments will be set for this course.

Project 1 (which relates to Aims 1a and 1b) is intended to develop and demonstrate your abilities to outline the principles and practice of a selected sustainable engineering system and to describe examples of its application in existing large-scale buildings (based on descriptions in the published literature). A report of approximately six A4 pages plus no more than eight power-point slides is anticipated. **Due date 17th August with Presentations on 20th and 24th August.**

Project 2 (which relates to Aims 2a and 2b) is intended to develop and demonstrate your understanding of sustainable engineering systems design and your abilities to apply such systems to a medium-scale building. A wall display equivalent to one A1 sheet is anticipated.

Due date 19th October, with Presentations to Client on 12th (and possibly 15th) October.

In both instances, Appendices may be added for completeness (from your point of view) or to support your findings, but these may not be read and will not be assessed

ASSESSMENT REQUIREMENTS

Assessment Criteria specific to the individual projects will be listed in each Project Outline.

BILD321 is internally assessed by the assignment work described above. Assignments are assessed and graded A+, A, A-, B+, B, B-, C+, C, D, E, (where C is a PASS). Grades only are issued to students. The final grade for the course is based on the aggregation of the percentage marks for each of the assignments, and a final grade of C or better is required to pass the course.

Projects 1 and 2 contribute 40% and 60% respectively towards the final course grade.

Your work will be reviewed on the basis of the degree to which it meets the assessment criteria described in the Project Outlines. Although visitors may be involved in some of the reviews, only the course coordinator and tutors will conduct the assessment. The course coordinator is finally responsible for the grades issued.

All work submitted for assessment must be accompanied by an **Assessment Declaration Form**.

All grades posted during this course are only provisional results until confirmed by the School Examiners Committee which meets after the examination period.

PENALTIES

For work that arrives late, the following penalty will be applied for the School of Architecture: 5% immediately, then 5% for every subsequent 24 hours including weekends.

GROUP WORK

While students will be expected to cooperate in the course of the second assignment, assessment will be based solely on their individual reports and presentations.

ATTENDANCE AND PARTICIPATION

Attendance and participation are important aspects of the learning process, and you are required to attend all the lectures and tutorials. If extraordinary circumstances arise that require you to be absent from some class sessions, you should discuss the situation with the Course Coordinator as soon as possible.

COURSE EXPECTED WORKLOAD

You should expect to spend of around 150 hours on this course, including both scheduled class time and independent study. Typically this involves around 12 hours per week during the twelve teaching weeks, with the balance during the mid-trimester break.

http://www.victoria.ac.nz/home/about_victoria/avcacademic/publications/assessment-handbook.pdf

MATERIALS AND EQUIPMENT REQUIRED

Students will need to provide all materials and equipment as necessary for the completion of required work and be prepared to travel to local site visits.

It is recommended that you have your own laptop although computer facilities are available at the School. If you are purchasing a laptop and would like information on the minimum requirements please contact the Student Administration Office. While digital cameras are available at the school, it is also recommended that students consider purchasing a simple digital camera (3.2mpxl minimum). Note: The Student Loan, administered by StudyLink, allows students to claim up to \$1000 for course related costs for each year of study.

RECORDING OF WORK AND PORTFOLIO

You are strongly encouraged to respect and care for your work, making and recording a visual summary of each project in this course. This may be in digital and/or hard copy. The principal purpose of this is to maintain a record of your work for incorporation into your own personal “Design Portfolio”. Recording a summary of your work also means it is available if needed for you or the School to exhibit or publish.

SUBMISSION OF WORK

Each student is responsible for ensuring their work is submitted on time and in the required format. Late submissions will be penalised as set out above, unless an extension is approved by the Course Coordinator.

EXTENSIONS

In the event of illness or other extraordinary circumstances that prevent you from submitting a piece of work on time, or that you feel adversely affect the quality of the work you submit, it is important that you discuss your circumstances with the Course Coordinator as soon as possible so that appropriate arrangements may be made. If possible, you should complete an Application for Extension form (available from the Faculty Office) for the Course Coordinator to approve before the hand-in date. You will also need to provide suitable evidence of your illness or other circumstances. In an emergency, or if you are unable to contact the Course Coordinator, you should advise the Faculty Office of your situation. Work submitted late must be submitted to the Course Coordinator.

