UNSW Course Outline

ZEIT3805 Airport Operations and Systems - 2024

Published on the 11 Feb 2024

General Course Information

Course Code : ZEIT3805
Year : 2024
Term : Semester 1
Teaching Period : Z1
Is a multi-term course? : No
Faculty : UNSW Canberra
Academic Unit : UC Science
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : UNSW Canberra at ADFA
Campus : UNSW Canberra
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This course will provide an introduction to airport operation and systems and will cover the topics of airport planning, airport operations, airport navigation aids, airport weather, airport procedure charts and airport quantitative modelling

Aspects of the design and operation of airport systems will also be reviewed. The course will cover interaction of various airport sub-systems and their impact on the overall performance of air transportation system through quantitative modelling. Students will also gain an insight into trade-offs amongst conflicting objectives of various stakeholders/users of airports for e.g. military, airlines, safety regulators, air navigation service providers and airport authorities. The course will also provide students an understanding of environmental impact of airports and possible strategies to manage it. Tutorials will include qualitative and quantitative analysis of problems relevant to airport operations. The course will include a field trip to an airfield.

Course Aims

The primary aim of this course is to gain an understanding for the operation of airports and related systems including operational procedures and technologies. The course will cover fundamental concepts in airport operation for both airside (runway, taxiway, navigation aids) well as landside (design of terminals and passenger buildings). The course will also cover system aspects of airport operations from safety and security management perspective. The course assumes that the participants need to deal with issues in airport planning, design, and management. It focuses on the actual problems that arises and on practical, effective ways of dealing with them. Additionally, sustainability, green airports and future airport technologies will be discussed.

Relationship to Other Courses

This course builds the knowledge and learning which related to the ZEIT3803 Air Traffic Management.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Explain the fundamental concepts in airport systems design and airport operations in the industry context
CLO2 : Describe organizational structure of airports for both airside and landside operations with the key considerations and design elements.
CLO3 : Describe operations related to the flight for both passenger and cargo services with operators' perspective.
CLO4 : Develop insight into system aspect of airport operations from the perspective of airport safety and security management systems including sustainability.

Course Learning Outcomes	Assessment Item
CLO1 : Explain the fundamental concepts in airport systems design and airport operations in the industry context	• Quizzes • Laboratory • Group Assignment • Final Exam
CLO2 : Describe organizational structure of airports for both airside and landside operations with the key considerations and design elements.	• Quizzes • Laboratory • Group Assignment • Final Exam
CLO3 : Describe operations related to the flight for both passenger and cargo services with operators' perspective.	• Quizzes • Laboratory • Group Assignment • Final Exam
CLO4 : Develop insight into system aspect of airport operations from the perspective of airport safety and security management systems including sustainability.	• Quizzes • Laboratory • Group Assignment • Final Exam

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

Teaching Activities

In this course student centered approach is followed to improve the teaching and learning activities. Teaching activities are mainly performed in lectures, tutorials, laboratory studies and when possible, field studies.

Lectures and Tutorials: Lectorials

Lectures and tutorials are the sessions which course conveyor and students interact together to improve better understanding of the course learning objectives. This hybrid approach also provides opportunities for the student's involvement for the course activities which are group workshops, presentations. The students are asked to provide their ideas and involvement within interactive learning environment. Course content and profile requires creating situational awareness of the air traffic management operations. For this reason, student engagement and interaction are vital for the expected course performance.

During lectorials, students take role in discussions and in group workshops as a member or managers (POGIL). Furthermore, *scenario-based* safety and efficiency workshops are performed

with the students.

Students are asked to provide their ideas and contributions for the course process such as contribution for the exam questions, rubric design, assignment design depending on the situational circumstances.

Laboratory studies

During the labs, students have the opportunity interact with the simulation tools. This engagement provides operational image and managing activities in aerodromes and airspaces. Simmod Pro is used for the lab studies. Course conveyor mentors the lab sessions for better understanding for the student role.

Filed Trip

During the semester, when appropriate field trip/visit will be organized for the operational environment engagement. The Canberra airport and its operations are the potential field to be engaged.

Overall, the course activities are designed for creating learning environment for the students who feel they are the potential and important airspace actors and should learn in theory and in operation interactively.

Additional Course Information

NA

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Quizzes Assessment Format: Individual	15%	Start Date: 18/03/2024 12:00 AM Due Date: Will be scheduled in class.
Laboratory Assessment Format: Individual	20%	Start Date: 29/04/2024 12:00 AM Due Date: 31/05/2024 12:00 AM
Group Assignment Assessment Format: Group	30%	Start Date: 20/05/2024 12:00 AM Due Date: 31/05/2024 12:00 AM
Final Exam Assessment Format: Individual	35%	

Assessment Details

Quizzes

Assessment Overview

Students will be asked to answer questions related to the weekly contents. There will be 3 quizzes each worth 5% of your course mark.

