UNSW Course Outline

EXPT2137 Functional Anatomy and Biomechanics 3 - 2024

Published on the 06 Feb 2024

General Course Information

Course Code : EXPT2137
Year : 2024
Term : Term 1
Teaching Period : T1
Is a multi-term course? : No
Faculty : Faculty of Medicine and Health
Academic Unit : School of Health Sciences
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

In this course students will apply anatomical and biomechanical principles to the analysis of movement. Lectures will expand on content introduced in ANAT1451 Functional Anatomy & Biomechanics 1 and ANAT1452 Functional Anatomy & Biomechanics 2. Laboratory classes will

offer students an opportunity to engage with biomechanical data collection and analyses, while tutorials will provide an opportunity to build theoretical competency.

Course Aims

This course aims to integrate knowledge of anatomy and biomechanics to develop a deeper understanding of the field of human movement science.

Relationship to Other Courses

Assistance with progression checking:

If you are unsure how this course fits within your program, you can seek guidance on optimising your program structure from staff at the Nucleus Student Hub.

Progression plans for UNSW Medicine and Health programs can be found on the UNSW Medicine & Health website.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Discuss the effects of mechanical load on the musculoskeletal system.
CLO2 : Apply biomechanical principles to evaluate normal and pathological human movement and task performance.
CLO3 : Describe mechanisms of musculoskeletal injury and associated preventative measures.
CLO4 : Communicate the rationale for biomechanical measurements and concepts relevant to movement and posture.
CLO5 : Demonstrate skills in data collection, graphical presentation, and interpretation of quantitative motion analysis data.

Course Learning Outcomes	Assessment Item
CLO1 : Discuss the effects of mechanical load on the musculoskeletal system.	• Written exam • Online Quizzes
CLO2 : Apply biomechanical principles to evaluate normal and pathological human movement and task performance.	• Quantitative motion analysis project • Written exam • Online Quizzes
CLO3 : Describe mechanisms of musculoskeletal injury and associated preventative measures.	• Written exam • Online Quizzes
CLO4 : Communicate the rationale for biomechanical measurements and concepts relevant to movement and posture.	• Quantitative motion analysis project
CLO5 : Demonstrate skills in data collection, graphical presentation, and interpretation of quantitative motion analysis data.	• Quantitative motion analysis project • Written exam • Online Quizzes

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

All course materials and course announcements are provided on the course learning

management system, Moodle (or Open Access).

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Written exam Assessment Format: Individual	40%	Start Date: During exam period Due Date: During exam period
Online Quizzes Assessment Format: Individual	30%	Start Date: Quiz will be open at the start of the relevant week Due Date: Weeks 1-5, 7-9 on Sunday at 9PM
Quantitative motion analysis project Assessment Format: Group	30%	Start Date: Not Applicable Due Date: Proposal: Week 5, Monday 9PM; Presentation: Week 10, in Laboratory classes

Assessment Details
Written exam

Assessment Overview

The written exam may include content from any lecture, laboratory or tutorial within the course. It will be 2 hours in duration and will occur in the final exam period. A final course grade will be provided.

Course Learning Outcomes

- CLO1 : Discuss the effects of mechanical load on the musculoskeletal system.
- CLO2 : Apply biomechanical principles to evaluate normal and pathological human movement and task performance.
- CLO3 : Describe mechanisms of musculoskeletal injury and associated preventative measures.
- CLO5 : Demonstrate skills in data collection, graphical presentation, and interpretation of quantitative motion analysis data.

Detailed Assessment Description

Detailed information about this assessment will be provided on the course Moodle page

Submission notes

No short extension is available for this assessment task

Assessment information

Use of artificial intelligence: no assistance

It is prohibited to use any software or service to search for or generate information or answers. If

such use is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

Assignment submission Turnitin type

This is not a Turnitin assignment

Online Quizzes

Assessment Overview

Online quizzes will be conducted continuously throughout the course of the term. Each quiz will focus on a separate content area and will consist of scenario- or problem-based questions. Time limits will be applied for completion of all quizzes. The overall quiz result will be immediately provided, and individual question feedback will be provided either once all students have completed the quiz or within 10 working days.

