UNSW Course Outline

ZEIT4901 Engineering Research 4A - 2024

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General Course Information

Course Code : ZEIT4901
Year : 2024
Term : Semester 2
Teaching Period : Z2
Is a multi-term course? : No
Faculty : UNSW Canberra
Academic Unit : School of Engineering and Technology
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : UNSW Canberra at ADFA
Campus : UNSW Canberra
Study Level : Undergraduate
Units of Credit : 12

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Students will undertake a problem-based learning project of scope commensurate with the level of attainment expected of a final-year Electrical Engineering student in the CDF Students Program. The project will take the form of a piece of research or investigation, or a feasibility

study or design chosen from a list of topics selected or approved by the Head of School. In each case at least one staff member will be nominated as a supervisor to provide guidance and general supervision during the project. Students will be assessed through their seminar presentations, attended by other students and members of staff, and the project thesis. Evidence of sufficient progress may be required from time to time. The thesis, which will have a nominal length of 20,000 words, is to be presented both typed and suitably bound and in electronic form.

During the year students will be required to participate in a series of specialist lectures and seminars. Specialist lectures will normally take the form of attendance by students on at least 8 occasions during the year at nominated meetings of the local professional societies.

This is the first half of a year-long course.

Course Aims

This research-based set of courses extends over **two semesters, each with 12 UOC**. Since the assessment for each is linked they are combined in this single course outline. Successful completion of two of these courses on the same topic is required. Topics for study are selected in the year previous to this enrolment, usually from a list of topics provided by the School that are closely aligned to current research directions and development platforms within the School. Provided a suitable supervisor is found within the School, topics may differ from those suggested and even may be conducted outside the School.

This course is the “capstone” of your degree. It consolidates findings and the skills developed and refined throughout the degree. It affords the opportunity to take these skills and knowledge from other courses in the degree and forge a valuable contribution by research to the discipline. Students can take significant ownership of a minor body of research and reflect this to the wider community by presentation and written submission. In doing so you will learn and refine skills in managing a low risk project.

Relationship to Other Courses

This is the first part of the 24 UOC research project. It continues onto ZEIT4902.

Jointly taught: ZEIT/3902/4901/4902/4500/4501/4297

Course Learning Outcomes

Course Learning Outcomes	Engineers Australia - Professional Engineer (Stage 1)
CLO1 : Demonstrated an in-depth knowledge of a niche research area, as reported for assessment, and,	• PEE1.1 : Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline • PEE1.2 : Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline • PEE1.3 : In-depth understanding of specialist bodies of knowledge within the engineering discipline • PEE1.4 : Discernment of knowledge development and research directions within the engineering discipline • PEE1.5 : Knowledge of engineering design practice and contextual factors impacting the engineering discipline • PEE1.6 : Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline
CLO2 : Exhibited communication skills for oral seminar, oral panel, and written medium, to a quality that has	• PEE3.2 : Effective oral and written communication in professional and lay domains • PEE3.5 : Orderly management of self, and professional conduct
CLO3 : Demonstrated information and digital literacy in defining the scope of the research in the broader context science and engineering, and	• PEE1.3 : In-depth understanding of specialist bodies of knowledge within the engineering discipline • PEE1.6 : Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline • PEE2.1 : Application of established engineering methods to complex engineering problem solving • PEE2.2 : Fluent application of engineering techniques, tools and resources • PEE2.3 : Application of systematic engineering synthesis and design processes • PEE3.3 : Creative, innovative and pro-active demeanour • PEE3.4 : Professional use and management of information
CLO4 : Demonstrated rigour in analysis, critique and reflection within a design or research task.	• PEE2.3 : Application of systematic engineering synthesis and design processes • PEE3.1 : Ethical conduct and professional

	accountability • PEE3.5 : Orderly management of self, and professional conduct
CLO5 : Shown application of knowledge obtained herein, and building on that learnt throughout the degree, to solve a minor research problem.	• PEE1.6 : Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline • PEE2.1 : Application of established engineering methods to complex engineering problem solving • PEE3.3 : Creative, innovative and pro-active demeanour • PEE3.4 : Professional use and management of information
CLO6 : Experienced and refined methodology for management of a small project, as also observed through panel and peer interaction,	• PEE3.1 : Ethical conduct and professional accountability • PEE3.2 : Effective oral and written communication in professional and lay domains • PEE3.3 : Creative, innovative and pro-active demeanour • PEE3.4 : Professional use and management of information
CLO7 : Documented and adopted findings from work experience in Engineering in Industry, and	• PEE1.5 : Knowledge of engineering design practice and contextual factors impacting the engineering discipline • PEE2.1 : Application of established engineering methods to complex engineering problem solving • PEE2.2 : Fluent application of engineering techniques, tools and resources • PEE2.3 : Application of systematic engineering synthesis and design processes • PEE3.1 : Ethical conduct and professional accountability • PEE3.2 : Effective oral and written communication in professional and lay domains
CLO8 : Indicated an insight into the diversity of Engineering through a course in specialist lectures.	• PEE1.3 : In-depth understanding of specialist bodies of knowledge within the engineering discipline • PEE1.6 : Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline • PEE3.2 : Effective oral and written communication in professional and lay domains • PEE3.3 : Creative, innovative and pro-active demeanour

