



Course Staff

Course Convenors: Prof Aruna **Seneviratne**, a.seneviratne@unsw.edu.au
Prof. Eliathamby **Ambikairajah**, ambi@ee.unsw.edu.au

Online Consultation Tutor: Vihanga **Peiris** (v.peiris@unsw.edu.au)

Online Tutors: Sara **Mashayekh** sara.mashayekh@unsw.edu.au
Josephine **Roper** j.roper@unsw.edu.au
Levi **Chayboub** l.chayboub@unsw.edu.au
Muhammad Talal Ali **Khan** m.t.khan@unsw.edu.au
Benjamin **Zhao** benjamin.zhao@unsw.edu.au
Scott **Watts** scott.watts@unsw.edu.au
Ali **Darejeh** ali.darejeh@unsw.edu.au

Consultations:

- You are encouraged to contact the Online Consultation Tutor in the first instance, who can respond to your questions on course logistics.
- You will be assigned an Online Tutor, who will lead your tutorial and seminar classes, and you should contact them about course learning, feedback, your marks and content-related questions.

All email enquiries should be made from your student email address (please do not use any other email address) with ELEC4122 in the subject line, to ensure that they 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 fully online
- 1-hour weekly tutorials (maximum 50 students per group) are primarily online (except one face-to-face group). You will be required to submit a scan/photo of your student ID pass.
- 2-hour weekly seminars (maximum 50 students per group) are primarily online (except one face-to-face group). You will be required to submit a scan/photo of your student ID pass.
- From Week 1 to Week 9, there is a short-answer and/or multiple-choice test every week, and feedback will be given regularly
- In Week 4 and Week 8, homework assignments will be released
- In Week 10, there is a class exam and/or oral exam (details released in Week 8)
- There will be no final exam

You are required to commit a total of 15 hours per week to your learning, including self-study. In order to complete the above assessments successfully, you will need to attend and contribute to all classes. If this format is not suitable for your learning, then please take the opportunity to change your enrolment.

Course Summary

Contact Hours: The course consists of 2 hr **lectures**, 1hr **tutorials**, and 2 hr **seminars** each week from Week 1 to 10. (Week 6 is Flexibility (Revision) Week and there will be no new material taught during this week).

Class Timetable: You can find the detailed class schedule at the following links:

<http://timetable.unsw.edu.au/2021/ELEC4122.html>;

ELEC4122	Day	Time	Mode of delivery / Location
Lectures	Thursday	12noon - 2pm	Online
Tutorials	Tuesday	2pm - 3pm	Online
	Wednesday	3pm - 4pm	Online
	Wednesday	11am -12 noon	Face to Face (Keith Burrows Theatre)
	Thursday	4pm – 5pm, 5pm – 6pm	Online Online
Seminars	Tuesday	10am – 12noon	Face to Face (ChemicalSc M17)
	Tuesday	12noon – 2pm, 4pm – 6pm	Online Online
	Wednesday	12noon – 2pm, 4pm – 6pm	Online Online

- **You must attend the same seminar timeslot and the same tutorial class, throughout Week 1 to Week 10.**
- **You cannot move days or timeslots once you have chosen your preferred tutorial and seminar times/days in Week 1.**
- For example, if you attend a Wednesday 3:00pm seminar in Week 1, you must attend the Wednesday 3:00pm seminar each week until Week 10. This applies to tutorials as well.

Context and Aims

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

Aims

The course aims to equip students with the ability to:

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

Indicative Course Schedule

Week	Lecture (PART A: Fundamentals of Ethics)	Name
1	Ethical Dilemmas, Choices, and Codes of Ethics	Professor Aruna Seneviratne (Online Delivery Mode)
2	Moral frameworks for Engineering Ethics; Safety and Risks	
3	Engineer's Responsibilities and Rights; Honesty	
4	Global Issues; Case Studies in a Workplace;	
Week	Lecture (PART B: Fundamentals of Leadership)	Name
5	Technical Leadership Fundamentals: Building Trust and Credibility, Risk-taking, Creativity, Ethics, Professionalism.	Professor Eliathamby Ambikairajah (Online Delivery Mode)
6	<i>Revision Week – No new material taught</i>	
7	Putting Leadership Principles into Practice: Creating Vision, Team Building, Time Management	
8	Putting Leadership Principles into Practice: Conflict Management, Decision making	
9	Ethical and Inclusive leadership: Ethical culture, Organisational and Individual requirements, inclusive leadership	Professor Aruna Seneviratne & Professor Eliathamby Ambikairajah
10	Class Exams/Oral assessments	