Course Learning Outcomes

- CLO1 : Discuss the effects of mechanical load on the musculoskeletal system.
- CLO2 : Apply biomechanical principles to evaluate normal and pathological human movement and task performance.
- CLO3 : Describe mechanisms of musculoskeletal injury and associated preventative measures.
- CLO5 : Demonstrate skills in data collection, graphical presentation, and interpretation of quantitative motion analysis data.

Detailed Assessment Description

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Submission notes

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Assessment information

Use of artificial intelligence: no assistance

It is prohibited to use any software or service to search for or generate information or answers. If such use is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

Assignment submission Turnitin type

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Quantitative motion analysis project

<u>Assessment Overview</u>

The quantitative motion analysis project is a small group (3-4 students) assessment that will be due at multiple points of the term. It requires your group to address a research question related to human movement. For this, you will use biomechanics measurement tools that you have been introduced to in the course. Your group will first submit a written project proposal to describe the literature related to the project and build a rationale for the aims and hypotheses. Your proposal will also include an outline of methods for data collection and processing. Following submission, course staff will provide feedback on the proposal. At the end of the term, your group will present your research findings. This will include a presentation of all sections of the research project (introduction, aims/hypotheses, methods, results, discussion and conclusion). Feedback on your proposal and presentation content and style will be provided within 10 days.

<u>Course Learning Outcomes</u>

- CLO2 : Apply biomechanical principles to evaluate normal and pathological human movement and task performance.
- CLO4 : Communicate the rationale for biomechanical measurements and concepts relevant to movement and posture.
- CLO5 : Demonstrate skills in data collection, graphical presentation, and interpretation of quantitative motion analysis data.

<u>Detailed Assessment Description</u>

Detailed information about this assessment will be provided on the course Moodle page

<u>Submission notes</u>

No short extension is available for this assessment task

<u>Assessment information</u>

Use of artificial intelligence: full assistance with attribution

This assessment requires you to produce a first draft of the submission yourself. You are then permitted to use generative AI software to improve your writing and argumentative style, but your own original draft must be attached as an appendix.

You may write a first draft in another language, AI software can be used to translate that draft into English. Any output of generative AI software that is used within your assessment must be attributed with full referencing.

If the outputs of generative AI software form part of your submission and is not appropriately

attributed, your marker will determine whether the omission is significant. If so, you may be asked to explain your understanding of your submission. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

Assignment submission Turnitin type

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

Hurdle rules

This course includes at least one "hurdle" assessment task, which must be passed in order to pass the course. Hurdle assessments are necessary as accrediting bodies of the health professional programs require graduates to demonstrate attainment of competencies as entry level practitioners in their relevant health discipline. Details of the hurdle assessment task(s) for this course (including assessment weighting and minimum pass mark required) are fully described in the course Moodle site.

General Assessment Information

Detailed instructions regarding assessments for this course are provided on the course Moodle page (or Open Learning).

For student information on results, grades, and guides to assessment see: https://student.unsw.edu.au/assessment

Grading Basis

Standard

Requirements to pass course

In order to pass this course students must:

