ECHO20003 *Fetal Echocardiography*
Term 2 - 2018

Profile information current as at 04/05/2024 08:36 am

All details in this unit profile for ECHO20003 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
Both echocardiographers and sonographers require expertise in fetal echocardiography. This unit will cover fetal cardiac structure, function, pathophysiology and scanning techniques at an advanced level. During this unit you will progress through standard heart views to focus on the ultrasound appearance and Doppler haemodynamics of congenital and acquired cardiac abnormalities and common syndromes. You will develop the ability to recognise fetal arrhythmias. You will acquire knowledge of advanced imaging techniques tailored to fetal echocardiography including spatio-temporal imaging correlation (STIC), 3 / 4-D colour Doppler, tissue Doppler imaging (TDI) and some common cardiac physiological measurements.

Details
Career Level: *Postgraduate*
Unit Level: *Level 9*
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 inEITHERCV69 Bachelor of Echocardiography (Cardiac Physiology) / Graduate Diploma of Echocardiography ORCV83 Master of Medical Ultrasound
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the Assessment Policy and Procedure (Higher Education Coursework).

Offerings For Term 2 - 2018
- Distance

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 Postgraduate 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. **Portfolio**
Weighting: 50%
2. **Written Assessment**
Weighting: 50%

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 "Have your say" unit Moodle site.

Feedback

Students enjoyed the fortnightly quiz and the portfolio that helped them engage with the learning material.

Recommendation

Retain the fortnightly quizzes which will become formative. Continue with the summative portfolio.

Feedback from "Have your say" unit Moodle site.

Feedback

Students liked the detailed rubrics which clearly detailed the structure of the assessment item requirements.

Recommendation

Review rubrics to ensure currency with assessment items and to ensure students new to recent postgraduate education have a clear marking guideline to follow.

Feedback from "Have your say" unit Moodle site.

Feedback

Students really enjoyed the use of "real life" videos of fetal cardiac pathology and the inclusion of interesting cases in the Zoom tutorials.

Recommendation

Continue to source and use videos of fetal heart pathology that aligns with the teaching material for use in this unit. Develop further interactive Zoom tutorials that align with the previous teaching material or extend the students' learning.

Feedback from "Have your say" unit Moodle site.

Feedback

Students would like to see instructional videos of new technological advances in fetal echocardiography included on the unit Moodle site.

Recommendation

Investigate developing videos demonstrating new fetal echocardiography technology for inclusion on the unit Moodle site.

Feedback from "Have your say" unit Moodle site.

Feedback

Students new to current postgraduate education would like more information and help on how to compose and write a journal article.

Recommendation

Provide information on how to compose and write a journal article on the unit Moodle site and at Zoom tutorials.

Unit Learning Outcomes

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

1. Differentiate the aetiology and Doppler haemodynamics of fetal cardiac abnormalities
2. Contrast typical 2-D and Doppler fetal echocardiographic views used to assess the fetal heart.
3. Evaluate existing and emerging technology and diagnostic parameters in fetal echocardiography
4. Apply practical skills and critical thinking to fetal cardiac assessment

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
1 - Portfolio - 50%	●			●
2 - Written Assessment - 50%		●	●	

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
1 - Knowledge	○	○	○	○
2 - Communication	○	○	○	○
3 - Cognitive, technical and creative skills	○	○	○	○
4 - Research			○	
5 - Self-management				○
6 - Ethical and Professional Responsibility			○	○
7 - Leadership				
8 - 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
1 - Portfolio - 50%	○	○	○		○	○		
2 - Written Assessment - 50%	○	○	○	○		○		

Textbooks and Resources

Textbooks
ECHO20003

Prescribed

A Practical Guide to Fetal Echocardiography: Normal and Abnormal Hearts
Edition: 3rd (2016)
Authors: Alfred Abuhamad and Rabih Chaoui
Wolters Kluwer
Philadelphia , USA
ISBN: 9781451176056
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)
- Computer with microphone and camera to attend zoom tutorials

Referencing Style

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

Teaching Contacts

Ann Quinton Unit Coordinator
a.quinton@cqu.edu.au

Schedule

Week 1 - 09 Jul 2018

Module/Topic	Chapter	Events and Submissions/Topic
Human heart embryology-part 1 • The primordial heart tube • Looping of the heart tube • Atrial and ventricular septation	Prescribed textbook Chapter 3	Zoom session Tuesday 7.00-8.00pm

