



# ECHO11002 Cardiac Structure and Function

## Term 2 - 2018

Profile information current as at 27/09/2024 10:13 am

All details in this unit profile for ECHO11002 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

Accurate assessment of cardiac function requires you to assemble a comprehensive knowledge of the anatomy, embryology, physiology, and ultrasound appearance of the heart, lungs and surrounding structures. By studying cardiac and respiratory structure and function in this unit, you will be armed with the necessary knowledge to perform high quality cardiac examinations. With this knowledge, you will assess cardiac ultrasound, electrocardiogram (ECG) and other cardiac data. You will also perform basic electrocardiogram (ECG) procedures and recognise normal rhythm. Attendance at a residential school is a requirement of this unit.

### Details

Career Level: *Undergraduate*

Unit Level: *Level 1*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

### Pre-requisites or Co-requisites

Pre-requisite Students must be enrolled in CV69 Bachelor of Echocardiography (Cardiac Physiology)/Graduate Diploma of Echocardiography AND Co-requisite BMSC11002 Human Body Systems 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 2 - 2018

- Brisbane
- Mixed Mode
- Perth
- Sydney

### 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. **Practical Assessment**

Weighting: Pass/Fail

#### 2. **In-class Test(s)**

Weighting: 40%

#### 3. **Examination**

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 Student evaluation

##### Feedback

Residential school was very beneficial, helping put learning into action.

##### Recommendation

Residential school to be maintained, but clearer assessment task is recommended from beginning of term.

#### Feedback from Student evaluation

##### Feedback

Heart anatomy lectures would be beneficial (not from YouTube, etc)

##### Recommendation

Detailed anatomy lectures tailored to unit need to be produced by CV69 staff.

## Unit Learning Outcomes

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

1. Describe the anatomy and physiology of the cardiovascular and respiratory systems, including their relationship to neighbouring structures
2. Describe the embryological development of the cardiovascular and respiratory system
3. Identify anatomical structures on medical and visual images of the cardiovascular system
4. Perform and interpret an electrocardiogram (ECG) and related cardiac assessment modalities.

Linked to National and International Standards

1. ASAR Accreditation Standards for Cardiac Sonography - critical practice Unit 8 - Cardiac
2. European Association of Cardiovascular Imaging Core Syllabus
3. American Registry for Cardiac Sonography Core Syllabus

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
<b>1 - Practical Assessment - 0%</b>				•
<b>2 - In-class Test(s) - 40%</b>	•	•	•	
<b>3 - Examination - 60%</b>	•	•	•	

### Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
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 - Practical Assessment - 0%	•	•				•	•	•		
2 - In-class Test(s) - 40%	•	•		•		•				
3 - Examination - 60%	•	•		•		•				

## Textbooks and Resources

### Textbooks

ECHO11002

#### Prescribed

#### 12 Lead ECG : The Art of Interpretation

Edition: 2nd (2013)

Authors: Garcia , Tomas

Jones Bartlett

Philadelphia , p , USA

ISBN: 0763773514

Binding: Paperback

ECHO11002

#### Prescribed

#### Echocardiography : The Normal Examination and Echocardiographic Measurements

Edition: 3rd (2017)

Authors: Anderson, Bonita

Echotext  
ISBN: 0992322219  
Binding: Hardcover  
ECHO11002

### Prescribed

#### **The Cardiac Catheterization Handbook**

Edition: 6th (2015)  
Authors: Morton J. Kern, Paul Sorajja, Michael J Lim  
Elsevier  
Philadelphia , PA , USA  
ISBN: 9780323340397  
Binding: Paperback  
ECHO11002

### Supplementary

#### **Before We Are Born: Essentials of Embryology and Birth Defects**

Edition: 9th (2015)  
Authors: Keith Moore, T. V. N. Persaud, Mark Torchia  
Elsevier  
Philadelphia , PA , USA  
ISBN: 9780323313377  
Binding: Paperback  
ECHO11002

### Supplementary

#### **Pathophysiology of Heart Disease : A Collaborative Project of Medical Students and Faculty**

6th Edition (2015)  
Authors: Leonard S. Lilly  
Wolters Kluwer  
Philadelphia , PA , USA  
ISBN: 9781451192759  
Binding: Paperback

[View textbooks at the CQUniversity Bookshop](#)

## IT Resources

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

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

## Referencing Style

All submissions for this unit must use the referencing style: [Vancouver](#)  
For further information, see the Assessment Tasks.

## Teaching Contacts

**Laurel McDaniel** Unit Coordinator  
[l.mcdaniel@cqu.edu.au](mailto:l.mcdaniel@cqu.edu.au)

## Schedule

### Week 1 - 09 Jul 2018

Module/Topic	Chapter	Events and Submissions/Topic
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**Anatomy and Physiology:**

- Cardiac anatomy
- The cardiomyocyte, Frank Starling Law and phases of the cardiac cycle

Lilly LS. Pathophysiology of heart disease: a collaborative project of medical students and faculty. Lippincott Williams & Wilkins; 2015. Chapter 1: Normal cardiac structure and function; p. 1-25.

