



MEDS12001 *Physics of Ultrasound*

Term 1 - 2023

Profile information current as at 20/04/2024 05:42 am

All details in this unit profile for MEDS12001 have been officially approved by CQU University 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

In this unit, you will be introduced to the principles of ultrasound physics and instrumentation. Ultrasound safety, quality assurance and recognition of artifacts will also be covered. The knowledge and skills learnt from this unit are integral to all concurrent and subsequent sonography and echocardiography units and forms the foundation from which you will build your image acquisition, recognition and assessment skills. You will apply your knowledge and skills of physics principles in the laboratory setting using ultrasound equipment.

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

Prerequisite MEDI11002 Physics for Health Sciences Co requisite MEDS12003 or ECHO12006

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

- Brisbane
- Mackay
- Melbourne
- 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. **Online Quiz(zes)**

Weighting: 40%

2. **Laboratory/Practical**

Weighting: Pass/Fail

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 student comments

Feedback

The unit is simultaneously delivered to CG91 (Sonography) and CV69 (Echocardiography) students. Some CV69 students feel the unit content needs to be more relatable to their situation.

Recommendation

Consider a cross-discipline approach whereby CV69 staff are more involved in content creation and/or delivery of the unit.

Feedback from SUTE student comments

Feedback

Some students felt that the final lab session was too rushed and they needed increased tutor support as a consequence.

Recommendation

Consider modifying the content or structure of the lab sessions to provide an improved learning experience.

Feedback from SUTE student comments

Feedback

Some students found that lectures were too long and complicated, which created some confusion with new concepts.

Recommendation

Refresh lectures with a focus on providing clear and concise explanations of concepts.

Unit Learning Outcomes

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

1. Apply the physical principles of diagnostic ultrasound to practical problems
2. Evaluate the components and performance of diagnostic ultrasound equipment
3. Apply knowledge of ultrasound physics and practical skills to acquire optimal ultrasound images, with due regard of safe practices
4. Discuss the principles of ultrasound techniques, Doppler ultrasound and its application in medical ultrasound including safety issues
5. Interpret the causes of, and apply problem solving skills to reduce, sources of artifacts on an ultrasound image.

This unit will be one of the core units in the Medical Sonography Course which is externally accredited by the Australian Sonographers Accreditation Registry (ASAR), an external professional regulatory body. Intended learning outcomes have been linked to:

ASAR Required Graduate Competency Outcomes for General Sonography Accreditation Standards 1.2,

Deliver safe, patient centred services- 1, 2, 3, 4, 5, 6 and 7

Practice within professional and ethical frameworks- 2, 6 and 7

Contribute to workplace health and safety and quality assurance- 2, and 7

Alignment of Learning Outcomes, Assessment and Graduate Attributes



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Online Quiz(zes) - 40%	•	•	•		
2 - Laboratory/Practical - 0%	•	•	•	•	•
3 - Online Test - 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 - Online Quiz(zes) - 40%	•	•	•					•		
2 - Laboratory/Practical - 0%	•	•	•			•		•		
3 - Online Test - 60%	•	•	•					•		

Textbooks and Resources

Textbooks

MEDS12001

Prescribed

Sonography Principles and Instruments

Edition: 10th (2019)

Authors: Frederick W. Kremkau

ELSEVIER

St Louis , Missouri , U.S.A

ISBN: 9780323597081

Binding: eBook

MEDS12001

Supplementary

ULTRASOUND, Physics and Technology, HOW, WHY AND WHEN

Edition: 1st (2009)

Authors: Vivien Gibbs, David Cole, Antonio Sassano

CHURCHILL LIVINGSTONE ELSEVIER

London , UK

ISBN: 978-0-7020-3041-3

Binding: eBook

Additional Textbook Information

Textbooks can be accessed online at the CQUniversity Library website. Access may be limited. 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 style: [Vancouver](#)

For further information, see the Assessment Tasks.

