



AVAT12003 Aviation Theory III

Term 2 - 2017

Profile information current as at 01/05/2024 12:12 pm

All details in this unit profile for AVAT12003 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 provides the aircraft general knowledge theory and aerodynamics theory required by commercial pilot students wishing to undertake the CASA CPL examination. Topics covered include the reciprocating engine, turbo and supercharging, propeller systems, hydraulics, electrical and ignition, fuel and carburation, and flight Instrumentation, and the aerofoil, lift and drag, Bernoullis Theorem, aerodynamic stalls, wing loading, manoeuvres, stability and control; takeoff and landing.

Details

Career Level: *Undergraduate*

Unit Level: *Level 2*

Credit Points: *12*

Student Contribution Band: *8*

Fraction of Full-Time Student Load: *0.25*

Pre-requisites or Co-requisites

Prerequisite: AVAT 11001

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 - 2017

- Bundaberg
- Distance

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 12-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 25 hours of study per week, making a total of 300 hours for the unit.

Class Timetable

[Regional Campuses](#)

Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

[Metropolitan Campuses](#)

Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Online Quiz(zes)**

Weighting: 7%

2. **Online Quiz(zes)**

Weighting: 7%

3. **Online Quiz(zes)**

Weighting: 7%

4. **Online Quiz(zes)**

Weighting: 7%

5. **Online Quiz(zes)**

Weighting: 7%

6. **Online Quiz(zes)**

Weighting: 7%

7. **Online Quiz(zes)**

Weighting: 7%

8. **Online Quiz(zes)**

Weighting: 7%

9. **Online Quiz(zes)**

Weighting: 7%

10. **Online Quiz(zes)**

Weighting: 7%

11. **Written Assessment**

Weighting: 30%

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

Rons style of teaching made some of the dry stuff easy to learn.

Recommendation

Keep improving teaching style and techniques to make the dry subjects more interesting and easier to learn. Add as much humour as possible

Feedback from Have Your Say

Feedback

Presentation on the Power Points complemented text books.

Recommendation

Keep improving the Power Points to enhance the textbooks.

Unit Learning Outcomes

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

1. Categorise and explain the mechanics of aircraft power plants and systems
2. Analyse the workings of propellers including constant speed units
3. Discuss and classify the workings of aircraft hydraulic and electrical systems for normal and emergency operations
4. Explain aircraft fuel systems, fuel, and fuelling procedures and their operation. Choose the operation for normal and emergency situations.
5. Distinguish components of aircraft instruments systems
6. Determine loss of instruments from gage diagram
7. Assess the aerodynamics of components of aircraft, particularly during take-off and landing
8. Prepare take off and landing data and decide if take off or landing is safe in given conditions

Alignment of Learning Outcomes, Assessment and Graduate Attributes

Graduate Attributes**Learning Outcomes****1 2 3 4 5 6 7 8****10 - Aboriginal and Torres Strait Islander Cultures****Alignment of Assessment Tasks to Graduate Attributes****Assessment Tasks****Graduate Attributes****1 2 3 4 5 6 7 8 9 10****1 - Online Quiz(zes) - 7%**

• • • •

2 - Online Quiz(zes) - 7%

• • • •

3 - Online Quiz(zes) - 7%

• • • •

4 - Online Quiz(zes) - 7%

• • • •

5 - Online Quiz(zes) - 7%

• • • •

6 - Online Quiz(zes) - 7%

• • • •

7 - Online Quiz(zes) - 7%

• • • •

8 - Online Quiz(zes) - 7%

• • • •

9 - Online Quiz(zes) - 7%

• • • •

10 - Online Quiz(zes) - 7%

• • • •

11 - Written Assessment - 30%

• • • • • • • •

Textbooks and Resources

Textbooks

AVAT12003

Prescribed

Aerodynamics for the CASA PPL/CPL Day VFR Syllabus

(2007)

Authors: Robson, David and Williams, Jim

Aviation Theory Centre

Cheltenham , Victoria , Australia

ISBN: 187553783X

Binding: Paperback

AVAT12003

Prescribed

Aircraft General Knowledge for the CASA PPL/CPL Day VFR Syllabus

(2007)