- Achieve a composite grade of at least 50 out of 100
- Meet any additional requirements specified in the assessment details section and on Moodle.
- Meet class attendance requirements, as specified in the "Attendance Requirements" section of the "Course Schedule.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 12 February - 18 February	Lecture	Welcome Math revision Optional review of key mathematics principles Linear kinematics Intro to biomechanics, scalars and vectors, translation and rotation, displacement, velocity, acceleration, equations of uniformly accelerated motion, projectile motion
	Tutorial	Solving linear kinematics problems
	Laboratory	Data processing methods
	Assessment	Online quiz
Week 2 : 19 February - 25 February	Lecture	Angular kinematics Angular displacement, velocity and acceleration, equations of uniformly accelerated angular motion, arc displacements, tangential velocity, tangential and normal acceleration
	Tutorial	Solving angular kinematics problems
	Laboratory	2D motion capture data collection and quantitative motion analysis project planning
	Assessment	Online quiz
Week 3 : 26 February - 3 March	Lecture	Linear kinetics Resultant forces, centre of mass, free body diagrams, Newton's laws, contact vs. non-contact forces, friction and normal forces
	Tutorial	Solving linear kinetics problems
	Laboratory	Ground reaction force data collection, 2D motion capture data processing
	Assessment	Online quiz
Week 4 : 4 March - 10 March	Lecture	Static equilibrium Moments, moment arms, moment directions, levers, free body diagrams, joint forces
	Tutorial	Solving static equilibrium problems
	Laboratory	Calculated vs. measured force in static equilibrium scenarios
	Assessment	Online quiz
	Assessment	QMAP proposal
Week 5 : 11 March - 17 March	Lecture	Angular kinetics Moment of inertia, body segment parameters, multi-segment centre of mass calculations, net muscle moments, inverse dynamics
	Tutorial	Solving angular kinetics problems
	Laboratory	3D motion capture data collection
	Assessment	Online quiz
Week 6 : 18 March - 24 March	Other	Flexibility week: no scheduled activities
Week 7 : 25 March - 31 March	Lecture	Impulse and momentum Linear and angular impulse and angular momentum, collision types, coefficient of restitution
	Tutorial	Solving impulse and momentum problems
	Laboratory	Data collections for quantitative motion analysis project
	Assessment	Online quiz
Week 8 : 1 April - 7 April	Lecture	Work, energy and power Linear and angular work, power and energy, conservative and non-conservative forces, locomotion models
	Tutorial	Solving work, energy and power problems
	Laboratory	Data processing for quantitative motion analysis project
	Assessment	Online quiz
Week 9 : 8 April - 14 April	Lecture	Fluid mechanics Density, pressure, buoyancy, drag and lift, spin
	Tutorial	Solving fluid mechanics problems
	Laboratory	3D motion capture data analysis
	Assessment	Online quiz

Week 10 : 15 April - 21 April	Lecture	Applications of biomechanics Sports performance, exercise adjustments, injury mechanisms, assistive technologies
	Laboratory	Quantitative motion analysis presentations
	Assessment	QMAP presentations in laboratory classes

Attendance Requirements

Students are expected to attend all scheduled laboratory classes. An Unsatisfactory Fail (UF) may be recorded as the final grade for the course if students fail to meet the minimum requirement of 80% attendance for laboratory classes (unless otherwise specified on Moodle). Course attendance expectations are determined by the requirements of the program accrediting body. Where a student is unable to attend, they are advised to inform the course convenor as soon as possible but no later than 3 days after the scheduled class and, where possible, provide written documentation (e.g. medical certificate) to support their absence.

General Schedule Information

The times and locations of classes can be found on myUNSW under Class Timetable.

The expected engagement for all UNSW 6UOC courses is 150 hours per term. This includes lectures, tutorials, readings, and completion of assessments and exam preparation (if relevant).

Course Resources

Recommended Resources

Recommended resources for this course are provided on the course Moodle page.

Course Evaluation and Development

Student feedback is taken seriously, and continual improvements are made to the course based, in part, on such feedback.

We use student feedback from myExperience surveys to develop and make improvements to the course each year. We do this by identifying areas of the course that require development from both the rating responses and written comments. Please spare a few minutes to complete the myExperience surveys for this course posted at the top of the Moodle page at the end of term.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Lecturer	Kirsty McDonald		Room 205, Wallace Wurth Building		By appointment requests via email	Yes	Yes

Other Useful Information

Academic Information

As a student of UNSW Medicine & Health you are expected to familiarise yourself with the contents of this course outline and the UNSW Student Code and policies and procedures related to your studies.

