ESSC12008 *Applied Exercise and Sport Biomechanics*
Term 2 - 2018

Profile information current as at 13/12/2025 03:56 pm

General Information

Overview
This unit is designed to build upon content from previous semesters and extend the students understanding of the role of musculoskeletal biomechanics with application to sport, work and the clinical and rehabilitation settings. Students will develop advanced kinematic and kinetic measurement and data analysis techniques to assess human motion. Students will develop, collect and present a biomechanics research project related to their professional field. Note: All flexible enrolled students are required to attend a compulsory Applied Exercise and Sport Biomechanics residential school to promote development of unit learning outcomes.

Details
Career Level: *Undergraduate*
Unit Level: *Level 2*
Credit Points: *6*
Student Contribution Band: *10*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites
Pre-requisite Units: ESSC12004 Exercise and Sport Biomechanics AND ESSC11002 Measurement and Evaluation
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the Assessment Policy and Procedure (Higher Education Coursework).

Offerings For Term 2 - 2018

- Distance
- Mackay
- Rockhampton

Attendance Requirements
All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website
This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

Regional Campuses
Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

Metropolitan Campuses
Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Online Quiz(zes)**
Weighting: 20%
2. **Written Assessment**
Weighting: 15%
3. **Portfolio**
Weighting: 65%
4. **On-campus Activity**
Weighting: Pass/Fail

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the University's Grades and Results Policy for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the CQUniversity Policy site.
You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the CQUniversity Policy site.

Previous Student Feedback

Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

Feedback from Unit Evaluations

Feedback

Students found the progression through assessment items and assessment feedback facilitated their learning.

Recommendation

Continue to provide detailed assessment feedback to support students as they develop their research project and progress through the assessment items (Research Proposal followed by an Oral Presentation and Written Manuscript).

Feedback from Unit Evaluations

Feedback

Students enjoyed the freedom to develop their own research question based on projects completed in laboratory and residential school activities.

Recommendation

Continue to develop research projects that are relevant to current trends in biomechanics and cover a wide range of topics. This enables students to select a topic of interest.

Feedback from Reflection by Teaching Staff

Feedback

While students are given opportunity to collect data in the laboratory and residential school activities, little time is given to data analysis.

Recommendation

Provide time during laboratory, residential school, and off-campus activities for students to analysis the data that they collect. This can provide them with a greater appreciation and understanding of data analysis techniques and how it can be applied in various settings.

Unit Learning Outcomes

On successful completion of this unit, you will be able to:

1. Explain the various equipment and measurement techniques used to evaluate biomechanics of human movement
2. Develop a biomechanical research project to solve problems or answer challenges that one might encounter in the real world
3. Complete data collection using various biomechanics equipment to measure and evaluate human movement
4. Critically analysis biomechanical data in relation to measurement of human motion
5. Interpret outcomes of biomechanics research project by integrating knowledge in the areas of biomechanics, motor learning and anatomy/physiology

Alignment of Learning Outcomes, Assessment and Graduate Attributes

— N/A Level | • Introductory Level | • Intermediate Level | • Graduate Level | ◦ Professional Level | ◦ Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Online Quiz(zes) - 20%	•				
2 - Written Assessment - 15%		•			
3 - Portfolio - 65%				•	•
4 - On-campus Activity - 0%			•		

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
1 - Communication	•	•	•	•	•
2 - Problem Solving	•	•	•	•	•
3 - Critical Thinking	•	•	•	•	•
4 - Information Literacy	•	•	•	•	•
5 - Team Work		•	•	•	•
6 - Information Technology Competence	•	•	•	•	•
7 - Cross Cultural Competence		•	•	•	•
8 - Ethical practice		•	•	•	•
9 - Social Innovation					
10 - Aboriginal and Torres Strait Islander Cultures					

Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
1 - Online Quiz(zes) - 20%		•	•	•		•				
2 - Written Assessment - 15%	•	•	•	•		•	•	•		
3 - Portfolio - 65%	•		•	•	•	•				
4 - On-campus Activity - 0%	•	•	•	•	•	•		•		

Textbooks and Resources

Textbooks

There are no required textbooks.

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Zoom Video Conferencing Application
- Microsoft Office (including Word, Excel and Powerpoint)

Referencing Style

All submissions for this unit must use the referencing style: American Psychological Association 6th Edition (APA 6th edition)
For further information, see the Assessment Tasks.

