



School of Civil and Environmental Engineering  
Term 3, 2021

# CVEN1701 ENVIRONMENTAL PRINCIPLES AND SYSTEMS

## COURSE DETAILS

<b>Units of Credit</b>	6
<b>Contact hours</b>	6 hours per week
<b>Class</b>	Monday, 10:00am – 12:00pm      online Tuesday, 10:00am – 12:00pm      online
<b>Workshop</b>	Thursday, 11:00am – 1:00pm      online
<b>Course Coordinator and Lecturer</b>	Prof. Tommy Wiedmann email: <a href="mailto:t.wiedmann@unsw.edu.au">t.wiedmann@unsw.edu.au</a> office: CE 312 Civil Engineering Building (H20) phone: +61 2 9065 2065
<b>Lecturer</b>	Prof. Stuart Khan email: <a href="mailto:s.khan@unsw.edu.au">s.khan@unsw.edu.au</a> office: CE 311 Civil Engineering Building (H20) phone: +61 2 9385 5070

## INFORMATION ABOUT THE COURSE

This course builds on the broad multidisciplinary introduction to sustainability provided in the ENGG1000 Engineering Design and Innovation projects, by viewing these principles from an environmental engineering perspective. A range of environmental accounting, environmental risk assessment, and industrial ecology research tools will be introduced to be able to quantifiably define



## TEACHING STRATEGIES

Lectures will provide an explanation of procedures to follow to undertake environmental material/footprint accounting, environmental risk assessment, and systems modelling methods. Examples will be given in these lectures. Students then learn these procedures by applying them to real world problems that they have some familiarity with. The approaches to learning are:

- Private Study**
- Review lecture material, reference books, and resources on UNSW Moodle.
  - Do set problems and preparation so that you can participate in workshops
  - Work in groups on class assignments
  -

**COURSE PROGRAM****TERM 3, 2021**

<b>Date</b>	<b>Lecture Content</b> Mondays, 10am-12pm	<b>Lecture Content</b> Tuesdays, 10am-12pm	<b>Demonstration Content</b> Thursdays, 11am-1pm
13/09/2021 (Week 1)	Sustainability Principles (incl. rel. vs abs. sust.)	Sustainable Engineering and Industrial Ecology	Sustainability Principles
20/09/2021 (Week 2)	Footprints (Carbon Footprint)	Footprints (Ecological Footprint)	Calculate your Ecological Footprint
27/09/2021 (Week 3)	Systems intro	System Dynamics modelling	Systems and Limits to Growth
04/10/2021 (Week 4)	<b><i>Public Holiday (no lecture)</i></b>	Material Flow Analysis	Interactive Material Flow Analysis + <b>Online Quiz</b>



**ASSESSMENT OVERVIEW**

Item	Length	Weighting	Learning outcomes assessed	Assessment Criteria	Due date and submission requirements	Deadline for absolute fail	Marks returned
Online quiz		10%	LO3	Students will be expected to demonstrate an understanding of the qualitative and quantitative concepts presented in the first three weeks of the course.	<b>Wednesday 6 Oct / 16:00</b> (during workshop session)	<b>Wednesday 6 Oct / 16:00</b> (during workshop session)	<b>Wednesday 6 Oct / 16:00</b> (during workshop session)
Assignment 1 (carbon footprinting)	10 pages (excluding cover sheet and appendices)	25%	LO1, LO2	This is a group assignment where carbon footprints of households are calculated, compared, altered and discussed and suggestions for changes presented. The aim is to demonstrate an understanding of environmental sustainability and footprinting methodology, the capacity for analytical and critical thinking, for creative problem solving and skills for collaborative team work. The assessment criteria refer to the study context, methodology and calculations, assumptions and explanations, results, discussion, recommendations, conclusions, summary and the overall report quality.	<b>Friday 22 Oct / 20:00</b> Via Turnitin on Moodle. <b>One student per group submits</b>		

**RELEVANT RESOURCES**

**UNSW Moodle**

**Appendix A: Engineers Australia (EA) Competencies**

*Stage 1 Competencies for Professional Engineers*

	<b>Program Intended Learning Outcomes</b>
<b>PE1: Knowledge and Skill Base</b>	PE1.1 Comprehensive, theory-