Student Code of Conduct

Throughout your time studying at UNSW Medicine & Health, you share a responsibility with us for maintaining a safe, harmonious and tolerant University environment. This includes within the courses you undertake during your degree and your interactions with the UNSW community, both on campus and online.

The UNSW Student Code of Conduct website provides a framework for the standard of conduct expected of UNSW students with respect to both academic integrity and your responsibility as a UNSW citizen.

Where the University believes a student may have breached the code, the University may take disciplinary action in accordance with the Student Misconduct Procedure.

The Student Conduct and Integrity Office provides further resources to assist you to understand your conduct obligations as a student at UNSW.

Academic Honesty and Plagarism

Academic integrity

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 the principle of academic integrity, and ethical scholarship of learning is fundamental to your success at UNSW

Medicine & Health.

Plagiarism, contract cheating, and inappropriate use of generative AI undermine academic integrity and are not tolerated at UNSW. For more information see the Academic Integrity and Plagiarism toolkit.

In addition to the information you are required to review in your ELISE training, UNSW Medicine & Health strongly recommends that you complete the Working with Academic Integrity module before submitting your first assessment task.

Referencing

Referencing is a way of acknowledging the sources of information that you use to research your assignments. Preferred referencing styles vary among UNSW Medicine & Health disciplines, so check your course Learning Management System (e.g. Moodle or Open Learning) page for information on preferred referencing styles.

For further information on referencing support and styles, see the Current Student Referencing page.

Academic misconduct and plagiarism

At UNSW, academic misconduct is managed in accordance with the Student Misconduct Procedure. Allegations of plagiarism are generally handled according to the UNSW Plagiarism Management Procedure. Plagiarism is defined in the UNSW Plagiarism Policy and is not tolerated at UNSW.

Use of Generative AI and other tools in your assessment

UNSW has provided guiding statements for the use of Generative AI in assessments. This will differ, depending on the individual assessment task, your course requirements, and the course stage within your program.

Your course convenor will outline if and how you can use Generative AI in each your assessment tasks. Options for the use of generative AI include: (1) no assistance; (2) simple editing assistance; (3) planning assistance; and (4) full assistance with attribution.

You may be required to submit the original generative AI responses, or drafts of your original work. Inappropriate use of generative AI is considered academic misconduct.

See your course Moodle (or Open Learning) page for the full instructions for individual assessment tasks for your course.

Submission of Assessment Tasks

Short extensions and special consideration

Short extension

Commencing in Term 1, 2024, UNSW has introduced a short extension procedure for submission of assessment tasks. Not all tasks are eligible, and eligible tasks have a predetermined extension length. UNSW Medicine and Health have set School-level extension lengths for eligible assessment tasks. See your course assessment descriptions for more information.

Students must check the availability of a short extension in the individual assessment task information for their courses.

Short extensions do not require supporting documentation. They must be submitted before the assessment task deadline. No late applications will be accepted.

Late penalties apply to submission of assessment tasks without approved extension.

Special consideration

In cases where short term events beyond your control affect your performance in a specific assessment task you may formally apply for Special Consideration through myUNSW.

UNSW has a **Fit to Sit rule**, which means that by sitting an examination on the scheduled date, you are declaring that you are fit to do so and cannot later apply for Special Consideration. Examinations include centrally timetabled examinations and scheduled, timed examinations and tests managed by your School.

Important information relating to Short Extension and Special Consideration is available here, including eligibility for Special Consideration, circumstances where students with Equitable Learning Plans can apply for Short Extensions and Special Consideration, and the appeals process.

Examinations

Information about the conduct of examinations in your course is provided on your course Moodle

page.

Timed online assessment tasks

If you experience a technical or connection problem during a timed online assessment, such as a timed quiz, you can apply for Special Consideration. To be eligible to apply you need to contact the Course Convenor and advise them of the issue immediately. You will need to submit an application for Special Consideration immediately, and upload screenshots, error messages or other evidence of the technical issue as supporting documentation. Additional information can be found on: https://student.unsw.edu.au/special-consideration

Other assessment tasks

Late submission of assessment tasks

UNSW has standard late submission penalties as outlined in the UNSW Assessment Implementation Procedure, with no permitted variation. All late assignments (unless extension or exemption previously agreed) will be penalised by 5% of the maximum mark per calendar day (including Saturday, Sunday and public holidays).