Teaching Contacts

Brendan Humphries Unit Coordinator
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Schedule

Week 1 - 09 Jul 2018

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Research Design and Signal Processing	Online Readings	

Week 2 - 16 Jul 2018

Module/Topic	Chapter	Events and Submissions/Topic
Principles of Force Plates and Isokinetic Dynamometry	Chapter 6: Force and Pressure Measurement Chapter 8: Isokinetic Dynamometry Online Readings	

Week 3 - 23 Jul 2018

Module/Topic	Chapter	Events and Submissions/Topic
Principles of Electromyography (EMG)	Chapter 7: Surface Electromyography Online Readings	Quiz 1 Opens Monday (23 Jul 18) 9:00 AM AEST

Week 4 - 30 Jul 2018

Module/Topic	Chapter	Events and Submissions/Topic
Principles of 2D and 3D Motion Analysis	Chapter 4: Motion Analysis Using Video Chapter 5: Motion Analysis Using Online Systems Online Readings	Quiz 1 Closes Monday (30 Jul 18) 9:00 AM AEST

Week 5 - 06 Aug 2018

Module/Topic	Chapter	Events and Submissions/Topic
Principles of Ballistic Measurement System and Accelerometers	Online Readings	Quiz 2 Opens Monday (6 Aug 18) 9:00 AM AEST

Vacation Week - 13 Aug 2018

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 20 Aug 2018

Module/Topic	Chapter	Events and Submissions/Topic
Research Design	Chapter 10: Research Methods Online Readings	Quiz 2 Closes Monday (20 Aug 18) 9:00 AM AEST

Week 7 - 27 Aug 2018

Module/Topic	Chapter	Events and Submissions/Topic
Data Analysis (statistics), Interpretation and Presenting Results	Online Readings	Research Manuscript Drafts are due Wednesday (29 Aug 18) 11.45 PM (AEST)

Week 8 - 03 Sep 2018

Module/Topic	Chapter	Events and Submissions/Topic
Presentation Tips	Online Readings	

Week 9 - 10 Sep 2018

Module/Topic	Chapter	Events and Submissions/Topic
Manuscript Preparation Tips	Online Readings	

Week 10 - 17 Sep 2018

Module/Topic	Chapter	Events and Submissions/Topic
No Formal Lecture		Event Open Zoom Session Wednesday (19 Sep 18) 10:00 AM AEST

Week 11 - 24 Sep 2018

Module/Topic	Chapter	Events and Submissions/Topic
No Formal Lecture		Event Open Zoom Session Wednesday (26 Sep 18) 10:00 AM AEST

Week 12 - 01 Oct 2018

Module/Topic	Chapter	Events and Submissions/Topic
Student Presentations		Presentation slides are due Monday (1 Oct 18) 12:00 PM AEST See Assessment Information for Presentation Session Times.

Review/Exam Week - 08 Oct 2018

Module/Topic	Chapter	Events and Submissions/Topic

Exam Week - 15 Oct 2018

Module/Topic	Chapter	Events and Submissions/Topic
		Written Manuscripts are due Monday (15 Oct 18) 11:45 PM AEST

Assessment Tasks

1 Online Quizzes

Assessment Type
Online Quiz(zes)

Task Description
There are 2 Online Quizzes (details on each specific quiz below). Each quiz is worth 10% of the final grade (total 20% for this assessment item). Each quiz will consist of 20 multiple choice questions and have a 40-minute time limit. Questions on each quiz will be randomly drawn from a larger question bank.
Quiz 1: Opens Week 3 Monday 23 July 2018 9:00 AM (AEST) and Closes Week 4 Monday 30 July 2018 9:00 AM (AEST)
This quiz will cover the equipment covered in Week 2 and 3 - Force Plates, Isokinetic Dynamometry, and Electromyography. The quiz will test your knowledge of the function, characteristics and operation of force plates and load cells, isokinetic dynamometry, and electromoygraphy systems.

Quiz 2: Opens Week 5 Monday 6 August 2018 9:00 AM (AEST) and Closes Week 6 Monday 20 August 2018 9:00 AM (AEST)
This quiz will cover the equipment covered in Week 4 and 5 - 2D and 3D Motion Analysis, Ballistic Measurement System, and Accelerometers. The quiz will test your knowledge of the function, characteristics and operation of 2D and 3D motion analysis systems, ballistic measurement system and accelerometers.
Online quizzes should be completed on a computer, as attempting the quiz on a smartphone or tablet can result in your session being ended in the event of a phone call or notification.
Once you have logged on to the quiz it must be completed within that single session. You CANNOT save the quiz and return to it later.