Course Learning Outcomes	Assessment Item
CLO1 : Demonstrated an in-depth knowledge of a niche research area, as reported for assessment, and,	• Project Preliminary Report and Viva • Project Seminar
CLO2 : Exhibited communication skills for oral seminar, oral panel, and written medium, to a quality that has	• CDF Seminar Journal • Project Research Summary • Project Preliminary Report and Viva
CLO3 : Demonstrated information and digital literacy in defining the scope of the research in the broader context science and engineering, and	• Project Specific Deliverable • CDF Seminar Journal • Project Preliminary Report and Viva
CLO4 : Demonstrated rigour in analysis, critique and reflection within a design or research task.	• Project Specific Deliverable • Project Research Summary • Project Seminar
CLO5 : Shown application of knowledge obtained herein, and building on that learnt throughout the degree, to solve a minor research problem.	• Project Specific Deliverable • Project Research Summary • Project Seminar
CLO6 : Experienced and refined methodology for management of a small project, as also observed through panel and peer interaction,	• Project Specific Deliverable • Project Research Summary • Project Seminar
CLO7 : Documented and adopted findings from work experience in Engineering in Industry, and	• Project Specific Deliverable
CLO8 : Indicated an insight into the diversity of Engineering through a course in specialist lectures.	• Project Research Summary • Project Seminar

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

The Learning Management System

Moodle is the Learning Management System used at UNSW Canberra. All courses have a Moodle site which will become available to students at least one week before the start of semester. Please find all help and documentation (including Blackboard Collaborate) at the Moodle Support page.

UNSW Moodle supports the following web browsers:

» Google Chrome 50+

» Safari 10+

** Internet Explorer is not recommended

** Addons and Toolbars can affect any browser's performance.

Operating systems recommended are:

Windows 7, 10, Mac OSX Sierra, iPad IOS10

For further details about system requirements click here.

Log in to Moodle here.

If you need further assistance with Moodle:

For enrolment and login issues please contact:
IT Service Centre
Email: itservicecentre@unsw.edu.au
Phone: (02) 9385-1333
International: +61 2 9385 1333

For all other Moodle issues please contact:
External TELT Support
Email: externalteltsupport@unsw.edu.au
Phone: (02) 9385-3331
International: +61 2 938 53331

Opening hours:
Monday – Friday 7:30am – 9:30 pm
Saturday & Sunday 8:30 am – 4:30pm

Additional Course Information

Academic Integrity and Plagiarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW staff and students have a responsibility to adhere to this principle of academic integrity. All students are expected to adhere to UNSW's Student Code of Conduct https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf

Plagiarism undermines academic integrity and is not tolerated at UNSW. *It is defined as using the words or ideas of others and passing them off as your own, and* can take many forms, from deliberate cheating to accidental copying from a source without acknowledgement.

For more information, please refer to the following:

https://student.unsw.edu.au/plagiarism

Referencing

In this course, students are required to reference following the APA 7 / Chicago NB referencing style. Information about referencing styles is available at: https://guides.lib.unsw.adfa.edu.au/c.php?g=472948&p=3246720

Study at UNSW Canberra

https://www.unsw.adfa.edu.au/study

Study at UNSW Canberra has lots of useful information regarding:

- Where to get help
- Administrative matters
- Getting your passwords set up
- How to log on to Moodle
- Accessing the Library and other areas.