Late submissions penalties are capped at five calendar days (120 hours). This means that a student is not permitted to submit an assessment more than 5 calendar days (120 hours) after the due date for that assessment (unless extension or exemption previously agreed).

Failure to complete an assessment task

You are expected to complete all assessment tasks for your courses. In some courses, there will be a minimum pass mark required on a specific assessment task (a "hurdle task") due to the need to assure clinical competency.

Where a hurdle task is applicable, additional information is provided in the assessment information on your course Moodle page.

Feedback on assessments

Feedback on your performance in assessment tasks will be provided to you in a timely manner. For assessment tasks completed within the teaching period of a course, other than a final assessment, feedback will be provided within 10 working days of submission, under normal circumstances.

Feedback on continuous assessment tasks (e.g. laboratory and studio-based, workplace-based, weekly quizzes) will be provided prior to the midpoint of the course.

Any variation from the above information that is specific to an assessment task will be clearly indicated in the course and assessment information provided to you on your course Moodle (or Open Learning) page.

Faculty-specific Information

Additional support for students

The university offers a wide range of support services that are available for students. Here are some links for you to explore.

- The Current Students Gateway: https://student.unsw.edu.au

- Academic Skills and Support: https://student.unsw.edu.au/academic-skills

- Student support: https://www.student.unsw.edu.au/support

- Student Wellbeing, Health and Safety: https://student.unsw.edu.au/wellbeing

Mind Smart Guides are a series of mental health self-help resources designed to give you the psychological flexibility, resilience and self-management skills you need to thrive at university and at work.

- Mind Smart Guides: https://student.unsw.edu.au/mindsmart

- Equitable Learning Services: https://student.unsw.edu.au/els

- Guide to studying online: https://www.student.unsw.edu.au/online-study

Most courses in UNSW Medicine & Health use Moodle as your Learning Management System. Guidance for using UNSW Moodle can be found on the Current Student page. Difficulties with Moodle should be logged with the IT Service Centre.

- Moodle Support: https://student.unsw.edu.au/moodle-support

The IT Service Desk is your central point of contact for assistance and support with remote and on-campus study.

- UNSW IT Service Centre: https://www.myit.unsw.edu.au/services/students

Course evaluation and development

At UNSW Medicine & Health, students take an active role in designing their courses and their overall student experience. We regularly seek feedback from students, and continuous improvements are made based on your input. Towards the end of the term, you will be asked to participate in the myExperience survey, which serves as a source of evaluative feedback from students. Your input to this quality enhancement process is valuable in helping us meet your learning needs and deliver an effective and enriching learning experience. Student responses are carefully considered, and the action taken to enhance educational quality is documented in the myFeedback Matters section of your Moodle (or Open Learning) course page.

School Contact Information

School guidelines on contacting staff:

Course questions

All questions related to course content should be posted on Moodle (or Open Learning) or as directed by your Course Convenor.

In cases where email communication with course convenors is necessary, we kindly request the following:

- Use your official email address for any correspondence with teaching staff.
- We expect a high standard of communication. All communication should avoid using short-hand or texting language.
- Include your full name, student ID, and your course code and name in all communication.

Our course convenors are expected to respond to emails during standard working hours of Monday to Friday, 9am-5pm.

Administrative questions

If you have an administrative question about your program of study at the School please submit your enquiry online at UNSW Ask Us.

Complaints and appeals

Student complaints and appeals: https://student.unsw.edu.au/complaints

If you have any grievances about your studies, we invite you to address these initially to the Course Convenor. If the response does not meet your expectations, you may then contact the School Grievance Officer, Dr Chris Maloney (c.maloney@unsw.edu.au).