Assessment

- | | |
|---|-----|
| 1. Two online homework assessments (2 x 15%; weeks 4 and 8) | 30% |
| 2. Eight online short-answer and multiple-choice test (8 x 3%: weeks 1-5 and 7-9) | 24% |
| 3. *Active contribution to seminars and tutorials (weeks 2-5 and 7-9) | 14% |
| 4. *Class Exams/Oral assessments (week 10) | 32% |

*** You must pass the active contribution and class exam assessments in order to pass the course.**

COVID19 - Important Health Related Notice

Your health and the health of those in your class is critically important. You must stay at home if you are sick or have been advised to self-isolate by [NSW health](#) or government authorities. Current alerts and a list of hotspots can be found [here](#). You will not be penalised for missing a face-to-face activity due to illness or a requirement to self-isolate. We will work with you to ensure continuity of learning during your isolation and have plans in place for you to catch up on any content or learning activities you may miss. Where this might not be possible, an application for fee remission may be discussed.

If you are required to self-isolate and/or need emotional or financial support, please contact the [Nucleus: Student Hub](#). If you are unable to complete an assessment, or attend a class with an attendance or participation requirement, please let your teacher know and apply for [special consideration](#) through the [Special Consideration portal](#). To advise the University of a positive COVID-19 test result or if you suspect you have COVID-19 and are being tested, please fill in this [form](#).

UNSW requires all staff and students to follow NSW Health advice. Any failure to act in accordance with that advice may amount to a breach of the Student Code of Conduct. Please refer to the [Safe Return to Campus](#) guide for students for more information on safe practices.

Course Details

Credits

This is a 6 UoC course and the expected workload is 15 hours per week (including lectures, tutorials, seminars and self-study) throughout the 10-week term.

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 following 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).

Subsequent Courses

Currently, there are no subsequent courses available, but those who have successfully completed this course will have an understanding of professional and ethical responsibility and will be able to analyse ethical problems and take an appropriate course of action. They will also be in a position to embed an ethical culture in a working environment. The leadership component will be a helpful primer for masters-level study of leadership (e.g. MBA).

Learning outcomes

At the end of the course students should be able to:

1. Identify ethical problems in the context of engineering practice and understand ethical decision models
2. Apply the concepts embodied in codes of ethical conduct to professional situations
3. Demonstrate critical thinking skills and attitudes for engaging in respectful and inclusive dialogue with their peers and assess conflicting views of ethical issues.
4. Understand effective leadership roles and strategies and apply them in a variety of workplace settings
5. Exhibit persuasive verbal communication skills, and effective teamwork evidenced by strong and sustained contributions from every member

This course addresses the Engineers Australia (National Accreditation Body) Stage I competency standard as outlined in **Appendix A**.

Syllabus

Part A (Fundamentals of Ethics): Ethical decision-making strategies, critiques of codes of ethics, personal commitments and professional life, assessment of safety and risk, risk-benefit analysis, safe-exit and fail-safe systems, employee/employer rights and responsibilities, confidentiality and conflict of interest, whistle-blowing, consulting engineers, expert witnesses, professional behaviour/policies on the job, globalisation of engineering, technology transfer, computer ethics.

Part B (Fundamentals of Leadership): Building trust and credibility, risk-taking, creativity, ethics, professionalism, creating vision, team-building, time management, conflict management, decision-making, ethical culture, organisational and individual expectations, inclusive leadership, inclusive behaviour, building key leadership skills and working across boundaries, unconscious bias.

Teaching Strategies

Delivery Mode

The entire course will be delivered via online interactive lectures (recorded lectures will also be available) and online tutorials, online activities and online seminars with assigned tutors.

There will be one tutorial group and one seminar group available for face-to-face learning, if you prefer face-to-face classes.

Learning in this course

1. You are expected to learn from all online lectures every week and contribute to the weekly discussion with assigned tutors and lecturers.
2. You must attend all tutorials, seminars, oral assessments/class exams.
3. You must prepare well 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/tutorials/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 an online course such as this, it is *vital* that you undertake adequate self-directed study every week during the term, in order to prepare for your homework, short-answer and multiple-choice tests, class contributions and class written/oral exams.
7. Various learning technology platforms will be adopted, but all will be accessible via the course Moodle site.

Assessment

The assessment scheme in this course reflects the intention to assess your learning progress through the term.

Online Homework Assessments (30%)

In Weeks 4 and 8, online homework assessments will be released, each worth 15%. Late submissions will be penalised by 30% per day (including weekends). The assessments will be based on lecture content, class discussions, independent learning and your own self-reflection on the course materials. The assessments will be due within four days of release (see p6 for dates). Assessments will be marked on the basis of the level of understanding and clarity of communication exhibited by the submissions. Feedback will be given by the tutors via the learning platform.

Online Short-Answer and Multiple-Choice Tests (24%)

From Weeks 1-9 (excluding Week 6), there will be a total of eight short-answer and multiple-choice tests, each worth 3%. The questions will be mainly based on the lecture content, and the short answers will be mainly based on your independent study and self-reflection on class discussions. Each test will be available for four days (see p6 for dates), during which the test can be taken at any time, but once the test begins it must be completed and submitted within 30 minutes (after 30 minutes it will automatically submit what you have done), and only one attempt is allowed. There will be no negative marking of multiple-choice questions. Regular feedback will be given by the tutors via the learning platform.

Active Contribution to Seminars and Tutorials (14%)

Every week (Weeks 2-9), your active contributions (presentation, discussions/debates and team leadership) to the seminars and tutorials will be noted by the tutor. Tutors will give feedback as you progress through the term, and then at the end of the term your tutor will assign a mark for your contribution to all seminars and tutorials throughout the term. **You must pass the active contribution assessment to pass the course.**

Class Exams/Oral Assessments (32%)

At the end of the course, a class exam (1 hour) and possibly an oral assessment (5-10 minutes each) will be held during Week 10. The format (written exam and/or oral) will be finalised and communicated to you by Week 8. This will cover all content from Weeks 1-9, and marks will be assigned on the basis of understanding of the topics tested, understanding and application of key ethics and leadership ideas, and the detail and correctness of case study analyses. During assessments, you must have your facial video stream switched on. **You must pass the class exam/oral assessment to pass the course.**

Requirements to Pass the 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 to Seminars and Tutorials (Weeks 2-5 and 7-9)
- Class exam assessments (Week 10)

Relationship of Assessment Methods to Learning Outcomes

Week	Assessment Methods	Release Date	Submission Date	Learning Outcomes				
	PART A: Fundamentals of Ethics			1	2	3	4	5
1	Short-Answer & Multiple - Choice Test 1 (3%)	18/02/21 (5pm)	22/02/21 (5pm)	✓	-	-	-	✓
2	Short-Answer & Multiple - Choice Test 2 (3%)	25/02/21 (5pm)	01/03/21 (5pm)	✓	✓	-	-	✓
3	Short-Answer & Multiple - Choice Test 3 (3%)	04/03/21 (5pm)	08/03/21 (5pm)	✓	✓	✓	-	✓
4	Homework Assessment 1 (15%) Short-Answer & Multiple - Choice Test 4 (3%)	11/03/21 (5pm)	15/03/21 (5pm)	✓	✓	✓	-	✓
Week	Assessment Methods	Release Date	Submission Date	Learning Outcomes				
	PART B: Fundamentals of Leadership			1	2	3	4	5
5	Short-Answer & Multiple - Choice Test 5 (3%)	18/03/21 (5pm)	22/03/21 (5pm)	-	-	-	✓	✓
6	Revision Week							
7	Short-Answer & Multiple - Choice Test 6 (3%)	01/04/21 (5pm)	06/04/21 (5pm)	-	-	✓	✓	✓
8	Homework Assessment 2 (15%) Short-Answer & Multiple - Choice Test 7 (3%)	08/04/21 (5pm)	12/04/21 (5pm)	-	-	✓	✓	✓
9	Short-Answer & Multiple - Choice Test 8 (3%)	15/04/21 (5pm)	19/04/21 (5pm)	-	-	✓	✓	✓
10	Class Exams/Oral assessments (32%) Active Contribution to tutorial and seminar (14%)	Details will be notified in Week 8		✓	✓	✓	✓	✓

