

# ENGR 4011 SUSTAINABILITY AND RISK ENGINEERING

**Credit Points** 10

**Legacy Code** 300798

**Coordinator** Dharma Hagare ([https://directory.westernsydney.edu.au/search/name/Dharma Hagare/](https://directory.westernsydney.edu.au/search/name/Dharma%20Hagare/))

**Description** Analysis of sustainability with engineering perspectives is increasingly becoming important in the modern world. Also, often the risk analysis is required to be carried for true sustainable solutions. Engineers with in-depth understanding of different tools that can be used for both sustainability and risk analysis will have significant edge in their future career. The students will discuss and understand various engineering issues including renewable/alternative energy systems, energy/resource efficiency, sustainable/green buildings, sustainable transport and infrastructure, sustainable water management, environmental management systems, sustainability reporting, life cycle analysis, probability/reliability theory, risk assessment models and, overall system analysis.

**School** Eng, Design & Built Env

**Discipline** Other Engineering And Related Technologies

**Student Contribution Band** HECS Band 2 10cp

Check your HECS Band contribution amount via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/fees/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 4 subject

**Pre-requisite(s)** CIVL 2002 AND CIVL 4017

## Restrictions

Successful completion of 200 credit points.

## Learning Outcomes

On successful completion of this subject, students should be able to:

1. Apply engineering knowledge for sustainable analysis and sustainable design of engineering systems.
2. Choose appropriate tools/ methods for sustainability and risk analysis of engineering systems.
3. Conduct thorough energy/ water/ materials audit for a given engineering system.
4. Determine appropriate water, energy, transport and infrastructure system based on sustainability and risk management criteria.
5. Carry-out comprehensive life cycle analysis of engineering systems.
6. Conduct overall system analysis of engineering systems considering sustainability and risk criteria.

## Subject Content

mass balance/ flow analysis  
heat/energy flow/conservation/loss analysis  
renewable/ alternative energy systems  
energy/resource efficiency  
sustainable/green buildings  
sustainable transport and infrastructure  
sustainable water management  
environmental management systems  
sustainability reporting/ framework

life cycle analysis  
probability/ reliability theory  
risk assessment models  
integrated system analysis.

## Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task
Participation	13 x submissions and 13 x quizzes; 1 hour per quiz	15	N	Individual
Report	5,000 words including tables, figures and pictures	30	N	Group
Report	1,000 words including tables, figures and pictures	5	N	Group
Final Exam	3 hours	50	N	Individual

Teaching Periods

## Sydney City Campus - Term 1 (2022)

### Sydney City

#### Day

**Subject Contact** Ankit Agarwal ([https://directory.westernsydney.edu.au/search/name/Ankit Agarwal/](https://directory.westernsydney.edu.au/search/name/Ankit%20Agarwal/))

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ENGR4011\\_22-SC1\\_SC\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ENGR4011_22-SC1_SC_D#subjects))

## Spring (2022)

### Penrith (Kingswood)

#### Day

**Subject Contact** Dharma Hagare ([https://directory.westernsydney.edu.au/search/name/Dharma Hagare/](https://directory.westernsydney.edu.au/search/name/Dharma%20Hagare/))

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ENGR4011\\_22-SPR\\_KW\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ENGR4011_22-SPR_KW_D#subjects))

## Parramatta - Victoria Rd

#### Day

**Subject Contact** Dharma Hagare ([https://directory.westernsydney.edu.au/search/name/Dharma Hagare/](https://directory.westernsydney.edu.au/search/name/Dharma%20Hagare/))

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ENGR4011\\_22-SPR\\_PS\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ENGR4011_22-SPR_PS_D#subjects))

## Sydney City Campus - Term 3 (2022)

### Sydney City

#### Day

**Subject Contact** Ankit Agarwal ([https://directory.westernsydney.edu.au/search/name/Ankit Agarwal/](https://directory.westernsydney.edu.au/search/name/Ankit%20Agarwal/))

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ENGR4011\\_22-SC3\\_SC\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ENGR4011_22-SC3_SC_D#subjects))

## **Sydney City Campus - Term 2 (2023)**

### **Sydney City**

#### **On-site**

**Subject Contact** Ankit Agarwal ([https://directory.westernsydney.edu.au/search/name/Ankit Agarwal/](https://directory.westernsydney.edu.au/search/name/Ankit%20Agarwal/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ENGR4011\\_23-SC2\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ENGR4011_23-SC2_SC_1#subjects))

## **Spring (2023)**

### **Penrith (Kingswood)**

#### **On-site**

**Subject Contact** Dharma Hagare ([https://directory.westernsydney.edu.au/search/name/Dharma Hagare/](https://directory.westernsydney.edu.au/search/name/Dharma%20Hagare/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ENGR4011\\_23-SPR\\_KW\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ENGR4011_23-SPR_KW_1#subjects))

### **Parramatta City - Macquarie St**

#### **On-site**

**Subject Contact** Dharma Hagare ([https://directory.westernsydney.edu.au/search/name/Dharma Hagare/](https://directory.westernsydney.edu.au/search/name/Dharma%20Hagare/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ENGR4011\\_23-SPR\\_PC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ENGR4011_23-SPR_PC_1#subjects))