Week 2 - 16 Jul 2018

Module/Topic	Chapter	Events and Submissions/Topic
Human heart embryology-part 2 • Aortic arch • Development of heart valves • Anomalies of coronary arteries • The fetal circulation		Online formative multiple choice questions (MCQ) with certainty scoring, released Monday and open for one week

Week 3 - 23 Jul 2018

Module/Topic	Chapter	Events and Submissions/Topic

Screening views and fetal echocardiography of the normal fetal heart
• Assessing fetal lie, determining fetal right and left
• Position, axis, situs, size
• Segmental anatomy of the fetal heart
• Detailed cardiac sonographic anatomy
• First trimester heart screening

Chapters 6-10

Zoom session Tuesday 7.00-8.00pm

Week 4 - 30 Jul 2018

Module/Topic	Chapter	Events and Submissions/Topic
Common cardiac physiological measures • Colour Doppler • Pulsed Doppler • Cardiac function and measurements	Chapters 12-14	Online formative multiple choice questions (MCQ) with certainty scoring, released Monday and open for one week

Week 5 - 06 Aug 2018

Module/Topic	Chapter	Events and Submissions/Topic
Abnormalities of the 4 chamber view • Ventricular septal defects • Atrial septal defects • Atrioventricular septal defects	Chapter 18	Zoom session Tuesday 7.00-8.00pm

Vacation Week - 13 Aug 2018

Module/Topic	Chapter	Events and Submissions/Topic
Break week		

Week 6 - 20 Aug 2018

Module/Topic	Chapter	Events and Submissions/Topic
Left sided heart anomalies • Hypoplastic left heart syndrome • Aortic stenosis (critical and mild) • Coarctation of the aorta • Interrupted aortic arch • Right aortic arch • Double aortic arch • Aberrant subclavian artery	Chapters 21, 22, 23, 29	Online formative multiple choice questions (MCQ) with certainty scoring, released Monday and open for one week

Week 7 - 27 Aug 2018

Module/Topic	Chapter	Events and Submissions/Topic
Right sided heart anomalies • Hypoplastic right heart syndrome • Pulmonary stenosis • Pulmonary atresia with intact ventricular septum • Tricuspid atresia with VSD • Ebstein anomaly • Tricuspid valve dysplasia	Chapter 19 (p288-295), 20, 24	Zoom session Tuesday 7.00-8.00pm

Week 8 - 03 Sep 2018

Module/Topic	Chapter	Events and Submissions/Topic
Conotruncal anomalies • Tetralogy of Fallot • Complete transposition of the Great Arteries (TGA) • Congenitally corrected TGA • Double outlet right ventricle • Common arterial trunk	Chapter 25, 26,27, 28	Online formative multiple choice questions (MCQ) with certainty scoring, released Monday and open for one week

Week 9 - 10 Sep 2018

Module/Topic	Chapter	Events and Submissions/Topic
Fetal heterotaxy • Left atrial isomerism • Right atrial isomerism • Situs inversus Anomalies of systemic and pulmonary venous connections	Chapters 30 and 31	Zoom session Tuesday 7.00-8.00pm

Week 10 - 17 Sep 2018

Module/Topic	Chapter	Events and Submissions/Topic
Fetal arrhythmias • Irregular heart rhythm • Bradyarrhythmias • Tachyarrhythmias	Chapter 33	Online formative multiple choice questions (MCQ) with certainty scoring, released Monday and open for one week **Portfolio** Due: Week 10 Friday (21 Sept 2018) 4:00 pm AEST

Week 11 - 24 Sep 2018

Module/Topic	Chapter	Events and Submissions/Topic
Cardiac tumours Pericardial effusions Cardiomyopathies	Chapter 32	Zoom session Tuesday 7.00-8.00pm

Week 12 - 01 Oct 2018

Module/Topic	Chapter	Events and Submissions/Topic
New technologies • Spatio-temporal image correlation (STIC) • 3D/4D • Tissue Doppler Imaging	Chapter 15	

Review/Exam Week - 08 Oct 2018

Module/Topic	Chapter	Events and Submissions/Topic
		Written assessment Due: Review/Exam Week Monday (8 Oct 2018) 4:00 pm AEST