Course Learning Outcomes

- CLO1 : Explain the fundamental concepts in airport systems design and airport operations in the industry context
- CLO2 : Describe organizational structure of airports for both airside and landside operations with the key considerations and design elements.
- CLO3 : Describe operations related to the flight for both passenger and cargo services with operators' perspective.
- CLO4 : Develop insight into system aspect of airport operations from the perspective of airport safety and security management systems including sustainability.

Detailed Assessment Description

Quiz questions will be generated from the teaching modules, lectures and in class discussions.

Assessment Length

10 min

Submission notes

Quiz papers will be submitted to the moodle submission box.

Assessment information

NA

Assignment submission Turnitin type

Not Applicable

Laboratory

Assessment Overview

You will participate in 5 different lab activities each worth 4% of your course mark. For each you will submit the required work for marking.

Course Learning Outcomes

- CLO1 : Explain the fundamental concepts in airport systems design and airport operations in the industry context
- CLO2 : Describe organizational structure of airports for both airside and landside operations

with the key considerations and design elements.
- CLO3 : Describe operations related to the flight for both passenger and cargo services with operators' perspective.
- CLO4 : Develop insight into system aspect of airport operations from the perspective of airport safety and security management systems including sustainability.

Detailed Assessment Description

During the lab session students will be using simulation tool to understand better airport operations. They will be required on time performance evaluation and reporting.

Assessment Length

2 hours in lab and additional 30 mins for report submission.

Submission notes

Reports will be submittted 30 min after teh lab sessions.

Assessment information

NA

Assignment submission Turnitin type

Not Applicable

Group Assignment

Assessment Overview

The airport operators are performing all operations in airport's airside and landside competently in a harmony with each other. Their role and responsibilities should be well known by the students who are taking this course. The students (in groups) are expected to create personas infographics for the specified and selected airport operators who are working in the available airports (Canberra or Sydney) for different demographics and positions of Airlines, Air Navigation Service Provider, Ground Handling Services, Government Agencies and Concessions from civilian and military airport environments. The personas infographics will be prepared during the course period including all aspects of the operators' work, competencies, certifications, requirements ext. and will be presented at the end of the course to discuss collaboratively with an operational scope. All groups will combine their personas project as airport operators' map.

Course Learning Outcomes

- CLO1 : Explain the fundamental concepts in airport systems design and airport operations in the industry context
- CLO2 : Describe organizational structure of airports for both airside and landside operations with the key considerations and design elements.

- CLO3 : Describe operations related to the flight for both passenger and cargo services with operators' perspective.
- CLO4 : Develop insight into system aspect of airport operations from the perspective of airport safety and security management systems including sustainability.

Detailed Assessment Description

Description of the Assignment Task

Purpose of this assignment is to understand and explain the role and characteristics of different airport operators.

The airport operators are performing all operations in airport's airside and landside competently in a harmony with each other. Their role and responsibilities should be well known by the students who are taking this course.

The expected work and outcomes:

- The students (in groups) are expected to create personas infographics for the specified and selected airport operators who are working in the available airports for different demographics and positions of Airlines, Air Navigation Service Provider, Ground Handling Services, Government Agencies and Concessions from civilian and military airport environments. You may discuss your selection with the course convenor.
- The personas infographics will be prepared during the course period including all aspects of the operators' work, competencies, certifications, requirements ext. and will be presented at the end of the course to discuss collaboratively with an operational scope. All groups will combine their personas project as airport operators' map.
- Creating an informative, structured and scholarly written report about the choosen ATC unit. Report will cover related technical information about the unit. Report will be max 10 pages including tables and figures but excluding references and anexes.
- Performing an interactive presentation to share the information about the choosen project. Presentation will be 15 minutes and 5 minutes Q&A section. Presentation event will be managed by all groups in a harmony.

Students are expected to determine their project topics by end of the week 6 of the semester. Presentation order will be volunteerly organised within class members.

All materials will be submitted to A2 submission box before the spesified deadline by all group members.

Assessment Length

20 min presentation, 10 pages report in group collaboration

Submission notes

Project presentation, poster and report will be submitted.

Assessment information

NA

Assignment submission Turnitin type

This is not a Turnitin assignment

Final Exam

Assessment Overview

n/a

Course Learning Outcomes

- CLO1 : Explain the fundamental concepts in airport systems design and airport operations in the industry context
- CLO2 : Describe organizational structure of airports for both airside and landside operations with the key considerations and design elements.
- CLO3 : Describe operations related to the flight for both passenger and cargo services with operators' perspective.
- CLO4 : Develop insight into system aspect of airport operations from the perspective of airport safety and security management systems including sustainability.

Assessment Length

2 hours

Submission notes

Exam papers will be submitted to the moodle submission box.

Assessment information

NA

Assignment submission Turnitin type

Not Applicable

General Assessment Information

All marks obtained for assessment items during the session are provisional. The final mark as published by the university following the assessment review group meeting is **the only official mark.**

Late Submission of Assessment

Unless prior arrangement is made with the lecturer or a formal application for special consideration is submitted, a penalty of 5% of the total available mark for the assessment will apply for each day that an assessment item is late up to a maximum of 5 days (120 hours) after which an assessment can no longer be submitted and a grade of 0 will be applied.

SIMPLE EDITING ASSISTANCE For this assessment task, you may use standard editing and referencing software, but not generative AI. You are permitted to use the full capabilities of the standard software to answer the question (e.g. you may wish to specify particular software such as Microsoft Office suite, Grammarly, etc.).
If the use of generative AI such as ChatGPT is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

Grading Basis

Standard

Requirements to pass course

All marks obtained for assessment items during the session are provisional. The final mark as published by the university following the assessment review group meeting is **the only official mark.**

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 26 February - 1 March	Lecture	Introduction to Airports and Related Concepts and Terminology
Week 2 : 4 March - 8 March	Lecture	Airport Airside and Landside Structures
	Tutorial	
Week 3 : 11 March - 15 March	Lecture	Airport Airside and Landside Structures
	Tutorial	
Week 4 : 18 March - 22 March	Lecture	Airport Operators and Stakeholders
	Tutorial	
	Assessment	Quiz 1
	Presentation	Assignment 1 presentations will be performed individually and discussed in class by weekly. Assigment 1 will not be marked.
Week 5 : 25 March - 29 March	Lecture	Passenger and Cargo Services
	Tutorial	
	Presentation	Assignment 1 presentations will be performed individually and discussed in class by weekly. Assigment 1 will not be marked.
Week 6 : 1 April - 5 April	Lecture	Passenger and Cargo Services
	Tutorial	
	Presentation	Assignment 1 presentations will be performed individually and discussed in class by weekly. Assigment 1 will not be marked.
Week 7 : 22 April - 26 April	Lecture	Ground Handling Services
	Tutorial	
	Presentation	Assignment 1 presentations will be performed individually and discussed in class by weekly. Assigment 1 will not be marked.
Week 8 : 29 April - 3 May	Lecture	Airport Safety and Security Management Systems
	Laboratory	
	Tutorial	
	Assessment	Quiz 2
	Presentation	Assignment 1 presentations will be performed individually and discussed in class by weekly. Assigment 1 will not be marked.
Week 9 : 6 May - 10 May	Lecture	Air Traffic Control and Airport Operations Control Centers
	Laboratory	
	Tutorial	
	Presentation	Assignment 1 presentations will be performed individually and discussed in class by weekly. Assigment 1 will not be marked.
Week 10 : 13 May - 17 May	Lecture	Airport Emergency Planning and Crisis Management
	Laboratory	
	Tutorial	
	Fieldwork	Field trip to Canberra airport!
Week 11 : 20 May - 24 May	Lecture	Low visibility and Bad Weather Operations
	Project	Assigment 2 projects will be performed by group members. Also project presentation, poster and report will be submitted about the subject. Rubric will be provided in moodle.
	Laboratory	
	Tutorial	
Week 12 : 27 May - 31 May	Lecture	Sustainable and Green Airports
	Project	Assigment 2 projects will be performed by group members. Also project presentation, poster and report will be submitted about the subject. Rubric will be provided in moodle.
	Laboratory	
	Tutorial	
	Assessment	Quiz 3
Week 13 : 3 June - 7 June	Lecture	Aerodrome Wild Life Management

	Tutorial	

Attendance Requirements

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

General Schedule Information

Topics covered will include: Introduction to Airports and Related Concepts and Terminology; Airport Airside and Landside Structures; Airport Operators and stakeholders; Passenger and Cargo Services; Ground Handling Services; Airport Safety and Security Management Systems; Air Traffic Control and Airport Operations Control Centres; Airport Emergency Planning and Crisis Management; Low visibility and Bad Weather Operations; Sustainable and Green Airports; Aerodrome Wild Life Management.

Course Resources

Prescribed Resources

CASR Part 139 – **Aerodromes**, CASA, https://www.casa.gov.au/standard-page/casr-part- 139-aerodromes

FAA Advisory Circular, AC 150/5300-13A, **Airport Design**, 2014

ICAO DOC 9859, **Safety Management Manual**, 2018.

