MEDI11002 *Physics for Health Sciences*

Term 3 - 2019

Profile information current as at 19/05/2024 10:19 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 - 2019

- 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. **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 Have Your Say feedback, teaching team observations

Feedback

The volume of lecture time varied weekly, with three higher volume weeks in the second half of term. Although the average volume per week was about two hours, many students got behind during those higher volume weeks.

Recommendation

Review the depth of content and distribution of content across weeks of study to more evenly balance student weekly workload.

Feedback from Student informal feedback during the term, Have Your Say feedback, unit coordinator observations.

Feedback

All assigment markers used the same structured scoring and feedback form with scoring codes. There was variation in the volume of text feedback. Many students did not understand how to use the feedback of the scoring codes or how to use feedback to reflect on their assignment performance.

Recommendation

Develop an instructional video on interpreting the feedback and using it for improvement of assessment performance.

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

— 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
1 - Written Assessment - 15%	•	•	•
2 - Written Assessment - 25%	•	•	•
3 - Examination - 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 - Examination - 60%	•	•		•						

Textbooks and Resources

Textbooks

MEDI11002

Prescribed

Conceptual Physics
Edition: 12th global (2015)
Authors: Paul G. Hewitt
Pearson Education Limited
Harlow , Essex , England
ISBN: 9781292057132
Binding: eBook

Additional Textbook Information
Students may use either the hard copy or e-book version of this text. Both provide access to hyperlinked multimedia learning resources that supplement the text. The e-book version of the text allows both online (web-based) and offline (downloaded copy) access to the book and has no expiry date. It is usable on both computers and tablets (specifically iPads and Android OS).
The hardcopy textbook may be available through the CQUniversity Bookshop at http://bookshop.cqu.edu.au/texts.asp (search on the unit code). The ebook version is available directly through Pearson Australia and the direct link is: http://www.pearson.com.au/9781292057538.

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

Brijesh Kumar Unit Coordinator
b.kumar@cqu.edu.au

Schedule

Week 1 - 11 Nov 2019

Module/Topic	Chapter	Events and Submissions/Topic
• Science Fundamentals • Deductive Logic and Problem-solving • Using learning goals in your study • Introduction to Kinematics • Newton's First Law of Motion	Conceptual Physics Chapters 2 & 3 '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 - 18 Nov 2019

Module/Topic	Chapter	Events and Submissions/Topic
• Newton's Second and Third Laws of Motion • Force, Momentum, Energy, Power, Centre of Mass	Conceptual Physics - Excerpts from Chapters 4, 5, 6 & 7	Tutorial on Week 1 content

Week 3 - 25 Nov 2019

Module/Topic	Chapter	Events and Submissions/Topic
• States of Matter • Pressure • Static and Flowing Fluids	Conceptual Physics - Excerpts from Chapters 11 - 13 'Chapter 14: Fluid Dynamics of Non-Viscous Fluids' from *Introduction to Biological Physics for the Health and Life Sciences* by Franklin, Muir, Scott, Wilcocks & Yates	Tutorial on Week 2 content

Week 4 - 02 Dec 2019

Module/Topic	Chapter	Events and Submissions/Topic
• Pressure in Gases • Heat and Temperature • Fundamentals of Traveling Waves	Conceptual Physics - Excerpts from Chapters 14, 15, 16, 18 & 19	Tutorial on Week 3 content

Vacation Week - 09 Dec 2019

Module/Topic	Chapter	Events and Submissions/Topic
Break Week		

Week 5 - 16 Dec 2019

Module/Topic	Chapter	Events and Submissions/Topic
• Sound • Doppler Effect	Conceptual Physics - Excerpts from Chapters 19, 20 & 21	Tutorial on Week 4 content **Written Assignment 1** Due: Week 5 Tuesday (17 Dec 2019) 4:00 pm AEST

Week 6 - 23 Dec 2019

Module/Topic	Chapter	Events and Submissions/Topic
• Electrostatics • Introduction to Electrodynamics	Conceptual Physics - Excerpts from Chapters 22 & 23	Tutorial on Week 5 content

Week 7 - 06 Jan 2020

Module/Topic	Chapter	Events and Submissions/Topic
• Applied Electrodynamics • Electrical Safety	Conceptual Physics Chapter 23 (see also assigned reading from online resources)	Tutorial on Week 6 content

Week 8 - 13 Jan 2020

Module/Topic	Chapter	Events and Submissions/Topic
• Magnetism • Electromagnetism	Conceptual Physics - Excerpts from Chapters 24 & 25	Tutorial on Week 7 content

Week 9 - 20 Jan 2020

Module/Topic	Chapter	Events and Submissions/Topic
• Electromagnetic Energy • Quanta • Forms of Electromagnetic Energy	Conceptual Physics - Excerpts from Chapters 26, 30 & 31	Tutorial on Week 8 content

Week 10 - 27 Jan 2020

Module/Topic	Chapter	Events and Submissions/Topic

		Tutorial on Week 9 content
• Visible light • Introduction to optics	Conceptual Physics - Excerpts from Chapters 26 - 30	**Written Assignment 2** Due: Week 10 Tuesday (28 Jan 2020) 4:00 pm AEST
Week 11 - 03 Feb 2020		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
• Ionising Radiation • X-ray Production • Radioactive Emissions	Conceptual Physics - Excerpts from Chapters 32 - 33	Tutorial on Week 10 content
Week 12 - 10 Feb 2020		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Review and consolidation		Tutorial on Week 11 content Q&A revision tutorial
Exam Week - 17 Feb 2020		
Module/Topic	**Chapter**	**Events and Submissions/Topic**

Term Specific Information

You are expected to spend on average 10 - 12 hours of time each week in your study activities for this unit. A suggested time budget for weekly study is:

- 2 - 2½ hours for watching recorded lectures and taking notes
- 1 - 1½ hours for completing assigned reading
- ½ - 1 hour for completing other posted learning activities
- 2 - 2 ½ hours for creating study notes to meet weekly learning goals using the lectures and readings
- ½ hour for adding week-specific content to your exam 'cheat sheet'
- 1 - 1 ½ hours for applying weekly content using posted end-of-chapter questions
- ½ hour for working on posted tutorial questions in preparation for tutorial
- 1 hour for participation in online tutorial
- 1 - 2 hours for assignment preparation and/or revision for final examination

Tutorials are interactive sessions where your participation enables you to check your understanding of and your ability to apply the week's concepts and for you to build your skills in responding to assessment-style questions. Your regular participation strongly supports your success in the unit. While online tutorials will be recorded, these recordings are not intended to replace your active participation in live sessions.

For the final examination, you will be able to take into the examination room with you one A4 sheet of paper with content that is of your choosing. This may be computer generated or hand written, and may include (but is not limited to) text, photos, drawings and/or figures. Both sides of the page may be used.

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 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 Tuesday (17 Dec 2019) 4:00 pm AEST

Return Date to Students
Week 7 Friday (10 Jan 2020)

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 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 Tuesday (28 Jan 2020) 4:00 pm AEST

Return Date to Students
Week 12 Friday (14 Feb 2020)

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

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
Restricted.

Materials
Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).
Calculator - non-programmable, no text retrieval, silent only

Academic Integrity Statement

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

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

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

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

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

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

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

Where can I get assistance?
For academic advice and guidance, the Academic Learning Centre (ALC) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?

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

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

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