UNSW Course Outline

AVIA3113 Air Transport Performance and Navigation - 2024

Published on the 28 Jan 2024

General Course Information

Course Code : AVIA3113
Year : 2024
Term : Term 1
Teaching Period : T1
Is a multi-term course? : No
Faculty : Faculty of Science
Academic Unit : School of Aviation
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Bankstown
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 the CASR 1998 Part 61 MOS for the Air Transport Pilot Licence level Navigation, and Performance and Loading, specifically the APLC, APLA and ANVC units of competency. The course explores key

concepts of air transport performance and navigation, considerations and data interpretation relating to take-off, enroute and landing performance; weight and balance calculations, and limitations; and principles and practical techniques involved in route navigation. 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 navigation, and performance and loading for the issue of an Australian Air Transport Pilot Licence. The course aims to support students' acquisition of necessary skills and knowledge through a combination of learning delivery styles and resources, including a series of collaborative lecture presentations integrating relevant reference material, videos, and quizzes, followed by discussion involving challenge, response-style questioning. 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 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-requisites: AVIA2111, AVIA2112, AVIA2113, AVIA2114, AVIA 2115, AVIA2116 and AVIA2117

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Explain weight and balance concepts, take-off, enroute and landing performance considerations applicable to multi-engine jet transport aeroplanes.
CLO2 : Complete B727-200 load and trim sheets and extract take-off and landing performance data from the performance manual.
CLO3 : Explain the principles of navigation charts, time zones, flight instruments and compasses, radio wave propagation, radio navigation aids, radar, area navigation systems and route navigation.
CLO4 : Practically apply chart plotting techniques involved in route navigation.
CLO5 : Satisfy the theoretical knowledge requirements of the CASR 1998 Part 61 MOS for the APLC, APLA and ANVC units of competency.

Course Learning Outcomes	Assessment Item
CLO1 : Explain weight and balance concepts, take-off, enroute and landing performance considerations applicable to multi-engine jet transport aeroplanes.	• Comprehensive knowledge checks • Air transport pilot licence performance and loading (aeroplane) exam (CASA APLA)
CLO2 : Complete B727-200 load and trim sheets and extract take-off and landing performance data from the performance manual.	• Comprehensive knowledge checks • Air transport pilot licence performance and loading (aeroplane) exam (CASA APLA)
CLO3 : Explain the principles of navigation charts, time zones, flight instruments and compasses, radio wave propagation, radio navigation aids, radar, area navigation systems and route navigation.	• Air transport pilot licence navigation exam (CASA ANAV) • Comprehensive knowledge checks
CLO4 : Practically apply chart plotting techniques involved in route navigation.	• Air transport pilot licence navigation exam (CASA ANAV) • Comprehensive knowledge checks
CLO5 : Satisfy the theoretical knowledge requirements of the CASR 1998 Part 61 MOS for the APLC, APLA and ANVC units of competency.	• Air transport pilot licence navigation exam (CASA ANAV) • Air transport pilot licence performance and loading (aeroplane) exam (CASA APLA) • Comprehensive knowledge checks

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

Face-to-face classroom lectures will be supplemented by materials available to students on the UNSW Moodle, Powerpoint presentations and videos.

A supportive environment is provided but there is an expectation that students will take responsibility for their own learning and progress within the course.Assessments are designed to reflect the learning outomes, as well as providing preparation for the CASA exams.

Additional Course Information

NIL

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Comprehensive knowledge checks Assessment Format: Individual	20%	
Air transport pilot licence navigation exam (CASA ANAV) Assessment Format: Individual	40%	Start Date: As booked for you at the external CASA examination centre. Due Date: As booked for you at the external CASA examination centre.
Air transport pilot licence performance and loading (aeroplane) exam (CASA APLA) Assessment Format: Individual	40%	

Assessment Details

Comprehensive knowledge checks

Assessment Overview

This assessment comprises of two knowledge checks, 1A and 1B (each weighted 10%; total for this assessment is 20%), with each assessing your knowledge of different content explored in the course.

Assessment 1A assesses your knowledge of Navigation, and comprises short written response questions. You are required to complete this assessment on Day 5 and you will be provided with 90 minutes to complete the test.

Assessment 1B assesses your knowledge of Loading and Performance, and comprises of short written response questions. You are required to complete this assessment on Day 5 and you will be provided with 120 minutes to complete the test.

Marks will be provided to students immediately upon completion of each knowledge 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 each knowledge check submission deadline.

Course Learning Outcomes

- CLO1 : Explain weight and balance concepts, take-off, enroute and landing performance considerations applicable to multi-engine jet transport aeroplanes.
- CLO2 : Complete B727-200 load and trim sheets and extract take-off and landing

performance data from the performance manual.
- CLO3 : Explain the principles of navigation charts, time zones, flight instruments and compasses, radio wave propagation, radio navigation aids, radar, area navigation systems and route navigation.
- CLO4 : Practically apply chart plotting techniques involved in route navigation.
- CLO5 : Satisfy the theoretical knowledge requirements of the CASR 1998 Part 61 MOS for the APLC, APLA and ANVC units of competency.

Air transport pilot licence navigation exam (CASA ANAV)

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. The exam comprises of multiple-choice questions and numerical entry questions.

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.

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 , irrespective of the final mark.

Course Learning Outcomes

- CLO3 : Explain the principles of navigation charts, time zones, flight instruments and compasses, radio wave propagation, radio navigation aids, radar, area navigation systems and route navigation.
- CLO4 : Practically apply chart plotting techniques involved in route navigation.
- CLO5 : Satisfy the theoretical knowledge requirements of the CASR 1998 Part 61 MOS for the APLC, APLA and ANVC units of competency.

Assessment Length

90 minutes

Assignment submission Turnitin type

This is not a Turnitin assignment

Hurdle rules

Assessment task 2 is an essential component of the course. Failure to attempt or pass assessment 2 will result in the award of a UF grade for AVIA 3113.

Important: Where applicable, you must provide the original CASA result notification(s) for each attempt to the Head of Operations as evidence that you have passed a CASA exam.

Air transport pilot licence performance and loading (aeroplane) exam (CASA APLA)

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. The exam comprises of multiple-choice questions and numerical entry questions.

You will be provided with 150 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 , irrespective of the final mark.

Course Learning Outcomes

- CLO1 : Explain weight and balance concepts, take-off, enroute and landing performance considerations applicable to multi-engine jet transport aeroplanes.
- CLO2 : Complete B727-200 load and trim sheets and extract take-off and landing performance data from the performance manual.

- CLO5 : Satisfy the theoretical knowledge requirements of the CASR 1998 Part 61 MOS for the APLC, APLA and ANVC units of competency.

Detailed Assessment Description

CASA examination of 150 minutes duration, a combination of calculation-type questions and knowledge questions. Pass mark is 70%.

General Assessment Information

Your final mark for AVIA 3113 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 3113.

Grading Basis

Standard

Requirements to pass course

All of the assessment tasks listed above must be satisfactorily completed no later than the end of Term 1 exam period, 9th May 2024, to achieve a pass in AVIA 3113.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 7 : 25 March - 31 March	Lecture	DAY 1 01 ATPL NAV Prerequisites Chart Theory 01 Direction Latitude Longitude 02 Great Circle and Rhumb Line 03 Difference and Departure 04 Chart Properties 05 Scale 06 Convergence 07 Lambert Conical Conformal Projection 08 Conversion Angle 09 Mercator 10 Azimuthal Projection 11 Chart Theory Rules DAY 2 CR2 TAS Calculation Revision Chart Procedures 01 Plotting Position 02 Climb Descent and Track Miles 03 In-Flight Wind Velocity Graphical Method DAY 3 Chart Procedures 06 Critical Point Off Track 07 Last Point of Safe Diversion Chart Procedures 08 YMHB to NZCH ETI Radio Wave Theory & Propogation 01 Transceiver 02 Radio Waves 03 Wavelength Calculation 04 Phase Comparison 05 Rated Coverage 06 Propagation Characteristics 07 Propagation Paths 08 Modulation 09 Ionosphere 10 Solar Activity 11 Hetrodyning 12 Communication 13 Antenna DAY 4 Radio Wave Theory & Propogation 14 Radar Principles 15 Primary Radar 16 Secondary Radar 17 Weather Radar 18 Radar Altimeter 19 ADSB Instruments 01 Pitot Static System 02 Air Data Computer 03 Temperature Measurement 04 Sensitive Pressure Altimeter 05 Servo Assisted Altimeter 06 Airspeed Indicator 07 Vertical Speed Indicator 08 Instantaneous Vertical Speed Indicator 09 Machmeter 10 Gyroscopic Principles 11 Gyroscope Types 12 Gyroscopic Wander 13 Attitude Indicator 14 Direction Indicator 15 Turn and Balance Indicator 16 Turn Coordinator 17 Gyro Compass 18 Slip Indicator 19 Magnetic Compass 20 EFIS 21 Flight Management Computer CDU

		Altimetry 02 True Altitude Calculation 03 Outer Marker Height Check Speed 01 IAS TAS MACH 02 Mach Calculation 03 TAS Calculation
Week 8 : 1 April - 7 April	Lecture	DAY 5 Altimetry 01 Altimetry Navigation Aids 01 ADF 02 ADF Intercepts 03 VOR 04 VOR Intercepts 05 DME 07 ILS 08 MLS 09 GNSS 11 INS IRS Time 01 ATPL Time RVSM 01 RVSM
Week 9 : 8 April - 14 April	Lecture	ATPL Performance and Loading Course Day 1: Centre of Gravity considerations, B727 Loading System, exercises based on B727 Loading System Course Day 2: further practical application of B727 Loading System, theoretical basis and practical application of take-off and climb performance (including climb segments) Course Day 3: Part 121 MOS considerations, B727 take-off graphs, enroute performance Course Day 4: theoretical basis and practical application of landing performance, B727 landing graphs, basis of thrust and speed management Course Day 5: ACN/PCN, B727 floor loading principles and calculations, revision, Assessment Task 1B

Attendance Requirements

Please note that lecture recordings are not available for this course. Students are strongly encouraged to attend all classes and contact the Course Authority to make alternative arrangements for classes missed.

General Schedule Information

ATPL Navigation will be held over 7 course days (Match 25th, 26th, 27th, 28th, April 5th, 6th, 7th 2024).

ATPL Performance and Loading will be held over 5 course days (April 8th, 9th, 10th, 11th, 12th 2024).

All classes will be held at the Bankstown Flight Operation Unit, and classes will commence at 8.30 a.m. on each course day.

Course Resources

Prescribed Resources

ATPL Navigation:

FOUAK - ATPL - NAV (unsw.edu.au)

FOUAK_ATPL_NAV_STD_2020

ATPL Performance and Loading:

FOUAK - ATPL - PL (unsw.edu.au)

FOUAK_ATPL_PL_STD_2020

Recommended Resources

The Australian ATPL (Aeroplane) Examination Information Book is relevant and is located at URL: ATPL APLA workbook | Civil Aviation Safety Authority (casa.gov.au)

A comprehensive series of notes, exercises and quizzes will be supplied to students for the course via Moodle.

Additional Costs

A breakdown of posible additional direct flying costs can be found in the Profesional Pilots Procedures Manual v17.3 June 2023. A copy of this manual can be downloaded from the FOU intranet at Library | School of Aviation (unsw.edu.au)

Course Evaluation and Development

Assessments 1A and 1B: feedback will be given verbally by the ATPL lecturers within 2 weeks of submission.

Assessment 2 and 3 (CASA exams:) 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	Martin Jamieson		Bankstown Airport	0297911151	By appointmant	Yes	Yes
Head lecturer	Jeremy Andrews		Bankstown Airport	02 9791 1151	By appointment	No	No
Lecturer	Barry Ellis		Bankstown Airport	02 9791 1151	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)