



## UNSW Course Outline

# AVIA5018 Aviation Human Factors - 2024

Published on the 22 May 2024

## General Course Information

Course Code : AVIA5018

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 : Online

Delivery Format : Standard

Delivery Location : Kensington

Campus : Sydney

Study Level : Postgraduate

Units of Credit : 6

### Useful Links

[Handbook Class Timetable](#)

## Course Details & Outcomes

### Course Description

Aviation Human Factors is a multi-disciplinary subject area that influences all aspects of the aviation environment from ramp to hangar and from security screening to the flight deck.

Theoretical and applied human factors perspectives will be explored on the course. Topics

include modern precepts of human error, aspects of physical and cognitive performance such as situation awareness, non-technical skills, the human factors of unmanned aerial systems, the strengths and limitations of automation, accident investigation, and human performance aspects of maintenance, air traffic management and flight operations.

This fully online course is designed for students undertaking study at the Masters level with either a first degree or substantial industry experience. It builds upon existing knowledge about the aviation industry and/or a related discipline in order to provide an interesting and challenging learning environment. The course has particular relevance for those involved in management and leadership, delving into organisational culture and the organisational influences on safety.

It is understood that some students will have little or no recent tertiary academic study experience. These students must be prepared to devote time to developing a broad suite of academic skills such as efficient online literature searching, formal academic writing, and a perspective that embraces and endeavours to understand the complexity and sometimes conflicting points of view present in the human factors literature and among aviation operators. Students will be provided with a diverse array of opportunities and resources to learn throughout the course. This includes case-study based activities, collaborative forum spaces, related readings and instructional videos, and assessments that allow students to apply knowledge and skills learnt in the course and to obtain expert feedback on their progress.

## **Course Aims**

The primary aim of this course is to introduce students to human factors as an applied discipline, particularly its role in enhancing performance and safety in civil and military aviation. Students will consider ways that human factors principles can be applied to improve system safety and resilience; as well as to enhance performance at multiple levels of the organisation including for individuals, operational teams, and at the management level. Numerous safety-related incidents and crashes will be examined with the aim of illustrating key concepts in aviation safety and to emphasise the importance of learning from the past. Emerging challenges and opportunities related to the human dimension of operational safety and effectiveness will be explored. The course also aims to consider how senior management can be effectively engaged with respect to the application of human factors.

# Course Learning Outcomes

Course Learning Outcomes
CL01 : Describe various aspects relating to both the historical and contemporary contributions made by the field of human factors in support of aviation operations.
CL02 : Explain the reigning models of, and approaches to error in work settings, safety management systems, and organisational resilience.
CL03 : Critique emerging theories and issues related to human and organisational performance in the aviation workplace.
CL04 : Analyse human challenges pertaining to a range of aviation industry occupations.
CL05 : Apply conceptual and applied knowledge with respect to nontechnical skills to a variety of human factors contexts.
CL06 : Critique and appropriately use the academic and professional resources available in the field of aviation human factors.

Course Learning Outcomes	Assessment Item
CL01 : Describe various aspects relating to both the historical and contemporary contributions made by the field of human factors in support of aviation operations.	<ul style="list-style-type: none"> <li>• Short Answer Assignment</li> <li>• Final Assignment</li> </ul>
CL02 : Explain the reigning models of, and approaches to error in work settings, safety management systems, and organisational resilience.	<ul style="list-style-type: none"> <li>• Final Assignment</li> </ul>
CL03 : Critique emerging theories and issues related to human and organisational performance in the aviation workplace.	<ul style="list-style-type: none"> <li>• Essay</li> <li>• Short Answer Assignment</li> <li>• Final Assignment</li> </ul>
CL04 : Analyse human challenges pertaining to a range of aviation industry occupations.	<ul style="list-style-type: none"> <li>• Final Assignment</li> </ul>
CL05 : Apply conceptual and applied knowledge with respect to nontechnical skills to a variety of human factors contexts.	<ul style="list-style-type: none"> <li>• Final Assignment</li> </ul>
CL06 : Critique and appropriately use the academic and professional resources available in the field of aviation human factors.	<ul style="list-style-type: none"> <li>• Essay</li> <li>• Short Answer Assignment</li> <li>• Final Assignment</li> </ul>

## Learning and Teaching Technologies

Moodle - Learning Management System

# Assessments

## Assessment Structure

Assessment Item	Weight	Relevant Dates
Short Answer Assignment Assessment Format: Individual	30%	Start Date: Not Applicable Due Date: 28/06/2024 11:59PM
Essay Assessment Format: Individual	40%	Start Date: Not Applicable Due Date: 26/07/2024 11:59PM
Final Assignment Assessment Format: Individual	30%	Start Date: 09/08/2024 12:00 AM Due Date: 15/08/2024 11:59 PM

## Assessment Details

### Short Answer Assignment

#### Assessment Overview

For this assessment, you will be required to select questions out of a list provided by the course convenor and provide a response for each. The total submission (excluding references) should be a maximum of 1500 words.

