UNSW Course Outline

AVIA5037 Airline Operations and Delay Management - 2024

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General Course Information

Course Code : AVIA5037
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 : 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

This course focuses on introducing the key aspects of airline operations and delay management such as airline ground operations (including passenger facilitation and aircraft turnaround operations), delay data collection, delay data analysis, delay development modelling, airline

networks, and the emerging concept of robust airline scheduling. The course is designed to provide students with practical airline operations knowledge coupled with the use of mathematical models in delay analysis, leading to the study of ways in which to improve the robustness of airline scheduling in actual operations. Hence, some units of this course may contain mathematical models that require extra effort in self-study. With ongoing academic guidance, virtual classroom discussions are provided to support the development of these skills. Basic statistical knowledge is ideal for this course. Students with airline operations experience may be able to grasp this course quickly; however, prior operations experience is not essential for studying this course.

Course Aims

The aim of this course is to support students in gaining an understanding of the operational side of the airline business. The course also aims to provide an in-depth view into daily airline operations, from scheduling to operational management, and also a comprehensive understanding of delay management. The course also aims to provide an in-depth view into daily airline operations, from scheduling to operational management. In addition, the course aims to offer students with the opportunity to develop a combination of theoretical and practical skills and knowledge through tutorials, assignments that encourage students to apply their skills to solve case-based challenges within the aviation industry, and essay writing and research tasks that drive students to engage with analytical model development and research-integrated learning.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Apply an advanced understanding of airline operations and feedback associated with the process to airline schedule planning.
CLO2 : Explain the role of uncertainties in daily airline operations and how airline schedules should be designed to mitigate effects from unexpected disruptions.
CLO3 : Identify and describe why delays occur in airline operations, to model delays and how delays propagate through an airline network
CLO4 : Develop appropriate mathematics models for modelling airline delays and for understanding how schedules can be adjusted to reflect delay risks in operations.
CLO5 : Critique the emerging concept of 'robust airline scheduling' and how this concept is rooted in the feedback received from airline operations and delay management.

Course Learning Outcomes	Assessment Item
CLO1 : Apply an advanced understanding of airline operations and feedback associated with the process to airline schedule planning.	• Assignment 1
CLO2 : Explain the role of uncertainties in daily airline operations and how airline schedules should be designed to mitigate effects from unexpected disruptions.	• Assignment 1
CLO3 : Identify and describe why delays occur in airline operations, to model delays and how delays propagate through an airline network	• Assignment 2
CLO4 : Develop appropriate mathematics models for modelling airline delays and for understanding how schedules can be adjusted to reflect delay risks in operations.	• Assignment 1
CLO5 : Critique the emerging concept of 'robust airline scheduling' and how this concept is rooted in the feedback received from airline operations and delay management.	• Assignment 2

Learning and Teaching Technologies

Moodle - Learning Management System

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Assignment 1 Assessment Format: Individual	50%	Start Date: Week 4 Due Date: Week 6: 18 March - 24 March
Assignment 2 Assessment Format: Individual	50%	Start Date: Week 8 Due Date: Week 10: 15 April - 21 April

Assessment Details

Assignment 1

Assessment Overview

Assignment 1 is an open book individual assessment that assesses your understanding of airline network modelling data. You are required to write an essay response that includes answers to all parts of the question provided in the assignment description. Details of the assignment including the question will be made available in Week 4. You are required to submit your answers electronically by Week 6.

Feedback and marks will be provided within 10 working days following submission.

Course Learning Outcomes

- CLO1 : Apply an advanced understanding of airline operations and feedback associated with the process to airline schedule planning.
- CLO2 : Explain the role of uncertainties in daily airline operations and how airline schedules should be designed to mitigate effects from unexpected disruptions.
- CLO4 : Develop appropriate mathematics models for modelling airline delays and for understanding how schedules can be adjusted to reflect delay risks in operations.

Assignment 2

Assessment Overview

Assignment 2 is an open book individual assessment that assesses your understanding of airline network and operations management. You are required to write an essay response that includes answers to all parts of the question provided in the assignment description. Details of the assignment including the question will be made available in Week 8. You are required to submit your answers electronically by Week 10.

Feedback and marks will be provided within 10 working days following submission.

Course Learning Outcomes

- CLO3 : Identify and describe why delays occur in airline operations, to model delays and how delays propagate through an airline network
- CLO5 : Critique the emerging concept of 'robust airline scheduling' and how this concept is rooted in the feedback received from airline operations and delay management.

Assignment submission Turnitin type

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

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	Topic	Introduction to airline operations and the operating environment Airline scheduling and aircraft turnaround operations
Week 2 : 19 February - 25 February	Topic	Schedule constraints and delay modelling
Week 3 : 26 February - 3 March	Topic	The optimal turnaround time- empirical method
Week 4 : 4 March - 10 March	Topic	Issues in aircraft turnaround operations Collecting service data Modelling ground services
Week 5 : 11 March - 17 March	Topic	Managing passenger flows at airports
Week 6 : 18 March - 24 March	Topic	Network complexity & operations
Week 7 : 25 March - 31 March	Topic	Delay propagation modelling
Week 8 : 1 April - 7 April	Topic	On-time performance management
Week 9 : 8 April - 14 April	Topic	Inherent delays
Week 10 : 15 April - 21 April	Topic	Robust airline scheduling

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

Prescribed Resources

The prescribed text for this course is:

- Wu, C-L 2016, *Airline operations and delay management: insights from airline economics, networks, and strategic schedule planning*, Routledge, London;

This text can be borrowed from UNSW library both in hard copy and soft copy forms (e.g. e-books). It is essential that students have a copy of this text as the teaching of this course closely follows the structure and contents of the prescribed text. E-books of this text are available for download for UNSW students via the Library portal, so please visit UNSW Library and download a copy of e-book before starting this course. This text can also be purchased from UNSW Bookshop where this text is usually in stock and readily available. Books are also available for purchase online:

- Taylor & Francis: http://www.tandfebooks.com/isbn/9781315566467
- DOI: https://doi.org/10.4324/9781315566467.
- Amazon: https://www.amazon.com/Airline-Operations-Delay-Management-Economics/dp/075467293X.
- UNSW Library: https://primoa.library.unsw.edu.au/permalink/61UNSW_INST/oq6556/alma9937397130001731
- UNSW bookshop (Print): https://www.bookshop.unsw.edu.au/details.cgi?ITEMNO=9780754672937
- UNSW bookshop (Digital): https://unswbookshop.vitalsource.com/products/-v9781317182948

Other texts and journal papers that may be of assistance are referenced in the various sections of each unit or made available via UNSW Library. You may find that some of these publications are also useful references in areas other than the extracted sections. The use of library resources is essential for your study in this course.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Cheng-Lung Wu					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 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)