UNSW Course Outline

AVIA2115 Commercial Aerodynamics - 2024

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General Course Information

Course Code : AVIA2115
Year : 2024
Term : Term 2
Teaching Period : T2
Is a multi-term course? : No
Faculty : Faculty of Science
Academic Unit : School of Aviation
Delivery Mode : In Person
Delivery Format : Non Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This course introduces students to the aeronautical knowledge training required by Civil Aviation Safety Regulations 1998 Part 61 Manual of Standards for commercial pilot licence level Aerodynamics, specifically the Commerical Aerodynamics - all aircraft categories (CADC) and

Commercial Aerodynamics - aeroplane (CADA) units of competency. The course explores key concepts of commercial aerodynamics, with a focus on understanding aerodynamic concepts applicable to low-speed propeller driven aeroplanes, and the relationship between theoretical aerodynamics concepts and design features, controls and limitations found in low-speed propeller driven aeroplanes. A combination of synchronous learning and discussion is used to teach key concepts, knowledge and skills, and homework and class quizzes are also provided to students to assess retention and understanding of their learning.

Course Aims

The aim of this course is to help students achieve the aeronautical knowledge requirements in relation to aerodynamics for the issue of an Australian Commercial Pilot Licence. The course aims to support students' acquisition of necessary skills and knowledge through the delivery of a series of collaborative lecture presentations followed by discussion of each topic to consolidate concepts. To ensure that students feel supported prior to sitting the mandatory CASA examination for this course and are confident in their understanding of the required knowledge, preparatory support and foundational knowledge checks with feedback provided on each student's performance are integrated throughout the course.

The standards achieved are to meet or exceed those laid down by the Civil Aviation Safety Authority as per the UNSW Operations Manual.

Relationship to Other Courses

Pre-requisite(s): AVIA1111

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Define and explain aerodynamic concepts applicable to low speed propeller driven aeroplanes.
CLO2 : Relate theoretical aerodynamic concepts to design features, controls and limitations found in low speed propeller driven aeroplanes.
CLO3 : Satisfy the theoretical knowledge requirements of the CASR 1998 Part 61 MOS for the CADC and CADA units of competency.

Course Learning Outcomes	Assessment Item
CLO1 : Define and explain aerodynamic concepts applicable to low speed propeller driven aeroplanes.	• Foundation knowledge check • Comprehensive knowledge check • CASA CPL Aerodynamics (CASA CADA) Exam
CLO2 : Relate theoretical aerodynamic concepts to design features, controls and limitations found in low speed propeller driven aeroplanes.	• Foundation knowledge check • Comprehensive knowledge check • CASA CPL Aerodynamics (CASA CADA) Exam
CLO3 : Satisfy the theoretical knowledge requirements of the CASR 1998 Part 61 MOS for the CADC and CADA units of competency.	• Foundation knowledge check • Comprehensive knowledge check • CASA CPL Aerodynamics (CASA CADA) Exam

Learning and Teaching Technologies

Moodle - Learning Management System

Additional Course Information

The topics are presented during face-to-face lectures, with supporting documentation, videos and quizzes available on UNSW Moodle. Supported by textbooks and additional online reference material, with discussions at the conclusion of each topic. Homework and class quizzes check retention and understanding and at the conclusion of the new topic's students undertake formal CASA exam preparation.

Although the student will have completed the BAKC & the RBKA units of competency, the foundational aircraft general aerodunamic knowledge information is reviewed as new material is presented. Given the very specific and difficult nature of the formal CASA exam, formal exam preparation is necessary.

A supportive environment is provided but there is an expectation that all students will take responsibility for their own learning and progress within the course. Assessment is designed to reflect the learning outcomes.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Foundation knowledge check Assessment Format: Individual	20%	Start Date: Day 4 Due Date: Day 4
Comprehensive knowledge check Assessment Format: Individual	30%	Start Date: Day 7 Due Date: Day7
CASA CPL Aerodynamics (CASA CADA) Exam Assessment Format: Individual	50%	Start Date: As booked for you at the external CASA examination centre Due Date: No Later than the last day of the exam period, for the applicable term of enrolment

Assessment Details

Foundation knowledge check

Assessment Overview

For the Foundation Knowledge Check assessment, you are required to undertake a test at the end of Day 3, comprised of short answer questions. The test will assess your understanding of foundation navigation material covered on Days 1-2.