Number of Quizzes
2

Frequency of Quizzes
Other

Assessment Due Date

Quiz 1: Opens Week 3 Monday 23 July 2018 9:00 AM (AEST) and Closes Week 4 Monday 30 July 2018 9:00 AM (AEST); Quiz 2: Opens Week 5 Monday 6 August 2018 9:00 AM (AEST) and Closes Week 6 Monday 20 August 2018 9:00 AM (AEST)

Return Date to Students

Results for each quiz will be given upon completion of quiz via Moodle. Feedback on specific questions will be available once the quiz closes.

Weighting
20%

Assessment Criteria
Quiz results will be tabulated as correct or incorrect and returned via Moodle.

Referencing Style

- American Psychological Association 6th Edition (APA 6th edition)

Submission
Online

Submission Instructions
It is recommended that you use a computer to complete each quiz and submit via the Moodle online quiz system

Learning Outcomes Assessed

- Explain the various equipment and measurement techniques used to evaluate biomechanics of human movement

Graduate Attributes

- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence

2 Research Manuscript Draft

Assessment Type
Written Assessment

Task Description
You will submit a written document based on a group research manuscript draft (introduction and methods) that will describe your intended research project. The manuscript draft must include background literature, study aims/hypotheses, methods (with planned statistical analysis), and references. Each group member submits the completed document with the completed cooperative group learning rubric.
The research manuscript draft length should be between 1000-1500 words (excluding references). Reference style should follow that of the Journal of Science and Medicine in Sport.
The research manuscript draft will be submitted as a word document that has two distinct sections. (1) A draft of the research manuscript with all "track changes" to highlight group involvement. The track changes will be in the form of "COMMENTS" made by each group member, and (2) a completed research manuscript draft with no "track changes" COMMENTS that depicts the completed document after the suggested changes have been made.
More details including videos, templates, guidelines, and grading rubrics will be made available for each component on the unit Moodle site.

Assessment Due Date

Due Wednesday 29 August 2018 11:45 PM (AEST)

Return Date to Students

The Research Manuscript Draft will be returned within 2 weeks of the due date.

Weighting
15%

Assessment Criteria
The Research Manuscript Draft will be assessed on the following areas: Background literature, aim(s) and hypotheses, methods (including intended statistical analyses),writing style (spelling, grammar and adherence to journal guidelines), group involvement (manuscript draft must include group word document with "track changes" to highlight group involvement plus a completed group word document without "track changes") plus a cooperative group learning rubric completed by each member of the group.

Referencing Style

- American Psychological Association 6th Edition (APA 6th edition)

Submission
Online

Submission Instructions
A Word document (.doc or .docx) is to be submitted electronically via the Moodle online assignment upload link.

Learning Outcomes Assessed

- Develop a biomechanical research project to solve problems or answer challenges that one might encounter in the real world

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

3 Written Research Manuscript and Presentation

Assessment Type
Portfolio

Task Description
Assessment Overview:
This Assessment consists of two tasks which make up the Portfolio. Tasks include:
1. Presentation - Due Week 12 (specific presentation times outlined)
2. Written Manuscript - Due Monday 15 October 2018 11:45 PM (AEST).

Assessment Tasks Detail:
1. Presentation (worth 25% of final grade)
At the completion of the research project you will be asked to prepare a 10-minute presentation regarding your project using PowerPoint. The oral presentation will be completed as an individual and delivered as part of a live 'virtual' conference via Zoom video conferencing application. Following your presentation, you will be asked questions from fellow students/teaching staff during a 5-minute question period.
You will nominate to present and attend one of the following sessions. It is expected that you will be in attendance for the entire session to support your fellow students and participate in the question periods.
Conference Session 1: Monday 1 October 2018 1:00-4:30 PM (AEST)
Conference Session 2: Monday 1 October 2018 5:00-8:30 PM (AEST)
Conference Session 3: Tuesday 2 October 2018 9:00-11:30 AM (AEST)
Conference Session 4: Tuesday 2 October 2018 5:00-8:30 PM (AEST)
You must submit a copy of your PowerPoint slides to Moodle via the "Presentation" upload link. Due date for submission of presentation slides is Monday 1 October 2018 12:00 PM (AEST).
2. Written Manuscript (worth 40% of final grade)
You will be required to complete a group written manuscript based on your research project that follows the author guidelines for the Journal of Science and Medicine in Sport. The paper will be approximately 2000 to 3000 words in length and will conform to your research topic.
Written manuscripts are to be submitted to Moodle via the "Manuscript" upload link Due date for submission is Monday 15 October 2018 11:45 PM (AEST).
More details including videos, templates, guidelines, and grading rubrics will be made available for each component on the unit Moodle site.

