School of Electrical Engineering and Telecommunications

Term 1, 2022
Course Outline

ELEC4122: Strategic Leadership and Ethics

Course Staff

Course Convenor: Prof. Eliathamby **Ambikairajah**, e.ambikairajah@unsw.edu.au

Head Tutor: Mr. Scott **Watts** scott.watts@unsw.edu.au

Seminar Mentors (Morning 10am to 1pm):

Dr Shaghik Atakaramians s.atakaramians@unsw.edu.au (Group H10A, **in Person**)
Prof Francois Ladouceur f.ladouceur@unsw.edu.au (Group H10B, Online)
Mr Scott Watts scott.watts@unsw.edu.au (Group H10C, Online)
Mr Muhammad Talal Ali Khan m.t.khan@unsw.edu.au (Group H10D, Online)

Seminar Mentors (Afternoon 2pm to 5pm):

Dr Matthew Priestley m.priestley@unsw.edu.au (Group H14A, **in Person**)
Mr Scott Watts scott.watts@unsw.edu.au (Group H14B, Online)
Dr Deepak Mishra d.mishra@unsw.edu.au (Group H14C, Online)
Mr Muhammad Talal Ali Khan m.t.khan@unsw.edu.au (Group H14D, Online)
Ms Nadia Degregori Retamozo n.degregori@unsw.edu.au (Group H14E, Online)

Protocol for Consultations:

- You are encouraged to contact the Head Tutor in the first instance, who can respond to your questions on course logistics.
- You will be assigned an online/face-to-face 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 a fully hybrid mode.
- 3-hour weekly seminars (maximum 25 students per group) are primarily online (except for two face-to-face groups). You will be required to submit a scan/photo of your student ID pass.
- In Weeks 4 and 8, homework assignments will be released.
- There **will be a final exam** (open book exam) of 2-hour duration covering the lecture content from Weeks 1 to 10

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.

Course Summary

Contact Hours: The course consists of 2 hr **lectures**, and 3 hr **seminars** each week from Week 1 to Week 10. (Week 6 is Flexibility Week [Revision] and there will be no new material taught during that week).

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

http://timetable.unsw.edu.au/2022/ELEC4122.html

ELEC4122	Day	Time	Mode of delivery / Location/Mentor
Lectures	Tuesday	2pm - 4pm (1A)	Hybrid (Ainsworth G03) / Professor Eliathamby Ambikairajah
Seminars	Thursday	10am – 1pm (H10A) 10am – 1pm (H10B) 10am – 1pm (H10C) 10am – 1pm (H10D)	Face-to-Face (Elec Eng G23) / Dr Shaghik Atakaramians Online / Prof Francois Ladouceur Online / Mr Scott Watts Online / Mr Muhammad Talal Ali Khan
	Thursday	2pm – 5pm (H14A) 2pm – 5pm (H14B) 2pm – 5pm (H14C) 2pm – 5pm (H14D) 2pm – 5pm (H14E)	Face-to-Face (Elec Eng G23) / Dr Matthew Priestley Online / Mr Scott Watts Online / Dr Deepak Mishra Online / Mr Muhammad Talal Ali Khan Online / Ms Nadia Degregori Retamozo

- **You must attend the same seminar timeslot throughout Week 1 to Week 10**.
- **You cannot move timeslots once you have chosen your preferred seminar time in Week 1.**

Note: You are required to commit 10 - 15 hours per week to your learning, including self-study in order to complete the assignments and assessments successfully.

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 and Codes of Ethics	Professor Eliathamby Ambikairajah (Weeks 1 & 2) Professor Aruna Seneviratne (weeks 3 & 4) (Hybrid Delivery Mode)
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)**	**Name**
5	Technical Leadership Fundamentals: Components of Leadership, Building Trust and Credibility, Risk-taking, Creativity.	Professor Eliathamby Ambikairajah (Hybrid Delivery Mode)
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**	

Assessment

1. Seminar
   - 1(a) Seminar presentations (Weeks 1- 4 & 7-9 mentors led; Weeks 5 & 9 students led) 15%
   - 1(b) *Active contribution/participation to seminars (Weeks 1-5 and 7-10) 15%
2. Group work reflection individual report (Week 10) 10%
3. Two online homework assessments (2 x 15%; Weeks 4 and 8) 30%
4. *Final exam (open book exam) 30%

*** You must pass each (overall mark of at least 50%) the Active contribution to seminars and Final exam 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 10-15 hours per week (including lectures, seminars, assignments 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 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).