You will be provided with 90 minutes to complete the test.

Marks will be provided to students immediately upon completion of the foundation check. General feedback on student performance with an emphasis on identified problem areas will also be provided verbally by the instructor in the class following the knowledge check submission deadline.

Course Learning Outcomes

- CLO1 : Define and explain aerodynamic concepts applicable to low speed propeller driven aeroplanes.
- CLO2 : Relate theoretical aerodynamic concepts to design features, controls and limitations found in low speed propeller driven aeroplanes.
- CLO3 : Satisfy the theoretical knowledge requirements of the CASR 1998 Part 61 MOS for the CADC and CADA units of competency.

Detailed Assessment Description

30 multiple choice questions covering foundation aerodynamics information. Delivered via Moodle.

Feedback is given by the lecturer during class with emphasis on identified problem areas

Assessment Length

90 mins

Submission notes

Online Moodle Assessment examination given on a date notified in class, held on a regular scheduled class day and set between certain times.

Assessment information

The assessement tasks will cover the following topics

01 The Curves

02 Wings

03 Lift

04 Drag

08 Taxi Take-Off Landing

10 Straight and Level

12 Climb

13 Descent

14 Turn

16 Stall Spin Spiral

17 Lift Augmentation

Assignment submission Turnitin type

Not Applicable

Comprehensive knowledge check

Assessment Overview

For the Comprehensive Knowledge Check assessment, you are required to undertake a test on Day 6, comprised of short answer questions. The test will assess your understanding of material covered in Days 1-4.

You will be provided with 90 minutes to complete the test.

General feedback on student performance with an emphasis on identified problem areas will also be provided verbally by the instructor in the class following the comprehensive knowledge check submission deadline.

Course Learning Outcomes

- CLO1 : Define and explain aerodynamic concepts applicable to low speed propeller driven aeroplanes.
- CLO2 : Relate theoretical aerodynamic concepts to design features, controls and limitations found in low speed propeller driven aeroplanes.
- CLO3 : Satisfy the theoretical knowledge requirements of the CASR 1998 Part 61 MOS for the CADC and CADA units of competency.

Detailed Assessment Description

30 short answer questions covering detailed syllabus requirements.

Feedback will be given as written comments and scores on the paper, as well as during class with emphasis on identified problem areas.

Assessment Length

90 mins

Submission notes

Online Moodle Assessment examination given on a date notified in class, held on a regular scheduled class day, and set between certain times.

Assessment information

This assessment task is designed to cover topic areas, with questions to represent the style and scope of the Civil Aviation Safety Authority examination, required by the CASR 1998 Part 61 MOS for commercial pilot licence level aircraft aerodynamics, specifically the CADC and CADA units of competency.

Specifically the topics examined during Assessement 2 are

05 Ground Effect

06 Boundary Layer

07 Flight Controls

09 Wind Gradient Wind Shear

11 Centre of Gravity

15 Vn Diagram

18 Design Features

19 Trim

20 Stability

21 Propeller Aerodynamics

22 Turbulence

01 IAS TAS MACH

03 TAS Calculation

04 V Speeds

Assignment submission Turnitin type

This is not a Turnitin assignment

CASA CPL Aerodynamics (CASA CADA) Exam

Assessment Overview

For this assessment, you are required to complete a federally mandated examination conducted by the aviation regulator (CASA) external to UNSW. The exam will test your knowledge of the syllabus in Part 61 Manual of Standards (MOS) schedule 3.

You will be provided with 90 minutes to complete the examination. Feedback will be provided

immediately after the examination via the Knowledge Deficiency Report (KDR).