ICAO Annex 14, **Aerodromes**, Volume 1 (Aerodrome Design and Operations)

ICAO ANNEX 17, **Security**, 2006.

Recommended Resources

Norman J. Asford, H.P. Martin Stanton, Clifton A. Moore, Pierre Coutu, John R. Beasly. **Airport Operations**. New York: McGrawHill, 2013.

Richard De Neufville and Amedeo R Odoni. **Airport Systems planning design and management**. Second Edition, New York: McGraw-Hill, 2003.

Suzanne K. Kearns. **Fundamentals of International Aviation**. London: Routledge Taylor&Francis Group, 2018.

ACRP Report 25: **Airport Passenger Terminal Planning and Design**, Volume 1: Guidebook, Transport Research Board, Washington DC, 2010

Additional Costs

NA

Course Evaluation and Development

Student feedback will be taken during the semester in class and tutorial time by semi-structured templates to improve teaching and learning.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Ugur Turhan		B26 R117	0437470713	I am usually available for consultation during normal working hours. Please phone or email to make an appointment.	No	Yes
Lab supervisor	Alexander Somerville		Aviation lab B17	NA	During the lab times	No	No

Other Useful Information

Academic Information

Course Evaluation and Development

One of the key priorities in the 2025 Strategy for UNSW is a drive for academic excellence in education. One of the ways of determining how well UNSW is progressing towards this goal is by listening to our own students. Students will be asked to complete the myExperience survey towards the end of each course.

Students can also provide feedback during the semester via: direct contact with the lecturer, the “On-going Student Feedback” link in Moodle, Student-Staff Liaison Committee meetings in schools, informal feedback conducted by staff, and focus groups (where applicable). Student opinions really do make a difference. Refer to the Moodle site for your course to see how the feedback from previous students has contributed to the course development.

Important note: Students are reminded that any feedback provided should be constructive and professional and that they are bound by the Student Code of Conduct.

https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf

Equitable Learning Services (ELS)

Students living with neurodivergent, physical and/or mental health conditions or caring for someone with these conditions may be eligible for support through the Equitible Learning Services team. Equitable Learning Services is a free and confidential service that provides practical support to ensure your mental or physical health conditions do not adversely affect your studies.

Our team of dedicated **Equitable Learning Facilitators** (ELFs) are here to assist you through this process. We offer a number of services to make your education at UNSW easier and more equitable.

Further information about ELS for currently enrolled students can be found at: https://www.student.unsw.edu.au/equitable-learning

Academic Honesty and Plagarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW staff and students have a responsibility to adhere to this principle of academic integrity. All students are expected to adhere to UNSW's Student Code of Conduct. Find relevant information at: Student Code of Conduct (unsw.edu.au)

Plagiarism undermines academic integrity and is not tolerated at UNSW. It is defined as using the words or ideas of others and passing them off as your own, and can take many forms, from deliberate cheating to accidental copying from a source without acknowledgement.

For more information, please refer to the following:

https://student.unsw.edu.au/plagiarism

Submission of Assessment Tasks

Special Consideration

Special Consideration is the process for assessing and addressing the impact on students of short-term events, that are beyond the control of the student, and that affect performance in a specific assessment task or tasks.

Applications for Special Consideration will be accepted in the following circumstances only:

- Where academic work has been hampered to a substantial degree by illness or other cause;
- The circumstances are unexpected and beyond the student's control;
- The circumstances could not have reasonably been anticipated, avoided or guarded against by the student; and either:

(i) they occurred during a critical study period and was 3 consecutive days or more duration, or a total of 5 days within the critical study period; or

(ii) they prevented the ability to complete, attend or submit an assessment task for a specific date (e.g. final exam, in class test/quiz, in class presentation)

Applications for Special Consideration must be made as soon as practicable after the problem occurs and at the latest within three working days of the assessment or the period covered by the supporting documentation.

By sitting or submitting the assessment task the student is declaring that they are fit to do so and cannot later apply for Special Consideration (UNSW 'fit to sit or submit' requirement).

Sitting, accessing or submitting an assessment task on the scheduled assessment date, after applying for special consideration, renders the special consideration application void.

Find more information about special consideration at: https://www.student.unsw.edu.au/special/consideration/guide

Or apply for special consideration through your MyUNSW portal.

Late Submission of assessment tasks (other than examinations)

UNSW has a standard late submission penalty of:

- 5% per day,
- capped at five days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

Electronic submission of assessment

Except where the nature of an assessment task precludes its electronic submission, all assessments must be submitted to an electronic repository, approved by UNSW or the Faculty, for archiving and subsequent marking and analysis.

Release of final mark

All marks obtained for assessment items during the session are provisional. The final mark as published by the university following the assessment review group meeting is the only official mark.