ECHO11002 *Cardiac Structure and Function*
Term 2 - 2019

Profile information current as at 13/12/2025 03:59 pm

General Information

Overview
Accurate assessment of cardiac function requires comprehensive knowledge of anatomy, embryology, and physiology of the heart, lungs and surrounding structures. In addition, an echocardiographer requires familiarity with the spatial relationship of these structures to the heart. This unit exposes you to data acquired from multiple imaging modalities including cardiac ultrasound and angiography. You will learn to perform a standard 12 lead electrocardiogram 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 ANDCo-requisiteBMSC11002 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 - 2019

- Mixed Mode

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 Emails, course evaluation

Feedback
Students felt there were some errors in lectures that should have been amended prior to delivery.

Recommendation
Minor errors were identified and corrected. Any remaining materials should be assessed by the Unit Coordinator to ensure correctness and accuracy.

Feedback from Course evaluation, self evaluation

Feedback
Students felt that the ECG assessment should include more theory as it was quite simplified.

Recommendation
Unit profile to be amended to include ECG assessment in the in-class test and final examination.

Feedback from Course evaluation

Feedback
Students enjoyed the hands on experience at residential school.

Recommendation
The 2-day residential school format will be continued in 2019.

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 system
2. Identify anatomical structures on diagrams and medical images of the thorax and cardiovascular system
3. Describe the embryological development of the cardiovascular system
4. Explain the formation of an electrocardiogram (ECG) complex, and its representation on a normal 12-lead ECG
5. Competently perform a 12-lead electrocardiogram.

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

— 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 - Practical Assessment - 0%					•
2 - In-class Test(s) - 40%		•		•	

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
3 - Examination - 60%	•		•		

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 - 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 (2015)
Authors: Garcia, Tomas

Jones & Bartlett Learning
Burlington , MA , USA
ISBN: 0763773514
Binding: Paperback
ECHO11002

Prescribed

ECHOCARDIOGRAPHY : THE NORMAL EXAMINATION AND ECHOCARDIOGRAPHIC MEASUREMENTS
Edition: 3rd (2017)
Authors: Anderson, Bonita
Echotext
Australia
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: eBook
ECHO11002

Supplementary

BEFORE WE ARE BORN: ESSENTIALS OF EMBRYOLOGY AND BIRTH DEFECTS
Edition: 9th (2016)
Authors: Keith Moore, T. V. N. Persaud, Mark Torchia
Elsevier
Philadelphia , PA , USA
ISBN: 9780323313377
Binding: eBook
ECHO11002

Supplementary

PATHOPHYSIOLOGY OF HEART DISEASE : A COLLABORATIVE PROJECT OF MEDICAL STUDENTS AND FACULTY
Edition: 6th (2015)
Authors: Leonard S. Lilly
Wolters Kluwer Health
Hagerstown , MD , USA
ISBN: 9781451192759
Binding: eBook

Additional Textbook Information
The textbooks prescribed are used throughout the CV69 program in multiple units, and students may have already purchased several of these resources.
You can check and purchase at the CQUni Bookshop here: http://bookshop.cqu.edu.au (search on the Unit code)
View textbooks at the CQUniversity Bookshop

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
Paula Boucaut Unit Coordinator
p.boucaut@cqu.edu.au

Schedule

Week 1 - 15 Jul 2019

Module/Topic	Chapter	Events and Submissions/Topic
ECG: • Lecture 1: The 12-lead ECG • Lecture 2: Components and transmission of the ECG	Garcia TB. 12-lead ECG: The art of interpretation. Jones & Bartlett Publishers; 2013. p.5-56.	

Week 2 - 22 Jul 2019

Module/Topic	Chapter	Events and Submissions/Topic
ECG: • Lecture 3: Determining the rate • Lecture 4: Determining the axis	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.	

Week 3 - 29 Jul 2019

Module/Topic	Chapter	Events and Submissions/Topic
Cardiac Anatomy: • Cardiac anatomy • The great vessels • Superficial heart landmarks, pericardium and heart wall	Kelley LL, Petersen C. Sectional Anatomy for Imaging Professionals-E-Book. 4th ed. Elsevier Health Sciences; 2018. Chapter 6: The thorax; p. 682-888. (Available on the unit Moodle site as a CRO)	

Week 4 - 05 Aug 2019

Module/Topic	Chapter	Events and Submissions/Topic
Cardiac Cath Lab (CCL): • Lecture 1: The cardiac catherisation laboratory • Lecture 2: Imaging cardiac anatomy	Kern MJ, Sorajja P, Lim MJ. Cardiac catheterization handbook. Elsevier Health Sciences; 2015 Aug 12. p. 1-98. (Online access available via CQUniversity Library website)	

Week 5 - 12 Aug 2019

Module/Topic	Chapter	Events and Submissions/Topic

Cardiac Cath Lab (CCL): • Lecture 3: Angiographic angulation • Lecture 4: Coronary angiography and ventriculography	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)	

Break Week - 19 Aug 2019

Module/Topic	Chapter	Events and Submissions/Topic
BREAK WEEK		

Week 6 - 26 Aug 2019

Module/Topic	Chapter	Events and Submissions/Topic
ECHO: • Standard echocardiographic image interpretation • Identification of segmental wall motion in Echocardiography in relation to coronary artery distribution	Anderson B. Echocardiography: the normal examination and echocardiographic measurements. Australia: Echotext Pty Ltd; 2017. p. 32-70, p. 162-170.	

Week 7 - 02 Sep 2019

Module/Topic	Chapter	Events and Submissions/Topic
Cardiac Physiology: • The cardiomyocyte, Frank Starling Law and phases of the cardiac cycle • Pulmonary vs systemic circulation • Arterial and venous systems	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. (Available on the unit Moodle site as a CRO)	

Week 8 - 09 Sep 2019

Module/Topic	Chapter	Events and Submissions/Topic
Respiratory System: • The respiratory system • The bony thorax and respiratory muscles • The mediastinum, pleural cavities, lungs and bronchi	Scanlon VC, Sanders T. Essentials of anatomy and physiology. 7th ed. FA Davis; 2015. Chapter 15: The respiratory system; p. 380-407. (Available on the unit Moodle site as a CRO) Kelley LL, Petersen C. Sectional Anatomy for Imaging Professionals-E-Book. 4th ed. Elsevier Health Sciences; 2018. Chapter 6: The thorax; p. 682-888. (Available on the unit Moodle site as a CRO)	

Week 9 - 16 Sep 2019

Module/Topic	Chapter	Events and Submissions/Topic

Embryology: • Lecture 1: Heart tube and looping	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. (Available on the unit Moodle site as a CRO)	**In-class test: September 16, 2019 at 9.00 am on your campus of enrolment.** **September 19-20, 2019: 2-day Residential School. Mandatory attendance at campus of enrollment.**

Week 10 - 23 Sep 2019

Module/Topic	Chapter	Events and Submissions/Topic
Embryology: • Lecture 2: 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. (Available on the unit Moodle site as a CRO)	

Week 11 - 30 Sep 2019

Module/Topic	Chapter	Events and Submissions/Topic
Embryology: • Lecture 3: 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. (Available on the unit Moodle site as a CRO)	

Week 12 - 07 Oct 2019

Module/Topic	Chapter	Events and Submissions/Topic
REVISION WEEK		

Review/Exam Week - 14 Oct 2019

Module/Topic	Chapter	Events and Submissions/Topic
		The OFFICIAL Examination Timetable for Standard exams is usually available during week six of term.

Exam Week - 21 Oct 2019

Module/Topic	Chapter	Events and Submissions/Topic
		To access your personal examination schedule: 1. Sign into MyCentre at http://mycentre.cqu.edu.au 2. Select ‘My Exam Timetable' 3. You will then arrive at your personalised exam timetable If any further information is required or you need assistance, please do not hesitate to contact Ti Enquiry on 13 27 86.

Term Specific Information

The unit coordinator for ECHO11002 is Laurel McDaniel. Please feel free to use the 'General Discussion' forum as a social space to communicate with other students in this course. Please ensure that your conduct in this forum is consistent with that outlined in the Student Charter. Teaching staff will monitor posts on the 'Q&A' forum. The Q&A forum is a great place to post questions relevant to your study or laboratory sessions. Responses from staff will be made available to all students. Don't be shy in asking questions, as you will often find that other students also share your query. Alternatively, if you have a personal question, please contact the unit coordinator directly by email: l.mcdaniel@cqu.edu.au or phone 08 9260 4079.

This unit has an in-class test on Monday of week 9. Students will be required to attend their campus of enrolment to complete this assessment piece. Please see Assessment Information on the unit Moodle site for specific information. This unit has a mandatory on-campus residential school in Week 9 for 2 full days. You must attend the residential school at your campus of enrolment. Please see the unit Moodle site for specific information.

The tutorial schedule and Zoom ID link can be found on unit Moodle site. All tutorials will be hosted live, recorded and subsequently posted under the corresponding week on Moodle. The tutorials will focus on clarification of course concepts and/or assessment requirements. Clinical case studies may be discussed to highlight the link between content presented and clinical practice.

As this is a foundational unit covering multiple topics, you will require several prescribed textbooks. Some textbooks will also be prescribed resources for subsequent 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.

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.

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 performing a 12-lead ECG. Students will be required to accurately perform an ECG recording on a peer patient model provided to them. This skill will taught, revised and assessed during the residential school for this unit. This practical assessment will critique skills including preparation, proper lead placement and attachment producing an ECG free from significant artefactual recordings.

- Students will be given an appropriate amount of time to complete this practical assessment.
- 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.
- 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.

Assessment Due Date

Week 9 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
This is a PASS/FAIL assessment with no weighting toward the final overall unit grade. To PASS, a student must demonstrate a 'beginner level' of competency - minimum 60% GRADE to satisfactorily demonstrate how to perform and produce a 12-lead ECG.

Students will be assessed using a 12-Lead ECG 'Assessment of Readiness for Clinical' (ARC) tool. Each item in the ARC tool in **BOLD** must be passed to pass the assessment overall. Students must complete this practical assessment within the time frame given. 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.

The student will be assessed on correct ECG performance technique including:

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

Referencing Style

- Vancouver

Submission
Offline

Learning Outcomes Assessed

- Competently perform a 12-lead electrocardiogram.

Graduate Attributes

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

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.

The in-class test will be held Monday of Week 9 on your campus of enrolment. Specific time and location details will be posted on the unit Moodle site. Following 10 minutes of test perusal, 60 minutes will be provided to successfully complete this assessment task. 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 identifying anatomical structures of the thorax and cardiovascular system and explaning the formation of an electrocardiogram (ECG) complex and its representation on a normal 12-lead ECG. You will be also be required to describe the characteristics of a 12-lead ECG and determine the rhythm, rate and axis of sample ECGs provided.

- 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.
- All in-class tests must be completed at the scheduled time.
- In the absence of an approved assessment extension or if you do not complete the test at the scheduled time, your mark 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 Monday (16 Sept 2019) 11:45 pm AEST

The in-class test will take place on your campus of enrollment.

Return Date to Students

Feedback will be provided within two weeks of submission.

Weighting
40%

Assessment Criteria
Students will be assessed on their ability to:

- identify anatomical structures on diagrams and medical images of the thorax and cardiovascular system
- describe procedures that occur within the cardiac cath lab and the associated production of cardiac images
- describe the formation of a 12-lead ECG
- use correct terminology when describing ECG waveforms
- determine rate, rhythm and axis on provided ECGs

Individual mark allocations will be shown on the in-class test provided.

Referencing Style

- Vancouver

Submission
Offline

Learning Outcomes Assessed

- Identify anatomical structures on diagrams and medical images of the thorax and cardiovascular system
- Explain the formation of an electrocardiogram (ECG) complex, and its representation on a normal 12-lead ECG

Graduate Attributes

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

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).

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