Course Resources

Reference books

- C. B. Fledderman, Engineering Ethics (Fourth Edition), Prentice Hall, 2012.
- D. W. Hess, Leadership by Engineers and Scientists, Wiley, 2018

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
- P. G. Northouse, Leadership Theory and Practice, 4th edn, 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>

Online resources

Moodle

As a part of the teaching component, Moodle will be used to disseminate teaching materials. Assessment marks will also be made available via Moodle: <https://moodle.telt.unsw.edu.au/login/index.php>. Moodle will also be the primary portal through which to access all other learning platforms used in this course.

Mailing list

Announcements concerning course information will be given in the lectures and/or on Moodle and/or via email (which will be sent to your student email address).

Other Matters

Dates to note

Important Dates available at: <https://student.unsw.edu.au/dates>

Academic Honesty and Plagiarism

Plagiarism is the unacknowledged use of other people's work, including the copying of assignment works and laboratory results from other students. Plagiarism is considered a form of academic misconduct, and the University has very strict rules that include some severe penalties. For UNSW policies, penalties and information to help you avoid plagiarism, see <https://student.unsw.edu.au/plagiarism>. To find out if you understand plagiarism correctly, try this short quiz: <https://student.unsw.edu.au/plagiarism-quiz>.

Student Responsibilities and Conduct

Students are expected to be familiar with and adhere to all UNSW policies (see <https://student.unsw.edu.au/policy>), and particular attention is drawn to the following:

Workload

It is expected that you will spend at least **15 hours per week** studying a 6 UoC course, from Week 1 until the final assessment, including both formal classes and *independent, self-directed study*. In periods where you need to complete assignments or prepare for examinations, the workload may be greater. Over-commitment has been a common source of failure for many students. You should take the required workload into account when planning how to balance study with employment and other activities.

Attendance

Regular and punctual attendance at all classes is expected. For this online course, attendance in every week and active contributions to tutorials and seminars are essential. If students attend less than 90% of scheduled classes, they may be refused final assessment in Week 10.

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.

Work Health and Safety

UNSW policy requires each person to work safely and responsibly, in order to avoid personal injury and to protect the safety of others.

Special Consideration and Supplementary Examinations

You must submit all assignments and attend all examinations scheduled for your course. You can apply for special consideration when illness or other circumstances beyond your control interfere with an assessment performance. If you need to submit an application for special consideration for an exam or assessment, you must submit the application **prior to the start** of the exam or before the assessment is submitted, except where illness or misadventure prevent you from doing so. Be aware of the “fit to sit/submit” rule which means that if you sit an exam or submit an assignment, you are declaring yourself well enough to do so and cannot later apply for Special Consideration. For more information and how to apply, see <https://student.unsw.edu.au/special-consideration>.

Continual Course Improvement

This course is under constant revision in order to improve the learning outcomes for all students. Please forward any feedback (positive or negative) on the course to the course convener or via the online student survey myExperience. You can also provide feedback to ELSOC who will raise your concerns at student focus group meetings. As a result of previous feedback obtained for this course and in our efforts to provide a rich and meaningful learning experience, we have continued to evaluate and modify our delivery and assessment methods.

In response to feedback from students, staff and industry, this course has been completely revised. The course pedagogy has been newly developed to revolve around Bloom’s taxonomy and the SOLO taxonomy, so that at the completion of the course, students will be able to demonstrate the highest-level evaluation and concept creation skills. For example, students will be capable of creating a professional code of ethical conduct for a student organisation or a workplace. The leadership and ethics components have been separated, in order to clarify them as discrete topics. Communication skills and teamwork have been explicitly included as a learning outcome and assessed. All case studies, assessment formats and assessment contents are completely new.

Administrative Matters

On issues and procedures regarding such matters as special needs, equity and diversity, occupational health and safety, enrolment, rights, and general expectations of students, please refer to the School and UNSW policies:

<https://student.unsw.edu.au/guide>

<https://www.engineering.unsw.edu.au/electrical-engineering/resources>

Appendix A: Engineers Australia (EA) Professional Engineer Stage 1 Competency Standards

Competency Standards		Learning Outcomes (LO)
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