UNSW Course Outline

ELEC4122 Strategic Leadership and Ethics - 2024

Published on the 05 Feb 2024

General Course Information

Course Code : ELEC4122
Year : 2024
Term : Term 1
Teaching Period : T1
Is a multi-term course? : No
Faculty : Faculty of Engineering
Academic Unit : School of Electrical Engineering & Telecommunications
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This course aims to help students understand the importance and necessity of professional and ethical responsibility. The course also focuses on engineering leadership in the context of professional engineering roles.

The course is designed to provide an understanding of the complex, interrelated working environments in which engineers practice, and introduce practical guidance for interacting professionally when practising their profession, especially within large and small organisations under strong commercial drivers.

The course covers topics including theories of leadership, the leadership of teams, organisational behaviour, strategic planning, uncertainty and risk, the interaction of laws with engineering projects and innovations, the role of engineering in society; assessment of innovation in processes and products, engineering ethics principles and practice, an introduction to ethical systems, the application of ethical frameworks to engineering practice with particular reference to electrical engineering and computing, codes of ethics in the professions. Ethical analyses will be specifically informed by codes of practice provided by the Engineers Australia and other engineering professional organisations.

Course Aims

This course is primarily designed to enhance your ability to analyse ethical problems, determine a plan of action, and articulate this resolution to others as well as to make decisions about technological innovations and to, thereby, engage productively in the leadership of various groups. The course is designed in the context of engineering, but the skills apply equally to your wider life. In summary, the course aims to equip students with the ability to:

- Recognise and respond to ethical issues;
- Exercise ethical thinking and apply ethical judgement; and
- Develop leadership capability with an engineering mindset.

Relationship to Other Courses

ELEC4122 is a 4th year undergraduate course in the School of Electrical Engineering and Telecommunications at the University of New South Wales. It is a core course for students that are enrolled in a BE (Electrical) or (Telecommunications) program and other combined degree programs.

Pre-requisites and Assumed Knowledge

There is no specific prerequisite for this course, but we assume that students have worked previously on an engineering related project, either in industry or as part of the engineering curriculum. For ELEC4122, students must have successfully completed 120 UOC of an undergraduate engineering program (or equivalent).

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Identify ethical problems in the context of engineering practice and identify ethical decision models
CLO2 : Apply the concepts embodied in codes of ethical conduct to professional situations
CLO3 : Critically assess and discuss conflicting view and attitudes on ethical issues in respectful and inclusive dialogue
CLO4 : Explain effective leadership roles and strategies and apply them in a variety of workplace settings
CLO5 : Exhibit persuasive verbal communication skills, and effective teamwork evidenced by strong and sustained contributions from every member

Course Learning Outcomes	Assessment Item
CLO1 : Identify ethical problems in the context of engineering practice and identify ethical decision models	• Group work reflection with individual report • Exams • Seminars
CLO2 : Apply the concepts embodied in codes of ethical conduct to professional situations	• Group work reflection with individual report • Exams • Seminars
CLO3 : Critically assess and discuss conflicting view and attitudes on ethical issues in respectful and inclusive dialogue	• Seminars
CLO4 : Explain effective leadership roles and strategies and apply them in a variety of workplace settings	• Group work reflection with individual report • Exams • Seminars
CLO5 : Exhibit persuasive verbal communication skills, and effective teamwork evidenced by strong and sustained contributions from every member	• Seminars

Learning and Teaching Technologies

Moodle - Learning Management System | Microsoft Teams

Learning and Teaching in this course

Protocol for Consultations:

- You will be assigned a Mentors, who will lead your seminar classes;
- You encouraged to contact the Head Tutor about your marks and content-related questions etc.

- You are welcome to contact the Course Convenor for any course related matters.
- All email enquiries should be made from your UNSW student email address (please do not use any other email address) with ELEC4122 in the subject line, to ensure that your email can be addressed promptly.

Keeping Informed: Announcements may be made via email (to your student email address) and/or via online learning and teaching platforms – in this course, we will use Moodle https://moodle.telt.unsw.edu.au/login/index.php. Please note that you will be deemed to have received this information, so you should take careful note of all announcements.

Primary Learning Mode: This course is delivered online/face-to-face.

- 2-hour weekly lectures (all students) are delivered in-person.
- 3-hour weekly seminars (maximum 25 students per group) are primarily in-person. You will be required to submit a scan/photo of your student ID pass.
- There **will be two exams** of 1-hour duration each in Weeks 4 to 9.