Exam Week - 15 Oct 2018

Module/Topic	Chapter	Events and Submissions/Topic

Term Specific Information

Associate Professor Ann Quinton BAppSc(MRS), GradDip(ultrasound), MAppSc(ultrasound), PhD(medicine), Gradcert (Higher Education) is the unit coordinator for Fetal Echocardiography ECHO20003. Ann has worked clinically in fetal medicine units performing obstetric ultrasound and fetal echocardiography scans. She continues to work part-time clinically, performs research and lectures extensively nationally and internationally in the field of fetal echocardiography. The best way to contact Ann is via email: a.quinton@cqu.edu.au or Ph: +61 2 9324 5008 as she is often in labs with students.

Mr Christopher Kramer BA, ACS, RDCS, FASE who is also teaching into this unit is an advanced cardiac sonographer, experienced academic and Program Director for the School of Diagnostic Medical Sonography at Aurora St. Luke's Health Care in Milwaukee Wisconsin, USA. He is active in the American Society of Echocardiography as a member of the Sonographer Counsel, Board Member of the Joint Review of Diagnostic Medical Sonography and is a team member on the American Registry of Diagnostic Medical Sonography writing and mentoring group. Chris has worked in the field of echocardiography for the last 15 years, with interests in sonography education, quality and new technology. His writings include articles on 3D echocardiography, athletic conditioning, and left ventricular assist devices. Chris trained at the Mayo Clinic in Rochester, Minnesota and worked for the Mayo Clinic in Arizona after graduation. Chris resides in Milwaukee, WI, USA.

Access to the internet is required to undertake and complete this unit. There will be readings and tutorials provided on the unit Moodle site, however you will need to purchase the textbook to take full advantage of the learning provided in this unit.

Assessment Tasks

1 Portfolio

Assessment Type
Portfolio

Task Description
Routine assessment of the fetal heart is usually performed by following screening guidelines that have been published by professional bodies, for example the International Society of Obstetrics and Gynecology (ISUOG). Guidelines for fetal echocardiography assessment have also been published (see papers uploaded on the unit Moodle site). Referral for suspected abnormal fetal heart or recognition of an abnormal fetal heart from the screening views should result in the initiation of extended fetal echocardiography views which may include 2D (images and measurements), m-mode assessing rhythm, rate and dimensions, 3D/4D ultrasound, colour Doppler imaging (CDI) and pulsed Doppler (PD) ultrasound imaging with measurements. These techniques are used to confirm a normal scan or to help in obtaining a diagnosis and/or exclude any further pathology.

For this assessment item you will put together a presentation of one normal fetal heart ultrasound study and one abnormal fetal heart ultrasound study using:

A normal fetal heart study from the first, second or third trimester you have scanned yourself, or been involved in, or sourced (source referenced),

and

An abnormal fetal heart study from the first, second or third trimester you have scanned yourself, or have been involved in, or sourced (source referenced).

You will create a PowerPoint presentation comparing and contrasting your normal and abnormal images and clinical history. As you will be comparing and contrasting the two fetal hearts, ensure both cases are from the same trimester of pregnancy. The presentation will be suitable for a multi-disciplinary team educational meeting. You will ensure that all identifying information will be removed from the images and patient history.

There will be five sections to the presentation:

1. Title of presentation, your name, student number and unit details (1 slide)
2. Patient histories (2 slides)
3. Imaging (include 10-24 images +/- video clips) including critique of image quality and an explanation of technical factors used for assessment. You will label the images for educational purposes. It is expected you will demonstrate the anatomical ultrasound planes in 2D and CDI, and correct placement of PD and 2D and/or m-mode callipers for measurements (12 slides maximum, 2 images per slide maximum)
4. Diagnosis (this includes aetiology, echocardiography findings, differential diagnosis, patient management, other testing and follow-up). Use your knowledge of 2D screening views and extended views, segmental sequential analysis, m-mode, CDI, PD and possibly 3D/4D sonography to explain how to interrogate the fetal hearts and arrive at a diagnosis. By evaluating the fetal hearts your conclusion will report recommendations on the ultrasound views/techniques that would be used or are of no use for reaching a diagnosis for the normal and abnormal fetal heart (7 slides maximum)
5. References (2 slides) (smaller font size can be used if needed for the referencing slides)

The presentation should be written in a style so the message is clearly conveyed, the information can be generalised and be relevant to other practitioners.

