UNSW Course Outline

BIOM4952 Research Thesis B - 2024

Published on the 12 May 2024

General Course Information

Course Code : BIOM4952
Year : 2024
Term : Term 2
Teaching Period : T2
Is a multi-term course? : No
Faculty : Faculty of Engineering
Academic Unit : Graduate School of Biomedical Engineering
Delivery Mode : Research
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 4

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Seen as the highlight of study at UNSW, Biomedical Engineering Thesis Projects provide a unique opportunity for you to bring together the engineering principles learned over your previous years of study and apply these principles to develop innovative solutions to

unsolved engineering problems related to human health. This could include the development of a specific design prototype, process and/or the investigation of a scientific hypothesis. Thesis projects are complex, open-ended problems that allow room for your creativity, and the acquisition, analysis and interpretation of results. There will be multiple possible solutions or conclusions at the outset and sufficient complexity to require a degree of project planning. Thesis Projects are completed over three terms under the course codes BIOM4951, BIOM4952 and BIOM4953.

While the project may develop as you explore new gaps in the scientific and engineering knowledge the overarching research themes and supervisor are retained across terms. BIOM4952 is the second step of this exciting capstone project opportunity and your research journey. BIOM4952 is the continuation of BIOM4951 and must be on the same topic. A pass mark in BIOM4951 is required before proceeding to BIOM4952 and should be completed with the same supervisor.

Course Aims

Biomedical Engineering Thesis Projects aim to provide an opportunity for students to bring together engineering principles learned over their previous years of study and apply these principles to solve important problems in engineering related to human health. Thesis projects aim to provide an opportunity to conduct research and develop the students' ability to work within a research and development environment. Thesis projects must include complex, open-ended problems that allow room for student creativity, and the acquisition, analysis and interpretation of results. There must be multiple possible solutions or conclusions at the outset and sufficient complexity to require a degree of project planning from the student. Thesis projects aim to improve the student's ability to formulate problems in engineering terms, manage an engineering project and find solutions by applying engineering methods. Thesis projects aim to up-skill the student's ability to communicate technical content effectively to a wide audience through the completion of written reports, oral seminars and conference/industry night poster presentations.

Relationship to Other Courses

Thesis Projects are completed over three terms under the course codes BIOM4951, BIOM4952 and BIOM4953. BIOM4952 is the second step of this exciting capstone project opportunity and your research journey.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.
CLO2 : Critically reflect on a specialist body of knowledge related to their thesis topic.
CLO3 : Apply scientific and engineering methods to solve an engineering problem.
CLO4 : Analyse data objectively using quantitative and mathematical methods.
CLO5 : Demonstrate oral and written communication in professional and lay domains.
CLO6 : To solve biomedical problems by applying CLO 1-5

Course Learning Outcomes	Assessment Item
CLO1 : Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.	• Progress Seminar
CLO2 : Critically reflect on a specialist body of knowledge related to their thesis topic.	• Progress Seminar
CLO3 : Apply scientific and engineering methods to solve an engineering problem.	• Progress Seminar
CLO4 : Analyse data objectively using quantitative and mathematical methods.	• Progress Seminar
CLO5 : Demonstrate oral and written communication in professional and lay domains.	• Progress Seminar
CLO6 : To solve biomedical problems by applying CLO 1-5	• Progress Seminar

Learning and Teaching Technologies

Moodle - Learning Management System | Microsoft Teams

Other Professional Outcomes

https://www.unsw.edu.au/engineering/student-life/student-resources/program-design

Additional Course Information

You must still ensure your enrolment and registration is up to date in your enrolment. Your face-to-face time needs to be organised with your supervisor, as you are expected to meet them at least once per week.

You must have passed BIOM4951 Thesis A to proceed to BIOM4952 Thesis B.

Expectations of Students:

- Meet your supervisor regularly
- Complete all the assessments on time

Attend Research Skills Workshops:

- Week 7 - Scientific Communication

Present a Progress Seminar as part of the Week 8 Biomedical Engineering Projects Showcase

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Progress Seminar Assessment Format: Individual	10%	Due Date: Week 8 Showcase

Assessment Details

Progress Seminar

Assessment Overview

Assessment Stages

- BIOM4951 Thesis A: Interim Report (10%)
- BIOM4952 Thesis B: Progress Seminar and Reflection (10%)
- BIOM4953 Thesis C: Final report (65%), Participation (5%), Conference Poster Presentation (10%)

BIOM4952 Thesis B Assessment Objectives

1. Ensure timely progress according to the plan and key milestones developed in BIOM4951
2. Provide an opportunity to showcase your progress to other students, accademics and industry partners
3. Complete a significant proportion of the experimental or developmental work of the overall thesis project.