This assignment is due in Week 5. Details of the questions and assignment will be released in Week 3. It is expected that your responses will reference the academic literature to substantiate your argument/analysis.

Marks and feedback will be provided within 10 working days of the submission deadline.

#### Course Learning Outcomes

- CL01 : Describe various aspects relating to both the historical and contemporary contributions made by the field of human factors in support of aviation operations.
- CL03 : Critique emerging theories and issues related to human and organisational performance in the aviation workplace.
- CL06 : Critique and appropriately use the academic and professional resources available in the field of aviation human factors.

#### Assessment Length

1500 words

#### Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

# Essay

## Assessment Overview

For this essay, you will be required to write a 2000-word essay (excluding references and any annexes you may wish to provide) on one topic from a list of essay topics provided.

The essay must be submitted by Week 9. The essay topics and assignment details will be released in Week 6.

The essay must be written as a proper academic paper and will be marked in accordance with normal academic conventions/standards.

Marks and feedback will be provided within 10 working days of the submission deadline.

## Course Learning Outcomes

- CL03 : Critique emerging theories and issues related to human and organisational performance in the aviation workplace.
- CL06 : Critique and appropriately use the academic and professional resources available in the field of aviation human factors.

## Assessment Length

2,000 words

## Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

# Final Assignment

## Assessment Overview

For the final assignment, you will be required to choose questions to answer from a predetermined list provided to you. The total assignment submission should be a maximum of 1800 words. It is expected that this assignment will take approximately 4 hours to complete.

The purpose of the final assessment is to test your understanding of aviation human factors and your ability to apply this understanding to the operational environment. The final assessment will not be simply a test of factual knowledge. To do well in this assessment, you are encouraged to absorb the essential readings of the course and explore some of the topic areas further through your own research. The questions are designed to test your general knowledge of the course concepts and readings – and your ability to critically review and integrate this information.

The assessment and questions will be made available at the start of the official UNSW Official Examination Period. You are to submit your final assignment containing your 3 written responses within 7 days after release of the assignment questions.

Feedback is available through inquiry with the course convenor.

### Course Learning Outcomes

- CLO1 : Describe various aspects relating to both the historical and contemporary contributions made by the field of human factors in support of aviation operations.
- CLO2 : Explain the reigning models of, and approaches to error in work settings, safety management systems, and organisational resilience.
- CLO3 : Critique emerging theories and issues related to human and organisational performance in the aviation workplace.
- CLO4 : Analyse human challenges pertaining to a range of aviation industry occupations.
- CLO5 : Apply conceptual and applied knowledge with respect to nontechnical skills to a variety of human factors contexts.
- CLO6 : Critique and appropriately use the academic and professional resources available in the field of aviation human factors.

### Assessment Length

500 - 600 words per question.

### Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

## **General Assessment Information**

Please note that you are provided with an opportunity to complete an early self-assessment quiz, due by the end of Week 4. This is a formative assessment item and the marks will not be used as a summative contribution to the final mark. However, it is expected that you will attempt it with serious intent, as the aim of this assignment is to assess your understanding of the course material early in the course to help you understand your progress and identify areas for improvement.

Marks will be provided immediately after completion of the test.

~~~~~

### **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 : 27 May - 2 June     | Topic         | Unit 1 : Some History and key concepts    |
| Week 2 : 3 June - 9 June     | Topic         | Unit 2 : Foundations of Human Performance |
| Week 3 : 10 June - 16 June   | Topic         | Unit 3 : Performance enhancement          |
| Week 4 : 17 June - 23 June   | Topic         | Unit 4 : Safety and the organisation      |
| Week 5 : 24 June - 30 June   | Topic         | Unit 5 : Training                         |
| Week 6 : 1 July - 7 July     | Topic         | Unit 6 : Liveware ( to liveware)          |
| Week 7 : 8 July - 14 July    | Topic         | Unit 7 : Technology                       |
| Week 8 : 15 July - 21 July   | Topic         | Unit 8 : Flight enablers                  |
| Week 9 : 22 July - 28 July   | Topic         | Unit 9 : Enduring and emerging challenges |
| Week 10 : 29 July - 4 August | Topic         | Unit 10 : Investigation                   |

## Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

## General Schedule Information

### 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

## Recommended Resources

### Text Books

*Prescribed:* There are no prescribed (compulsory) textbooks to purchase for this course.

*Recommended:* Four texts are recommended as particularly useful for this course and for students with an enduring, professional interest in aviation human factors. Each can be accessed electronically via the UNSW online library.

- Flin, R., O'Connor, P., & Crichton, M. (2008). *Safety at the sharp end: A guide to non-technical skills*. Aldershot, Hampshire: Ashgate. (available as an e-book via the UNSW Library)
- Harris, D. (2011). *Human performance on the flight deck*. Aldershot, Hampshire: Ashgate.
- Kanki, B. G., Anca, J. M., & Chidester, T. R. (2019). *Crew resource management* (3<sup>rd</sup> ed.). London: Academic Press.
- Salas, E., & Maurino, D. (Eds.). (2010). *Human factors in aviation* (2nd ed.). New York: Academic Press.

*Suggested:* Other suggested texts, which you may wish to borrow, purchase or part-download from the UNSW library include:

- Blackwell Landon, L., Slack, K. J., & Salas, E. (Eds.). (2020). *Psychology and human performance in space programs: Research at the frontier*. CRC Press.
- Dekker, S. W. A. (2005). *Ten questions about human error: A new view of human factors and system safety*. London: Lawrence Erlbaum Associates.
- Dekker, S. W. A. (2014). *The field guide to understanding 'human error'* (3<sup>rd</sup> ed.). Aldershot: Ashgate.
- Dekker, S. W. A. (2011). *Drift into failure*. Aldershot: Ashgate.
- Dunn, R. F. (2017). *Gear up, mishaps down: The evolution of naval aviation safety, 1950-2000*. Naval Institute Press.
- Ebermann, H., & Scheiderer, J. (Eds.). (2013). *Human factors on the flight deck: Safe piloting behaviour in practice*. Berlin: Springer.
- Griffin, T. G. C., Young, M. S., & Stanton, N. A. (2015). *Human factors models for aviation accident analysis and prevention*. Aldershot: Ashgate.
- Harris, D., & Li, W. (Eds.). (2015). *Decision making in aviation*. Aldershot: Ashgate.
- Kanki, B. G., Clervoy, J. F, Sandal, G., & Sgobba, T. (Eds.). (2017). [\*Space safety and human performance\*](#) (1<sup>st</sup> ed.). Butterworth-Heinemann.
- Martinussen, M., & Hunter, D. R. (2017). *Aviation psychology and human factors* (2<sup>nd</sup> ed.). Boca Raton: CRC Press.
- Reason, J. (2013). *A life in error: From little slips to big disasters*. Aldershot: Ashgate.



- Reason, J., & Hobbs, A. (2003). *Managing maintenance error: A practical guide*. Aldershot: Ashgate.
- Sanchez-Alarcos, J. (2019). [\*Aviation and Human Factors: How to incorporate Human Factors into the field\*](#). CRC Press.
- Seedhouse, E., Brickhouse, A., Szathmary, K., & Williams, E. D. (2020). [\*Human Factors in air transport: Understanding behavior and performance in aviation\*](#). Cham: Springer International.
- Stolzer, A. J., Halford, C. D., & Goglia, J. J. (Eds.). (2013). *Implementing Safety Management Systems in Aviation*. Aldershot: Ashgate.
- Vidulich, M. A., Tsang, P. S., & Flach, J. (Eds.). (2016). *Advances in Aviation Psychology, Volume 2: Using Scientific Methods to Address Practical Human Factors Needs* (1st ed.). Routledge. <https://doi-org.wwwproxy1.library.unsw.edu.au/10.4324/9781315565712>
- Wiegmann, D. A., & Shappell, S. A. (2003). *A Human Error Approach to Aviation Accident Analysis: The Human Factors Analysis and Classification System*. Aldershot, Hampshire: Ashgate Publishing.
- Wise, J. A., Hopkin, V. D., & Garland, D. J. (Eds.). (2009). [\*Handbook of aviation human factors\*](#) (2<sup>nd</sup> ed.). Boca Raton: CRC Press

Journals / magazines that you are encouraged to become acquainted with include:

- [\*Aviation Psychology and Applied Human Factors\*](#)
- [\*Aerospace Medicine and Human Performance\*](#)
- [\*International Journal of Aerospace Psychology\*](#)
- [\*AeroSafety World Magazine\*](#) (Past issues – now a subscription quarterly newsletter)

You should be able to access these journals via the UNSW online library.

## 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 | Prasannah Prabhakaran |       |          |       | via email and/or Moodle forums | No                                  | Yes             |

## 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 Plagiarism

**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)