Additional Information as required

CRICOS Provider no. 00098G
The University of New South Wales Canberra.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Project Preliminary Report and Viva Assessment Format: Individual	25%	Due Date: Week 12: 14 October - 18 October
Project Specific Deliverable Assessment Format: Individual	30%	Start Date: Not Applicable Due Date: Not Applicable
CDF Seminar Journal Assessment Format: Individual	5%	Start Date: Not Applicable Due Date: Not Applicable
Project Research Summary Assessment Format: Individual	30%	Start Date: Not Applicable Due Date: Not Applicable
Project Seminar Assessment Format: Individual	10%	Start Date: Not Applicable Due Date: Not Applicable

Assessment Details

Project Preliminary Report and Viva

Assessment Overview

The student will, in consultation with the supervisor/s develop a Preliminary/Interim Report that outlines the scope and significance of the intended research. It will define where this project sits in the wider context of its application, and will include a project management timeline. It will detail reading and progress made on the project up till the date of submission. This will serve as a document to address in the oral defence. It should be submitted by email to the supervisor and the Panel Chair.

An oral defence or Viva to a small panel of academics of your project direction, and partial work towards the objectives will be scheduled in Weeks 11 and 12 of your first project semester for ZEIT4901. The submitted Preliminary Report above, will serve as supporting documentation in this defence. The members of the panel will assign a mark. The format of the Viva will be communicated to you and the Panel.

Course Learning Outcomes

- CLO1 : Demonstrated an in-depth knowledge of a niche research area, as reported for assessment, and,
- CLO2 : Exhibited communication skills for oral seminar, oral panel, and written medium, to a quality that has
- CLO3 : Demonstrated information and digital literacy in defining the scope of the research in the broader context science and engineering, and

Assessment information

The viva will be held during week 12. The preliminary report is due on 2400, the 21st Oct.

The length of the report is 12 pages.

Assignment submission Turnitin type

Not Applicable

Hurdle rules

Students need to pass this assessment to enroll ZEIT4902.

Project Specific Deliverable

Assessment Overview

A Project Specific Deliverable will be identified by your supervisor as reasonable documentation required to support and document the project work so it may be continued by others. This may include electronic working files and designs, documentation of the operations of tools and software used in the project, a traditional research thesis, etc.

The form of this deliverable will be detailed in writing at the outset of your study and the Memorandum of Understanding (MoU) signed, and will have been recognised by the Panel as representing a similar workload as required of other students enrolled in this course.

The Project Specific Deliverable should be provided directly to the supervisor by Monday, revision week of the second project semester, and the quality and content will form part of their assessment of your work.

Course Learning Outcomes

- CLO3 : Demonstrated information and digital literacy in defining the scope of the research in the broader context science and engineering, and
- CLO4 : Demonstrated rigour in analysis, critique and reflection within a design or research task.
- CLO5 : Shown application of knowledge obtained herein, and building on that learnt throughout the degree, to solve a minor research problem.
- CLO6 : Experienced and refined methodology for management of a small project, as also observed through panel and peer interaction,
- CLO7 : Documented and adopted findings from work experience in Engineering in Industry, and

Assignment submission Turnitin type

Not Applicable

CDF Seminar Journal

Assessment Overview

A **CDF Seminar Journal** must be kept, to be handed in with the final report. Students' marks will be downgraded if they have not attended a particular seminar without a valid reason. This journal should include entries of ~250 words per week. These entries should answer the question what did you learn during the seminar. Include your own reflections, such as comments and questions on the material, and attempt to relate the material to what you already know.

Course Learning Outcomes

- CLO2 : Exhibited communication skills for oral seminar, oral panel, and written medium, to a quality that has
- CLO3 : Demonstrated information and digital literacy in defining the scope of the research in the broader context science and engineering, and

Assignment submission Turnitin type

Not Applicable

Project Research Summary

Assessment Overview

A 10 page Research Summary is a written reflection on the project definition, impact, significance, and conclusions will be submitted for review to the School Undergraduate Journal. It is a communication of your contribution to the focus area and engineering discipline.

It will be submitted electronically in PDF format to the School student journal (JUER) (see https://gateway.unsw.adfa.edu.au/ojs/index.php/ju er/index).

Guidelines on document structure are provided. Your supervisor and Panel will also provide guidance on how to write and structure this document to best communicate the significance of your project work to the area of research.

All research summary reports must go through the Turnitin check via the course Moodle site. All students must submit their draft versions two weeks before the project seminar week for a prelim screening so that they can use the Originality Report generated to improve their final version. The due date for the final version summary and the corresponding Originality Report is the Monday of Week 13 of the second project semester. The Panel will assess and review this work, and may request revisions, whereupon the final submission completes this assessment.