You are required to commit a total of 10-15 hours per week to your learning, including self-study. In order to complete the above assignments and assessments successfully, you will need to attend and contribute to all classes.

Other Professional Outcomes

Engineers Australia, Professional Engineer Stage 1 Competencies

The learning outcomes of this course contribute to your development of the following EA competencies:

	EA Stage 1 Competencies	Course Learning Outcomes (CLOs)
PE1: Knowledge and Skill Base	PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals	1
PE1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing		
PE1.3 In-depth understanding of specialist bodies of knowledge		
PE1.4 Discernment of knowledge development and research directions		
PE1.5 Knowledge of engineering design practice		
PE1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice		1, 2, 3, 4, 5
PE2: Engineering Application Ability	PE2.1 Application of established engineering methods to complex problem solving	2, 3, 4
PE2.2 Fluent application of engineering techniques, tools and resources		
PE2.3 Application of systematic engineering synthesis and design processes		
PE2.4 Application of systematic approaches to the conduct and management of engineering projects		
PE3: Professional and Personal Attributes	PE3.1 Ethical conduct and professional accountability	1, 2, 3, 4
PE3.2 Effective oral and written communication (professional and lay domains)		5
PE3.3 Creative, innovative and pro-active demeanour		3, 4
PE3.4 Professional use and management of information		
PE3.5 Orderly management of self, and professional conduct		1, 2, 3, 4, 5
PE3.6 Effective team membership and team leadership		4, 5

Additional Course Information

Learning in this course

1. You are expected to learn from all lectures every week and contribute to the weekly discussion/seminars with assigned tutors and lecturers.
2. You must attend all seminars.
3. You must prepare in advance, for your weekly group discussion with your tutor and must *reflect on the content that you have learnt*.
4. You will increase your knowledge of the core material by reading the prescribed resources in addition to attending lectures/seminars. Reading additional texts will further enhance your learning experience and will assist your preparation for assessments.
5. Group learning via discussions, both during class and between classes, is vitally important for this course.
6. For a course such as this, it is *essential* that you undertake adequate self-directed study every week during the term, in order to prepare for your homework/seminars, class contributions and active participations.
7. Various learning technology platforms will be adopted, but all will be accessible via the course Moodle site.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Group work reflection with individual report Assessment Format: Individual	15%	
Exams Assessment Format: Individual	40%	
Seminars Assessment Format: Individual	45%	

Assessment Details

Group work reflection with individual report

Assessment Overview

This will be an opportunity for students to reflect on how they personally respond to group work situations during the weekly seminars and how they have developed skills (e.g., characteristics of team excellence, understanding of team effectiveness, creativity, etc) over the term. This will be a written reflection report with up to a maximum of 500 words.

Course Learning Outcomes

- CLO1 : Identify ethical problems in the context of engineering practice and identify ethical decision models
- CLO2 : Apply the concepts embodied in codes of ethical conduct to professional situations
- CLO4 : Explain effective leadership roles and strategies and apply them in a variety of

workplace settings

Exams

Assessment Overview

There are two exams (one on ethics and one on leadership) to test critical thinking and understanding of the topics, the application of key ethics and leadership ideas, and the detail and correctness of your analysis of some case studies. The exam will cover all content of the course. Your work will be graded according to the rubric. **You must pass (50% or greater) the exams to pass the course.**

Course Learning Outcomes

- CLO1 : Identify ethical problems in the context of engineering practice and identify ethical decision models
- CLO2 : Apply the concepts embodied in codes of ethical conduct to professional situations
- CLO4 : Explain effective leadership roles and strategies and apply them in a variety of workplace settings

Seminars

Assessment Overview

This consists of two elements: 1- active contributions (presentation, discussions/debates, and team leadership) to the weekly seminars (individually assessed) and 2- group seminar presentation (with a maximum 30% weight of final mark).