MANDATORY COURSE REQUIREMENTS

In order to pass the course you must also satisfy the following mandatory course requirements:

- Attend and present your work for Project 1 at the scheduled sessions.
- Complete the revisions for your Project 1 report to the required standard.
- Attend and present your work for Project 2 at the scheduled sessions.
- Achieve a grade of “D” or higher in both projects.

COMMUNICATION OF ADDITIONAL INFORMATION

Any changes or additions to this Course Outline will be discussed and agreed with the class, and conveyed through Blackboard or via email to all students enrolled in the course.

SCHEDULE OF SESSIONS

Week month	day	date	item	location	time	Comments Trimester 2 Begins
Week 29 July	M	16		VS3.18	14.40-16.30	
	TU	17				
	W	18				
	TH	19				
	F	20			VS3.18	14.40-16.30
Week 30 July	M	23		VS3.18	14.40-16.30	
	TU	24				
	W	25				
	TH	26				
	F	27			VS2.04	14.40-16.30
Week 31 July August	M	30		VS3.18	14.40-16.30	
	TU	31				
	W	1				
	TH	2				
	F	3			VS2.04	14.40-16.30
Week 32 August	M	6		VS3.18	14.40-16.30	
	TU	7				
	W	8				
	TH	9				
	F	10			VS2.04	14.40-16.30
Week 33 August	M	13		VS3.18	14.40-16.30	
	TU	14				
	W	15				
	TH	16				
	F	17			VS2.04	14.40-16.30
Week 34 August	M	20		VS3.18	14.40-16.30	Project 1 presentations (1 of 2)
	TU	21				
	W	22				
	TH	23				
	F	24			VS2.04	14.40-16.30
Week 35 August	M	27				Mid Trimester Break
	TU	28				
	W	29				
	TH	30				
	F	31				

Week month	day	date	item	location	time	Comments Trimester 2 Begins
Week 36 September	M	3				
	TU	4				
	W	5				
	TH	6				
	F	7				Trimester 2 continues
Week 37 September	M	10		VS3.18	14.40-16.30	
	TU	11				
	W	12				
	TH	13				
	F	14		VS2.04	14.40-16.30	
Week 38 September	M	17		VS3.18	14.40-16.30	
	TU	18				
	W	19				
	TH	20				
	F	21		VS2.04	14.40-16.30	
Week 39 September	M	24		VS3.18	14.40-16.30	
	TU	25				
	W	26				
	TH	27				
	F	28		VS2.04	14.40-16.30	
Week 40 October	M	1		VS3.18	14.40-16.30	
	TU	2				
	W	3				
	TH	4				
	F	5		VS2.04	14.40-16.30	*
Week 41 October	M	8		VS3.18	14.40-16.30	*
	TU	9				
	W	10				
	TH	11				
	F	12		VS2.04	14.40-16.30	Project 2 presentations
Week 42 October	M	15		VS3.18	14.40-16.30	Project 2 (reserve session)
	TU	16				
	W	17				
	TH	18				
	F	19		VS2.04	14.40-16.30	Project 2 Hand-in
Week 43 October	M	22				Labour Day - Holiday
	TU	23				
	W	24				
	TH	25				
	F	26				
Week 44 October November	M	29				
	TU	30				
	W	31				
	TH	1				
	F	2				
Week 45 November	M	5				
	TU	6				
	W	7				
	TH	8				
	F	9				
Week 46 November	M	12				
	TU	13				
	W	14				
	TH	15				
	F	16				
Week 47 November	M	19				Trimester 3 Begins
	TU	20				
	W	21				
	TH	22				
	F	23				

CLASS REPRESENTATIVES

The Faculty of Architecture and Design operates a system of Class Representatives in 100-level courses, and Year Representatives in each of the professional disciplines. Student Representatives are elected during a class session in the first week of teaching. All Student Representatives will be listed on the STUDiO notice board in the Atrium, and the relevant Representatives are also listed on studio notice boards. Student Representatives have a role in liaising between staff and students to represent the interests of students to the academic staff, and also in providing students with a communication channel to STUDiO and the Student Representation organiser.

ACADEMIC INTEGRITY AND PLAGIARISM

Academic integrity means that University staff and students, in their teaching and learning are expected to treat others honestly, fairly and with respect at all times. It is not acceptable to mistreat academic, intellectual or creative work that has been done by other people by representing it as your own original work.

Academic integrity is important because it is the core value on which the University's learning, teaching and research activities are based. Victoria University's reputation for academic integrity adds value to your qualification.