Assessment Due Date

Presentation: Monday 1 October 2018 12:00 PM (AEST). Manuscript: Monday 15 October 2018 12:00 PM (AEST)

Return Date to Students

Each component of the portfolio will be returned with feedback within 2 weeks of the due dates.

Weighting
65%

Assessment Criteria
The presentation will be assessed individually on the following areas: introduction, methods, results, discussion, conclusion, practical implications, and presentation skills (20% of final grade) in the format of a presentation.
The manuscript will be assessed as a group document on the following areas: introduction, methods, results, discussion, conclusion, practical implications, writing and group contribution (40% of final grade) in the format of a written journal article.
Each portfolio component will be graded using assessment Rubrics available on the unit Moodle site.

Referencing Style

- American Psychological Association 6th Edition (APA 6th edition)

Submission
Online

Submission Instructions
Research presentation will be presented online via Zoom. Please submit all portfolio components electronically via the unit Moodle site, preferably as a word document (doc or .docx file) (or a .ppt or .pptx for the presentation). PDF submissions will not be accepted.

Learning Outcomes Assessed

- Critically analysis biomechanical data in relation to measurement of human motion
- Interpret outcomes of biomechanics research project by integrating knowledge in the areas of biomechanics, motor learning and anatomy/physiology

Graduate Attributes

- Communication
- Critical Thinking
- Information Literacy
- Team Work

- Information Technology Competence

4 On-campus Activity

Assessment Type
On-campus Activity

Task Description
This assessment involves completion of all laboratory activities of this unit. You are required to attend (and participate) the laboratory sessions in one of the following options:

1. Laboratory block session held on Rockhampton North Campus. Week 4 Wednesday/Thursday 1 and 2 August 2018 9:00 AM (AEST)
2. Residential school held on Rockhampton North Campus. Week 4 Saturday/Sunday 4 and 5 August 2018 9:00 AM (AEST)
3. Laboratory block session held on Mackay City Campus. Week 5 Tuesday/Wednesday 7 and 8 August 2018 9:00 AM (AEST)

If you miss a practical session, there will NOT be an opportunity to simply 'catch up' at any time. The Assessment Policy and Procedure (Higher Education Coursework) outlines acceptable reasons for adjusting assessment (Section 5.16 – 5.19). This section of the policy is relevant in cases where a student fails to attend a required practical session/residential school within this unit. If a student does not attend a practical session/residential school session, and provides a valid reason, with supporting documentation (see Section 5.26 – 5.29), then an attempt to make alternate arrangements will be made (for example a 'catch up' session at a suitable time or an alternative assessment/task) in consultation with the Unit Coordinator and the student.

Assessment Due Date

Attendance at all laboratory sessions is completed during laboratory block sessions and/or at residential school during the active term.

Return Date to Students

Attendance will be taken during each block laboratory session or residential school session.

Weighting
Pass/Fail

Assessment Criteria
This assessment item is based on Pass/Fail Grading. If you complete all laboratory sessions you will pass this assessment piece. If you do not complete all laboratory sessions you will fail this assessment item.

Referencing Style

- American Psychological Association 6th Edition (APA 6th edition)

Submission
Offline

Submission Instructions
No documentation is required to be submitted. You will be required to sign attendance sheets for the laboratory sessions.

Learning Outcomes Assessed

- Complete data collection using various biomechanics equipment to measure and evaluate human movement

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Ethical practice

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the **Student Academic Integrity Policy and Procedure**. This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?
A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?
A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?
For academic advice and guidance, the Academic Learning Centre (ALC) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?

Be Honest
If your assessment task is done by someone else, it would be dishonest of you to claim it as your own

Seek Help
If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)

Produce Original Work
Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem