AVAT11005 *Aviation Physics*
Term 3 - 2020

Profile information current as at 27/04/2024 06:54 am

All details in this unit profile for AVAT11005 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
Aviation Physics will introduce you to areas of applied physics relevant to aviation. You will discover the theory behind mechanics, AC and DC circuits, fluid dynamics and waves, and their practical application to aviation. Further, you will apply this theory to aerodynamics, aircraft systems, and navigation. The theory will be used to aid calculations in flight planning, performance, and loading.

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

- Bundaberg
- Cairns
- Mixed Mode
- Perth

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).

Residential Schools
This unit has a Compulsory Residential School for distance mode students and the details are:
Click here to see your Residential School Timetable.

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: 10%
2. **Practical Assessment**
Weighting: 30%
3. **Take Home Exam**
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
Additional support was provided to assist students to understand the mathematical application in physics.

Recommendation
Students informed that the lecturer was willing to provide additional support to assist with mathematical applications that supported their learning. The practice will continue in the next offering.

Feedback from Have your say

Feedback
The tutorials greatly helped students to understand the topic.

Recommendation
The practice will continue in the next offering.

Feedback from Have your say

Feedback
Most of the topics are relevant in one way or another, there need to be clear linkages to aviation.

Recommendation
Students informed that the topic should clearly be linked to aviation rather than understanding the physics principles only. We will add more content in light of aviation in the next offering.

Feedback from Have your say

Feedback
The current textbook is not so appropriate.

Recommendation
Students reported that more engagement through the textbook would have helped their study of lectures and tutorials. We will select an appropriate textbook in the next offering.

Feedback from Have your say

Feedback
Too much of contents delivered in a short time.

Recommendation
The contents were too much in this unit. We will revise the contents in the next offering.

Unit Learning Outcomes

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

1. Perform simple calculations in basic mechanics
2. Explain conservation of energy and momentum
3. Use Newton's Laws to explain motion
4. Perform simple calculations in basic fluid mechanics
5. Describe the effects of electric and magnetic field
6. Explain DC and AC circuits
7. Describe the propagation of waves.

N/A

Alignment of Learning Outcomes, Assessment and Graduate Attributes

N/A Level | Introductory Level | Intermediate Level | Graduate Level | Professional Level | Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes										
	1	2			3			4	5	6	7
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 - 10%	•	•		•						
2 - Practical Assessment - 30%	•	•		•	•					
3 - Take Home Exam - 60%	•	•		•						

Textbooks and Resources

Textbooks

AVAT11005

Prescribed

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

Additional Textbook Information
eBook of this text book is available. eBook can be purchased at the publisher's website.

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: Harvard (author-date)
For further information, see the Assessment Tasks.

Teaching Contacts

Shaminda De Silva Unit Coordinator
s.desilva@cqu.edu.au

Schedule

Week 1 - 09 Nov 2020

Module/Topic	Chapter	Events and Submissions/Topic
Numbers and accuracy. Motion and Newton's first law.	Conceptual Physics. Chapters: 1 and 2	Tutorial 1: Numbers and accuracy. Motion and Newton's first law.

Week 2 - 16 Nov 2020

Module/Topic	Chapter	Events and Submissions/Topic
Linear motion. Newton's second and third laws of motion.	Conceptual Physics. Chapters: 3, 4 and 5.	Tutorial 2: Linear motion. Newton's second and third laws of motion.

Week 3 - 23 Nov 2020

Module/Topic	Chapter	Events and Submissions/Topic
The principles of Momentum, Energy and Work	Conceptual Physics. Chapters: 6 and 7.	Tutorial 3:The principles of Momentum, Energy and Work

Week 4 - 30 Nov 2020

Module/Topic	Chapter	Events and Submissions/Topic

Rotational motion and Gravity.	Conceptual Physics. Chapters: 8 and 9.	Tutorial 4: Rotational motion and Gravity.

Vacation Week - 07 Dec 2020

Module/Topic	Chapter	Events and Submissions/Topic
Non teaching week. Opportunity for students to consolidate their reading.	Conceptual Physics. Chapters 1 to 9 and 12 to 14.	None.

Week 5 - 14 Dec 2020

Module/Topic	Chapter	Events and Submissions/Topic
Properties of matter. Pressure in a fluid. Archimedes Principle. Bernoulli's Principle.	Conceptual Physics. Chapters: 12, 13 and 14.	Tutorial 5: Properties of matter. Pressure in a fluid. Archimedes Principle. Bernoulli's Principle.

Week 6 - 21 Dec 2020

Module/Topic	Chapter	Events and Submissions/Topic
Basic principles of Thermodynamics, heat, temperature and heat transfer.	Conceptual Physics. Chapters: 15, 16 and 18.	Tutorial 6: Basic principles of Thermodynamics, heat, temperature and heat transfer.

