BIOM1010

Engineering in Medicine and Biology

Contents

1. Staff contact details 3
Contact details and consultation times for course convenor**Error! Bookmark not defined.**
2. Important links 3
3. Course details 3
Credit points 4
Course hours 4
Information About the Course 4
Handbook Description 5
Course Aims 5
This course aims to: 5
Expected Learning Outcomes 5
4. Teaching strategies 6
5. Course schedule 6
Course Program 8
Relevant Resources 8
Course Evaluation and Development 8
Dates to Note 9
Plagiarism 9
Special consideration and supplementary assessment 9
6. Administrative matters and links 9

1. Staff contact details

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BIOM1010 team would like to acknowledge Associate Professor Lauren Kark for her ongoing support in development of the course.

Please contact for consultation by email. Further virtual consultation meetings can be arranged.

2. Important links

- Moodle
- Health and Safety
- Student Resources
- UNSW Timetable
- UNSW Handbook
- Engineering Student Support Services Centre
- UNSW Graduate School of Biomedical Engineering
- Microsoft Teams

3. Course details

Credit points

This is a 6 unit-of-credit (UoC) course and involves 4 hours per week (h/w) of online classes. 2 hours for tutorial 1 and 2 hours for tutorial 2 that both have online stream.

The normal workload expectations of a student are approximately 25 hours per term for each UOC, including class contact hours, other learning activities, preparation and time spent on all assessable work.

Course hours

Lectures	Day	Time	Location
Online lessens via Moodle	NA	NA	Moodle
Tutorial 1	Monday	11am – 1pm 2pm – 4pm	Microsoft Teams
	Tuesday	9am – 11am 3pm – 5pm	Microsoft Teams
Tutorial 2	Wednesday	2pm – 4pm 12pm – 2pm	Microsoft Teams
	Thursday	11am – 1pm 1pm – 3pm	Microsoft Teams

Please refer to your class timetable for the learning activities you are enrolled in and attend only those classes.

Information About the Course

Welcome to BIOM1010! This course will introduce you to the various aspects of designing and developing a medical device. You will get hands on experience in a guided project (Tutorial 1) and work collaboratively with your mentors to develop new medical technologies that could have significant impact in improving healthcare (Tutorial 2).

BIOM1010 is an introductory course, preparing students in the dual degree for subsequent biomedical engineering courses. As an introductory course, it is also a suitable first-year elective for all engineering students and for interested non-engineering students with some technical background (mathematics and physics).

Handbook Description

https://www.handbook.unsw.edu.au/undergraduate/courses/2019/BIOM1010/
UNSW Library website: https://www.library.unsw.edu.au/
Moodle: https://moodle.telt.unsw.edu.au/login/index.php

Course Aims

This course aims to:

1. Introduce you to some basic concepts in several branches of engineering with applications in medicine.
2. Introduce you to selected applications of engineering and technology in medicine.
3. Introduce you to selected areas of physiology, which can be viewed as engineering solutions to problems of life.
4. Develop your ability to analyse and solve problems in the biomedical engineering area.
5. Improve your writing skills.
6. Enhance your skill at using information resources.

Expected Learning Outcomes

By the end of this course, you will be able to:

1. Identify and describe several applications of engineering and technology to medicine/biology
2. Apply basic mathematics, physics and engineering methods to solve biomedical problems
3. Find information on and evaluate specific applications of technology to medicine/biology
4. Write a concise and professional report detailing a specific application of technology in medicine/biology using the languages of engineering and medicine/biology and present this information orally.

Suggested strategy for learning

For each hour of contact, it is expected that you will put in at least 1.5 hours of private study. You will need to spend substantial time each week before and after class to work through the various online resources and activities in Moodle, prepare for your tutorial classes and work on your project and reports.

Expectations of students

Attendance at the tutorials is compulsory. Non-attendance for reasons other than misadventure will preclude you from submitting the assignment related to the activity you missed. Course staff will record attendance.

4. Teaching strategies

Private Study	• Review lecture material and textbook • Complete assignments • Join Moodle discussions • Reflect on class content • Download materials from Moodle • Keep up with notices and find out marks via Moodle
Online Lectures	• Find out what you must learn • Follow worked examples • Hear announcements on course changes
Tutorial 1	• Guided study • Practice solving problems • Ask questions
Tutorial 2	• Hands-on work, to set studies in context • Work on your individual project and reports
Assessments	• Demonstrate your knowledge and skills • Demonstrate higher understanding and problem solving

Lectures will be delivered online and include concept development, problem solving and discussion sessions. These will cover the theory supporting experimental methods and the practical research problems. Tutorials are designed to explain the concepts introduced in the online lectures using practical approaches. These strategies are intended to support you in attaining the learning outcomes. Content, including notes and videos, will be available via Moodle. Assessments and feedback will be provided to you regularly.