The Progress Seminar is designed to provide students a learning opportunity to develop more effective communication skills. Specifically, students will be expected to polish their ability to clearly and concisely communicate scientific and technical content to a larger general audience in an engaging way.

Progress Seminar Structure

- Length: 9 minutes Seminar + 4 minutes question and answers (total time 13 minutes)
- The seminar should be coherent, interesting and suitable for a wider academic audience including the following:
  - background to the larger problem being solved,
  - summary of past literature/work in the area,
  - gaps in the knowledge, motivation for the work and original hypothesis,
  - methods used in experiments or developmental work,
  - results and progress so far,
  - critical reflection on their work and how it adds to previous work,
  - summary of main findings including applications (if any) to industry.
- Students also need to discuss with their supervisor and nominate an assessor by Week 2, who will act as an qualified assessor for both thesis B and thesis C.

Biomechanical Engineering Showcase Week 8

For Thesis B students:

- Students will be allocated a themed session to present at with other students in Week 8.
- Students must present in-person at the allocated session.
- There is an expectation that the student will have preliminary results by this point.
- The supervisor and nominated assessor are required to attend.
- Industry partners, other accademics and engineering students will be invited to attend.
- The seminar presentation will be marked by all attending on the day using online-forms.

For Thesis B+C students:

- Students must self-organise a time with their supervisor, assessor and other team members to present in Week 3.
- Students must present in-person at the agreed session in Week 3.
- Results should be almost finalised by this point. The seminar in Week 3 of the student's second term give the student the opportunity to drop Thesis C prior to the census date if their progress is deemed unsatisfactory by the supervisor.
- Students are responsible for booking a room and sending out invites to their supervisor, assessor and other invited guests.
- The seminar presentation will be marked by all attending on the day using online-forms

Assessment criteria

Biomedical Engineering Progress Seminars will be part of the Biomedical Engineering Showcase Event in Week 8. The marking rubric will be available on the Moodle and Teams classroom pages. The seminar presentation duration of 9 minutes must be strictly adhered to.

Use of Generative Artificial Intelligence (AI) and editing assistance in thesis projects

Editing assistance

For Biomedical Engineering Thesis projects, you may use standard editing and referencing software, (e.g. Microsoft Office suite, Grammarly, EndNote, etc). This does not need to be cited. You are also encouraged to use the UNSW approved online writing support platform Smart Thinking service, https://www.student.unsw.edu.au/smarthinking

Generative AI

As this assessment task involves some planning or creative processes, you are permitted to use software to assist you in the generation of 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. Use of generative AI must be cited. When writing you thesis project and thinking about how to make use generative AI tools you should strive to create an original master piece by drawing together the available information from a wide range of sources. It is expected that the final submission will be demonstrably greater than the sum of the contributing parts. You should also consider the new 2023 marking rubric whereby projects that do not demonstrate original contributions from the student or appear to rely heavily on generative AI or other tools will be marked in the lower bands for each category. User of generative AI must be cited as follows:

* To cite: OpenAI (Year Accessed). ChatGPT. “Copy of text used to generate the output”, [date generated dd/mm/yyy], OpenAI. https://openai.com/models/chatgpt/

Please note that the outputs from these tools are not always accurate, appropriate, nor properly referenced. You should ensure that you have moderated and critically evaluated the outputs from generative AI tools and only use occasionally AI generated words or phrases in your submissions.

***** If the outputs of generative AI such as ChatGPT form a part of your submission and they are not cited or include complete sentences or paragraphs, it will be regarded as serious academic misconduct similar to plagiarism (coping work and then passing it of as your own work) and subject to the standard penalties, which may include 00FL, suspension and exclusion. *****

Course Learning Outcomes

- CLO1 : Develop a design or a process or investigate a hypothesis following industry and professional engineering standards.
- CLO2 : Critically reflect on a specialist body of knowledge related to their thesis topic.
- CLO3 : Apply scientific and engineering methods to solve an engineering problem.
- CLO4 : Analyse data objectively using quantitative and mathematical methods.
- CLO5 : Demonstrate oral and written communication in professional and lay domains.
- CLO6 : To solve biomedical problems by applying CLO 1-5

Assessment Length

9 minutes seminar + 4 minutes questions

Submission notes

Attend Week 7 Workshop on Scientific Communication

Assessment information

Students discuss with their supervisor and nominate an assessor by Week 2. Thesis B (4+4+4) students will be allocated a themed session in Week 8. Thesis B+C Students will need to self-organise a session in Week 3 with their assessor and supervisor.

Assessor Nomination Form

Marking form (Within UNSW) or Marking form (outside UNSW)

Assignment submission Turnitin type

Not Applicable

General Assessment Information

Presenting your progress seminar to your research group is an important communication learning outcome of BIOM4952. At a minimum, we require the supervisor to provide a progress mark and three other markers to attend. Your supervisors mark contributes 50% and the other markers contribute 50% to the final progress seminar grade.

Grading Basis

Standard

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 0 : 20 May - 26 May	Blended	By Week 0, reach out to your confirmed supervisor and set up a weekly meeting schedule with your supervisor.
Week 2 : 3 June - 9 June	Blended	• Nominate an assessor for your thesis project. • For Thesis B+C (4+8) students organise a time in Week 3 to present your progress seminar.
Week 7 : 8 July - 14 July	Workshop	Scientific Communication
Week 8 : 15 July - 21 July	Assessment	Progress Seminar at the Week 8 Biomedical Engineering Projects Showcase

Attendance Requirements

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

General Schedule Information

Your face-to-face time needs to be organised with your supervisor, as you are expected to meet them at least once per week. You must still ensure your enrolment and registration is up to date.

Course Resources

Prescribed Resources

Resources will be made available to help students guide them in their journey for Thesis B.

Extensions

You can apply for special consideration when illness or other circumstances interfere with your assessment performance.

Other applications for extension of submission of thesis reports (e.g. equipment breakdown, etc.):

Discuss the possibility of an extension with your supervisor first. Requests can then be lodged by the student here http://tinyurl.com/yy2jzpyv. The supervisor will then receive an email asking them to approve, before it is escalated to the decision panel. Request must be lodged by Week 6 of term. Panel decision will be made by end of week 7. The decision will be made by a panel – consisting of the HoS (or their nominee), Thesis Coordinator, and 1 other person. Students should be alerted to the fact that this is not guaranteed, and thus should not rely on getting an extension. Typically, extensions are granted UP TO 3 weeks. The length of the extension needs to be requested and justified by the supervisor. Panel will decide the length of time granted.

Procedure if you fail Thesis A, B or C

Fail in Thesis A (interim report mark < 50>– must re-enrol in Thesis A again.

Fail in Thesis B (seminar mark < 50> – must re-enrol in Thesis B again

Fail in Thesis C – Students have three options.

This last option is only available if the original mark was ≥40, OR if the student is in their last semester before graduation (regardless of the original mark).

– Students must re-enrol in Thesis B again, and cannot concurrently enrol in C. They can then take Thesis C when Thesis B has been satisfactorily completed.

Industry based projects

We encourage students to seek partnerships with industry, so students can have a co-supervisor from industry. However, if confidentiality is required, a confidential disclosure agreement (CDA) is obligatory. The agreement will protect the intellectual property rights of the industry partner, UNSW and the student. Students or academics are not authorised to sign confidential disclosure agreements on behalf of UNSW and are advised to talk to the course coordinator and UNSW legal office to arrange for drafting and signing of the confidential disclosure or research agreement.

To complete an industry-based thesis, you must complete the following steps:

Identify an industry supervisor and share with them these guidelines. Identify a GSBmE Academic who can be your academic supervisor. Complete this Industry thesis permission form and make sure your industry supervisor AND your academic supervisor have signed the form. Upload the signed form here (you may need to log in with your zID@ad.unsw.edu.au and zPass).Late Procedure

In all cases, applications for late submission can be applied for BEFORE the due date. This is at the discretion of the thesis coordinator but should only be granted in exceptional circumstances. As per normal, students can also apply through myUNSW for special consideration.

For Thesis A, B or C, 5 marks will be deducted off the thesis for every day late. Penalty applies until the marks for the course decrease to 50, and further lateness does not result in failure of the course, but might be a failure of the thesis (weekends count as days).

Additional support for students

- The Current Students Gateway: https://student.unsw.edu.au/
- Academic Skills and Support: https://student.unsw.edu.au/academic-skills
- Student Wellbeing, Health and Safety: https://student.unsw.edu.au/wellbeing
- Disability Support Services: https://student.unsw.edu.au/disability-services
- UNSW IT Service Centre: https://www.it.unsw.edu.au/students/index.html

Recommended Resources

Not available

Course Evaluation and Development

Student feedback has helped to shape and develop this course, including feedback obtained from online evaluations as part of UNSW's as part of UNSW's myExperience process. You are highly encouraged to complete such an on-line evaluation toward the end of Term. Feedback and suggestions provided will be important in improving the course for future students.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Matthew Brodie		Samuels 515	Moodle/ TEAMS Thesis Channel	Drop in help Wednesday 09:30 to 11:30, Samuels 515c	No	Yes
	Tianruo Guo		Samuels 515	Moodle/ TEAMS Thesis Channel	Weekdays by appointment	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 / Submit rule, which means that if you sit an exam or submit a piece of assessment, 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.

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 Contact Information

Student Services can be contacted via unsw.to/webforms.