As the flying training is conducted under Civil Aviation Safety Regulation 1998 Part 142 approval, students must not arrange, transfer, or sit exams without Head of Operations approval. All first attempts at exams will be arranged by UNSW.

You must provide the original CASA result (KDR) notification to the Head of Operations as evidence that you have passed a CASA exam within the time allowed. Students who do not hand in the KDR and subsequently lose the original copy will be liable to purchase a replacement from CASA at their own expense.

The mark to pass this examination is a minimum of 70%. Failure to attempt or pass this assessment will result in the award of a UF grade.

Course Learning Outcomes

- CLO1 : Define and explain aerodynamic concepts applicable to low speed propeller driven aeroplanes.
- CLO2 : Relate theoretical aerodynamic concepts to design features, controls and limitations found in low speed propeller driven aeroplanes.
- CLO3 : Satisfy the theoretical knowledge requirements of the CASR 1998 Part 61 MOS for the CADC and CADA units of competency.

Detailed Assessment Description

A federally mandated examination conducted by the aviation regulator external to UNSW, required for pilots to achieve a Commercial Pilot Licence.

Feedback is generated by the regulator immediately at the conclusion of the exam in accordance with legislation.

Assessment Length

90 mins

Submission notes

You must provide the original CASA result notification, also known as the KDR, (pass or fail) to the Head of Operations immediately after sitting the CASA examination. Students who do not hand in the KDR and subsequently lose the original copy will be liable to purchase a replacement from CASA at their own expense.

Assessment information

This is an external industry examinatiion, one of seven exams required for the commercial

pilot licence. The examination will be conducted by ASPEQ Limited. Students must be familiar with CASA exam rules at:

https://www.casa.gov.au/licences-and-certificates/pilots/pilot-and-flight-crew-exams/prepare-your-exam

As the flying training is conducted under Civil Aviation Safety Regulation 1998 Part 142 approval, students must not arrange, transfer, or sit CASA exams without Head of Operations approval. All first attempts at exams will be arranged by UNSW.

Assignment submission Turnitin type

This is not a Turnitin assignment

Hurdle rules

Assessment task 3 is an essential component of the course. **Failure to attempt or pass assessment 3 will result in the award of a UF grade for AVIA 2115.**

If a student does not pass assessment task 3 at the first attempt, then the result for AVIA 2115 will be capped at 50% regardless of performance in the other assessment tasks, provided the student subsequently passes assessment task 3 within the time allowed.
Assessement task 3 must be satisfactory completed no later than the last day of the applicable exam period following the term AVIA2115 was enrolled in. The last day of the exam period is determined by the published UNSW academic calandar available at UNSW Academic Calendar | UNSW Australia

General Assessment Information

Your final mark for AVIA 2115 will be determined using the weightings shown for each assessment task. Your mark will be moderated so that a result of between 70% to 100% in each assessment task will equate to a moderated result of 50% to 100% for AVIA 2115.

Submission of all homework assignments including assessment tasks 1 and 2 are compulsory. If a student is absent or does not submit assessment tasks due to illness or misadventure, medical or other certification that explains and covers the period of the absence must be submitted in the special consideration application.

Grading Basis

Standard

Course Schedule

Teaching Week/Module	Activity Type	Content
Week Commencing 15 July 2024	Lecture	Curves Wings Lift & Drag
Week Commencing 22 July 2024	Lecture	Airspeed Taxi Take off Landing Straight + Level
Week Commencing 29 July 2024	Lecture	Climb Descend Turn Stall Spin Stall Spin Design Stability Augmentation
Week Commencing 5 August 2024	Lecture	Propeller Turbulence Revision

Attendance Requirements

Attendance at each class is compulsory. If a student is absent due to illness or misadventure, medical or other certification that explains and covers the period of the absence must be submitted to the class lecture.

Unexplained and/or unsupported absences from classes may result in a review of the student's enrolment as per the Professional Pilot Program Procedures Manual and may result in a fail grade awarded for AVIA 2115.

General Schedule Information

The course must be integrated with practical flying training to comply with federal government accreditation requirements; therefore, the course is completed in class on consecutive days. Monday to Friday (6 contact hours per day) over 4 weeks and 1 day for revision = 42 contact hours.

The subject is conducted face-to-face at Kensington, and class times start at 0830 and go to 1550, although this may extend to a later time dependant on student questions and queries

Course Resources

Prescribed Resources

A comprehensive series of online notes and practice questions are available to students on Moodle. All handouts, quizzes and reviews are within the respective Molodle folders.

Access to UNSW Moodle is through the following link and student key

CPL Aerodynamics

https://moodle.telt.unsw.edu.au/course/view.php?id=50848

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Recommended Resources

The following textbook is provided for enrolled students

- Aerodynamics for the Private and Commercial Pilot Licences, Aviation Theory Centre, April 2015, ISBN 978-1-875537-83-9.
- UNSW Operations Manual and CASR 1998 Part 61 MOS, CADC and CADA units of competency.

Course Evaluation and Development

Assessment 1 and 2 feedback will be given verbally by the CPL lecturer within 2 weeks of submission and before the CASA exam.

Assessment 3 (CASA exam) feedback is given immediately after the exam via Knowledge Deficiency Report.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Lecturer	Barry Ellis		Flying Operations Unit	0297913047	By appointment	Yes	Yes
Head lecturer	Jeremy Andr ews		Flying Operations Unit	0297913047	By appointment	No	No

Other Useful Information

Academic Information

Upon your enrolment at UNSW, you share responsibility with us for maintaining a safe, harmonious and tolerant University environment.

You are required to:

- Comply with the University's conditions of enrolment.
- Act responsibly, ethically, safely and with integrity.
- Observe standards of equity and respect in dealing with every member of the UNSW community.
- Engage in lawful behaviour.
- Use and care for University resources in a responsible and appropriate manner.
- Maintain the University's reputation and good standing.

For more information, visit the UNSW Student Code of Conduct Website.

Academic Honesty and Plagarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.
Further information about referencing styles can be located at https://student.unsw.edu.au/referencing

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage. At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.
Further information about academic integrity, plagiarism and the use of AI in assessments can be located at:

- The Current Students site,
- The ELISE training site, and
- The Use of AI for assessments site.

The Student Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: https://student.unsw.edu.au/conduct

Submission of Assessment Tasks

Penalty for Late Submissions

UNSW has a standard late submission penalty of:

- 5% per day,
- for all assessments where a penalty applies,
- capped at five days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Any variations to the above will be explicitly stated in the Course Outline for a given course or assessment task.

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

Special Consideration

If circumstances prevent you from attending/completing an assessment task, you must officially apply for special consideration, usually within 3 days of the sitting date/due date. You can apply by logging onto myUNSW and following the link in the My Student Profile Tab. Medical documentation or other documentation explaining your absence must be submitted with your application. Once your application has been assessed, you will be contacted via your student email address to be advised of the official outcome and any actions that need to be taken from there. For more information about special consideration, please visit: https://student.unsw.edu.au/special-consideration

Important note: UNSW has a "fit to sit/submit" rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so and cannot later apply for Special Consideration. This is to ensure that if you feel unwell or are faced with significant circumstances beyond your control that affect your ability to study, you do not sit an examination or submit an assessment that does not reflect your best performance. Instead, you should apply for Special Consideration as soon as you realise you are not well enough or are otherwise unable to sit or submit an assessment.

Faculty-specific Information

Additional support for students

- The Current Students Gateway
- Student Support
- Academic Skills and Support
- Student Wellbeing, Health and Safety
- Equitable Learning Services
- UNSW IT Service Centre
- Science EDI Student Initiatives, Offerings and Guidelines

School Contact Information

Email:

aviation@unsw.edu.au

Telephone:

Undergraduate Courses - +61 2 9385 5756 (Katie Wang)

Postgraduate Courses - +61 2 9385 5787 (Michelle Lee)