



# ESSC12008 *Applied Exercise and Sport* **Biomechanics** Term 2 - 2017

Profile information current as at 27/04/2024 01:12 am

All details in this unit profile for ESSC12008 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

## 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 - 2017

- 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).

### Residential Schools

This unit has a Compulsory Residential School for distance mode students and the details are:

Click here to see your [Residential School Timetable](#).

### 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 Course Evaluations

##### Feedback

Students enjoyed the research/practical application aspect of this unit. However, some students felt overwhelmed by the research projects and related assessments.

##### Recommendation

This unit is structured to build on information learned in ESSC12004 and apply biomechanical principles to a research project. Students are required to work in groups (as well as independently) in a self-directed manner with guidance from the Unit Coordinator. In future, more guidance will be provided to ensure students are staying on track; however, it is ultimately the students responsibility to manage time and engage with fellow students/teaching staff.

#### Feedback from Course Evaluations

##### Feedback

There was mixed reviews on the feedback provided for assessments. Some students found it helpful and others wanted more feedback.

##### Recommendation

Students will continue to be provided with individual feedback on assessment tasks and encouraged to seek further feedback if required.

## 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



### 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%				•	•

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
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

ESSC12008

#### Prescribed

#### **Biomechanical evaluation of movement in sport and exercise**

Edition: 1st (2008)

Authors: Payton, C & Bartlett, R (eds)

Routledge

Abingdon, UK

ISBN: 9780415434690

Binding: Hardcover

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

#### You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- MSOffice (Excel, Word, Powerpoint etc) or similar software
- Webcam and Microphone
- Zoom Video Conferencing Application

## 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

**Crystal Kean** Unit Coordinator

[c.kean@cqu.edu.au](mailto:c.kean@cqu.edu.au)

## Schedule

### Week 1 - 10 Jul 2017

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

### Week 2 - 17 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Principles of Force Plates and Isokinetic Dynamometry	<b>Chapter 4:</b> Force and pressure measurement <b>Chapter 6:</b> Isokinetic dynamometry Online Readings	

### Week 3 - 24 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Principles of Electromyography (EMG)	<b>Chapter 5:</b> Surface electromyography Online Readings	

**Week 4 - 31 Jul 2017**

Module/Topic	Chapter	Events and Submissions/Topic
Principles of 2D and 3D Motion Analysis	<b>Chapter 2:</b> Motion Analysis using video <b>Chapter 3:</b> Motion Analysis using online systems Online Readings	<b>Quiz 1 Opens</b> Monday (31 Jul 17) 7:00AM AEST

**Week 5 - 07 Aug 2017**

Module/Topic	Chapter	Events and Submissions/Topic
Principles of Ballistic Measurement System, Accelerometers, and Mechanosensors	Online Readings	<b>Quiz 1 Closes</b> Monday (07 Aug 17) 9:00AM AEST <b>Research Proposal</b> Due: Week 5 Wednesday (9 Aug 2017) 11:45 pm AEST

**Vacation Week - 14 Aug 2017**

Module/Topic	Chapter	Events and Submissions/Topic
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**Week 6 - 21 Aug 2017**

Module/Topic	Chapter	Events and Submissions/Topic
Research Design and Critical Appraisal of Scientific Literature	Online Readings	<b>Quiz 2 Opens</b> Monday (21 Aug 17) 7:00AM AEST

**Week 7 - 28 Aug 2017**

Module/Topic	Chapter	Events and Submissions/Topic
Data Analysis (statistics), Interpretation and Presenting Results	Online Readings	<b>Quiz 2 Closes</b> Monday (28 Aug 17) 9:00AM AEST

**Week 8 - 04 Sep 2017**

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

**Week 9 - 11 Sep 2017**

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

**Week 10 - 18 Sep 2017**

Module/Topic	Chapter	Events and Submissions/Topic
No Lecture		

**Week 11 - 25 Sep 2017**

Module/Topic	Chapter	Events and Submissions/Topic
No Lecture		

**Week 12 - 02 Oct 2017**

Module/Topic	Chapter	Events and Submissions/Topic
Student Presentations		See Assessment Information for Presentation Session Times. Presentation slides are due Monday (2 Oct 17) 12:00PM AEST

**Review/Exam Week - 09 Oct 2017**

Module/Topic	Chapter	Events and Submissions/Topic
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**Exam Week - 16 Oct 2017**

Module/Topic	Chapter	Events and Submissions/Topic
		Written Manuscripts are due Monday (16 Oct 17) 11:45PM 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 30 multiple choice questions and have a 60-minute time limit. Questions on each quiz will be randomly drawn from a larger question bank.

