



# BMSC12006 Cardiorespiratory Physiology and Measurement

## Term 1 - 2023

Profile information current as at 29/04/2024 12:56 pm

All details in this unit profile for BMSC12006 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 prepares you for entry into the clinical environment by developing your knowledge and understanding of key physiological processes associated with the cardiovascular and respiratory systems, and introducing you to fundamental techniques used to measure cardiorespiratory function. You will enhance knowledge about the anatomy and physiology of the cardiovascular and respiratory systems, how the functionality of these two systems is interlinked, how pathological alterations in either system will result in systemic effects and, how major classes of medications mediate their effects within and between the two systems. Successful completion of this unit will require you attend all practical activities, perform fundamental cardiorespiratory measurements and interpret data collected from these procedures.

### Details

Career Level: *Undergraduate*

Unit Level: *Level 2*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

### Pre-requisites or Co-requisites

BMSC11002 Human Body Systems 2 OR BMSC11010 Human Anatomy and Physiology 1 AND BMSC11011 Human Anatomy and Physiology 2 OR BMSC11007 Medical Anatomy and Physiology 1 AND BMSC11008 Medical Anatomy and Physiology 2

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 1 - 2023

- Bundaberg
- Mixed Mode
- 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. **Practical Assessment**

Weighting: Pass/Fail

#### 2. **Written Assessment**

Weighting: 40%

#### 3. **Online Test**

Weighting: 60%

### 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 SUTE unit comments

**Feedback**

Students felt that additional resources to assist in preparing for the end-of-term test would be beneficial.

**Recommendation**

Additional resources will be developed to support students in their preparation for the end-of-term test.

#### Feedback from Unsolicited feedback from students.

**Feedback**

The inclusion of practical competencies into the residential school was well received by the students.

**Recommendation**

Practical competencies will continue to be used to assess students during the residential school. Competencies will be refined to align with the Australian Council for Clinical Physiologists 2022 accreditation framework.

#### Feedback from Staff reflection

**Feedback**

Incorporation of discipline-specific modules into unit in order for students to gain a better understanding of how the unit content relates to various discipline areas.

**Recommendation**

Discipline-specific modules will be developed to contextualise content depending on the students course area.

## Unit Learning Outcomes

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

1. Explain key physiological processes associated with the cardiovascular and respiratory systems
2. Explain how a pathological alteration in either the cardiovascular or respiratory systems will have systemic impacts
3. Perform cardiorespiratory measurements and interpret the results
4. Accurately interpret ECG rhythm strips to aid in the diagnosis of common cardiac conditions
5. Identify how major classes of cardiovascular and respiratory medications mediate their effects.

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



### Alignment of Assessment Tasks to Learning Outcomes

| Assessment Tasks                     | Learning Outcomes |   |   |   |   |
|--------------------------------------|-------------------|---|---|---|---|
|                                      | 1                 | 2 | 3 | 4 | 5 |
| <b>1 - Practical Assessment - 0%</b> |                   |   | • | • |   |
| <b>2 - Written Assessment - 40%</b>  | •                 | • |   |   |   |
| <b>3 - Online Test - 60%</b>         | •                 | • |   | • | • |

### Alignment of Graduate Attributes to Learning Outcomes

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

## Textbooks and Resources

### Textbooks

BMSC12006

#### Prescribed

##### **Cardiopulmonary Anatomy & Physiology; Essentials of respiratory care**

7th Edition (2020)

Authors: Terry Des Jardins

Cengage

ISBN: 9780357699805

Binding: Paperback

#### **Additional Textbook Information**

Textbooks can be accessed online at the CQUniversity Library website. If you prefer your own copy, you can purchase either paper or eBook versions at the CQUni Bookshop here: <http://bookshop.cqu.edu.au> (search on the Unit code)

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

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

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

## Referencing Style

**All submissions for this unit must use the referencing styles below:**

- [Harvard \(author-date\)](#)
- [American Psychological Association 7th Edition \(APA 7th edition\)](#)

For further information, see the Assessment Tasks.

## Teaching Contacts

**Candice Pullen** Unit Coordinator

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

## Schedule

### **Week 1 - 06 Mar 2023**

| Module/Topic   | Chapter  | Events and Submissions/Topic                   |
|--|--|--|
| Anatomy and physiology of the cardiorespiratory system | Revision from A&P units<br>Chapter 1- Respiratory anatomy and physiology<br>Chapter 5- Cardiovascular anatomy and physiology | On-campus practical: Heart and lung dissection |

### **Week 2 - 13 Mar 2023**

| Module/Topic                          | Chapter   | Events and Submissions/Topic |
|---------------------------------------|---|------------------------------|
| Ventilation<br>Control of ventilation | Chapter 2- Ventilation<br>Chapter 9- Control of ventilation |                              |

**Week 3 - 20 Mar 2023**

| Module/Topic   | Chapter  | Events and Submissions/Topic    |
|--|--|---------------------------------|
| Pulmonary function tests<br>Diffusion of pulmonary gases | Chapter 3- Pulmonary function measurements<br>Chapter 4-Diffusion of pulmonary gases | On-campus practical: Spirometry |

**Week 4 - 27 Mar 2023**

| Module/Topic   | Chapter  | Events and Submissions/Topic |
|--|--|------------------------------|
| O <sub>2</sub> and CO <sub>2</sub> transport<br>Acid-base regulation | Chapter 6- O <sub>2</sub> and CO <sub>2</sub> transport<br>Chapter 7- Acid-base balance and regulation |                              |

**Week 5 - 03 Apr 2023**

| Module/Topic   | Chapter   | Events and Submissions/Topic   |
|--|---|--|
| Ventilation-perfusion relationships<br>Cardiac Electrophysiology | Chapter 8-Ventilation-perfusion relationships<br>Chapter 12- Electrophysiology of the heart | On-campus practical: Cardiac electrophysiology, heart sounds, and peripheral circulation |

**Vacation Week - 10 Apr 2023**

| Module/Topic | Chapter | Events and Submissions/Topic |
|--------------|---------|------------------------------|
|--------------|---------|------------------------------|

**Week 6 - 17 Apr 2023**

| Module/Topic                | Chapter   | Events and Submissions/Topic   |
|-----------------------------|---|--|
| 12-lead ECG<br>ECG analysis | Chapter 13- 12-lead ECG<br>Chapter 14- ECG interpretation | On-campus practical: 12 Lead ECG and ECG Analysis<br><br><b>Written Assessment</b> Due: Week 6 Monday (17 Apr 2023) 9:00 am AEST |

**Week 7 - 24 Apr 2023**

| Module/Topic                                     | Chapter  | Events and Submissions/Topic                                  |
|--|--|---|
| Effect of exercise on the cardiopulmonary system | Chapter 18- Exercise and its effects on the cardiopulmonary system | On-campus practical: 6-minute walk test and Acid/base balance |

**Week 8 - 01 May 2023**

| Module/Topic                                    | Chapter   | Events and Submissions/Topic                            |
|---|---|---|
| The cardiopulmonary system and the renal system | Chapter 16- Renal failure and its effects on the cardiopulmonary system | Residential school for Mix mode students (7-8 May 2023) |

**Week 9 - 08 May 2023**

| Module/Topic                                 | Chapter                     | Events and Submissions/Topic |
|--|-----------------------------|------------------------------|
| Introduction to cardiopulmonary pharmacology | See Moodle site for details |                              |

**Week 10 - 15 May 2023**

| Module/Topic                         | Chapter                     | Events and Submissions/Topic |
|--------------------------------------|-----------------------------|------------------------------|
| Applying theory to clinical practice | See Moodle site for details |                              |

**Week 11 - 22 May 2023**

| Module/Topic                         | Chapter                     | Events and Submissions/Topic |
|--------------------------------------|-----------------------------|------------------------------|
| Applying theory to clinical practice | See Moodle site for details |                              |

**Week 12 - 29 May 2023**

| Module/Topic  | Chapter | Events and Submissions/Topic  |
|---------------|---------|---|
| Revision week |         | <b>End of term Online test</b> Due: Week 12 Friday (2 June 2023) 9:00 pm AEST |

## Review/Exam Week - 05 Jun 2023

| Module/Topic | Chapter | Events and Submissions/Topic |
|--------------|---------|------------------------------|
|--------------|---------|------------------------------|

## Exam Week - 12 Jun 2023

| Module/Topic | Chapter | Events and Submissions/Topic |
|--------------|---------|------------------------------|
|--------------|---------|------------------------------|

## Term Specific Information

### Teaching Team:

The teaching team for this unit consists of Dr. Candice Pullen (Unit coordinator) and Ms. Maddie Higgins. Candice is based on the Rockhampton campus and will be delivering the tutorial sessions and facilitating the Rockhampton practical sessions and residential school. Maddie will assist in the delivery of the tutorials on the Bundaberg campus and facilitate the Bundaberg practical sessions. **Please direct all communications regarding the unit to the Unit Coordinator.**

### Practical Classes/ Residential School:

- Students enrolled in CM17 are required to attend on-campus practical sessions scheduled during the term. Please review the scheduled time on your timetable. Attendance is compulsory. You must attend each practical session in order to complete the competencies associated with each session.
- All other students are required to attend the residential school that will be held on the Rockhampton campus. Please review your timetable for the scheduled dates. Attendance is compulsory as all competencies will be assessed during these sessions.
- All students are required to wear the uniform appropriate to their particular course during practical classes and residential school, as professionalism will be continually assessed. Please ensure that you have appropriate footwear (ie closed-in shoes).

### Study Load:

As per Australian education standards, you are expected to commit 150 hours of engagement to your study of this unit. For example, this can be broken as:

- 2-3 hours per week completing the weekly study questions and attending tutorials
- 1-2 hours per week for completing assigned reading
- 2-3 hours per week attending lectures and revising content through study notes
- 3-4 hours per week preparing your assessments and studying for the final online test.

## Assessment Tasks

### 1 Practical Assessment

#### Assessment Type

Practical Assessment

#### Task Description

During the Residential School and practical classes, you will be required to complete a series of tasks related to the content covered in the unit lectures. Such activities include spirometry, acid-base balance interpretation, as well as performing and interpreting a 12-lead ECG. During each of these tasks, you will be assessed according to a series of practical competencies such as communication skills, professionalism, technical skills, and knowledge. Details of the competencies assessed can be located on the Moodle page.

This is a Pass/Fail assessment. In order to receive a passing grade, you must be deemed competent in all competencies assessed during the residential school or practical classes.

#### Assessment Due Date

The Practical Assessment will be completed during the Residential School or Practical classes.

## Return Date to Students

Students will receive feedback on their Practical Assessment at the conclusion of the Residential School or Practical classes.

### Weighting

Pass/Fail

### Minimum mark or grade

You must pass the Practical Assessment to be eligible to pass the unit.

### Assessment Criteria

A Pass / Fail grade will be awarded depending on the level of competency and knowledge displayed during the Practical Assessment. In the event that a fail grade is awarded, students will be allowed a second attempt at the practical assessment during the residential school.

You must pass the Practical Assessment to be eligible to pass the unit.

### Referencing Style

- [Harvard \(author-date\)](#)
- [American Psychological Association 7th Edition \(APA 7th edition\)](#)

### Submission

Offline

### Learning Outcomes Assessed

- Perform cardiorespiratory measurements and interpret the results
- Accurately interpret ECG rhythm strips to aid in the diagnosis of common cardiac conditions

## 2 Written Assessment

### Assessment Type

Written Assessment

### Task Description

This assessment item requires you to demonstrate your knowledge of the interrelationship of the cardiovascular and respiratory systems and how diseases may alter the function and physiology of both the cardiovascular and respiratory systems.

#### Task:

To meet this objective, you are required to write a 2000 word essay, discussing the impact of cystic fibrosis on the cardiopulmonary system and how it alters normal function.

In your essay, you will be required to demonstrate your understanding by addressing each of the following components:

- Discuss how the cardiovascular and respiratory systems function under normal conditions.
- Discuss how the anatomy and physiology of the cardiovascular and respiratory systems are impacted by cystic fibrosis.
- Discuss any biochemical changes which occur in the cardiovascular and respiratory systems in patients with cystic fibrosis in terms of oxygen and carbon dioxide transport.
- Discuss any compensatory mechanisms the cardiorespiratory system may use to offset pathophysiological changes that may occur (i.e how does the body attempt to maintain homeostasis).

In developing your assignment, you should consult peer-reviewed journal articles and referenced textbooks. Extensive use of non-peer-reviewed sources of information is strongly discouraged.

### Formatting:

- Your response should be submitted in essay format.
- No cover page is required. Student name and student number are to be included in the footer.
- Double line spacing must be used.
- Font in either Arial or Times New Roman, 12-point.

### Assessment Due Date

Week 6 Monday (17 Apr 2023) 9:00 am AEST

Students are required to upload their assessments to the unit Moodle site prior to the submission deadline. In the absence of an approved extension, late submissions will incur a 5% penalty per calendar day after the due date, as per policy.



**Return Date to Students**

Week 8 Friday (5 May 2023)

Feedback for this assessment task will be uploaded to the unit Moodle site.

**Weighting**

40%

**Minimum mark or grade**

50%

**Assessment Criteria**

The Written Assessment will be evaluated in accordance with a marking rubric/guide that can be found on the unit Moodle site.

Your knowledge and understanding of the anatomy and physiology of the cardiovascular and respiratory systems under normal and pathological conditions will be assessed. You will also be assessed on your ability to articulate the relationship between the systems and how alterations in one of the systems affect the other.

Spelling, grammar, and referencing will also be assessed.

**Referencing Style**

- [Harvard \(author-date\)](#)
- [American Psychological Association 7th Edition \(APA 7th edition\)](#)

**Submission**

Online

**Submission Instructions**

Submission is to be in Word format (doc. or docx.) or PDF format. Font in either Arial or Times New Roman, 12 point.

Document must be double spaced to allow for feedback.

**Learning Outcomes Assessed**

- Explain key physiological processes associated with the cardiovascular and respiratory systems
- Explain how a pathological alteration in either the cardiovascular or respiratory systems will have systemic impacts

### 3 End of term Online test

**Assessment Type**

Online Test

**Task Description**

You will be required to complete an end-of-term online test. This online test will assess all content covered during the term.

The test will be composed of different question types, ranging from multiple choice to long-answer responses, that will assess your understanding as well as your ability to apply the content. Please see the Moodle site for more details.

The online test will only be available for a 12-hour period however, you will have 3 hours to complete the test.

**Assessment Due Date**

Week 12 Friday (2 June 2023) 9:00 pm AEST

The end-of-term online test will open at 9 AM and will close at 9 PM.

**Return Date to Students**

Exam Week Friday (16 June 2023)

Test results will be made available via moodle

**Weighting**

60%

**Minimum mark or grade**

50%

**Assessment Criteria**

No Assessment Criteria

**Referencing Style**

- [Harvard \(author-date\)](#)
- [American Psychological Association 7th Edition \(APA 7th edition\)](#)

**Submission**

Online

## Learning Outcomes Assessed

- Explain key physiological processes associated with the cardiovascular and respiratory systems
- Explain how a pathological alteration in either the cardiovascular or respiratory systems will have systemic impacts
- Accurately interpret ECG rhythm strips to aid in the diagnosis of common cardiac conditions
- Identify how major classes of cardiovascular and respiratory medications mediate their effects.

## 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