Active Contribution to Seminars: Your active contributions (presentation, discussions/debates and team leadership) to the weekly seminars throughout the term will be noted by the mentor. This means working on the activities, and actively listening and appropriately contributing to discussions; not simply being physically present. Mentors will give feedback as you progress through the term, and then at the end of the term, your mentor will assign a mark for your active contribution to all seminars and active participation throughout the term. **Marks are assigned based on the quality of the content that you contribute** (rubric will be given). There will be no participation marks given for just **attending** the seminar. **You must pass the active contribution assessment to pass the course.**

Group Seminar Presentations: Students should individually prepare the seminar assignment as homework. The answers to seminar assignments should be discussed in small groups of ideally five students in the first part of the seminar. The seminar activities should occur with intensive peer interaction. Students should compare and discuss their answers until a consensus is

reached. During the second part of the seminar, each group should present their answer to the whole group of approximately 25 students. Their answer should be reviewed and supplemented by other groups in the discussion. The mentor will moderate the seminar discussions and keep track of the answers to ensure they are correct and complete. Seminars provide structured reflection opportunities on some of the ideas explored during the course and will provide you the opportunity to share your understanding and experience with each other, facilitated by a tutor. There will be two seminars on ethics and one on leadership. The seminars will be led by students. **Marks are given based on the quality of the ideas and quality of the presentation** (rubric will be given)**. Regular feedback will be provided by the mentors.**

Course Learning Outcomes

- CLO1 : Identify ethical problems in the context of engineering practice and identify ethical decision models
- CLO2 : Apply the concepts embodied in codes of ethical conduct to professional situations
- CLO3 : Critically assess and discuss conflicting view and attitudes on ethical issues in respectful and inclusive dialogue
- CLO4 : Explain effective leadership roles and strategies and apply them in a variety of workplace settings
- CLO5 : Exhibit persuasive verbal communication skills, and effective teamwork evidenced by strong and sustained contributions from every member

General Assessment Information

The assessment scheme in this course reflects the intention to assess your learning progress through the term. Ongoing assessment occurs through seminar presentation, including active participation in seminars and group presentations, groupwork reflections report, and the written exams.

Assessment 1: Group work reflection individual report (week 10) (15%)

This will be an opportunity for students to reflect on how they personally respond to group work situations during the seminars (Weeks 1 to 10) and how they have developed skills (e.g. characteristics of team excellence, understanding of team effectiveness, creativity etc) over the term.

Assessment 2: Written exams (40%)

There will be two written final exams (week 4 & 9) in the lecture of **one-hour** duration each. The first exam will cover the content from Weeks 1 to 3, and the second exam will cover the content from Weeks 5 to 8. The exam will test critical thinking and general understanding of the topics,

application of key ethics & leadership ideas, and the detail and correctness of case study analyses. **You must pass (50% or greater) this written exams to pass the course.**

Assessment 3: Seminars

Seminars present opportunities to:

- Explore topics in more depth
- Share ideas in a way that will advance your thinking
- Learn from other people's experiences and background knowledge
- Gain perspectives and points of view that you might not have otherwise considered
- Provide a platform to practice key skills, such as teamwork, which requires active engagement and inclusion with other people.

The seminar contains two componenets:

3(a) Active Contribution to Seminars (15%)

Every week (Weeks 1-5 and 7-10), your active contributions (presentation, discussions/debates and team leadership) to the seminars will be noted by the mentor. This means working on the activities, and actively listening and appropriately contributing to discussions; not simply being physically present. Mentors will give feedback as you progress through the term, and then at the end of the term, your mentor will assign a mark for your active contribution to all seminars and active participation throughout the term. **Marks are assigned based on the quality of the content that you contribute.**

There will be no participation marks given for just **attending** the seminar. **You must pass the active contribution assessment to pass the course.**

3(b) Group Seminar Presentations (30%)

Students should individually prepare the seminar assignment as homework. The answers on seminar assignments should be discussed in small groups of ideally five students in the first part of the seminar. The seminar activities should occur with intensive peer interaction. Students should compare and discuss their answers until consensus is reached.

During the second part of the seminar, each group should present their answer to the whole group of approximately 25 students. Their answer should be reviewed and supplemented by other groups in the discussion. The mentor will moderate the seminar discussions and keep track of the answers to ensure they are correct and complete.

Seminars provide structured reflection opportunities on some of the ideas explored during the course and will provide you the opportunity to share your understandings and experiences with each other, facilitated by a tutor. Two of the seminars (Weeks 5 & 10) will be led by students.

Marks are given based on the quality of the ideas and quality of the presentation. Regular feedback will be provided by the mentors.

Grading Basis

Standard

Requirements to pass course

A satisfactory performance (50% or greater) overall in the course, **and** in **each** of the following, is a necessary requirement to pass this course:

- Active contribution (quality of the content contributed to discussion) to Seminars (Weeks 1-5 and 7-10)
- Written exams

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 12 February - 18 February	Lecture	Ethical Dilemmas and Codes of Ethics
Week 2 : 19 February - 25 February	Lecture	Ethical Theories and Ethical Problem Solving Techniques
Week 3 : 26 February - 3 March	Lecture	The Rights and Responsibilities of Engineers; Risk and Safety
Week 4 : 4 March - 10 March	Lecture	Exam 1 and Global Issues; Case Studies in a Workplace
Week 5 : 11 March - 17 March	Lecture	Technical Leadership Fundamentals: Components of Leadership, Building Trust and Credibility, Risk-taking, Creativity
Week 6 : 18 March - 24 March	Lecture	Revision Week – No new material taught
Week 7 : 25 March - 31 March	Lecture	Leadership Theories and Styles: Transformational, Adaptive, Authentic, Autocratic, etc
Week 8 : 1 April - 7 April	Lecture	Putting Leadership Principles into Practice: Creating a Vision, Team building, Decision-making, Conflict Management and Resolution, Time management
Week 9 : 8 April - 14 April	Lecture	Exam 2 and Ethical and Inclusive leadership: Ethical culture, Organisational and Individual requirements, inclusive leadership
Week 10 : 15 April - 21 April	Lecture	Industry lecture: Ethics and Leadership

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

Indicative Course Schedule Week Lecture (PART A: Fundamentals of Ethics) 1 Ethical Dilemmas and Codes of Ethics 2 Ethical Theories and Ethical Problem Solving Techniques 3 The Rights and Responsibilities of Engineers; Risk and Safety 4 Global Issues; Case Studies in a Workplace Week Lecture (PART B: Fundamentals of Leadership) 5 Technical Leadership Fundamentals: Components of Leadership, Building Trust and Credibility, Risk-taking, Creativity. 6 Revision Week – No new material taught 7 Leadership Theories and Styles: Transformational, Adaptive, Authentic, Autocratic etc 8 Putting Leadership Principles into Practice: Creating a Vision, Team building, Decision-making, Conflict Management and Resolution, Time management 9 Ethical and Inclusive leadership: Ethical culture, Organisational and Individual requirements, inclusive leadership 10 Industry lecture: Ethics and Leadership

Course Resources

Prescribed Resources

Reference books

- Q. Zhu, M.W. Martin and R. Schinzinger, Ethics in Engineering, McGraw Hill, 2022.
- D. W. Hess, Leadership by Engineers and Scientists, Wiley, 2018

Recommended Resources

Additional Resources

- Engineering Ethics in Practice: A guide for Engineers - Royal Academy of Engineering UK
- Code of Ethics and Guidelines on Professional Conduct - IEAust
- Engineering Ethics: Concepts and Cases (Electrical Engineering Cases) - NSF Workshop Cases
- Markkula Centre for Applied Ethics: Technology Ethics Cases - Santa Clara University
- M. W. Martin, R. Schinzinger, Introduction to Engineering Ethics, McGraw Hill, 2010
- P. G. Northouse, Leadership Theory and Practice, Sage Publications, 2016
- E Gundling & C Williams, Inclusive Leadership: From Awareness to Action, Aperian Global, 2019
- Quick Guide to Unconscious Bias – http://tiny.cc/UBQuickGuide

Course Evaluation and Development

The number of assessment for the course has been reduce to 3 componenets. Seminars that enbables students to show case their ability to discuss the seminar topic. Two written in-class exams replaced the final written exam for the curse.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Shaghik Ataka ramians				Please email the course convenor for meetings	No	Yes
Head tutor	Junye Li					No	No
Tutor	Aryan Sharma					No	No
	Deepak Mishra					No	No
	Hassan Habibi Gharakheili					No	No
	Francois Ladouceur					No	No
	Yingge (Lucy) Chen					No	No
	Aruna Senevirathne					No	No

Other Useful Information

Academic Information

I. Special consideration and supplementary assessment

If you have experienced an illness or misadventure beyond your control that will interfere with your assessment performance, you are eligible to apply for Special Consideration prior to, or within 3 working days of, submitting an assessment or sitting an exam.

Please note that UNSW has a Fit to Sit rule, which means that if you sit an exam, you are declaring yourself fit enough to do so and cannot later apply for Special Consideration.

For details of applying for Special Consideration and conditions for the award of supplementary assessment, please see the information on UNSW's Special Consideration page.

