



Faculty of Engineering
Graduate School of Biomedical Engineering

Session 1, 2019 **BIOM2451 Biomechanics for Sports Scientists**

COURSE DETAILS

Units of Credit	6
Contact hours	2 hours per week, plus an additional 1 hour/week in weeks 4, 7 and 11
Lecture	Online via Moodle
Tutorial/Laboratory	One of the following: Mon 3 – 5pm (Wks 2-9,11) SAM513 Wed 10 – 12pm (Wks 2-10) SAM513 Wed 12 – 2pm (Wks 2-10) SAM513 Thurs 10 - 12pm (Wks 2-9), Tues 10-12pm (Wk 11) SAM513 Thurs 12 - 2pm (Wks 2-9), Tues 12-2 pm (Wk 11) SAM513
Course Coordinator	Lucy kieran.lau@sw.edu.au

INFORMATION ABOUT THE COURSE

Biomechanics is the study of the effects of all mechanical phenomena (forces, velocities, accelerations, energies, power, momenta, moments, friction, fatigue and failure) on human bodies. It relies on an understanding of mechanics and applies the fundamentals of mechanics to the structure and function of the human body.

Knowledge of biomechanics is used in a diverse range of disciplines including biology, ergonomics, engineering, physiology, medicine, and exercise physiology. Many professionals

mechanics followed by the application of this knowledge to the analysis of the human body as a system in order to understand the resultant impacts of motion or motions.

BIOM2451 is part of the suite of biomechanics courses offered by the Graduate School of Biomedical Engineering, which includes BIOM9510 Introductory Biomechanics, BIOM9541 Mechanics of the Human Body, BIOM9561 Mechanics of Biomaterials, BIOM9551 Biomechanics of Physical Rehabilitation and BIOM9701 Dynamics of the Cardiovascular System.

HANDBOOK DESCRIPTION

<https://www.handbook.unsw.edu.au/undergraduate/courses/2019/biom2451/>

OBJECTIVES

The aims of this course are to:

- Introduce you to the fundamentals of biomechanics; and
- Relate these to the mechanical actions of, by and on the body by integrating the knowledge of anatomy and mechanics to develop a deeper understanding of the field of human movement science.

On completion of this course, you should be able to:

- Explain how basic physical principles apply to human motion;
- Undertake simple analyses of human motion;
- Analyse the effects of loads applied to the musculoskeletal system;
- Describe the mechanical properties of the musculoskeletal system; and
- Explain how biomechanics can inform health and exercise science practice.

Graduate attributes developed in this course include:

- Understanding of their discipline in its interdisciplinary context
- Rigorous in their analysis, critique and reflection
- Able to apply their knowledge and skills to solving problems
- Collaborative team workers

TEACHING STRATEGIES

Private Study	Review lecture material and textbook Do set problems and assignments Join Moodle discussions of problems Reflect on class problems and assignments Download materials from Moodle Keep up with notices and find out marks via Moodle
Online Lectures	Find out what you must learn See methods that are not in the textbook Follow worked examples Hear announcements on course changes
Tutorials	Be guided by demonstrators Practice solving set problems Ask questions
Assessments (multiple choice questions, quizzes, tests, examinations, assignments, hand-in tutorials, laboratory reports etc.)	Demonstrate your knowledge and skills Demonstrate higher understanding and problem solving
Laboratory Work	Hands-on work, to set studies in context

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. Laboratories (one per week) are designed to review tutorial problems (it is expected that you will have attempted the tutorial questions prior to the tutorial) and explain the concepts 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 on tutorial work will be provided to you regularly.

Suggested approach to learning. This course requires you to understand the lecture material and then apply the knowledge to basic biomechanical applications. It is important to understand the fundamental concepts as soon as possible and to ask for help if you do not understand. Complete all the lectures and if something is unclear, please ask questions. Make sure you review lecture notes and read all material that is suggested or handed out. Class participation through attendance at exercises and group work is expected and will allow for alternative methods of absorbing the relevant information.

Expectations of students. Attendance at the practical activities is compulsory. Non-attendance for reasons other than misadventure will preclude you from submitting the activity related to the activity you missed. Your demonstrator will record attendance. Tutorials are designed to review problems distributed online, and it is expected that you will have attempted these questions prior to attending the tutorial.

ASSESSMENT

Task

Knowledge &
abilities
assessed

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 assignments are submitted through Moodle. In the process of submitting you must confirm that you have not plagiarised.

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 at:

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

ADMINISTRATION MATTERS

Assignment submissions. Assignments must be submitted in soft-copy via Moodle.

Occupational Health and Safety. Each practical activity performed as part of this course has been assessed for risk. Your demonstrators will communicate the risks with you prior to the commencement of your practical activity.

Special consideration. Applications for special consideration must be lodged through myUNSW. In addition, it is recommended that you discuss your circumstances with your lecturer.

Disability Support Services. 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 Convenor prior to, or at the commencement of, their course, or with the Disability Advisor at Disability Support Services (9385 4734 or <https://student.unsw.edu.au/disability>). 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 4(u)-9(en)4(t9(i)5(s)-q-22(a6r)[n55iBT/FJET8005240053(s)34)-22(A

ACADEMIC ADVICE

For information about:

Notes on assessments and plagiarism,
Special Considerations,
School Student Ethics Officer, and
BESS

refer to the School website available at

<http://www.engineering.unsw.edu.au/biomedical-engineering/>