The University defines plagiarism as presenting someone else's work as if it were your own, whether you mean to or not. 'Someone else's work' means anything that is not your own idea. Even if it is presented in your own style, you must acknowledge your sources fully and appropriately. This includes:

- Material from books, journals or any other printed source
- The work of other students or students or staff
- Information from the internet
- Software programs and other electronic material
- Designs and ideas
- The organisation or structuring of any such material

Find out more about plagiarism, how to avoid it and penalties, on the University's website:

www.victoria.ac.nz/home/studying/plagiarism.html

USE OF TURNITIN

Student work provided for assessment in this course may be checked for academic integrity by the electronic search engine <http://www.turnitin.com>. Turnitin is an online plagiarism prevention tool which compares submitted work with a very large database of existing material. At the discretion of the Head of School, handwritten work may be copy-typed by the School and subject to checking by Turnitin. Turnitin will retain a copy of submitted material on behalf of the University for detection of future plagiarism, but access to the full text of submissions is not made available to any other party.

Students should familiarise themselves with the University's policies and statutes, particularly the Assessment Statute, the Personal Courses of Study Statute, the Statute on Student Conduct and any statutes relating to the particular qualifications being studied; see the *Victoria University Calendar* or the University's policy website <http://www.victoria.ac.nz/home/about/policy>

Student and staff conduct

The Statute on Student Conduct together with the Policy on Staff Conduct ensure that members of the University community are able to work, learn, study and participate in the academic and social aspects of the University's life in an atmosphere of safety and respect. The Statute on Student Conduct contains information on what conduct is prohibited and what steps are to be taken if there is a complaint. For information about complaint procedures under the Statute on Student Conduct, contact the Student Interest and Disputes Resolution Advisor or refer to the statute on the Victoria policy website at: <http://www.victoria.ac.nz/home/about/policy>

The Policy on Staff Conduct can also be found at: <http://www.victoria.ac.nz/home/about/policy>

Academic grievances

If you have any academic problems with your course you should talk to the tutor or lecturer concerned; class representatives may be able to help you in this. If you are not satisfied with the result of that meeting, see the Head of School or the relevant Associate Dean; the Student Interest and Dispute Resolution Advisor is available to assist in this process. If, after trying the above channels, you are still unsatisfied, formal grievance procedures can be invoked. These are set out in the Academic Grievance Policy which is published on the Victoria website at: <http://www.victoria.ac.nz/home/about/policy>

There is also a leaflet explaining the grievance process available from the Academic Office website at: http://www.victoria.ac.nz/home/about_victoria/avcacademic/Publications.aspx#grievances

Students with Impairments

Refer to the [*Meeting the Needs of Students with Impairments Policy*](#), available on the University's policy website <http://www.victoria.ac.nz/home/about/policy>

The University has a policy of reasonable accommodation of the needs of students with impairments. The policy aims to give students with disabilities the same opportunity as other students to demonstrate their abilities. If you have a disability, impairment or chronic medical condition (temporary, permanent or recurring) that may impact on your ability to participate, learn and/or achieve in lectures and tutorials or in meeting the course requirements, please contact the course coordinator as early in the course as possible. Alternatively, you may wish to approach a Student Adviser from Disability Services to discuss your individual needs and the available options and support on a confidential basis. Disability Services are located on Level 1, Robert Stout Building: telephone 463-6070 email: disability@vuw.ac.nz

Information regarding support is available from the Faculty Office reception desk.

Student Support

Staff at Victoria want students to have positive learning experiences at the University. There are a number of support services available to help you directly if your academic progress is causing concern or if there are elements in your life that are affecting your ability to study. These include:

- Your course coordinator or programme director;
- Staff in your Faculty Student Administration Office Student Dedicated learning support through Student Learning Support Service; Te Pūtahi Atawhai; Disability Services and Victoria International;
- Wider holistic support through the Health Service; Counselling Service; Financial Support and Advice; Accommodation Service and Career Development and Employment. Find out more at www.victoria.ac.nz/st_services/ or email student-services@vuw.ac.nz;
- Facilitation and Disputes Advisory Service can provide support and guidance on matters involving student safety, conflict or misconduct.

