



# MEDI11002 *Physics for Health Sciences*

## Term 3 - 2020

Profile information current as at 08/05/2024 03:32 am

All details in this unit profile for MEDI11002 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

### General Information

#### Overview

This unit creates the foundations for an understanding of physics as it applies to our world around us, our bodies and our clinical environments. You will learn how to explain observed phenomena, predict changing behaviour and communicate using science conventions. You will apply problem-solving skills and knowledge of physics to find reasonable solutions to both word- and numerical-based situations.

#### 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

There are no requisites for this unit.

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 3 - 2020

- Online

#### 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. **Written Assessment**

Weighting: 15%

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

Weighting: 25%

#### 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 Unit Evaluation

##### Feedback

Many students commented on the engaging and clear delivery of lecture content.

##### Recommendation

Maintain and update lectures as required.

#### Feedback from Unit evaluation and emails from students

##### Feedback

Students found it difficult to manage workloads due to some lecture content being made available at different times of the week.

##### Recommendation

Content has been redistributed during the term, which caused problems with making it available in a timely manner. Now this has been completed, it won't be an issue in future.

#### Feedback from Unit evaluation and emails from students

##### Feedback

Many students found the tutorials helpful and felt that they were a 'safe space' to ask questions and seek clarification.

##### Recommendation

Maintain and update tutorials as required.

## Unit Learning Outcomes

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

1. Discuss fundamental concepts, theories and principles of classical mechanics, matter, heat, sound, electromagnetism, electromagnetic energy and the atom
2. Apply fundamental physics concepts, theories and principles to explain physical phenomena of everyday life and clinical situations and to predict outcomes under changing conditions
3. Use problem-solving and numeracy skills, knowledge of fundamental physics concepts, theories and principles, and standard conventions of science communication to present reasonable solutions to problems.

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes		
	1	2	3
1 - Written Assessment - 15%	•	•	•
2 - Written Assessment - 25%	•	•	•
3 - Online Test - 60%	•	•	•

## Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes		
	1	2	3
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 - Written Assessment - 15%	•	•		•						
2 - Written Assessment - 25%	•	•		•						
3 - Online Test - 60%	•	•		•						

## Textbooks and Resources

### Textbooks

MEDI11002

#### Prescribed

##### Conceptual Physics

Edition: 12th global (2015)

Authors: Paul G. Hewitt

Pearson Education Limited

Harlow, Essex, England

ISBN: 9781292057538

Binding: eBook

#### Additional Textbook Information

If you prefer to study from a paper text, they can still be purchased from the CQUni Bookshop here: <http://bookshop.cqu.edu.au> (search on the Unit code)

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

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

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

## Referencing Style

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

- [Harvard \(author-date\)](#)
- [Vancouver](#)

For further information, see the Assessment Tasks.

## Teaching Contacts

**Deepa Rijal** Unit Coordinator

[d.rijal@cqu.edu.au](mailto:d.rijal@cqu.edu.au)

## Schedule

### Week 1 - 09 Nov 2020

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"><li>• Science Fundamentals</li><li>• Deductive Logic and Problem-solving</li><li>• Using learning goals in your study</li><li>• Introduction to Kinematics</li><li>• Newton's First Law of Motion</li><li>• Newton's Second and Third Laws of Motion</li></ul>	Conceptual Physics Chapters 2,3, 4 & 5 'Chapter 1: Physics and the Life Sciences' from Physics for the Life Sciences 2nd ed. by Zinke-Allemang, Sills, Nejat, Galiano-Riveros.	Tutorial on core skills for this unit

### Week 2 - 16 Nov 2020

Module/Topic	Chapter	Events and Submissions/Topic
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- Force, Momentum, Energy, Power, Centre of Mass
- States of Matter

Conceptual Physics - Excerpts from Chapters 6 & 7, 11 to 14

Tutorial on Week 1 content

### Week 3 - 23 Nov 2020

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> <li>• Pressure</li> <li>• Static and Flowing Fluids</li> <li>• Pressure in Gases</li> <li>• Heat and Temperature</li> </ul>	Conceptual Physics - Excerpts from Chapters 11 - 13 'Chapter 14: Fluid Dynamics of Non-Viscous Fluids' from <i>Introduction to Biological Physics for the Health and Life Sciences</i> by Franklin, Muir, Scott, Wilcocks & Yates	Tutorial on Week 2 content