Authors: Robinson, David; Baumanis, Andrew

Aviation Theory Centre

Cheltenham , Victoria , Australia

ISBN: 1875537821

Binding: Paperback

[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

Ron Bishop Unit Coordinator

r.bishop@cqu.edu.au

Schedule

Week 1 - 10 Jul 2017

| Module/Topic | Chapter | Events and Submissions/Topic |
|---------------------------|------------|------------------------------|
| Dynamics and Aerodynamics | AERO 1 & 2 | |

Week 2 - 17 Jul 2017

| Module/Topic | Chapter | Events and Submissions/Topic |
|-------------------------|---------|---|
| Inceptors and Effectors | AERO 3 | Quizzes start this week and will occur every week for the remainder of the unit. Check Moodle for when the quiz is due. |

Week 3 - 24 Jul 2017

| Module/Topic | Chapter | Events and Submissions/Topic |
|-----------------------|---------|---|
| Stability and Control | AERO 4 | Online Quiz(zes) Due: Week 3 Monday (24 July 2017) 9:00 am AEST |

Week 4 - 31 Jul 2017

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|------------|---|
| Aerodynamic Performance: Turns, climbs, Wing Loading, Load Factor | AERO 5 & 6 | Online Quiz(zes) Due: Week 4 Monday (31 July 2017) 9:00 am AEST |

Week 5 - 07 Aug 2017

| Module/Topic | Chapter | Events and Submissions/Topic |
|-------------------------------------|------------|---|
| Atmospheric Disturbances and Stalls | AERO 7 & 8 | Online Quiz(zes) Due: Week 5 Monday (7 Aug 2017) 9:00 am AEST |

Vacation Week - 14 Aug 2017

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

Week 6 - 21 Aug 2017

| Module/Topic | Chapter | Events and Submissions/Topic |
|----------------------|-----------|--|
| Reciprocating engine | AGK 1 & 2 | Online Quiz(zes) Due: Week 6 Monday (21 Aug 2017) 9:00 am AEST |

Week 7 - 28 Aug 2017

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|-----------------|--|
| Ignition, Carburetion Systems , Lubrication and Supercharging | AGK 3, 4, 5 & 6 | Online Quiz(zes) Due: Week 7 Monday (28 Aug 2017) 9:00 am AEST |

Week 8 - 04 Sep 2017

| Module/Topic | Chapter | Events and Submissions/Topic |
|-------------------|---------|--|
| Propeller systems | AGK 7 | Online Quiz(zes) Due: Week 8 Monday (4 Sept 2017) 9:00 am AEST |

Week 9 - 11 Sep 2017

| Module/Topic | Chapter | Events and Submissions/Topic |
|-----------------------------|-----------|---|
| Fuel and Electrical Systems | AGK 8 & 9 | Online Quiz(zes) Due: Week 9 Monday (11 Sept 2017) 9:00 am AEST |

Week 10 - 18 Sep 2017

| Module/Topic | Chapter | Events and Submissions/Topic |
|----------------------------|-----------------|--|
| Hydraulic aircraft systems | AGK 10, 11 & 12 | Online Quiz(zes) Due: Week 10 Monday (18 Sept 2017) 9:00 am AEST |

Week 11 - 25 Sep 2017

| Module/Topic | Chapter | Events and Submissions/Topic |
|-----------------------------|-----------------|--|
| Aircraft flight instruments | AGK 13, 14 & 15 | Online Quiz(zes) Due: Week 11 Monday (25 Sept 2017) 9:00 am AEST Written Assessment Due: Week 11 Friday (29 Sept 2017) 9:00 am AEST |

Week 12 - 02 Oct 2017

| Module/Topic | Chapter | Events and Submissions/Topic |
|------------------|---------|--|
| Automatic flight | AGK 16 | Online Quiz(zes) Due: Week 12 Monday (2 Oct 2017) 9:00 am AEST |

Review/Exam Week - 09 Oct 2017

| Module/Topic | Chapter | Events and Submissions/Topic |
|------------------------------|---------|---|
| Writing/Practical Assignment | | See Moodle for Written Assessment due date. |

Assessment Tasks

1 Online Quiz(zes)

Assessment Type

Online Quiz(zes)

Task Description

10 Question Quiz

Number of Quizzes

1

Frequency of Quizzes**Assessment Due Date**

Week 3 Monday (24 July 2017) 9:00 am AEST

Return Date to Students

Automatic through Moodle

Weighting

7%

Assessment Criteria

No Assessment Criteria

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Assess the aerodynamics of components of aircraft, particularly during take-off and landing
- Prepare take off and landing data and decide if take off or landing is safe in given conditions

