UNSW Course Outline

AVIA1301 Simulation in Aviation and Airworthiness Management - 2024

Published on the 05 Feb 2024

General Course Information

Course Code : AVIA1301
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 : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This course introduces two important foundations of aviation safety: flight simulation; and

airworthiness.

The first part of the course (Simulation) focuses on the use of simulation from the point of view of both management and flight crew and in the context of aviation safety. Areas including regulation, simulator training facilities, how simulators operate, and how flight crew interact with simulators are explored through practical examples presented in weekly lectures. Leadership, communications and problem-solving are also discussed in the course.

The second part of the course (Airworthiness Management) provides an overview of the civil aviation regulations governing aircraft certification, airworthiness and maintenance before exploring some design principles and the establishment of initial airworthiness, followed by continuing airworthiness and aircraft maintenance. Case studies are used to illustrate airworthiness responses from manufacturers, regulators, operators and maintenance organisations to incidents and accidents.

Course Aims

The aim of this course is to provide students with an understanding of both simulation in aviation and airworthiness management. Through learning about simulation in aviation, students will be expected to gain and develop an understanding the vital role that simulation plays in aviation safety, especially for airlines and training organisations. This will be achieved by building knowledge and discussing concepts in the context of real-world situations and human factors examples. Within the airworthiness management component of the course, students will be provided with an introduction to aircraft airworthiness, both how it is established and how it is sustained for transport category aircraft. Specific aims are to introduce students to engineering and maintenance management terminology, activities, responsibilities and accountabilities, the regulatory environment governing airworthiness and aircraft maintenance and some contemporary issues.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Discuss the benefits and limitations of simulators and the use of simulation to prevent errors leading to accidents.
CLO2 : Explain the role of the simulator and training managers in aviation safety, the regulations that apply to simulation, and the procedures used to achieve safety outcomes.
CLO3 : Investigate the requirements of crew training and how to implement that training to improve crew performance, team management, leadership, and crew skills.
CLO4 : Describe the fundamentals of simulator design and the effect of that design on crew members
CLO5 : Describe the concepts of initial airworthiness and continuing airworthiness.
CLO6 : Identify the Australian Civil Aviation Safety Authority Regulations which govern airworthiness standards and certification, continuing airworthiness, and maintenance.
CLO7 : Describe various continuing airworthiness management activities and types of aircraft maintenance tasks, and have awareness of different contemporary airworthiness management issues.
CLO8 : Describe how airworthiness issues may arise during design, manufacture, operations, and maintenance, and how deficiencies in airworthiness may be corrected by actions from manufacturers, regulators, operators, and maintenance organisations.

Course Learning Outcomes	Assessment Item
CLO1 : Discuss the benefits and limitations of simulators and the use of simulation to prevent errors leading to accidents.	• Simulation in Aviation Incident Investigation Essay
CLO2 : Explain the role of the simulator and training managers in aviation safety, the regulations that apply to simulation, and the procedures used to achieve safety outcomes.	• Simulation in Aviation Incident Investigation Essay
CLO3 : Investigate the requirements of crew training and how to implement that training to improve crew performance, team management, leadership, and crew skills.	• Simulation in Aviation Incident Investigation Essay
CLO4 : Describe the fundamentals of simulator design and the effect of that design on crew members	• Simulation Applications Assignment
CLO5 : Describe the concepts of initial airworthiness and continuing airworthiness.	• Airworthiness Management Mid-Topic Test • Airworthiness Management Examination
CLO6 : Identify the Australian Civil Aviation Safety Authority Regulations which govern airworthiness standards and certification, continuing airworthiness, and maintenance.	• Airworthiness Management Mid-Topic Test • Airworthiness Management Examination
CLO7 : Describe various continuing airworthiness management activities and types of aircraft maintenance tasks, and have awareness of different contemporary airworthiness management issues.	• Airworthiness Management Mid-Topic Test • Airworthiness Management Examination
CLO8 : Describe how airworthiness issues may arise during design, manufacture, operations, and maintenance, and how deficiencies in airworthiness may be corrected by actions from manufacturers, regulators, operators, and maintenance organisations.	• Airworthiness Management Mid-Topic Test • Airworthiness Management Examination

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

Teaching comprises lectures over a 9 -week program.Study material will be available in Moodle.

The lectures include video examples and group discussions.

If face-to-face lectures are not possible, recorded videos will be available.

The lecturer will be available during and after lectures and via email if you have questions or

comments.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Simulation Applications Assignment Assessment Format: Individual	20%	Start Date: 20 Feb 2024 Due Date: 8 Mar 2024
Simulation in Aviation Incident Investigation Essay Assessment Format: Individual	30%	Start Date: 27 Feb 2024 Due Date: 22 Mar 2024
Airworthiness Management Mid-Topic Test Assessment Format: Individual	20%	Start Date: 08/04/2024 02:00 PM Due Date: 08/04/2024 03:00 PM
Airworthiness Management Examination Assessment Format: Individual	30%	Start Date: UNSW Exam Period Due Date: UNSW Exam Period

Assessment Details

Simulation Applications Assignment

Assessment Overview

In this assignment, you will be required to answer a series of short-answer questions assessing content taught in Weeks 1-3 (inclusive) of the AVIA1301 course. Each question will test your understanding of different concepts, skills and knowledge related to simulation applications.

The description for the assessment and marking rubric will be released at the end of Week 2. The assignment is to be submitted as a typed document and submitted via Moodle by Week 4 (date to be specified during the course). Written feedback and marks will be provided by 10 working days after the submission deadline.

Course Learning Outcomes

- CLO4 : Describe the fundamentals of simulator design and the effect of that design on crew members

Simulation in Aviation Incident Investigation Essay

Assessment Overview

You will be asked to write an essay relating simulation to a real-life situation and investigating how simulation could have been used to avoid the incident, and should be used to improve training, situational awareness and human factors for flight crew. Management students, as well

as flight crew, must have an understanding of these factors to improve aviation safety.

The description and marking rubric for the assessment will be released at the end of Week 3. You will be required to submit your assignment via Moodle in Week 7. Written feedback and marks will be provided by 10 working days from the submission deadline.

Course Learning Outcomes

- CLO1 : Discuss the benefits and limitations of simulators and the use of simulation to prevent errors leading to accidents.
- CLO2 : Explain the role of the simulator and training managers in aviation safety, the regulations that apply to simulation, and the procedures used to achieve safety outcomes.
- CLO3 : Investigate the requirements of crew training and how to implement that training to improve crew performance, team management, leadership, and crew skills.

Airworthiness Management Mid-Topic Test

Assessment Overview

You will be required to complete an online test in Week 9, which assesses Airworthiness Management content taught in Weeks 5 – 8 (inclusive). The format of the test will be closed book with a combination of multiple choice questions and short answer questions, and will solely test your understanding without the use of reference notes and information. You will have one hour to complete the test. Details of the examination will be provided in Week 5 of the AVIA1301 course. Written feedback and marks will be provided to you by up to 10 working days after the completion of the test. In addition, the convenor will provide general verbal feedback on the test and how students performed.

Course Learning Outcomes

- CLO5 : Describe the concepts of initial airworthiness and continuing airworthiness.
- CLO6 : Identify the Australian Civil Aviation Safety Authority Regulations which govern airworthiness standards and certification, continuing airworthiness, and maintenance.
- CLO7 : Describe various continuing airworthiness management activities and types of aircraft maintenance tasks, and have awareness of different contemporary airworthiness management issues.
- CLO8 : Describe how airworthiness issues may arise during design, manufacture, operations, and maintenance, and how deficiencies in airworthiness may be corrected by actions from manufacturers, regulators, operators, and maintenance organisations.

Airworthiness Management Examination

Assessment Overview

You will be required to complete an examination during the final examination period, which

assesses all content taught in Airworthiness Management during Weeks 5 – 10 (inclusive). The examination will be conducted on campus but completed online via each student's personal laptop in a specified exam browser. The format of the test will be open book with a combination of multiple-choice questions and short answer questions, and students will be allowed to bring any physical paper notes and books to support their completion of the examination (no digital notes are allowed). You will have two hours to complete the examination. Marks will be provided during the official University marks release period. Feedback is available through inquiry with the course convenor.

Course Learning Outcomes

- CLO5 : Describe the concepts of initial airworthiness and continuing airworthiness.
- CLO6 : Identify the Australian Civil Aviation Safety Authority Regulations which govern airworthiness standards and certification, continuing airworthiness, and maintenance.
- CLO7 : Describe various continuing airworthiness management activities and types of aircraft maintenance tasks, and have awareness of different contemporary airworthiness management issues.
- CLO8 : Describe how airworthiness issues may arise during design, manufacture, operations, and maintenance, and how deficiencies in airworthiness may be corrected by actions from manufacturers, regulators, operators, and maintenance organisations.

General Assessment Information

UNSW Aviation's decision for Short Extension Policy

The School of Aviation has carefully reviewed its range of assignments and projects to determine their suitability for automatic short extensions as set out by the UNSW Short Extension Policy. After careful consideration of our course offerings and our current structure, we have determined that our current deadline structures already accommodate the possibility of unexpected circumstances that may lead students to require additional days for submission. **Consequently, the School of Aviation has decided to not adopt the Short Extension provision for all its courses and has reassured that flexibility is integrated into our assessment deadlines.** The decision is subject to revision in response to the introduction of new course offerings. Students may still apply for Special Consideration via the usual procedures.

Grading Basis

Standard

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 12 February - 18 February	Lecture	2 x 2 hr lectures. Key areas covered across the two lectures are: • Introduction to simulation • Basic aircraft operation, • Glossary of terms and FSTD Classifications, • Some history, Future Personnel Requirements and Training Resources • Regulation, and regulation of simulators
Week 2 : 19 February - 25 February	Lecture	2 x 2hr lectures. Key areas covered across the lectures are: • Economics, Procurement and Evaluation and Approval, • Human Senses, Hardware & Software basics, • Visual Systems - Collimation,Visual Modeling & Displays • Motion & Cueing and Control loading
Week 3 : 26 February - 3 March	Lecture	2 x 2hr lectures. Key areas covered across the lectures are: • Licensing, MPL, Pilot competencies and Competency or Evidence Based Training, • Type rating training and Zero Flight Time Training (ZFTT) • Recurrent training, Line Orientated Flight Training (LOFT), LVP and Multi Crew Co-operation Training • Instructor Training & Operating Stations, debriefing Systems, Data and Fidelity
Week 4 : 4 March - 10 March	Lecture	2 x 2hr lectures. Key areas covered across the lectures are: • Threat and Error Management, • TEM techniques • Non-normal procedures and examples • Go Around, Stalling and Upset Prevention & Recovery Training
	Assessment	Simulation Applications Assignment
Week 5 : 11 March - 17 March	Lecture	2 x 2hr lectures. Key areas covered across the lectures are: • Growth & Training challenges., • Future of Simulation and summary.
	Lecture	Introduction to Safety and Airworthiness
Week 6 : 18 March - 24 March	Other	Flexibility Week
	Assessment	Simulation in Aviation Incident Investigation Essay
Week 7 : 25 March - 31 March	Lecture	Airworthiness Standards and Design Principles
	Lecture	Initial Airworthiness and Certification
Week 8 : 1 April - 7 April	Lecture	Case-study based learning.
	Lecture	Continuing Airworthiness Management
Week 9 : 8 April - 14 April	Lecture	Case-study based learning.
	Assessment	Airworthiness Management Mid-Topic Test
	Lecture	Contemporary Airworthiness Management Issues Airline Engineering and Maintenance Organisations
Week 10 : 15 April - 21 April	Lecture	Aircraft Maintenance
	Lecture	Case-study based learning.

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

Because of Easter Monday, the class originally scheduled for Monday in week 8 has been rescheduled to Friday, April 5th, at the same time, and will take place at Macauley Theatre.

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UNSW Aviation's decision to not release Lecture Recordings:

The School of Aviation prides itself on offering education that supports students in their personalised learning journey. This involves providing opportunities for students to engage with academics and key aviation experts to identify and address learning gaps, develop core skills and knowledge, and foster an environment of collaboration and meaningful discussion with the UNSW Aviation community. To support this vision, UNSW Aviation has decided to require students to attend all synchronous lectures (in-person or online) and not release class recordings to the student cohort. If students cannot attend a class and require learning support due to unforeseen circumstances, they should contact their Course Coordinator or Program Coordinator to discuss options for support and making up for missed class time.

Course Resources

Course Evaluation and Development

The myExperience Survey aims to boost student feedback which creates a culture of continuous improvement by identifying, responding to, and acting on student feedback.

The course survey will open towards the end of Term. Students are encouraged to participate in the survey via Moodle, myUNSW, or through the direct myExperience link.

Please provide constructive feedback and focus on your learning experience in relation to the course material. While the survey is confidential, it is not anonymous. Comments that breach the Student Code of Conduct, that are hurtful, racist, sexist or ill natured, may lead to disciplinary action.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Norman Fitzpatrick					No	Yes
	Martyn Potts					No	No
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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)