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 appropriate courses 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): Codes of ethics, Ethical theories and ethical problem solving techniques, assessment of safety and risk, risk-benefit analysis, safe-exit and fail-safe systems, the rights and responsibilities of engineers, 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): Leadership theories and styles: Transformational, adaptive, authentic, autocratic etc

risk-taking, creativity, 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 interactive lectures (recorded lectures will also be available) and homework activities and online seminars with assigned mentors.

There will be two seminar groups 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 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.

Assessment

The assessment scheme in this course reflects the intention to assess your learning progress through the term. Ongoing assessment occurs through seminar presentation, active participation in seminars homework assignments (Weeks 4 & 8) and groupwork reflections report (Week 10), and then the final exam.

1. Seminar

1(a) Seminar Presentations (15%)

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.

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 kept 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.

1(b) Active Contribution to Seminars (15%)

Every week (Weeks 1 to 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.**

2. Group work reflection individual report (week 10) (10%)

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.

3. Homework Assessments (30%)

In Weeks 4 and 8, online homework assessments will be released, each worth 15%. Late submissions will be penalised by 20% per day (including weekends). The assessments will be based on lecture content, class/seminar discussions, independent learning and your own self-reflection on the course materials. Assessments will be marked on the basis of the level of understanding and clarity of communication exhibited by the submissions. Feedback will be given via the learning platform.

4. Final Examination (30%)

At the end of the course, there will be a written final exam (open book exam) of **two-hour** duration. This will cover all content from Weeks 1 to10, and it 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 exam 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 (quality of the content contributed to discussion) to Seminars (Weeks 1-5 and 7-10)
- Final exam (Open book exam)

Relationship of Assessment Methods to Learning Outcomes

Assessment Item			Learning Outcomes				
Item	**Type**	**Weighting**	**1**	**2**	**3**	**4**	**5**
1(a)	**Seminar presentations (Weeks 1 to 10)	15%	✓	✓	✓	✓	✓
1(b)	**Active seminar participation (Weeks 1 to 10)	15%	✓	✓	✓	✓	✓
2	Group work reflection report (Individual) (Week 10)	10%	✓	✓	×	✓	×
3	Homework activities (x2) (Weeks 4 & 8)	30%	✓	✓	×	✓	×
4	Final exam (Open book exam)	30%	✓	✓	×	✓	×

**Marking guide for seminar presentations is given below:

Content (50%):

Ability to think critically on the subject, correctly and effectively incorporate relevant theory, generate novel insights on the issues presented, seminar is structured to communicate points effectively, have a logical flow between ideas so that the whole seminar builds towards a coherent conclusion.

Presentation (25%):

Effective use of material (visual material, any external tools to aid their presentation), good presentation skills in terms of speech and speaker transition, well-timed.

Engagement (25%):

Seminar is run in such a way as to generate significant student engagement that is effective in developing the audience's understanding of the material, use of creativity.

Week	Homework Assessments	Release Date	Submission Date
4	Homework Assessment 1 (15%)	09/03/22 (5pm)	16/03/22 (5pm)
8	Homework Assessment 2 (15%)	06/04/22 (5pm)	13/04/22 (5pm)
10	Groupwork Reflection Report (10%)	21/04/22 (5pm)	26/04/22 (5pm)

Course 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

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

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 **10 - 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 seminars are essential. If students attend less than 90% of scheduled classes (Seminars), they may be refused to sit the final exam.

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

- Your feedback is valuable to improve the course. Please forward any feedback (positive or negative) on the course to the course convener **or** via the weekly comments link in **SurveyMonkey on Moodle**. This will ensure that we can make adaptive changes throughout the term.
- Towards Week 10, you will be asked by UNSW to provide feedback 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:

    1. Oral examination has been removed and a written final exam has been introduced.
    2. Previously offered Tutorial (1hr) and seminar (2hr) have now been integrated and a three hour seminar is provided for each week, thus enabling students to actively participate in seminars.
    3. Group work reflection report has also been introduced. This will be an opportunity for students to reflect on how they personally respond to group work situations during the seminars and how they have developed skills over the term.

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