Vacation Week - 28 Dec 2020

Module/Topic	Chapter	Events and Submissions/Topic
Non teaching week. Opportunity for students to consolidate their reading.	Conceptual Physics. Chapters 1 to 9.	None.

Week 7 - 04 Jan 2021

Module/Topic	Chapter	Events and Submissions/Topic
Sound and Waves.	Conceptual Physics. Chapters: 19,20 and 21	Tutorial 7: Sound and Waves. **Assignment 1** Due: Week 7 Monday (4 Jan 2021) 9:00 am AEST

Week 8 - 11 Jan 2021

Module/Topic	Chapter	Events and Submissions/Topic
Basic principles of Electricity.	Conceptual Physics. Chapters: 22 and 23	Tutorial 8: Basic Principles of Electricity

Week 9 - 18 Jan 2021

Module/Topic	Chapter	Events and Submissions/Topic
Magnetism and Electromagnetism.	Conceptual Physics. Chapters: 24 and 25	Tutorial 10:Magnetism and Electromagnetism.

Week 10 - 25 Jan 2021

Module/Topic	Chapter	Events and Submissions/Topic
Principles of Light, Reflection and Refraction.	Conceptual Physics. Chapters: 26, 27 and 28	Tutorial 10: Principles of Light, Reflection and Refraction.

Week 11 - 01 Feb 2021

Module/Topic	Chapter	Events and Submissions/Topic
Based on Practical Exercises	None specific.	Tutorial 11: Discussions will be based on material covered in the teaching weeks 1 to 10

Week 12 - 08 Feb 2021

Module/Topic	Chapter	Events and Submissions/Topic
Consolidation and Revision.	None specific.	Tutorial session orientated to exam preparation. **Assignmnet 2** Due: Week 12 Monday (8 Feb 2021) 9:00 am AEST

Exam Week - 15 Feb 2021		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
		Examination
Prepare for exam	None specific.	**Home Examination** Due: Exam Week Wednesday (17 Feb 2021) 2:00 pm AEST

Assessment Tasks

1 Assignment 1

Assessment Type
Written Assessment

Task Description
This is an individual assessment accessible via the unit Moodle site. This assessment will consist of several questions to test the student's basic understanding of Physics concepts, which will involve solving some analytical and numerical problems. It comprises a set of question on the topics covered from Week 1 to Week 6 (including week 1 and week 6) and students are required to demonstrate their theoretical knowledge and analytical and problem solving skills. This assessment is an important activity to check and enhance your comprehension. This assessment is an integrated part of the study to test the key aspects of each topic. This assessment item weights 10% of your final mark. In addition, students should submit their scanned detailed solution and workings within allowed time period to Moodle as a single PDF file. Further specific details related to this assessment will be published on the unit Moodle site.

- This assessment will have essay type questions and short questions as well.
- Students need to copy the questions to blank A4 papers and solve the problems.
- Students need to include all steps of their workings and final answers,
- Students should scan the workings, answers, and produce a single PDF file and upload it to the unit Moodle site.
- There is no specific word count in answering this assessment.
- This assessment has a set end time and answer/workings submission link will be closed at the end of time.
- Students are strongly advised to sufficiently cover the related material before answering the assessment.

Assessment Due Date
Week 7 Monday (4 Jan 2021) 9:00 am AEST

Return Date to Students
Week 9 Monday (18 Jan 2021)
We will strive to release the assessment marks 2 weeks after the due date

Weighting
10%

Assessment Criteria
Students can use a dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments). Students can use a calculator - all non-communicable calculators, including scientific, and graphics calculators are authorized. Each question in the assessment will be assessed separately against the following criterion:

- Proper formatting and structuring
- Have neat, legible and tidy work and presentation.
- On time submission
- Evidence of understanding
- Correct workings, answers and solutions to questions (correct method and procedure, correct selection and application of formula, clear presentation of mathematical and arithmetical calculations for the results obtained)

- Accuracy and correct results
- Correct use of terminology (scientific language), SI units and conventions
- The correct referencing style where necessary.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
This is an individual submission.

Learning Outcomes Assessed

- Perform simple calculations in basic mechanics
- Explain conservation of energy and momentum

Graduate Attributes

- Communication
- Problem Solving
- Information Literacy

2 Assignmnet 2

Assessment Type
Practical Assessment

Task Description
The assignment 2 will be based on the work completed during the laboratory activities. This will involve solving scientific problems, by identifying the correct principle and formulae where appropriate and carrying out scientific analysis.
This assessment item will cover topics from 1 to 10. This will consist of several experiments carried out in small teams, and students will be required to work as a team and write a team report. The team report needs to consist of a brief explanation of the principles being investigated, apparatus, the methodology, sources of error, results, discussions and conclusions
Attendance at virtual residential school (Zoom based online laboratory sessions) to complete laboratory exercises and activities is compulsory. Online (Zoom based) laboratory sessions will be held as directed on the unit Moodle site. All information regarding the laboratories will be provided to the students via the unit Moodle site.
Laboratory reports of students who did not attend the virtual residential school (online laboratory sessions) will not be accepted for marking and will be awarded zero marks.