5. Course schedule

ASSESSMENT

The assessment scheme for the course will be:

1. Reports in total: 65% (including 10% project proposal, 10% progress weekly report and 45% final report)
2. Video presentation: 10%
3. Participation: 10%
4. Weekly progress marks: 10%
5. Mentor mark: 5%

Assessment Tasks

Task	Knowledge & abilities assessed	Assessment Criteria	% of total mark	Date
Weekly progress marks will ensure you are keeping up with content. The online content contains checkpoint questions to allow you to gauge your understanding. There are a variety of question types such as comprehension, true/false, multiple-choice and short answer. You can attempt the questions two times, but the lesson can be attempted as many times as you like. Your mark at the beginning of Tutorial 1 of the week in question will be recorded in the grade book.	LO1 – LO4	Completion Note: you will receive 100% for this task if you complete at least 8 out of 10 topics on time and score at least 80%. Completing fewer than 8 will result in a score of 0.	10	Continuous
Participation. Success in this course, and your future university career, relies on your active participation in tutorials. With online teaching, it is very important for your learning outcomes to participate in tutorial 1 and 2 weekly.	LO1 – LO4	Attendance in Tutorials 1&2: (Each class attendance in each tutorial scores 0.5 out of 10)	10	Continuous
Mentor mark. Each of your mentors will give you a score out of five based on their observations of your motivation and attempt on your design/build project.	LO1 – LO4	Motivation and contribution to progress of the project	5	Continuous
Project reports that include project proposal, progress report and final report.	LO1 – LO4	Criteria specific to each element will be contained within its brief.		
		Project proposal	10	Week 3
		Progress report	10	Weekly
		Final report	45	Final Week
Video presentation that demonstrates the prototype/device functions	LO1 – LO4	Please refer to table 1 in Assessment Tasks document for judgement criteria for the prototype	10	Final Week

Late submissions will be penalized at a rate of **10% per day** after the due time and date has expired.

Course Program

Wk	Lectures	Skills (Online)	Tutorial 1	Tutorial 2
	Online via Moodle (must be completed before Tutorial 1 of same week)	*Online via Moodle (must be completed before Tutorial 1 of same week)*	Class time	Class time
1	Welcome to BIOM1010	Intro to Fusion 360 (optional)	Introduction to BIOM1010 (tut 1), Team Building	Introduction to BIOM1010 (tut 2), Meet the Mentors
2	Medical Terminology	Info Finding	Literature Review	Design and Build
3	Clinical Needs		Report Ideas and Referencing	Design and Build
4	Device Assessment	Data Presentation	Medical Device Assessment	Design and Build
5	Ethic	*Ethics Pre-Work	Ethics of Medical Devices	Design and Build
6	FLEXIBLE WEEK	FLEXIBLE WEEK	FLEXIBLE WEEK	FLEXIBLE WEEK
7	Clinical Trials	Report Writing	Human Trials of Medical Devices	Design and Build
8	Regulations and Standard	Oral Presentation	Risk Management and Ethics Approval	Design and Build
9	Intellectual Property	Patent Searching	IP Strategy	Design and Build
10	Health Tech Assessment		Presentation Practice	Design and Build

Relevant Resources

No specific textbooks are required for this course. Useful references will be listed on Moodle when required. Students seeking additional resources can also obtain assistance from the UNSW Library at http://library.unsw.edu.au/.

Course Evaluation and Development

Student feedback has helped to shape and develop this course, including feedback obtained from on-line evaluations as part of UNSW's myExperience process. Your feedback is much appreciated and taken very seriously. Continual improvements are made to the course based in part on such feedback

and this helps us to improve the course for future students. Informal student feedback is also sought frequently throughout the semester and used to assist in the progression of the course.

Dates to Note

Refer to MyUNSW for Important Dates, available at:
https://my.unsw.edu.au/student/resources/KeyDates.html

Plagiarism

Beware! An assignment that includes plagiarised material will receive a 0% Fail, and students who plagiarise may fail the course. Students who plagiarise will have their names entered on a plagiarism register and will be liable to disciplinary action, including exclusion from enrolment.

It is expected that all students must at all times submit their own work for assessment. Submitting the work or ideas of someone else without clearly acknowledging the source of borrowed material or ideas is plagiarism.

All assessments which you sent **must** have a Non Plagiarism Declaration Cover Sheet. Attach it to your assignment before submitting it to the Course Coordinator or at the School Office.

Plagiarism is the use of another person's work or ideas as if they were your own. When it is necessary or desirable to use other people's material you should adequately acknowledge whose words or ideas they are and where you found them (giving the complete reference details, including page number(s)). The Learning Centre provides further information on what constitutes Plagiarism.

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 submitting an assessment or sitting an exam.

Please note that UNSW now 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.

6. 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
- Academic Honesty and Plagiarism
- Equitable Learning Services