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

2 Online Quiz(zes)

Assessment Type

Online Quiz(zes)

Task Description

Quiz

Number of Quizzes

1

Frequency of Quizzes

Weekly

Assessment Due Date

Week 4 Monday (31 July 2017) 9:00 am AEST

Return Date to Students

Return on completion of Quiz

Weighting

7%

Assessment Criteria

No Assessment Criteria

Referencing Style

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

Submission

Online

Submission Instructions

Submit through moodle

Learning Outcomes Assessed

- Assess the aerodynamics of components of aircraft, particularly during take-off and landing

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

3 Online Quiz(zes)

Assessment Type

Online Quiz(zes)

Task Description

No Assessment Task Description

Number of Quizzes

1

Frequency of Quizzes**Assessment Due Date**

Week 5 Monday (7 Aug 2017) 9:00 am AEST

Return Date to Students

Return on completion of Quiz

Weighting

7%

Assessment Criteria

No Assessment Criteria

Referencing Style

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

Submission

Online

Submission Instructions

Submit through moodle

Learning Outcomes Assessed

- Assess the aerodynamics of components of aircraft, particularly during take-off and landing

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

4 Online Quiz(zes)

Assessment Type

Online Quiz(zes)

Task Description

No Assessment Task Description

Number of Quizzes

1

Frequency of Quizzes**Assessment Due Date**

Week 6 Monday (21 Aug 2017) 9:00 am AEST

Return Date to Students

Return on completion of Quiz

Weighting

7%

Assessment Criteria

No Assessment Criteria

Referencing Style

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

Submission

Online

Submission Instructions

Submit through moodle

Learning Outcomes Assessed

- Categorise and explain the mechanics of aircraft power plants and systems

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

5 Online Quiz(zes)

Assessment Type

Online Quiz(zes)

Task Description

No Assessment Task Description

Number of Quizzes

1

Frequency of Quizzes**Assessment Due Date**

Week 7 Monday (28 Aug 2017) 9:00 am AEST

Return Date to Students

Return on completion of Quiz

Weighting

7%

Assessment Criteria

No Assessment Criteria

Referencing Style

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

Submission

Online

Submission Instructions

Submit through moodle

Learning Outcomes Assessed

- Categorise and explain the mechanics of aircraft power plants and systems

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

6 Online Quiz(zes)

Assessment Type

Online Quiz(zes)

Task Description

No Assessment Task Description

Number of Quizzes

1

Frequency of Quizzes**Assessment Due Date**

Week 8 Monday (4 Sept 2017) 9:00 am AEST

Return Date to Students

Return on completion of Quiz

Weighting

7%

Assessment Criteria

No Assessment Criteria

Referencing Style

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

Submission

Online

Submission Instructions

Submit through moodle

Learning Outcomes Assessed

- Categorise and explain the mechanics of aircraft power plants and systems

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

7 Online Quiz(zes)

Assessment Type

Online Quiz(zes)

Task Description

No Assessment Task Description

Number of Quizzes

1

Frequency of Quizzes**Assessment Due Date**

Week 9 Monday (11 Sept 2017) 9:00 am AEST

Return Date to Students

Return on completion of Quiz

Weighting

7%

Assessment Criteria

No Assessment Criteria

Referencing Style

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

Submission

Online

Submission Instructions

Submit through moodle

Learning Outcomes Assessed

- Analyse the workings of propellers including constant speed units

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

8 Online Quiz(zes)

Assessment Type

Online Quiz(zes)

Task Description

No Assessment Task Description

Number of Quizzes

1

Frequency of Quizzes**Assessment Due Date**

Week 10 Monday (18 Sept 2017) 9:00 am AEST

Return Date to Students

Return on completion of Quiz

Weighting

7%

Assessment Criteria

No Assessment Criteria

Referencing Style

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

Submission

Online

Submission Instructions

Submit through moodle

Learning Outcomes Assessed

- Explain aircraft fuel systems, fuel, and fuelling procedures and their operation. Choose the operation for normal and emergency situations.
- Distinguish components of aircraft instruments systems

Graduate Attributes

- Communication
- Problem Solving

- Critical Thinking
- Information Literacy

9 Online Quiz(zes)

Assessment Type

Online Quiz(zes)

Task Description

No Assessment Task Description

Number of Quizzes

1

Frequency of Quizzes

Assessment Due Date

Week 11 Monday (25 Sept 2017) 9:00 am AEST

Return Date to Students

Return on completion of Quiz

Weighting

7%

Assessment Criteria

No Assessment Criteria

Referencing Style

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

Submission

Online

Submission Instructions

Submit through moodle

Learning Outcomes Assessed

- Discuss and classify the workings of aircraft hydraulic and electrical systems for normal and emergency operations

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

10 Online Quiz(zes)

Assessment Type

Online Quiz(zes)

Task Description

No Assessment Task Description

Number of Quizzes

1

Frequency of Quizzes

Assessment Due Date

Week 12 Monday (2 Oct 2017) 9:00 am AEST

Return Date to Students

Return on completion of Quiz

Weighting

7%

Assessment Criteria

No Assessment Criteria

Referencing Style

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

Submission

Online

Submission Instructions

Submit through moodle

Learning Outcomes Assessed

- Determine loss of instruments from gage diagram

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

11 Written Assessment

Assessment Type

Written Assessment

Task Description

This assignment will broaden your understanding of alternative fuel or propulsion systems. You will need to scan relevant literature (textbooks, websites, etc) to explain and discuss alternative fuel or propulsion systems for General Aviation. The main fuel source currently used in General Aviation is AVGAS. Experts agree that AVGAS availability is declining. Parts of the world don't have access to AVGAS. This is a concern to aviation as a large portion of General Aviation (GA) relies on AVGAS to operate. Electric power, Diesel/Kerosene (AVTUR), and many other fuels and propulsion systems are being explored.

Your paper should briefly cover the following areas:

Replacing AVGAS with alternative fuel or propulsion systems in General Aviation.

The paper will draw on sourced literature and other sources. (Hint: Use the Library's resource search and online journal databases, (eg., Ebscohost, books, videos, etc.)

Format

The paper is to be written in essay format, with an Introduction, Body, and Conclusion, and will be properly referenced using the Harvard Style. An abstract is required. Do not provide a table of contents. Pages should be numbered in Arabic numerals at the top right corner, except for the title page (no page number) and the abstract should have Roman numerals starting at ii. 1200 words maximum.

Assessment Due Date

Week 11 Friday (29 Sept 2017) 9:00 am AEST

Return Date to Students

Within 2 weeks after due date

Weighting

30%

Assessment Criteria

Demonstrates knowledge and understanding of the AVGAS problem and development of new fuels and propulsion systems to solve this problem. Extensive knowledge and understanding of the historical development of aviation as demonstrated by a well informed and critical discussion of the conditions and technological advances that will solve the AVGAS problem in General Aviation.

HD: Excellent and appropriate use of examples and good grasp of how technology can change GA from using primarily AVGAS to Alternative Fuels or propulsion systems to ensure the fuel source is sustainable.

D: Considerable knowledge and understanding of the fuel issues of aviation as demonstrated by a well informed and critical discussion of the conditions and technological advances which will lead to a sustainable fuel. Very good use of examples.

C: Appropriate use of examples of possible fuels and propulsion systems that can ensure General Aviation is Sustainable. Decent use of examples.

P: Basic knowledge and understanding of the alternative fuel development of aviation as demonstrated by a well informed and critical discussion of the conditions and technological advances that will lead to a sustainable fuel source.

P: Some use of examples and milestones. Little knowledge and understanding of the AVGAS problem of General Aviation as demonstrated by a well informed and critical discussion of the conditions and technological advances which lead to the development of a sustainable fuel for General Aviation.

F: No use of examples. No grasp of the subject on the AVGAS problem. No or limited references. Very poor referencing.

Referencing Style

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

Submission

Online

Submission Instructions

Submit through moodle/turnitin

Learning Outcomes Assessed

- Categorise and explain the mechanics of aircraft power plants and systems
- Discuss and classify the workings of aircraft hydraulic and electrical systems for normal and emergency operations
- Prepare take off and landing data and decide if take off or landing is safe in given conditions

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

Academic Integrity Statement

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

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

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

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

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

What is a breach of academic integrity?

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

Why is academic integrity important?

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

Where can I get assistance?

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

What can you do to act with integrity?



Be Honest

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



Seek Help

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



Produce Original Work

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