TE ARO CAMPUS BUILDING RULES AND FACILITIES

Students on the Te Aro Campus are required to comply with the Faculty Guidelines relating to the safe use, access and care of the Architecture and Design technical resources and building facilities. These are available on the School website, and in the following documents available from the student R drive:

<R:\Student Health and Safety Information>

FAD Health & Safety Handbook – <http://www.victoria.ac.nz/fad/facilities/3d-model-workshops.aspx>

- Workshop and campus safety
- Safety training and safety precautions for the workshops
- FAD hazard Register
- Te Aro Campus floor plans

FAD Technical Services and Facilities Handbook – issued to all staff and available to all students on the student R drive, covering various local practices, including information on:

- Information for new staff and students
- Access and booking of teaching/studio spaces, and technical resources
- Studio etiquette and rules pertaining to exhibitions, critiques and storage of models/drawings
- Housekeeping/cleaning within the studios and workshops
- Information on Te Aro IT systems and support
- Te Aro campus floor plans

General information on Faculty/School Technical Facilities including **technical staff** and their associated areas: <http://www.victoria.ac.nz/fad/facilities>

WHERE TO GET HELP

Faculty of Architecture and Design Student Administration Office – Vivian Street – Level One

The Faculty's Student Administration Office is located on the first floor of the Vivian Street Wing. The first floor counter is the first point of contact for general enquiries and Faculty forms. Student Administration Advisors are available to discuss course status and give further advice and the Faculty qualifications. To check for opening hours call the Faculty Student Administration Office on (04) 463 6200.

HEALTH AND SAFETY

Students are reminded that they must comply with any health and safety instructions given by staff members in charge or work places and instructions and signs posted around the campus. All students should familiarise themselves with the *FAD Health and Safety Manual* and *Notices around the Workshops and Laboratories*. Students are advised to refer to the Student R drive for safety and other relevant information. <R:\Student Health and Safety Information>

WITHDRAWAL DATES

Information on withdrawals and refunds can be found at:

<http://www.victoria.ac.nz/home/admisenrol/payments/withdrawalsrefunds.aspx>



Faculty of Architecture and Design

Work Submitted for Assessment Declaration Form

Student's full name :

Course :

Assignment/project :

(number and title)

Date submitted :

Refer to the information on Academic Integrity, Plagiarism and Copyright on the back of this form.

I confirm that:

- I have read and understood the University's information on academic integrity and plagiarism contained at <http://www.victoria.ac.nz/home/study/plagiarism.aspx> and outlined below:
- I have read and understood the general principles of copyright law as set out below:
- This project/assignment is entirely the result of my own work except where clearly acknowledged otherwise:
- Any use of material created by someone else is permitted by the copyright owner.

Signed:

Date:

Academic Integrity, Plagiarism and Copyright

ACADEMIC INTEGRITY

Academic integrity is important because it is the core value on which the University's learning, teaching and research activities are based. University staff and students are expected to treat academic, intellectual or creative work that has been done by other people with respect at all times. Victoria University's reputation for academic integrity adds value to your qualification.

Academic integrity is simply about being honest when you submit your academic work for assessment

- You must acknowledge any ideas and assistance you have had from other people.
- You must fully reference the source of those ideas and assistance.
- You must make clear which parts of the work you are submitting are based on other people's work.
- You must not lie about whose ideas you are submitting.
- When using work created by others either as a basis for your own work, or as an element within your own work, you must comply with copyright law

(Summarised from information on the University's Integrity and Plagiarism website:

www.victoria.ac.nz/home/studying/plagiarism.html)

PLAGIARISM

The University defines plagiarism as presenting someone else's work as if it were your own, whether you mean to or not. 'Someone else's work' means anything that is not your own idea. Even if it is presented in your own style, you must acknowledge your sources fully and appropriately. This includes:

- Material from books, journals or any other printed source
- The work of other students or staff
- Information from the internet
- Software programs and other electronic material
- Designs and ideas
- The organisation or structuring of any such material

Find out more about plagiarism, how to avoid it and penalties, on the University's website:

www.victoria.ac.nz/home/studying/plagiarism.html

COPYRIGHT

Copyright law regulates the use of the work of an author, artist, designer or other creator.

- Copyright applies to created work including designs, music, computer programs, artistic and literary work.
- The work can be in printed, digital, audio, video or other formats.
- Normally the author or creator of a work owns the copyright for their lifetime and for 50 years after their death, (although sometimes someone other than the creator of a work owns the copyright to the work, such as the creator's employer, or a person who commissions the creator's work).
- You must have permission from the copyright owner to copy, alter, display, distribute or otherwise use created work.
- If the creator has applied a Creative Commons licence to a work, this permits others to use the work but only in accordance with that licence.

Further information on copyright is available on the Creative Commons Aotearoa FAQ website:

http://www.creativecommons.org.nz/frequently_asked_questions#III1