UNSW Course Outline

# AVIA2117 Instrument Rating - 2024

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## General Course Information

**Course Code :** AVIA2117
**Year :** 2024
**Term :** Term 3
**Teaching Period :** T3
**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 :** Bankstown
**Campus :** Sydney
**Study Level :** Undergraduate
**Units of Credit :** 6

**Useful Links**

Handbook Class Timetable

## Course Details & Outcomes

### Course Description

This course is for students undertaking flight training at UNSW within the Bachelor of Aviation (Flying) program. The course focuses on equipping students with the ability to fly in all-weather operations, in multi-engine aeroplanes, and during commercial operations. The course consists of face-to-face lectures and synchronous online lectures. Relevant subject topics, IREX and

GNSS, from the CASR 1998, Part 61 MOS are designed to help students achieve the aeronautical knowledge requirements for the issue of an Australian Instrument Rating.

## Course Aims

The aim of this course is to provide students with the opportunity to acquire the fundamental aeronautical knowledge and skills essential for the Bachelor of Aviation (Flying) program and for acquiring an Australian Instrument Rating. The course also aims to support students with building their ability and confidence to fly in all-weather operations, in multi-engine aeroplanes, and during commercial operations.

## Relationship to Other Courses

Pre-requisite(s): AVIA2111, AVIA2112, AVIA2113, AVIA2114, AVIA2115, AVIA2116.

## Course Learning Outcomes

| Course Learning Outcomes |
|---|
| CLO1 : Apply principles of single pilot threat and error management to the conduct of Instrument Flight Rules flying operations; |
| CLO2 : Apply the aeronautical knowledge that underpins flying operations undertaken by night and in Instrument Meteorological Conditions. |
| CLO3 : Amend and keep up to date a personal copy of current legislation versions, interpret and apply the comprehensive set of regulatory publications applicable to the instrument flight rules. |

| Course Learning Outcomes | Assessment Item |
|---|---|
| CLO1 : Apply principles of single pilot threat and error management to the conduct of Instrument Flight Rules flying operations; | • IFR exercises<br>• CASA IREX<br>• UNSW IFR exam |
| CLO2 : Apply the aeronautical knowledge that underpins flying operations undertaken by night and in Instrument Meteorological Conditions. | • IFR exercises<br>• CASA IREX<br>• UNSW IFR exam |
| CLO3 : Amend and keep up to date a personal copy of current legislation versions, interpret and apply the comprehensive set of regulatory publications applicable to the instrument flight rules. | • IFR exercises<br>• CASA IREX<br>• UNSW IFR exam |

## Learning and Teaching Technologies

Moodle - Learning Management System | Blackboard Collaborate

# Assessments

## Assessment Structure

| Assessment Item | Weight | Relevant Dates |
|---|---|---|
| IFR exercises<br>Assessment Format: Individual | 10% | |
| CASA IREX<br>Assessment Format: Individual | 50% | |
| UNSW IFR exam<br>Assessment Format: Individual | 40% | |

## Assessment Details

### IFR exercises

**Assessment Overview**

For the IFR exercises, you will be expected to complete 15 sets of 40 questions each, during the first week of intensive classes. These quizzes cover all applicable units of competency, from the Civil Aviation Manual of Standards for IREX and GNSS. Verbal feedback will be provided by the lecturer in class following each quiz. The quizzes typically comprise a combination of short-answer and multiple-choice questions.

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 : Apply principles of single pilot threat and error management to the conduct of Instrument Flight Rules flying operations;
- CLO2 : Apply the aeronautical knowledge that underpins flying operations undertaken by night and in Instrument Meteorological Conditions.
- CLO3 : Amend and keep up to date a personal copy of current legislation versions, interpret and apply the comprehensive set of regulatory publications applicable to the instrument flight

rules.

**Detailed Assessment Description**

Quizzes covering all applicable units of competency.  The 15 sets of quizzes are available through Moodle and are intended to be completed by the end of the course

**Assignment submission Turnitin type**

This is not a Turnitin assignment

**Generative AI Permission Level**

**No Assistance**

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.
For more information on Generative AI and permitted use please see here.

## CASA IREX

**Assessment Overview**

In this examination, you will be assessed on all topic areas covered in the AVIA2117 course. The duration of the examination is 210 mins and will be held within a week of completing the course. Feedback will be provided by the formal Knowledge Deficiency Report upon completion of the examination.

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 for AVIA2117.

**Course Learning Outcomes**

- CLO1 : Apply principles of single pilot threat and error management to the conduct of Instrument Flight Rules flying operations;

- CLO2 : Apply the aeronautical knowledge that underpins flying operations undertaken by night and in Instrument Meteorological Conditions.
- CLO3 : Amend and keep up to date a personal copy of current legislation versions, interpret and apply the comprehensive set of regulatory publications applicable to the instrument flight rules.

**Detailed Assessment Description**

Instrument rating exam - IREX | Civil Aviation Safety Authority (casa.gov.au)

**Assessment Length**

3.5 hours

**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.

**Assessment information**

Students who do not hand in the KDR immediately after sitting the CASA examination and subsequently lose the original copy will be liable to purchase a replacement from CASA at their own expense.

*It should be noted that the results obtained from the first attempt at this assessment task will be used to determine the final mark, even if a fail result was obtained initially. Assessment tasks 2 must be passed within the specified time frame, being the last day of the UNSW published examination timetable for the applicable term the course was conducted in, regardless of the result of the first attempt, to pass this course.*

**Assignment submission Turnitin type**

This is not a Turnitin assignment

**Hurdle rules**

**Failure to attempt or pass assessment tasks 2, will result in the award of a UF grade for AVIG5913**

**Generative AI Permission Level**

**No Assistance**

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

For more information on Generative AI and permitted use please see here.

### UNSW IFR exam

**Assessment Overview**

In the UNSW IFR exam, you will be assessed on all topic areas covered in AVIA2117. The time allocated to complete each paper is 120 mins, with a total of two papers to complete (total examination time is 240 minutes). Verbal feedback will be provided in class by the Lecturer upon completion of the examinations. The examinations typically comprise a combination of multiple-choice and short-answer questions. The pass mark for this assessment is 70%.

This assessment task must be satisfactorily completed by the end of the course to achieve a pass.

**Course Learning Outcomes**

- CLO1 : Apply principles of single pilot threat and error management to the conduct of Instrument Flight Rules flying operations;
- CLO2 : Apply the aeronautical knowledge that underpins flying operations undertaken by night and in Instrument Meteorological Conditions.
- CLO3 : Amend and keep up to date a personal copy of current legislation versions, interpret and apply the comprehensive set of regulatory publications applicable to the instrument flight rules.

**Assessment Length**

120 mins each

**Generative AI Permission Level**

**No Assistance**

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.
For more information on Generative AI and permitted use please see here.

## General Assessment Information

Your final mark for AVIA 2117 will be determined using the weightings shown for each assessment task. *Assessment task 1 and 3 will be moderated to reflect score out of 100. Assessment task 2 will be moderated so that a result of 70% to 100% in assessment task 2 will be moderated to a result of 50% to 100%* for AVIA2117. *Note, your mark may be scaled in accordance with UNSW policies but your ranking within the group will not change.*

Grading Basis

Standard

# Course Schedule

| Teaching Week/Module | Activity Type | Content |
|---|---|---|
| Day 1 | Lecture | • Navigation Aids<br>• 01 ADF<br>• 02 ADF Intercepts<br>• 03 VOR<br>• 04 VOR Intercepts<br>• 05 DME<br>• 06 DME Arc<br>• 07 ILS<br>• 09 GNSS<br>• 10 Performance Based Navigation<br>• Altimetry<br>• 01 Altimetry<br>• 02 True Altitude Calculation<br>• 03 Outer Marker Height Check<br>• Speed<br>• 01 IAS TAS MACH<br>• 03 TAS Calculation<br>• CR2<br>• CR2 TAS Calculation Revision OAT IOAT<br>• Chart Procedures<br>• 01 Plotting Position<br>• 02 Climb Descent and Track Miles<br>• Chart Theory<br>• 01 Direction Latitude Longitude<br>• 02 Great Circle and Rhumb Line<br>• 04 Chart Properties<br>• 05 Scale<br>• 06 Convergence<br>• 07 Lambert Conical Conformal Projection<br>• RVSM<br>• 01 RVSM |
| Day 2 | Lecture | • Instruments<br>• 01 Pitot Static System<br>• 03 Temperature Measurement<br>• 04 Sensitive Pressure Altimeter<br>• 06 Airspeed Indicator<br>• 07 Vertical Speed Indicator<br>• 10 Gyroscopic Principles<br>• 11 Gyroscope Types<br>• 12 Gyroscopic Wander<br>• 13 Attitude Indicator<br>• 14 Direction Indicator<br>• 15 Turn and Balance Indicator<br>• 16 Turn Coordinator<br>• 17 Gyro Compass<br>• 18 Slip Indicator<br>• 19 Magnetic Compass |
| Day 3 | Lecture | • Radio Wave Theory & Propagation<br>• 01 Transceiver<br>• 02 Radio Waves<br>• 04 Phase Comparison<br>• 05 Rated Coverage<br>• 06 Propagation Characteristics<br>• 07 Propagation Paths<br>• 09 Ionosphere<br>• 12 Communication<br>• 13 Antenna<br>• 15 Primary Radar<br>• 16 Secondary Radar<br>• 19 ADSB<br>• Meteorology Operational<br>• 03 Graphical Area Forecast<br>• 04 Operational Meteorology<br>• 07 Flight Planing Forecast Requirements<br>• 09.0 BoM Manual of Meteorology Part 2 Aviation Meteorology<br>• 09.1 Cloud and Icing Table |

| | | |
|---|---|---|
| | | • 09.2 Airframe Icing Notes<br>• Meteorology Theoretical<br>• 11 Cloud Formation<br>• 12 Precipitation<br>• 13 Cloud Types<br>• 14 Cumulonimbus<br>• 15 Fog<br>• 16 Airframe Icing<br>• 17 Turbulence<br>• Aircraft General Knowledge<br>• 13 Engine Icing |
| Day 4 | Lecture | • Law<br>• 02 Aircraft Lighting<br>• 03 Airspace Services and Terms<br>• 04 Alerting & Warning<br>• 05 Alternate Planning Aerodrome Lighting<br>• 06 Alternate Planning Navigation Aids<br>• 07 Alternate Planning Weather<br>• 08 Altimeter Setting Procedures<br>• 09 Autopilot<br>• 10 Comms NAVAID Failure<br>• 11 Emergency Locator Transmitter<br>• 13 Instruments for Flight<br>• 19 Radio Communication Systems<br>• 21 Passenger Carrying<br>• 22 Aircraft Performance Category & Handling Speeds<br>• 23 IFR NVFR Recency Privileges Limitations<br>• CASR Part 61<br>• Part 61.M Instrument Rating<br>• Part 61.O Night VFR Rating |
| Day 5 | Lecture | • Instrument Procedures<br>• 00 AIP 91MOS OCT23<br>• 01 Departure<br>• 01 Departure<br>• 02 Take Off Minima<br>• 03 DAP NAP<br>• 02 Enroute<br>• 01 Flight Planning Requirements<br>• 02 Selection of Cruising Level<br>• 03 Fuel Requirements<br>• 04 Flight Notification<br>• 05 MOS Navigation Requirements<br>• 06 Navigation Services<br>• 07 Operations in All Airspace<br>• 08 Operations Outside Controlled Airspace<br>• 09 Operations inside Controlled Airspace<br>• 10 Holding Pattern<br>• 11 LSALT MSA<br>• 12 TIBA<br>• 03 Arrival<br>• 01 Standard Arrival Route<br>• 04 Approach<br>• 00 DAP Legend General Information and Tables<br>• 01 Flight Test Tolerances<br>• 02 Gradient Rate Nomograph<br>• 03 Aerodrome Meteorological Minima<br>• 04 Landing Minima<br>• 05 Approach Ban<br>• 06 Landing Minima no Instrument Approach<br>• Law<br>• 20 Visual Approach<br>• 04 Approach<br>• 07 Missed Approach<br>• 08 Runway Visual Range<br>• 09 Alternate Minima<br>• 10 Reversal Procedures<br>• 11 Circling Approaches and Visual Circling<br>• 12 Landing<br>• 13 Approach Introduction<br>• 14 2D Approach RNP<br>• 14.1 RNP Naming Convention<br>• 14.2 PBN AC<br>• 15 2D Approach VOR NDB<br>• 16 2D Approach DGA<br>• 17 3D Approach<br>• 18 3D Approach Temperature Correction<br>• 19 Minimum Vector Altitude Sydney |
| Days 6 -10 | Lecture | Consolidation |

| | | |
|---|---|---|
| Days 11-15 | Assessment | Assessment Consolidation |

## 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

Teaching times and locations: Consists of initially face to face classroom lectures at Kensington followed by synchronous online lectures using UNSW Moodle, to complete the subject material.

The aeronautical knowledge training runs with class timed from 0830 – 1550 daily. Moodle is used and login details are:

https://moodle.telt.unsw.edu.au/course/view.php?id=52603

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# Staff Details

| Position | Name | Email | Location | Phone | Availability | Equitable Learning Services Contact | Primary Contact |
|---|---|---|---|---|---|---|---|
| Convenor | Barry Ellis | | Flying Operations Unit | 02 9791 1151 | By appointment | Yes | Yes |
| Lecturer | Michael De Manincor | | Flying Operations Unit | 0297913047 | By appointment | No | No |
| Head lecturer | Jeremy Andr ews | | Flying Operations Unit | 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)