II. Administrative matters and links

All students are expected to read and be familiar with UNSW guidelines and polices. In particular, students should be familiar with the following:

- Attendance
- UNSW Email Address
- Special Consideration
- Exams
- Approved Calculators

- Academic Honesty and Plagiarism
- Equitable Learning Services

III. Equity and diversity

Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convener prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equitable Learning Services. Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

IV. Professional Outcomes and Program Design

Students are able to review the relevant professional outcomes and program designs for their streams by going to the following link: https://www.unsw.edu.au/engineering/student-life/student-resources/program-design.

Note: This course outline sets out the description of classes at the date the Course Outline is published. The nature of classes may change during the Term after the Course Outline is published. Moodle or your primary learning management system (LMS) should be consulted for the up-to-date class descriptions. If there is any inconsistency in the description of activities between the University timetable and the Course Outline/Moodle/LMS, the description in the Course Outline/Moodle/LMS applies.

Academic Honesty and Plagarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. *Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.*

Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. UNSW has produced a website with a wealth of resources to support students to understand and avoid plagiarism, visit: student.unsw.edu.au/plagiarism. The Learning Centre assists students with understanding academic integrity and how not to plagiarise. They also hold workshops and can help students one-on-one.

You are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting and the proper referencing of sources in preparing all assessment tasks.

Repeated plagiarism (even in first year), plagiarism after first year, or serious instances, may also be investigated under the Student Misconduct Procedures. The penalties under the procedures can include a reduction in marks, failing a course or for the most serious matters (like plagiarism in an honours thesis or contract cheating) even suspension from the university. The Student Misconduct Procedures are available here:

www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf

Submission of Assessment Tasks

Work submitted late without an approved extension by the course coordinator or delegated authority is subject to a late penalty of five percent (5%) of the maximum mark possible for that assessment item, per calendar day.

The late penalty is applied per calendar day (including weekends and public holidays) that the assessment is overdue. There is no pro-rata of the late penalty for submissions made part way through a day. This is for all assessments where a penalty applies.

Work submitted after five days (120 hours) will not be accepted and a mark of zero will be awarded for that assessment item.

For some assessment items, a late penalty may not be appropriate. These will be clearly indicated in the course outline, and such assessments will receive a mark of zero if not completed by the specified date. Examples include:

- Weekly online tests or laboratory work worth a small proportion of the subject mark;
- Exams, peer feedback and team evaluation surveys;
- Online quizzes where answers are released to students on completion;
- Professional assessment tasks, where the intention is to create an authentic assessment that has an absolute submission date; and,
- Pass/Fail assessment tasks.

Faculty-specific Information

Engineering Student Support Services – The Nucleus - enrolment, progression checks, clash

requests, course issues or program-related queries

Engineering Industrial Training – Industrial training questions

UNSW Study Abroad – study abroad student enquiries (for inbound students)

UNSW Exchange – student exchange enquiries (for inbound students)

UNSW Future Students – potential student enquiries e.g. admissions, fees, programs, credit transfer

Phone

(+61 2) 9385 8500 – Nucleus Student Hub

(+61 2) 9385 7661 – Engineering Industrial Training

(+61 2) 9385 3179 – UNSW Study Abroad and UNSW Exchange (for inbound students)

School-specific Information

General Conduct and Behaviour

Consideration and respect for the needs of your fellow students and teaching staff is an expectation. Conduct which unduly disrupts or interferes with a class is not acceptable and students may be asked to leave the class.

Use of AI for assessments

Your work must be your own. If you use AI in the writing of your assessment, you must acknowledge this and your submission must be substantially your own work. More information can be found on this website.

Workplace Health & Safety (WHS)

WHS for students and staff is of utmost priority. Most courses involve laboratory work. You must follow the rules about conduct in the laboratory. About COVID-19, advice can be found on this website.

School Contact Information

Consultations: Lecturer consultation times will be advised during the first lecture. You are welcome to email the tutor or laboratory demonstrator, who can answer your questions on this course and can also provide you with consultation times. ALL email enquiries should be made from your student email address with ELEC/TELExxxx in the subject line; otherwise they will not be answered.

Keeping Informed: Announcements may be made during classes, via email (to your student email address) and/or via online learning and teaching platforms – in this course, we will use Moodle https://moodle.telt.unsw.edu.au/login/index.php. Please note that you will be deemed to have received this information, so you should take careful note of all announcements.

Student Support Enquiries

For enrolment and progression enquiries please contact Student Services

Web

Electrical Engineering Homepage