- Students will be working in teams during virtual residential school (Online laboratory sessions)
- Attendance for virtual residential school (online laboratory sessions) is compulsory. Tutorials and discussion will take place at the virtual residential school
- Students need to submit a single Team laboratory report (one report per laboratory group) for this assessment by the due date and marks will be given for this report.
- Students need to submit team laboratory report as a single pdf file on Moodle.
- Students need to score equal to or more than 50% for this assessment to PASS this unit.
- This assessment weights 30% of your final marks.
- Please note that video demonstration of laboratory activities and supply data to students so they can write up and submit the required team laboratory reports.

Assessment Due Date
Week 12 Monday (8 Feb 2021) 9:00 am AEST

Return Date to Students
Exam Week Friday (19 Feb 2021)
We will strive to release the assessment 2 marks 2 weeks after the due date

Weighting
30%

Minimum mark or grade
The assessment 2 marks must be equal or more than 50%

Assessment Criteria
Laboratory exercise based assessment will be graded using the following criteria:

- Proper formatting and structuring of report
- Have neat, legible and tidy work and presentation of the laboratory work
- Correct workings, answers, and solutions.
- The correct use of terminology, using scientific language and conventions.
- Correct description of laboratory procedures.
- The correct identification and explanation of the applicable principles and formulae (where appropriate)
- Where appropriate show the calculated values based on the theory and compare them against the measured values.
- The accuracy of calculations.
- Appropriate discussion of laboratory results and a clear understanding of the purpose of experimentation and the logical interpretation of results (where applicable)
- Correct use of terminology (scientific language), SI units and conventions
- The correct referencing style where necessary.

Referencing Style

- Harvard (author-date)

Submission
Online Group

Submission Instructions
The assessment is a team submission. Need to submit a single report per team.

Learning Outcomes Assessed

- Use Newton's Laws to explain motion
- Perform simple calculations in basic fluid mechanics
- Describe the effects of electric and magnetic field
- Explain DC and AC circuits

Graduate Attributes

- Communication
- Problem Solving
- Information Literacy
- Team Work

3 Home Examination

Assessment Type
Take Home Exam

Task Description
This is an individual assessment accessible via the unit Moodle site and comprises a set of question on topics covered from Week 1 to Week 10 (including week 1 and week 10). Students are required to answer analytical and numerical questions to demonstrate their theoretical knowledge and analytical and problem solving skills. This test is an important activity to check and enhance your comprehension. This test is an integrated part of the study to test the key aspects of each topic. This take home examination weights 60% of your final mark. Students are given three hours to complete this take home examination. An additional two hours are provided for downloading, uploading and perusal of the questions. This examination will be available for a limited time during examination week and students need to attend this examination during that time. (For example these examination questions will be released on exam week either Monday or Tuesday or Wednesday or Thursday or Friday at 9 AM. Examination answers should be submitted to Moodle within the specified examination time period. In addition, students should submit their scanned detailed solution and workings within the allowed time period to Moodle as a single PDF file). Further specific details (including day and times) related to this assessment will be published on the unit Moodle site.

- Take home examination will have essay type questions and short questions as well.
- Students need to copy the questions to blank A4 papers and solve the problems.

- Students need to include all steps of your workings and final answers,
- Students should scan the workings, answers, and produce a single PDF file and upload it to the unit Moodle site.
- Take home examination has a set start time and end time. Answer/workings submission link will be closed at the end of time.
- Students are strongly advised to sufficiently cover the material related to the test before the test.

If you encounter any difficulty with network access during the test (take a screen shot as evidence), contact the unit coordinator at your earliest convenience.

Assessment Due Date
Exam Week Wednesday (17 Feb 2021) 2:00 pm AEST

Return Date to Students

Two weeks after submission

Weighting
60%

Minimum mark or grade
Students must obtain a minimum mark of 50% or more for the take home examination.

Assessment Criteria
Students can use a dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments). Students can use calculator - all non-communicable calculators, including scientific, and graphics calculators are authorized. Each question in the examination will be assessed separately against the following criterion:

- Proper formatting and structuring
- Have neat, legible and tidy work and presentation.
- On time submission
- Evidence of understanding
- Correct workings, answers and solutions to questions (correct method and procedure, correct selection and application of formula, clear presentation of mathematical and arithmetical calculations for the results obtained)
- Accuracy and correct results
- Correct use of terminology (scientific language), SI units and conventions

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
This is an individual submission. Students should upload their answers in a single PDF file in the unit Moodle.site

Learning Outcomes Assessed

- Perform simple calculations in basic mechanics
- Explain conservation of energy and momentum
- Use Newton's Laws to explain motion
- Perform simple calculations in basic fluid mechanics
- Describe the effects of electric and magnetic field
- Explain DC and AC circuits
- Describe the propagation of waves.

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