### Week 4 - 30 Nov 2020

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> <li>• Fundamentals of Traveling Waves</li> <li>• Sound</li> <li>• Doppler Effect</li> </ul>	Conceptual Physics - Excerpts from Chapters 14, 15, 16, 18 & 19	Tutorial on Week 3 content

### Vacation Week - 07 Dec 2020

Module/Topic	Chapter	Events and Submissions/Topic
Break Week		

### Week 5 - 14 Dec 2020

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> <li>• Electrostatics</li> <li>• Introduction to Electrodynamics</li> </ul>	Conceptual Physics - Excerpts from Chapters 19, 20 & 21	Tutorial on Week 4 content  <b>Written Assignment 1</b> Due: Week 5 Friday (18 Dec 2020) 4:00 pm AEST

### Week 6 - 21 Dec 2020

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> <li>• Applied Electrodynamics</li> </ul>	Conceptual Physics - Excerpts from Chapters 22 & 23	Tutorial on Week 5 content

### Vacation Week - 28 Dec 2020

Module/Topic	Chapter	Events and Submissions/Topic
Break Week		

### Week 7 - 04 Jan 2021

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> <li>• Electrical safety</li> </ul>	Conceptual Physics Chapter 23 (see also assigned reading from online resources)	Tutorial on Week 6 content

### Week 8 - 11 Jan 2021

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> <li>• Magnetism</li> <li>• Electromagnetism</li> </ul>	Conceptual Physics - Excerpts from Chapters 24 & 25	Tutorial on Week 7 content

### Week 9 - 18 Jan 2021

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> <li>• Electromagnetic Energy</li> <li>• Quanta</li> <li>• Forms of Electromagnetic Energy</li> </ul>	Conceptual Physics - Excerpts from Chapters 26, 30 & 31	Tutorial on Week 8 content

### Week 10 - 25 Jan 2021

Module/Topic	Chapter	Events and Submissions/Topic
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- Visible light
- Introduction to optics

Conceptual Physics - Excerpts from Chapters 26 - 30

Tutorial on Week 9 content

**Written Assignment 2** Due: Week 10 Thursday (28 Jan 2021) 4:00 pm AEST

### Week 11 - 01 Feb 2021

Module/Topic	Chapter	Events and Submissions/Topic
<ul style="list-style-type: none"> <li>• Ionising Radiation</li> <li>• X-ray Production</li> <li>• Radioactive Emissions</li> </ul>	Conceptual Physics - Excerpts from Chapters 32 - 33	Tutorial on Week 10 content

### Week 12 - 08 Feb 2021

Module/Topic	Chapter	Events and Submissions/Topic
Review and consolidation		Tutorial on Week 11 content Q&A revision tutorial

### Exam Week - 15 Feb 2021

Module/Topic	Chapter	Events and Submissions/Topic
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## Term Specific Information

As a 6-credit unit, you should spend 150 hours studying and completing assessments over the term. This equates to approximately 12.5 hours of study per week. It is important that you maintain engagement with the unit content and a suggested time budget for this unit is shown below:

- Pre-reading - Approximately 2 hours per week
- Watching lecture presentations and making notes - Approximately 3 hours per week
- Completing formative weekly quizzes - Approximately 1 hour per week
- Preparation for and attendance at the Zoom tutorial - Approximately 2 hours per week
- Revising for and completing written assignments and the end-of-term online test - Approximately 50 hours over the term.

## Assessment Tasks

### 1 Written Assignment 1

#### Assessment Type

Written Assessment

#### Task Description

This assessment requires you to demonstrate knowledge and understanding of the content in this unit. Each health profession possesses a body of knowledge, the fundamentals of which must be learnt and understood. Your health profession has selected these concepts as relevant to your future scope of practice and you will build upon them in your future clinical practice. The intent of this assessment is for you to demonstrate your ability to do three things:

- select principles, concepts and facts that are relevant to a situation,
- apply the concepts logically to solve a problem,
- communicate your reasoning using terminology and science conventions correctly.

This assignment consists of short and long answer questions focusing on topics from Weeks 1 - 3 of the unit content as detailed in the posted weekly learning goals.

- Each question will require you to apply the concepts and factual knowledge from the unit topics to a given situation.
- You may be asked to explain why the situation has occurred, what would happen if the situation were altered in a specific way, how to achieve a specific outcome in altering the situation and/or what outcome would logically follow the occurrence of the situation.
- Some questions will involve solving numerical problems.

You should be able to answer these questions using your learning from watching the unit lecture videos, reading the assigned text and other assigned learning activities from Weeks 1 - 3. There is no expectation that you will need to research additional material in order to complete the assessment. Weekly tutorials will provide practice in analysing assessment questions and in structuring logical and thorough responses.

- You should use the number of marks indicated for the question as a guide to the depth of response and number of main points expected.
- There is no target word count for the assignment or for any individual question. However, a guidance statement for each question will indicate a typical number of paragraphs that would be sufficient to address the question.
- The completed assignment must be word-processed and in either Word or pdf file format. (PDF files that are image-based rather than text cannot be used, as image-based files cannot be analysed by Turnitin.)

Further details on the assignment, including the questions, marking rubric and formatting requirements will be provided on the unit Moodle site.

Once you have uploaded your assignment file into Moodle, your Word or pdf file will automatically be analysed by Turnitin to generate an originality report and similarity score. You may use this report to assess and modify your draft file as required. It is your responsibility to submit a compatible file type so that a report can be generated. Your submission will be graded only when there is a Turnitin report and similarity score for it.

### **Assessment Due Date**

Week 5 Friday (18 Dec 2020) 4:00 pm AEST

### **Return Date to Students**

Week 7 Friday (8 Jan 2021)

### **Weighting**

15%

### **Assessment Criteria**

Each question on the assignment instruction page will indicate the number of marks per segment. Responses are scored based on:

- correct use of terminology
- factual correctness of presented material
- correct use of science conventions
- relevance of stated content to the question asked
- application of foundation concepts to the question asked
- clarity, thoroughness and completeness of explanations
- logic of explanations and problem-solving
- application of an explicit step-by-step approach to solving numerical problems
- correct and complete citing of information sources

More details can be found in the Assessment Instruction page and the marking rubric/scoring guide posted on the unit Moodle site.

### **Referencing Style**

- [Harvard \(author-date\)](#)
- [Vancouver](#)

### **Submission**

Online

### **Learning Outcomes Assessed**

- Discuss fundamental concepts, theories and principles of classical mechanics, matter, heat, sound, electromagnetism, electromagnetic energy and the atom
- Apply fundamental physics concepts, theories and principles to explain physical phenomena of everyday life and clinical situations and to predict outcomes under changing conditions
- Use problem-solving and numeracy skills, knowledge of fundamental physics concepts, theories and principles, and standard conventions of science communication to present reasonable solutions to problems.

### **Graduate Attributes**

- Communication
- Problem Solving
- Information Literacy



## 2 Written Assignment 2

### Assessment Type

Written Assessment

### Task Description

This assessment requires you to demonstrate knowledge and understanding of the content in this unit. Each health profession possesses a body of knowledge, the fundamentals of which must be learnt and understood. Your health profession has selected these concepts as relevant to your future scope of practice and you will build upon them in your future clinical practice. The intent of this assessment is for you to demonstrate your ability to do three things:

- select principles, concepts and facts that are relevant to a situation,
- apply the concepts logically to solve a problem,
- communicate your reasoning using terminology and science conventions correctly.

This assignment consists of short and long answer questions focusing on topics from Weeks 4 - 8 of the unit content as detailed in the posted weekly learning goals (You will likely need to apply some knowledge and/or skill from your study in Weeks 1 - 3 in order to complete the assignment, but the emphasis is on topics from Weeks 4 - 8).

- Each question will require you to apply the concepts and factual knowledge from the unit topics to a given situation.
- You may be asked to explain why the situation has occurred, what would happen if the situation were altered in a specific way, how to achieve a specific outcome in altering the situation and/or what outcome would logically follow the occurrence of the situation.
- Some questions will involve solving numerical problems.

**You should be able to answer these questions using your learning from watching the unit lecture videos, reading the assigned text and other assigned learning activities from Weeks 4 - 8.** There is no expectation that you will need to research additional material in order to complete the assessment. Weekly tutorials will provide practice in analysing assessment questions and structuring logical and thorough responses.

You are expected to apply your experience and feedback from Assignment 1 to your completion of this assignment. Accordingly, this Assignment 2 has more questions to complete and has a higher weight toward the final grade.

- You should use the number of marks indicated for the question as a guide to the depth of response and number of main points expected.
- There is no target word count for the assignment or for any individual question. However, a guidance statement for each question will indicate a typical number of paragraphs that would be sufficient to address the question.
- The completed assignment must be word-processed and in either Word or pdf file format.

Further details on the assignment, including the questions, marking rubric and formatting requirements will be provided on the unit Moodle site.

Once you have uploaded your assignment file into Moodle, your Word or pdf file will automatically be analysed by Turnitin to generate an originality report and similarity score. You may use this report to assess and modify your draft file as required. It is your responsibility to submit a compatible file type so that a report can be generated. Your submission will be graded only when there is a Turnitin report and similarity score for it.

### Assessment Due Date

Week 10 Thursday (28 Jan 2021) 4:00 pm AEST

### Return Date to Students

Week 12 Friday (12 Feb 2021)

### Weighting

25%

### Assessment Criteria

Each question on the assignment instruction page will indicate the number of marks per segment. Responses are scored based on:

- correct use of terminology
- factual correctness of presented material
- correct use of science conventions
- relevance of stated content to the question asked
- application of foundation concepts to the question asked
- clarity, thoroughness and completeness of explanations
- logic of explanations and problem-solving

- application of an explicit step-by-step approach to solving numerical problems
- correct and complete citing of information sources

More details can be found in the Assessment Instruction page and the marking rubric/scoring guide posted on the unit Moodle site.

### Referencing Style

- [Harvard \(author-date\)](#)
- [Vancouver](#)

### Submission

Online

### Learning Outcomes Assessed

- Discuss fundamental concepts, theories and principles of classical mechanics, matter, heat, sound, electromagnetism, electromagnetic energy and the atom
- Apply fundamental physics concepts, theories and principles to explain physical phenomena of everyday life and clinical situations and to predict outcomes under changing conditions
- Use problem-solving and numeracy skills, knowledge of fundamental physics concepts, theories and principles, and standard conventions of science communication to present reasonable solutions to problems.

### Graduate Attributes

- Communication
- Problem Solving
- Information Literacy

## 3 End-of-Term Online Test

### Assessment Type

Online Test

### Task Description

You will complete a 120 minute time-limited online test during the university examination period, at a time scheduled by the School. The purpose of this test is for you to demonstrate your understanding and ability to apply the concepts and correct use of the terminology from all weeks of the unit content. The test will consist of short and long answer questions based on the posted weekly learning goals. When completing the test, you will be required to:

- apply the concepts and factual knowledge from the unit topics to a given situation
- explain why the situation has occurred, what would happen if the situation was altered in a specific way, how to achieve a specific outcome in altering the situation and/or what outcome would logically follow the occurrence of the situation
- solve numerical problems

The number of marks for each question are allocated based on the depth and breadth of the required response, and will be indicated on the test.

Although the test is an open book assessment, you must remain mindful of the time you are taking to answer each question and have an understanding of the content and also familiarity with your resources to use them effectively. Please take note that once the test is accessed, it will remain open for 120 minutes. You can only attempt the test once and it must be completed in a single session. You cannot save your answers and return to the test at a later time.

This assessment is to be undertaken as an individual. As with all other university assessment, colluding with other students on non-group work tasks is considered academic misconduct. Inserting answers copied from other websites at the time of the online test is considered plagiarism. Both misconduct and plagiarism will be dealt with in accordance with the Student Academic Integrity policy.

It is your responsibility to log on to Moodle and complete the online test during the time the test is available. There is no opportunity to apply a late penalty. In the absence of an approved extension, you cannot complete this assessment at a later time, and you will receive a mark of zero for the assessment if you have not completed it by the scheduled date and time.

### Assessment Due Date

The test will be conducted during the university examination period, at a time scheduled by the School.

### **Return Date to Students**

Marks will be released within two weeks of the due date.

### **Weighting**

60%

### **Minimum mark or grade**

50%

### **Assessment Criteria**

Each question on the assignment instruction page will indicate the number of marks per segment. Responses are scored based on:

- correct use of terminology
- factual correctness of presented material
- correct use of science conventions
- relevance of stated content to the question asked
- application of foundation concepts to the question asked
- clarity, thoroughness and completeness of explanations
- logic of explanations and problem-solving
- application of an explicit step-by-step approach to solving numerical problems

### **Referencing Style**

- [Harvard \(author-date\)](#)
- [Vancouver](#)

### **Submission**

No submission method provided.

### **Learning Outcomes Assessed**

- Discuss fundamental concepts, theories and principles of classical mechanics, matter, heat, sound, electromagnetism, electromagnetic energy and the atom
- Apply fundamental physics concepts, theories and principles to explain physical phenomena of everyday life and clinical situations and to predict outcomes under changing conditions
- Use problem-solving and numeracy skills, knowledge of fundamental physics concepts, theories and principles, and standard conventions of science communication to present reasonable solutions to problems.

### **Graduate Attributes**

- Communication
- Problem Solving
- Information Literacy

## 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