Course Learning Outcomes

- CLO2 : Exhibited communication skills for oral seminar, oral panel, and written medium, to a quality that has
- CLO4 : Demonstrated rigour in analysis, critique and reflection within a design or research task.
- CLO5 : Shown application of knowledge obtained herein, and building on that learnt throughout the degree, to solve a minor research problem.
- CLO6 : Experienced and refined methodology for management of a small project, as also observed through panel and peer interaction,
- CLO8 : Indicated an insight into the diversity of Engineering through a course in specialist lectures.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

Project Seminar

Assessment Overview

A Seminar of 12 minutes duration with 3 minutes of question time will be conducted in Week 11 and 12 of your second project semester the week. The audience of this seminar will be your supervisors, peers, academic and technical staff, and members of the general public. The academic members of the audience will assess this work.

Course Learning Outcomes

- CLO1 : Demonstrated an in-depth knowledge of a niche research area, as reported for assessment, and,
- CLO4 : Demonstrated rigour in analysis, critique and reflection within a design or research task.
- CLO5 : Shown application of knowledge obtained herein, and building on that learnt throughout the degree, to solve a minor research problem.
- CLO6 : Experienced and refined methodology for management of a small project, as also observed through panel and peer interaction,
- CLO8 : Indicated an insight into the diversity of Engineering through a course in specialist lectures.

Assignment submission Turnitin type

Not Applicable

General Assessment Information

All marks obtained for assessment items during the session are provisional. The final mark as published by the university following the assessment review group meeting is the only official

mark.

This study stretches across two semesters with an EC grade provided in the first session, updated to the final grade at the conclusion of the courses. In these courses, you shall undertake a body of work under the technical supervision of one or more academic staff, and guidance of a group of interested academics (The Panel). The topic of this research will be decided in consultation with you and the supervisors, and allocated on the basis of availability of staff and resources. By default, all student have approached their potential supervisor and have already chosen and have been allocated a project before their first semester of project work start. The coordinator's default position is to disallow any student who has failed their project previously from undertaking a new project on the same research topic.

The Head of School reserves the right to remove a student's enrolment if performance is deemed unsatisfactory. At mid-project the Panel will decide if sufficient progress has been demonstrated to allow continuation onto ZEIT4902. For unsatisfactory performance a FL grade will be recorded, and a new project and re-enrolment in ZEIT4901 will be required.

Any student who receives a mark in the range 46- 49 in a course will have their performance reviewed by the school/discipline assessment meeting. If the meeting is satisfied that the student has demonstrated achievement of all of the learning outcomes at least once, a grade of 50 PS will be recommended. The meeting should record its reasons for deciding to recommend 50 PS, or to leave the student's mark under 50.

Late submission

Unless prior arrangement is made with the lecturer or a formal application for special consideration is submitted, a penalty of 5% of the total available mark for the assessment will apply for each day that an assessment item is late up to a maximum of 5 days (120 hours) after which an assessment can no longer be submitted and a grade of 0 will be applied.

AI Usage

For the project report, you may use standard editing and referencing software, but not Generative AI. You are permitted to use the full capabilities of the standard software (such as Microsoft Office suite, Grammarly, etc.).

You are permitted to use software to generate initial ideas. However, you must develop or edit those ideas to such a significant extent that what is submitted is your own work, i.e. only

occasional AI generated words or phrases may form part of your final submission. It is a good idea to keep copies of the initial prompts to show your lecturer if there is any uncertainty about the originality of your work. [Alternative wording: You are required to submit the original AI generated responses as set out below] (Consider what would be the minimum requirement for you to be satisfied of the originality of the submitted work, and the workload implications of any detailed examination as part of the marking).

If the outputs of generative AI such as ChatGPT form a part of your submission, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

Grading Basis

Standard

Course Schedule

Attendance Requirements

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

General Schedule Information

Assessment	Due date
Interim report	21/10/2024
Viva	Week 12

Course Resources

Course Evaluation and Development

One of the key priorities in the 2025 Strategy for UNSW is a drive for academic excellence in education. One of the ways of determining how well UNSW is progressing towards this goal is by listening to our own students. Students will be asked to complete the myExperience survey towards the end of this course.

Students can also provide feedback during the semester via: direct contact with the lecturer, the “On-going Student Feedback” link in Moodle, Student-Staff Liaison Committee meetings in schools, informal feedback conducted by staff, and focus groups. Student opinions really do make a difference. Refer to the Moodle site for this course to see how the feedback from

previous students has contributed to the course development.

Important note: Students are reminded that any feedback provided should be constructive and professional and that they are bound by the Student Code of Conduct Policy

https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Jianfeng Xue		Room: 128, Building 20	51145225	Available by appointment	No	Yes