**Zoom Tutorial**

(Online access available via CQUniversity Library website)

**Week 2 - 16 Jul 2018****Module/Topic****Chapter****Events and Submissions/Topic****Anatomy and Physiology:**

- The respiratory system
- Pulmonary versus systemic circulation

Scanlon VC, Sanders T. Essentials of anatomy and physiology. 7th ed. FA Davis; 2015. Chapter 15: The respiratory system; p. 380-407.

**Zoom Tutorial**

(Available on the unit Moodle site as a CRO)

**Week 3 - 23 Jul 2018****Module/Topic****Chapter****Events and Submissions/Topic****Embryology:**

- Lecture 1A: Heart tube and looping
- Lecture 1B: Atrial and ventricular septation

Moore KL, Persaud TV, Torchia MG. Before we are born e-Book: essentials of embryology and birth defects. Elsevier Health Sciences; 2015 Jan 21. Chapter 14: Cardiovascular system; p.184-224.

**Zoom Tutorial**

(Available on the unit Moodle site as a CRO)

**Week 4 - 30 Jul 2018****Module/Topic****Chapter****Events and Submissions/Topic****Embryology:**

- Lecture 2: Aortic arch, coronary artery formation, fetal circulation

Moore KL, Persaud TV, Torchia MG. Before we are born e-Book: essentials of embryology and birth defects. Elsevier Health Sciences; 2015 Jan 21. Chapter 14: Cardiovascular system; p.184-224.

**Zoom Tutorial**

(Available on the unit Moodle site as a CRO)

**Week 5 - 06 Aug 2018****Module/Topic****Chapter****Events and Submissions/Topic****Sectional Anatomy:**

- The thorax and cardiovascular image recognition

Kelley LL, Petersen C. Sectional Anatomy for Imaging Professionals-E-Book. 4th ed. Elsevier Health Sciences; 2018. Chapter 6: The thorax; p. 682-888.

**Zoom Tutorial**

(Available on the unit Moodle site as a CRO)

**Break Week - 13 Aug 2018****Module/Topic****Chapter****Events and Submissions/Topic****Week 6 - 20 Aug 2018****Module/Topic****Chapter****Events and Submissions/Topic****ECG:**

- Lecture 1: Introduction to the ECG
- Lecture 2: The 12-lead ECG

Garcia TB. 12-lead ECG: The art of interpretation. Jones & Bartlett Publishers; 2013. Chapter 6: The basic beat; p.41-56.

**Zoom Tutorial**

Week 7 - 27 Aug 2018		
Module/Topic	Chapter	Events and Submissions/Topic
<b>ECG:</b> <ul style="list-style-type: none"> <li>Lecture 3: Components of the ECG</li> <li>Lecture 4: Transmission of the ECG</li> <li>Practical demonstration: Performance of a standard 12-lead ECG</li> </ul>	Garcia TB. 12-lead ECG: The art of interpretation. Jones & Bartlett Publishers; 2013. p.17-22, 31-56.	<b>Zoom Tutorial</b>
Week 8 - 03 Sep 2018		
Module/Topic	Chapter	Events and Submissions/Topic
<b>ECG:</b> <ul style="list-style-type: none"> <li>Lecture 5: Determining the rate</li> <li>Lecture 6: Identifying the axis</li> </ul>	Garcia TB. 12-lead ECG: The art of interpretation. Jones & Bartlett Publishers; 2013. Chapter 6: The rate; p. 57-61, Chapter 12: The electrical axis; p. 235-252.	<b>Zoom Tutorial</b>
Week 9 - 10 Sep 2018		
Module/Topic	Chapter	Events and Submissions/Topic
<b>ECHO:</b> <ul style="list-style-type: none"> <li>Standard echocardiographic image interpretation</li> <li>Identification of segmental wall motion in Echocardiography in relation to coronary artery distribution</li> </ul>	Anderson B. Echocardiography: the normal examination and echocardiographic measurements. Australia: Echotext Pty Ltd; 2017. Chapter 2: The two-dimensional echocardiographic examination; p. 32-70, p. 162-170.	<b>September 13-14, 2018: 2-day Residential School. Mandatory attendance at campus of enrollment.</b>  <b>IN-CLASS TEST</b> Due: Week 9 Thursday (13 Sept 2018) 12:00 pm AEST
Week 10 - 17 Sep 2018		
Module/Topic	Chapter	Events and Submissions/Topic
<b>Cardiac Cath Lab (CCL):</b> <ul style="list-style-type: none"> <li>Lecture 1: Review of fundamental anatomy</li> <li>Lecture 2: Imaging cardiac anatomy</li> <li>Lecture 3: Chambers and valves</li> </ul>	Kern MJ, Sorajja P, Lim MJ. Cardiac catheterization handbook. Elsevier Health Sciences; 2015 Aug 12. Chapter 1: The catheterization laboratory; p. 99-173.  (Online access available via CQUniversity Library website)	<b>Zoom Tutorial</b>
Week 11 - 24 Sep 2018		
Module/Topic	Chapter	Events and Submissions/Topic
<b>Cardiac Cath Lab (CCL):</b> <ul style="list-style-type: none"> <li>Lecture 4: Angiographic angulation</li> <li>Lecture 5: Coronary angiography</li> </ul>	Kern MJ, Sorajja P, Lim MJ. Cardiac catheterization handbook. Elsevier Health Sciences; 2015 Aug 12. Chapter 3; Coronary angiography and ventriculography; p. 99-173.  (Online access available via CQUniversity Library website)	<b>Zoom Tutorial</b>
Week 12 - 01 Oct 2018		
Module/Topic	Chapter	Events and Submissions/Topic
<b>REVISION WEEK</b>		<b>Zoom Tutorial</b>
Review/Exam Week - 08 Oct 2018		
Module/Topic	Chapter	Events and Submissions/Topic
		<b>Written Exam - this week or next (refer to examination timetable - when released).</b>
Exam Week - 15 Oct 2018		
Module/Topic	Chapter	Events and Submissions/Topic

**Written Exam - this week or next  
(refer to examination timetable -  
when released).**

## Term Specific Information

The unit coordinator for ECHO11002 is Laurel McDaniel. In the first instance, students are requested to utilise the Moodle Q&A forum for content related questions. As there are multiple content experts teaching into this unit, this enables the most appropriate staff member to respond to your forum post. If the query is of a personal nature, please email l.mcdaniel@cqu.edu.au, or contact by phone at (08) 9260 4079. For ECG and Cardiac Cath Lab related content, please contact John Boland by email at j.boland@cqu.edu.au.

Weekly online Zoom tutorials will be held during the term. Specific times and meeting IDs will be posted on the unit Moodle site. Tutorials will be recorded and subsequently posted to the unit Moodle site. To give yourself the best chance of success, ensure that you attend tutorials and undertake all the additional readings/ activities that are provided to you. This is a comprehensive unit covering multiple topics, so please make sure to stay on top of the lectures and activities. Students are expected to spend on average 10 - 12 hours of time each week in their study activities for this unit. A suggested time budget for weekly study is:

- 2-3 hours for watching recorded lectures and taking notes
- 1-2 hours for completing assigned reading
- 0.5-1 hour for completing other posted learning activities
- 2-3 hours for creating study notes to meet weekly learning goals
- 0.5-1 hour for working on preparation for tutorial which may include posted tutorial questions
- 1 hour participation for online tutorial
- 1-2 hours for assessment preparation and/or revision for final examination

This unit has a mandatory on-campus residential school in Week 9 for 2 full days. You must attend the residential school at your enrolled campus only. Please see Assessment Information on the unit Moodle site for specific information.

As this is a foundational unit covering multiple topics, you will require several prescribed textbooks. These textbooks will also serve subsequent units and you may already have some from previous units. Supplementary textbooks listed are free resources available as full text e-books from the CQUniversity Library website. Please check the CQUniversity website for online access before purchasing your hardcopy texts.

## Assessment Tasks

### 1 PRACTICAL ASSESSMENT - ECG

#### **Assessment Type**

Practical Assessment

#### **Task Description**

An electrocardiogram (ECG) is often the first diagnostic test performed in people with suspected heart disease or arrhythmia. This task will assess student competency in both 12-lead ECG performance and basic ECG interpretation.

This assessment task has 2 components:

#### **Component A:**

Students will be required to correctly interpret and identify elements of a 12-lead ECG tracing. 1 ECG will be supplied for basic interpretation as covered in ECG lectures 1 - 6. This includes identifying leads on the trace, determining the rate and how to identify the axis.

#### **Component B:**

Students will be required to accurately perform an ECG recording on a patient. This skill will be taught and revised during the residential school for this unit. This component will critique skills including preparation, proper lead placement and attachment producing an ECG free from significant artefactual recordings.



- This is a PASS/FAIL assessment with no weighting toward the final overall unit grade. A PASS must be obtained to pass the unit overall.
- To PASS, a student will be required to competently perform a 12-lead ECG examination, and demonstrate a 'Beginner level' of interpretation competency (60% GRADE).
- One reattempt will be permitted following the first attempt on the same date. Feedback will be given to the student if the first attempt is failed. A failing student will only be required to re-sit the task component that they did not successfully pass.

### Assessment Due Date

Week 9 Friday (14 Sept 2018) 4:00 pm AEST

Component A: Week 9 Day 1 of Residential School. Re-sits will be scheduled to occur on Day 2. Component B: Week 9 Day 2 of Residential School. Re-sits will be scheduled to occur on the same day.

### Return Date to Students

Students will receive feedback on the day.

### Weighting

Pass/Fail

### Minimum mark or grade

60%

### Assessment Criteria

Students will have 15 minutes to complete component A and 30 minutes to complete component B of this practical assessment. This is a PASS/FAIL assessment with no weighting toward the final overall unit grade. To achieve an overall pass, each assessment component must be passed individually. To PASS, a student must demonstrate a 'beginner level' competency of ECG interpretation - 60% GRADE (Component A) and satisfactorily demonstrate how to perform and produce a 12-lead ECG (Component B).

An 'Assessment of Readiness for Clinical' (ARC) tool will be used to mark the performance of an ECG. The ARC tool can be found on the unit Moodle site. Each item in the ARC tool in **BOLD** must be passed to pass the assessment overall. The performance of an ECG will be video recorded for moderation purposes. There will be only ONE (1) opportunity to re-sit each component. Feedback on the performance of an ECG will be given to the student following an initial fail.

### Component A:

The written ECG interpretation component will consist of 10 questions to complete in 15 minutes (allowing 1.5 minutes per question). Each ECG question will be worth 1 mark, 10 marks in total. Students will be presented with 1 ECG tracing and will be asked to answer questions related to the tracing. To pass, the student must receive a minimum of 60% or a score of 6 marks, from a potential of 10 marks.

Students will not be required to bring a calculator or draft paper. The written ECG interpretation component is closed book.

### Component B:

The student will be assessed on correct ECG performance technique:

- appropriate skin preparation, **finger counting for precordial leads**, correct lead placement, **correct leads attached to correct electrodes**
- ECG recorded at 25 mm/s, artefact free ECG trace, basic troubleshooting, hygienic practice and maintaining patient comfort/ modesty

### Referencing Style

- [Vancouver](#)

### Submission

Offline

### Graduate Attributes

- Communication
- Problem Solving
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

## Learning Outcomes Assessed

- Perform and interpret an electrocardiogram (ECG) and related cardiac assessment modalities.

## 2 IN-CLASS TEST

### Assessment Type

In-class Test(s)

### Task Description

Each health profession possesses a body of knowledge, the fundamentals of which must be learnt and understood. The echocardiographic profession has selected these concepts as relevant to your future scope of practice and you will build upon them in your future clinical capacity. You will complete an in-class test to assess your understanding.

**The in-class test will be held during day 1 of the scheduled residential school.** The maximum time allowed for the in-class test is 60 minutes (1 hour). This assessment is worth 40% of the overall total grade for this unit.

- Content will be related to material covered in lectures during weeks 1-5. This includes the anatomy and physiology of the cardiovascular and respiratory system and its embryological development and identifying anatomical structures on medical and visual images of the cardiovascular system.
- The test will be out of 60 marks (allowing a minute per mark).
- These tests will have a range of question formats including multiple choice and short answer questions. Some answers will require diagrams and/or anatomical images to be labelled or to be drawn and labelled.
- Calculations will not be required.
- In the absence of an approved extension and if you do not attend the mandatory residential school, you will receive a mark of zero. There is no opportunity to resit.
- All in-class tests must be written at the scheduled time. There is no ability to apply a late penalty.
- In the absence of an approved assessment extension, if you do not write a test at the scheduled time, your mark on that test will be zero.
- Note that the in-class test is closed book and no physical or other notes may be brought into the test.

### Assessment Due Date

Week 9 Thursday (13 Sept 2018) 12:00 pm AEST

The in-class test will take place on your campus of enrollment during Residential School in the morning of Day 1.

### Return Date to Students

Feedback will be provided within two weeks of submission.

### Weighting

40%

### Assessment Criteria

Questions will be marked correct or incorrect.

### Referencing Style

- [Vancouver](#)

### Submission

Offline

### Graduate Attributes

- Communication
- Problem Solving
- Information Literacy
- Information Technology Competence

## Learning Outcomes Assessed

- Describe the anatomy and physiology of the cardiovascular and respiratory systems, including their relationship to neighbouring structures
- Describe the embryological development of the cardiovascular and respiratory system
- Identify anatomical structures on medical and visual images of the cardiovascular system

# Examination

**Outline**

Complete an invigilated examination.

**Date**

During the examination period at a CQUniversity examination centre.

**Weighting**

60%

**Length**

180 minutes

**Minimum mark or grade**

50%

**Exam Conditions**

Closed Book.

**Materials**

Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).

Calculator - non-programmable, no text retrieval, silent only

## 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