**Quiz 1: Opens Week 4 Monday 31 July 2017 7:00am (AEST) and Closes Week 5 Monday 7 August 2017 9:00am (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 electromyography systems.

**Quiz 2: Opens Week 6 Monday 21 August 2017 7:00am (AEST) and Closes Week 7 Monday 28 August 2017 9:00am (AEST)**

This quiz will cover the equipment covered in Week 4 and 5 - 2D and 3D Motion Analysis, Ballistic Measurement System, Accelerometers, and Mechanosensors. The quiz will test your knowledge of the function, characteristics and operation of 2D and 3D motion analysis systems, ballistic measurement system, accelerometers, and mechanosensors.

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 4 Monday 31 July 2017 7:00am (AEST) and Closes Week 5 Monday 7 August 2017 9:00am (AEST);  
Quiz 2: Opens Week 6 Monday 21 August 2017 7:00am (AEST) and Closes Week 7 Monday 28 August 2017 9:00am (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**

Submitted 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 Proposal

### Assessment Type

Written Assessment

### Task Description

You will submit a written document based on an individual research proposal that will describe your intended research project. The proposal must include background literature, study aims/hypotheses, proposed methods (with planned statistical analysis), timeline and references.

The proposal length should be between 1000-1500 words (excluding references). Reference style should follow that of the [Journal of Science and Medicine in Sport](#).

More details on the research proposal will be provided on the Moodle site.

### Assessment Due Date

Week 5 Wednesday (9 Aug 2017) 11:45 pm AEST

### Return Date to Students

Week 6 Friday (25 Aug 2017)

### Weighting

15%

### Assessment Criteria

The Research Proposal will be assessed on the following areas:

1. Background Literature - Review of past literature related to the research topic and development of the rationale/justification for the proposed research project
2. Aim(s) and Hypotheses
3. Methods - Description of study participants, data collection procedures, data and statistical analyses
4. Timeline
5. Writing Style (Spelling, grammar and adherence to guidelines)

### 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 16 October 2017 11:45pm (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 platform. 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 2 October 2017 1:00-4:30pm (AEST)

Conference Session 2: Monday 2 October 2017 6:00-9:30pm (AEST)

Conference Session 3: Tuesday 3 October 2017 8:00-11:30am (AEST)

Conference Session 4: Tuesday 3 October 2017 6:00-9:30pm (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 2 October 2017 12:00pm (AEST).

## 2. Written Manuscript (worth 40% of final grade)

You will be required to complete an individually 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 16 October 2017 11:45pm (AEST).

*More details on each item will be provided on the Moodle site.*

### **Assessment Due Date**

Presentation Slide Due Date: Monday 2 October 2017 12:00pm (AEST) with Presentation Sessions on Monday 2 October 2017 and Tuesday 3 October 2017 as noted above. Manuscript Due Date: Monday 16 October 2017 11:45pm (AEST).

### **Return Date to Students**

Presentation marks will be returned by Review Week Monday 9 October 2017. Manuscript marks will be returned with release of grades.

### **Weighting**

65%

### **Assessment Criteria**

Presentation will be assessed on following areas:

1. Presentation Content - Introduction, Methods, Results, Discussion, Conclusion
2. Response to Questions
3. Presentation Style
4. Participation in Conference Session (i.e. attendance to full session and asking fellow students questions)

Written Manuscript will be assessed on following areas:

1. Written Content - Abstract, Introduction, Methods, Results, Discussion, Conclusion
2. Writing Style

*Further details, including the marking rubric, will be available on Moodle.*

### **Referencing Style**

- [American Psychological Association 6th Edition \(APA 6th edition\)](#)

### **Submission**

Online

### **Submission Instructions**

All files are to be submitted electronically via the Moodle online assignment upload link. Presentation slides are to be uploaded as a Powerpoint file (.ppt or pptx) and Manuscripts uploaded as a Word file (.doc or docx). Do not upload pdf files.

### **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 sessions held throughout term on Rockhampton North Campus
2. Laboratory block session held on Mackay City Campus
3. Residential school held on Rockhampton North Campus

### Assessment Due Date

Attendance at all laboratory sessions is completed across term and/or at residential school.

### Return Date to Students

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

### Weighting

Pass/Fail

### Minimum mark or grade

Pass

### 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