



AVAT13008 Navigation (Air Transport Pilot Licence)

Term 1 - 2022

Profile information current as at 21/04/2024 12:11 am

All details in this unit profile for AVAT13008 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

Navigation (Air Transport Pilot Licence) will provide you with advanced knowledge of national and international navigation procedures applicable to heavy aircraft operations. You will cover the aeronautical knowledge requirements of the Civil Aviation Safety Authority Air Transport Pilot Licence (ATPL) navigation syllabus. You will learn how to interpret chart projections. You will convert between international time zones and study radio navigation aids. Altimetry procedures required for international and national flights will be examined. You will calculate critical points and convert between airspeed types.

Details

Career Level: *Undergraduate*

Unit Level: *Level 3*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

Pre-requisites or Co-requisites

Prerequisites: AVAT12009 Navigation (Commercial Pilot Licence) and AVAT12008 Meteorology (Commercial Pilot Licence).

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 1 - 2022

- Bundaberg
- Cairns
- 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. **Online Test**

Weighting: 40%

2. **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 SUTE

Feedback

Optional Moodle quizzes may be included before the exams to help students reinforce some of the concepts explored throughout the term.

Recommendation

Additional quizzes will be made available.

Feedback from SUTE

Feedback

Learning resources were sufficient, relevant covering all topics.

Recommendation

Agree and further improvements will be made.

Unit Learning Outcomes

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

1. Demonstrate competencies on the Advanced Navigation components of ATPL (Airline Transport Pilot License); as detailed in Schedule 3 of Part 61, MOS (Manual of Standards) of CASR (Civil Aviation Safety Regulations)
2. Interpret the various global navigation chart projections and explain their use on national and international flights
3. Convert between global time zones, Universal Coordinated Time and local time
4. Evaluate the operation and limitations of radio navigation aids
5. Examine the altimetry procedures used on national and international flights
6. Convert between various airspeed types
7. Calculate on-track and off-track critical points for various abnormal operations.

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 - Online Test - 40%	•	•	•		•	•	
2 - Examination - 60%	•	•	•	•	•	•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	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 - Online Test - 40%	•	•	•	•		•	•	•		
2 - Examination - 60%	•	•	•				•	•		

Textbooks and Resources

Textbooks

AVAT13008

Supplementary

ATPL Navigation Part 1 and Part 2

Edition: Product Code Av 2 and Av 9

Authors: Rob Avery

Avfacts Pilot Theory Specialists

Sorell, Tasmania, Australia

Binding: Spiral

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

Aruna Ranganathan Unit Coordinator
a.ranganathan@cqu.edu.au

Schedule

Introduction and Pressure Instruments - 07 Mar 2022

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to unit Typical pitot static systems Altimeter Airspeed indicator Machmeter Vertical speed indicator		

Gyroscopes and Compasses - 14 Mar 2022

Module/Topic	Chapter	Events and Submissions/Topic
Principles of gyroscopes: rigidity and precession, drift and topple Types of gyroscopes: air and electrically driven, ring laser gyroscopes Compasses Directional gyroscope Attitude indicator Turn and slip indicator Remote magnetic indicator and flux valves		

Charts - 21 Mar 2022

Module/Topic	Chapter	Events and Submissions/Topic
Fundamental principles, terms and models Departure Convergence Ideal characteristics Common projections overview Mercator projections		

Charts and Time - 28 Mar 2022

Module/Topic	Chapter	Events and Submissions/Topic
Charts (continued) Polar stereographic projection Lamberts conformal projection Standard time formats Time zones Local mean time		

Radio Wave Propagation - 04 Apr 2022

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

General principles
Types of wave propagation
Antennae types and functions

Online quiz: 40%

Vacation Week - 11 Apr 2022

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

ETP, PNR and PSD - 18 Apr 2022

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

Calculating ETP
Calculating PNR
Calculating off-track PSD

Mid Term Test Due: Week 6 Tuesday
(19 Apr 2022) 11:45 pm AEST

Conventional Radio Aids - 25 Apr 2022

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

NDB and ADF
VOR
DME
ILS
MLS

RADAR - 02 May 2022

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

Primary RADAR
Secondary RADAR
Radio altimeter
Weather RADAR

Inertial Navigation - 09 May 2022

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

Principles of operation and use
Gyrostabilized and strap down systems
Alignment
Accuracy and errors

Satellite Navigation - 16 May 2022

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

Principles of operation and use
Accuracy and errors
RAIM and FDE

RNAV and Integrated Systems - 23 May 2022

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

Typical modern systems and principles
Air data computers
Position updating
EFIS displays and presentation
Route considerations

Modern Navigation - 30 May 2022

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

GNSS enhancements
Performance based navigation
ADS-B, ADS-C
LIDAR

Review/Exam Week - 06 Jun 2022

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

Assessment Tasks

1 Mid Term Test

Assessment Type

Online Test

Task Description

This quiz will cover all material in weeks 1 to 5.

This will be an online test, consisting of multiple choice and short answer questions.

Assessment Due Date

Week 6 Tuesday (19 Apr 2022) 11:45 pm AEST

Return Date to Students

Week 7 Monday (25 Apr 2022)

Weighting

40%

Assessment Criteria

Students should be able to:

- explain the principle of operation of basic air data and gyroscopic flight instruments, and their associated errors
- interpret Mercator, Lambert's Conformal, and Polar Stereographic chart projections, and explain their differences and uses
- convert between different time zones
- resolve airspeed conversion and altimetry problems
- explain basic principles of radio wave propagation

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Demonstrate competencies on the Advanced Navigation components of ATPL (Airline Transport Pilot License); as detailed in Schedule 3 of Part 61, MOS (Manual of Standards) of CASR (Civil Aviation Safety Regulations)
- Interpret the various global navigation chart projections and explain their use on national and international flights
- Convert between global time zones, Universal Coordinated Time and local time
- Examine the altimetry procedures used on national and international flights
- Convert between various airspeed types

Graduate Attributes

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

Examination

Outline

Complete an invigilated examination.

Date

During the examination period at a CQUniversity examination centre.

Weighting

60%

Length

120 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 - all non-communicable calculators, including scientific, programmable and graphics calculators are authorised

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