The presentation should have no more than 24 slides, use a minimum of 24 point font size (exception is reference slides) and would be suitable for a 25 minute presentation which could be uploaded for teaching purposes onto a website or presentation at a conference. Referencing font size can be smaller to allow the referencing to fit into the presentation and fit onto two slides at the end of the presentation. Excess slides and/or unreadable font size will result in a 10% reduction in marks.

In the absence of an approved extension via the unit Moodle site there will be a 5% reduction in marks per day for late submissions.

Assessment Due Date
Week 10 Friday (21 Sept 2018) 4:00 pm AEST

Return Date to Students
Week 12 Friday (5 Oct 2018)

Weighting
50%

Minimum mark or grade
50%

Assessment Criteria

- Layout of presentation which leads the reader through the development of knowledge

- Correct usage of spelling, scientific, medical and fetal echocardiography pathological terminology
- Succinct and relevant description of patient history, aetiology, echocardiography findings, other testing, patient management and follow-up
- Accurate and complete description of the normal and abnormal fetal hearts and explanation of the techniques used to reach a diagnosis
- Correct and complete referencing
- A detailed rubric is available on the unit Moodle site

Referencing Style

- [Vancouver](#)

Submission
Online

Submission Instructions
Please upload as Powerpoint presentation

Learning Outcomes Assessed

- Differentiate the aetiology and Doppler haemodynamics of fetal cardiac abnormalities
- Apply practical skills and critical thinking to fetal cardiac assessment

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Self-management
- Ethical and Professional Responsibility

2 Written assessment

Assessment Type
Written Assessment

Task Description
This task is designed so you can evaluate existing or emerging technologies or diagnostic parameters in fetal echocardiography and educate your peers. You will research a topic that is related to fetal echocardiography and interests you. The topic can include but is not limited to:

- New or existing technology available on or potentially used on ultrasound machines
- New or existing technology available with other imaging or diagnostic modalities
- New or existing technology or diagnostic parameters available in the field of genetics
- New or existing diagnostic parameters in fetal echocardiography
- New or existing safe patient care in fetal echocardiography
- New or existing quality practice in fetal echocardiography

You need to have the following outline: Title, unstructured Abstract (200 words), key words (3-5 words), Introduction including an aim, Discussion, Conclusion, References. Headings and subheadings may be used within the text to guide the reader through the chosen topic. Images, diagrams and tables may be used to illustrate points and must be correctly referenced. Diagrams and tables must be original and the source material referenced. Images that are not the author's own work must be referenced.
Within the discussion section of the paper you need to include information about the following:

- Principles involved in the technology, diagnostic parameters, safe patient care or quality practice
- Advantages
- Disadvantages
- Current or potential use in fetal echocardiography

The conclusion section should summarise the findings and suggest areas for further study.
Information should be drawn from peer reviewed scientific journal articles and current textbooks.
Referencing must be done using the Vancouver system.
Word limit is 2000 words +/-10%.
There will be a 10% reduction in marks for exceeding the word limit. Images, diagrams, tables and the

reference list are not included in the word limit.

In the absence of an approved extension via the unit Moodle site there will be a 5% penalty per day for late submissions.

Assessment Due Date
Review/Exam Week Monday (8 Oct 2018) 4:00 pm AEST

Return Date to Students
Exam Week Monday (15 Oct 2018)

Weighting
50%

Minimum mark or grade
50%

Assessment Criteria

- Layout of report which leads the reader through the development of knowledge
- Correct use of spelling, grammar and technological terminology
- Accurate and complete description of new or existing technology, diagnostic parameters, safe patient care or quality practice which includes a discussion of principles involved, the advantages, disadvantages, and assessment of current or potential use in fetal echocardiography
- Use of images, tables or diagrams to illustrate points
- Correct and complete referencing
- Word count is within required limit
- A detailed marking rubric is available on the unit Moodle site

Referencing Style

- [Vancouver](#)

Submission
Online

Submission Instructions
Upload assessment item as a word file.

Learning Outcomes Assessed

- Contrast typical 2-D and Doppler fetal echocardiographic views used to assess the fetal heart.
- Evaluate existing and emerging technology and diagnostic parameters in fetal echocardiography

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Ethical and Professional Responsibility

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