



# AVAT11005 Aviation Physics

## Term 2 - 2020

Profile information current as at 10/10/2025 04:07 pm

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 2 - 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).

### 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 Students

**Feedback**

Great satisfaction from the students on the content and delivery of the unit

**Recommendation**

Will continue and improve upon the experience.

#### Feedback from Student

**Feedback**

Too much of content delivered in short time

**Recommendation**

Most of them were comfortable in the quantity and pace of delivery. However, will try to trim some of the basic elements of the unit.

## 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



### 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

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

**Nur Hassan** Unit Coordinator

[n.hassan@cqu.edu.au](mailto:n.hassan@cqu.edu.au)

## Schedule

### Week 1 - 13 Jul 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 - 20 Jul 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 - 27 Jul 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 - 03 Aug 2020

| Module/Topic | Chapter | Events and Submissions/Topic |
|--------------|---------|------------------------------|
|--------------|---------|------------------------------|

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

#### Week 5 - 10 Aug 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. |

#### Vacation Week - 17 Aug 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 6 - 24 Aug 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. |

#### Week 7 - 31 Aug 2020

| Module/Topic     | Chapter                                    | Events and Submissions/Topic   |
|------------------|--|--|
| Sound and Waves. | Conceptual Physics. Chapters: 19,20 and 21 | Tutorial 7: Sound and Waves.<br><b>Assignment 1</b> Due: Week 7 Monday (31 Aug 2020) 11:55 pm AEST |

#### Week 8 - 07 Sep 2020

| 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 - 14 Sep 2020

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

#### Week 10 - 21 Sep 2020

| 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 - 28 Sep 2020

| 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 7 to 10 |

#### Week 12 - 05 Oct 2020

| Module/Topic                | Chapter        | Events and Submissions/Topic   |
|-----------------------------|----------------|--|
| Consolidation and Revision. | None specific. | Tutorial session orientated to exam preparation.<br><b>Assignment 2</b> Due: Week 12 Monday (5 Oct 2020) 11:55 pm AEST |

#### Review/Exam Week - 12 Oct 2020

| Module/Topic | Chapter | Events and Submissions/Topic |
|--------------|---------|------------------------------|
|--------------|---------|------------------------------|

#### Exam Week - 19 Oct 2020

| Module/Topic | Chapter | Events and Submissions/Topic |
|--------------|---------|------------------------------|
|--------------|---------|------------------------------|

Prepare for exam

None specific.

Examination

**Home Examination** Due: Exam Week  
Monday (19 Oct 2020) 10:00 am AEST

## Assessment Tasks

### 1 Assignment 1

**Assessment Type**

Written Assessment

**Task Description**

This assignment will consist of several questions to test the student's basic understanding of the science, which will involve in solving some numerical problems. Students will have to identify the relevant scientific principles, any necessary formulations and explain the logic behind their approach to the problem. This assignment will be based on the material contained in the first 6 teaching weeks of the unit. There is no specific word count.

**Assessment Due Date**

Week 7 Monday (31 Aug 2020) 11:55 pm AEST

**Return Date to Students**

Week 9 Monday (14 Sept 2020)

**Weighting**

10%

**Assessment Criteria**

The correct use of terminology, using scientific language and conventions. The correct identification and explanation of the applicable principles and formulae (where appropriate). The logical and step by step sequence of answering the question. The quality of the presentation, which must be neat and well laid out. The accuracy of calculations where appropriate. 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 Assignment 2

**Assessment Type**

Practical Assessment

**Task Description**

The assignment-2 will be based on the work completed during the laboratory activities. It will be in two parts. The first part (10%) will be based on material covered in the teaching weeks 7 to 10. This will involve in solving scientific problems, by identifying the correct principle and formulae where appropriate and carrying out scientific analysis. Tutorials and discussion will take place at the residential school. Each student will submit their own individual Part 1 for Assignment 2 in the Moodle. The second part (20%) will

relate directly to the laboratory experiments carried out during the lab activities. This will consist of several individual experiments carried out in small groups, and students will be required to work as a team and write a group report. This will consist of a brief explanation of the principles being investigated, the methodology, sources of error, results and conclusions. The requirement is for a group submission for part 2, each group will work together to produce a single report. Please noted that video demonstration of Laboratory activities and supply data to students so they can write up and submit the required lab reports.

**Assessment Due Date**

Week 12 Monday (5 Oct 2020) 11:55 pm AEST

**Return Date to Students**

Review/Exam Week Monday (12 Oct 2020)

**Weighting**

30%

**Minimum mark or grade**

The overall average mark for Assignmnet 1 and Assignmnet 2 must be 50%

**Assessment Criteria**

The correct use of terminology, using scientific language and conventions. The correct identification and explanation of the applicable principles and formulae (where appropriate). The logical and step by step sequence of answering the question. A clear understanding of the purpose of experimentation and the logical interpretation of results (where applicable). The quality of the presentation, which must be neat and well laid out. The accuracy of calculations where appropriate. The correct referencing style where necessary.

**Referencing Style**

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

**Submission**

Online Group

**Submission Instructions**

The first part is an individual submission and the second part is a group submission.

**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**

Home examination will be scheduled in the exam week. The exam questions will be uploaded in the Moodle and will be available to all students at the same time. Students download the Exam paper from the Moodle and start working on the solution. Students are given three hours to complete the solution. Additional three hours are considered to provide them for downloading, uploading and perusal of the questions. Students should use blank A4 papers to write answers. Students upload their answer booklet as a single pdf file on Moodle.

**Assessment Due Date**

Exam Week Monday (19 Oct 2020) 10:00 am AEST

**Return Date to Students**

**Weighting**

60%

**Minimum mark or grade**

Students must obtain a minimum mark of 50% in the home examination.

**Assessment Criteria**

Students can use 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 authorised. Each question in the exam will be assessed separately against the following criterion:

- 20% of the total marks are for accuracy and correct result;
- Correct application of maths and arithmetic;
- Correct answer to the questions;
- Correct use of terminology, units and conventions
- 50% for correct method and procedure;
- Correct selection and application of formula and maths;
- Clear presentation of mathematical and arithmetical calculations for the results obtained;
- 30% for evidence of understanding

**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 Moodle.

**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