Teaching Contacts

Deanna Armstrong Unit Coordinator

d.armstrong@cqu.edu.au

Schedule

Week 1- Basic Sonographic Physics Principles - 06 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none">• Back to Basics• Pulse Echo Principle• Sound Wave Parameters• Maths Concepts	Sonography Principles and Instruments, Kremkau 10th edition chapter 1, PP: 1-12, chapter 2, PP 13-44	Zoom tutorial Wednesday 1400 AEST

Week 2- Pulsed Ultrasound - 13 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> Pulsed Ultrasound Pulse Repetition Period and Pulse Repetition Frequency Pulse duration, Duty Factor Spatial Pulse Length Bandwidth 	Kremkau Chapter 2, PP 13-44	Zoom tutorial Wednesday 1400 AEST Physics lab 1 on Thursday

Week 3- Sound interaction with matter - 20 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> Amplitude, Power and Intensity Attenuation and Absorption Reflection and Acoustic Impedance Types of Reflection Refraction 	Kremkau Chapter 2, PP 13-44 Ultrasound Physics and Technology, How, Why and When, Gibbs Chapter 4, PP 19-22 Gibbs Chapter 8, PP 45-49	Zoom tutorial Wednesday 1400 AEST

Week 4- Transducers - 27 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> Transducer Construction Beam Geometry Instrumentation 	Kremkau Chapter 3, PP 45-63 Kremkau Chapter 4, PP 73-116 Gibbs Chapter 6, PP 27-37	Zoom tutorial Wednesday 1400 AEST

Week 5- Image Resolution - 03 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> Lateral Resolution Axial Resolution Contrast Resolution Temporal Resolution 	Kremkau Chapter 3, PP 63-76 Kremkau Chapter 4, PP 110-116 Gibbs Chapter 7, PP 39-43	Zoom tutorial Wednesday 1400 AEST Physics lab 2 on Thursday

Vacation Week - 10 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Break week		

Week 6- Online Quiz - 17 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
No lectures are delivered this week to allow you to concentrate on the online quiz.		No Zoom tutorial on Wednesday due to the mid-term online quiz this week. Mid term Online Quiz Due: Week 6 Thursday (20 Apr 2023) 5:30 pm AEST

Week 7- Haemodynamics and the Doppler Principle - 24 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> Imaging motion and flow Blood flow haemodynamics The Doppler principle Colour Doppler 	Kremkau Chapter 5, PP 138-162 Gibbs Chapter 11, PP 11-79	Zoom tutorial Wednesday 1400 AEST

Week 8- Doppler Imaging - 01 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> Doppler Imaging Spectral Doppler Power Doppler 	Kremkau Chapter 5, PP 162-189 Gibbs Chapter 11, PP 79-89	Zoom tutorial Wednesday 1400 AEST

Week 9- Ultrasound Artifacts - 08 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> B-mode Artifacts Spectral Doppler Artifacts Colour Doppler Artifacts 	Kremkau Chapter 7, PP 202-235 Gibbs Chapter 9, PP 51-61	Zoom tutorial Wednesday 1400 AEST

Week 10- Ultrasound Bioeffects - 15 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> • Safety and Quality Assurance • Performance Measurements • Output Measurements • Ultrasound Bioeffects 	Kremkau Chapter 8, PP 236-247 Kremkau Chapter 9, PP 249-258 Gibbs Chapter 12, PP 91-99 Gibbs Chapter 13, PP 101-110	Zoom tutorial Wednesday 1400 AEST Physics lab 3 on Thursday
Week 11- Additional modes of ultrasound imaging - 22 May 2023		
Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> • Additional modes of ultrasound Imaging • Instruments: Imaging Anatomy, Motion, and Flow 	Kremkau Chapter 4, PP 116-137 Gibbs, Chapter 14, PP 111-119 Kremkau Chapter 6, PP 190-201	Zoom tutorial Wednesday 1400 AEST Physics lab manual submission due on Friday Laboratory Manual Submission Due: Week 11 Friday (26 May 2023) 4:00 pm AEST
Week 12- Review - 29 May 2023		
Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> • Review 		Pre- online test Zoom tutorial Wednesday 1400 AEST
The Exam Week - 05 Jun 2023		
Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> • The end of term online test. 		Online test Thursday 8th June 2023 The end of term online test Due: Review/Exam Week Thursday (8 June 2023) 5:30 pm AEST
Exam Week - 12 Jun 2023		
Module/Topic	Chapter	Events and Submissions/Topic

Term Specific Information

The unit coordinator for MEDS12001 is Deanna Armstrong. Deanna is based on the Sydney campus, Monday to Friday. The best way to contact Deanna is via email at d.armstrong@cqu.edu.au

It is important to check your student email regularly as updates about the unit will be sent from the unit coordinator via email and via the Announcements on the Moodle site. Please ensure all email correspondence is done via your CQU student email.

There are three (3) on campus labs to attend during the term on Thursdays of weeks 2, 5 and 10 respectively. Students are expected to perform the tasks set out in their lab manual and answer the relevant questions.

It is highly recommended that students attend these labs as the lab manual submission is a PASS/FAIL assessment of this unit. Failure to submit the lab manual by the due date and will result in failing the unit irrespective of student's achievements in other assessments of the unit.

No replacement labs will be available for students who fail to attend a lab for any reason.

Assessment Tasks

1 Mid term Online Quiz

Assessment Type

Online Quiz(zes)

Task Description

To demonstrate your understanding and knowledge of this unit, you are required to complete an online quiz. This quiz can be accessed via the assessment tab from the unit's Moodle page.

The access to the online quiz will be available on Tuesday of Week 6 for general sonography students enrolled in CG91 and Thursday of Week 6 for echocardiography students enrolled in CV69.

The contents of week 1 to week 5 will be assessed in the online quiz.

The online quiz will be open from 0900 to 1730 hours AEST on both days.

The test is comprised of ten questions worth 10 marks each.

The questions will be a combination of short answer and calculation type questions including image recognition questions. Images included will be from physics lab tasks in week 2 and week 5.

Once the quiz is accessed, it will remain open for 90 minutes, giving you an average time of 9 minutes per question.

Questions will be drawn from a large pool of questions to allow the quiz to be different for each student.

This assessment is to be undertaken as an individual. As with all other university assessments, colluding with other students on non-group work tasks is considered academic misconduct, and may lead to academic penalty. Inserting answers from other websites is considered plagiarism.

Number of Quizzes

1

Frequency of Quizzes

Other

Assessment Due Date

Week 6 Thursday (20 Apr 2023) 5:30 pm AEST

The online quiz is open for ten hours from 0900 to 1730 AEST on Tuesday of Week 6 for general sonography students (CG91) and on Thursday of Week 6 for echocardiography students (CV69).

Return Date to Students

The online quiz grades and feedback will be available on Thursday in Week 8.

Weighting

40%

Minimum mark or grade

50%

Assessment Criteria

Responses will be assessed according to:

- Use of appropriate and correct use of physics and ultrasound terminology and descriptors as well as grammar, spelling, the relevance of response and competence in addressing all elements of the question.
- Ability to appropriately and correctly interpret images/graphs/tables and to succinctly compose a correct and appropriate response based on their learning from the unit.
- Ability to show all the working out for any calculation question and demonstration of correct methods of using the appropriate formula and use of correct SI unit throughout the calculation.

Referencing Style

- [Vancouver](#)

Submission

Online

Submission Instructions

You must access the online quiz by 1600 AEST, as the quiz closes automatically at 1730 AEST.

Learning Outcomes Assessed

- Apply the physical principles of diagnostic ultrasound to practical problems
- Evaluate the components and performance of diagnostic ultrasound equipment
- Apply knowledge of ultrasound physics and practical skills to acquire optimal ultrasound images, with due regard of safe practices

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Ethical practice

2 Laboratory Manual Submission

Assessment Type

Laboratory/Practical

Task Description

Physics laboratories (labs) will provide an opportunity for you to explore the physical principles of ultrasound and develop knowledge of machine instrumentation and controls under the guidance of a tutor.

You are responsible for having access to the lab manual on an appropriate electronic device during the lab sessions, or alternatively, printing a hard copy of the lab manual and bringing it with you to the lab.

In small groups (4-5 people), you will collaboratively perform tasks set out in the lab manual during the practical laboratory sessions (weeks 2, 5 and 10) and obtain ultrasound images that will assist to answer set questions per task. During the labs, you will be required to record and store images, and observe the effect of changing machine parameters on the resultant image.

You will be required to attempt the lab manual questions during the lab sessions. The questions are designed to help you understand the physical properties of ultrasound and how that knowledge is used to inform the practical production of diagnostic medical images.

You are expected to work in teams to acquire images. Image sharing amongst lab group members is permitted, however lab manual questions are to be answered as an individual.

Upload your completed lab manual to the unit Moodle page via the link provided in the Assessment block.

It is a highly recommended that you attend all the laboratory practical sessions in order to meet the unit learning outcomes.

If you do not attend a lab session for any reason you are still required to complete the lab manual exercises and submit the lab manual by the due date.

Please bring a USB stick to labs to save the acquired images.

Please note the following excerpt from the University Assessment of Coursework Procedures: '...students who fail a single assessment task in a pass-fail unit, or who fail a pass-fail component of a graded unit will be deemed to have failed that unit'.

Assessment Due Date

Week 11 Friday (26 May 2023) 4:00 pm AEST

Return Date to Students

The PASS / FAIL grades will be available to students 14 days after submission.

Weighting

Pass/Fail

Minimum mark or grade

50%

Assessment Criteria

You are required to demonstrate your understanding of each lab task by performing the assigned task and correctly answering the assigned question for each task.

Record and store the required images as per instructions in the lab manual. The images are to be stored on a USB drive (provided by the student).

Answering the questions in the lab manual can be attempted during the lab session and may be completed in your own time, once the lab activities are completed.

Questions should be answered concisely, supported by the acquired images where required.

The acquired images should be inserted in the lab manual which should be saved in the Microsoft Word format.

This assessment will be marked as a PASS or FAIL. A minimum of fifty percent of the questions must have been answered correctly for students to obtain a PASS grade.

A detailed marking rubric is available on unit's Moodle page.

Failure to submit the completed lab manual by the due date and time will result in a grade of "FAIL" for the student regardless of their performance in other assessments of the unit.

There is no option of extension or late submission for the lab manual assessment (unless approved extension is obtained via the Moodle Extension Request System, with appropriate documentation) as students have 9 weeks to complete this task (from week 2 to week 11 of the term).

Referencing Style

- [Vancouver](#)

Submission

Online

Submission Instructions

The completed lab manual should be submitted as a single Word document .doc or .docx on Moodle.

Learning Outcomes Assessed

- Apply the physical principles of diagnostic ultrasound to practical problems

- Evaluate the components and performance of diagnostic ultrasound equipment
- Apply knowledge of ultrasound physics and practical skills to acquire optimal ultrasound images, with due regard of safe practices
- Discuss the principles of ultrasound techniques, Doppler ultrasound and its application in medical ultrasound including safety issues
- Interpret the causes of, and apply problem solving skills to reduce, sources of artifacts on an ultrasound image.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Technology Competence
- Ethical practice

3 The end of term online test

Assessment Type

Online Test

Task Description

To demonstrate the understanding and knowledge of the entire unit's contents, and to assess whether all the unit's learning outcomes have been achieved, you are required to complete an end of term online test.

The contents of week 1 to week 11 will be assessed in the end of term online test.

The end of term online test will be open from 0900 to 1730 hours on the assessment day.

The end of term online test is comprised of ten questions worth 10 marks each.

The questions will be combination of short and long answer and calculation type questions including image recognition questions. Images included will be from physics lab activities during the term.

Once the online test is accessed, it will remain open for 120 minutes, giving an average time of 12 minutes per question. Questions will be drawn from a pool of questions to allow tests to be different for each student. This assessment is to be undertaken as an individual.

The access to the end of term online test can be via own electronic devices. No on-campus attendance is necessary on the assessment day.

As with all other university assessments, colluding with other students on non-group work tasks is considered academic misconduct, and may lead to action being taken. Inserting answers from other websites at the time of the online test is considered plagiarism.

Assessment Due Date

Review/Exam Week Thursday (8 June 2023) 5:30 pm AEST

The online test will be accessible between 0900 and 1730 AEST

Return Date to Students

The end of the term online test results will be available on Certification of Grades.

Weighting

60%

Minimum mark or grade

50%

Assessment Criteria

The end of the term online test assesses:

- Use of appropriate and correct physics and ultrasound terminology and descriptors as well as grammar, spelling, the relevance of response and competence in addressing all elements of the question.
- Ability to appropriately and correctly interpret images/graphs/tables and then to succinctly compose an appropriate and correct response based on their learning from the unit.
- Ability to show all the working out for any calculation question and demonstration of correct methods of using the appropriate formula and use of correct SI unit throughout the calculation.
- Ability to discuss the answers comprehensively and correctly and demonstrate evidence of deep understanding of the concept and to apply critical thinking when addressing the questions.

Referencing Style

- [Vancouver](#)

Submission

Online

Submission Instructions

Students must open the online test by 1530 AEST as the test automatically closes at 1730 AEST

Learning Outcomes Assessed

- Apply knowledge of ultrasound physics and practical skills to acquire optimal ultrasound images, with due regard of safe practices
- Discuss the principles of ultrasound techniques, Doppler ultrasound and its application in medical ultrasound including safety issues
- Interpret the causes of, and apply problem solving skills to reduce, sources of artifacts on an ultrasound image.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Ethical practice

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the [Student Academic Integrity Policy and Procedure](#). This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?

A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?

A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?

For academic advice and guidance, the [Academic Learning Centre \(ALC\)](#) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?



Be Honest

If your assessment task is done by someone else, it would be dishonest of you to claim it as your own



Seek Help

If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)



Produce Original Work

Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem