UNSW Course Outline

ZEIT3803 Air Traffic Management - 2024

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General Course Information

Course Code : ZEIT3803
Year : 2024
Term : Semester 2
Teaching Period : Z2
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

The aim of this course is to introduce students to Air Traffic Management (ATM). The course will cover fundamental concepts in ATM such as communication, navigation and surveillance as well as Air Traffic Control operations and procedures.

The course will also introduce the role of airports and impact of weather in ATM. Students will learn about the environmental impact of aviation and human factor issues in air traffic. Advanced ATM concepts and future air traffic research programs ie SESAR & NextGen will also be introduced.

The course will also cover computer simulation, quantitative modelling of Air Traffic Control (ATC) problems and may involve a field visit.

Course Aims

The course aims to provide students with an overview of ATM, together with a more focused engagement with selected aspects. Basic ATM concepts and vocabulary will be introduced in the first half of the course via a series of lectures and an in class test. The second half of the course will involve a deeper consideration of advanced topics.

Relationship to Other Courses

This course uses the knowledge and learning which related to the ZEIT3805 Airport Operations and Systems. On the other hand, as a multidisciplinary approach, ATM motivates social, engineering and other research fields to improve safety and efficiency with any kind of relation.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Explain fundamental concepts in Air traffic Management and Air Traffic Control operations in the industry context
CLO2 : Describe Air Traffic Management and air traffic controllers' role in safety procedures and efficiency aspects
CLO3 : Demonstrate Air Traffic Management operations with procedural and operators' perspective
CLO4 : Evaluate the role of human factors and automation in air traffic safety

Course Learning Outcomes	Assessment Item
CLO1 : Explain fundamental concepts in Air traffic Management and Air Traffic Control operations in the industry context	• Group Assignment • Quiz • Final Exam • Laboratory
CLO2 : Describe Air Traffic Management and air traffic controllers' role in safety procedures and efficiency aspects	• Group Assignment • Quiz • Final Exam • Laboratory
CLO3 : Demonstrate Air Traffic Management operations with procedural and operators' perspective	• Group Assignment • Quiz • Final Exam • Laboratory
CLO4 : Evaluate the role of human factors and automation in air traffic safety	• Group Assignment • Final Exam • Laboratory

Learning and Teaching Technologies

Moodle - Learning Management System

Learning and Teaching in this course

Moodle is the Learning Management System used at UNSW Canberra. All courses have a Moodle site which will become available to students at least one week before the start of semester. Please find all help and documentation (including Blackboard Collaborate) at the Moodle Support page.

UNSW Moodle supports the following web browsers:

» Google Chrome 50+

» Safari 10+

** Internet Explorer is not recommended

** Addons and Toolbars can affect any browser's performance.

Operating systems recommended are:

Windows 7, 10, Mac OSX Sierra, iPad IOS10

For further details about system requirements click here.

Log in to Moodle here.

If you need further assistance with Moodle:

For enrolment and login issues please contact:
IT Service Centre
Email: itservicecentre@unsw.edu.au
Phone: (02) 9385-1333
International: +61 2 9385 1333

For all other Moodle issues please contact:
External TELT Support
Email: externalteltsupport@unsw.edu.au
Phone: (02) 9385-3331
International: +61 2 938 53331

Opening hours:
Monday – Friday 7:30am – 9:30 pm
Saturday & Sunday 8:30 am – 4:30pm

Additional Course Information

NA

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Group Assignment Assessment Format: Group Short Extension: Yes (5 days)	30%	Start Date: Not Applicable Due Date: Week 11: 07 October - 11 October, Week 12: 14 October - 18 October
Quiz Assessment Format: Individual Short Extension: Yes (5 days)	10%	Start Date: Not Applicable Due Date: Week 5: 12 August - 16 August
Final Exam Assessment Format: Individual	35%	Start Date: TBD by school Due Date: TBD
Laboratory Assessment Format: Individual Short Extension: Yes (5 days)	25%	Start Date: 8-13 week Due Date: Week 8: 16 September - 20 September, Week 9: 23 September - 27 September, Week 10: 30 September - 04 October, Week 11: 07 October - 11 October, Week 12: 14 October - 18 October

Assessment Details

Group Assignment

Assessment Overview

Students will perform research, presentation and reporting within teamwork.

Course Learning Outcomes

- CLO1 : Explain fundamental concepts in Air traffic Management and Air Traffic Control operations in the industry context
- CLO2 : Describe Air Traffic Management and air traffic controllers' role in safety procedures and efficiency aspects
- CLO3 : Demonstrate Air Traffic Management operations with procedural and operators' perspective
- CLO4 : Evaluate the role of human factors and automation in air traffic safety

Detailed Assessment Description

The global ATM projects like NextGen, SESAR and similar project in Asia-Pacific region including Australia are aiming to improve safety and efficiency by sustainable approach for better flight performance within all aspects. Students (in groups) are expected Research about the recent and ongoing ATM related research project from all around the world in terms of safety, efficiency, sustainability and UTM etc. Projects will be presented interactively by infographics in a final

semester event. Groups will research and evaluate present various research projects in about ATM and develop comprehensive image. Groups will create teamwork and collaboration.

Submission notes

Will be submitted to the moodle submission box

Assignment submission Turnitin type

Not Applicable

Quiz

Assessment Overview

There will be 2 quizzes each worth 5% of your course mark in total 10%.

Course Learning Outcomes

- CLO1 : Explain fundamental concepts in Air traffic Management and Air Traffic Control operations in the industry context
- CLO2 : Describe Air Traffic Management and air traffic controllers' role in safety procedures and efficiency aspects
- CLO3 : Demonstrate Air Traffic Management operations with procedural and operators' perspective

Detailed Assessment Description

Quizez will be covering modules previously studied.

Submission notes

Quiz papers will be submitted to the submission box

Assessment information

Additional information will be added to the submission box in moodle.

Assignment submission Turnitin type

Not Applicable

Final Exam

Assessment Overview

Final exam will be paper based.

Course Learning Outcomes

- CLO1 : Explain fundamental concepts in Air traffic Management and Air Traffic Control operations in the industry context

- CLO2 : Describe Air Traffic Management and air traffic controllers' role in safety procedures and efficiency aspects
- CLO3 : Demonstrate Air Traffic Management operations with procedural and operators' perspective
- CLO4 : Evaluate the role of human factors and automation in air traffic safety

Detailed Assessment Description

Final exam will be paper based.

Assessment Length

2 hours

Submission notes

Exam will be paper based.

Assessment information

E$xam will be covering all lectures and tutorials.

Assignment submission Turnitin type

Not Applicable

Laboratory

Assessment Overview

There will be 5 labs each worth 5% of your course mark in total 25%.

Course Learning Outcomes

- CLO1 : Explain fundamental concepts in Air traffic Management and Air Traffic Control operations in the industry context
- CLO2 : Describe Air Traffic Management and air traffic controllers' role in safety procedures and efficiency aspects
- CLO3 : Demonstrate Air Traffic Management operations with procedural and operators' perspective
- CLO4 : Evaluate the role of human factors and automation in air traffic safety

Detailed Assessment Description

During the labs, students have the opportunity interact with the ATC simulation tools. This engagement provides operational image and managing activities in aerodromes and airspaces. Airport 3D Pro and other simulations are used for the lab studies. Course conveyor and lab supervisor mentor the lab sessions for better understanding for the student role.

Assessment Length

1 hour

Submission notes

Reports will be submittted 30 min after teh lab sessions.

Assessment information

Lab tasks will be assessed by lab supervisor.

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.

Grading Basis

Standard

Requirements to pass course

Students are advised to perform all course assessment items in total over 50%.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 15 July - 19 July	Lecture	Course intorduction and Module 1: Introduction to Air Traffic Management and Related Concepts and Terminology
Week 2 : 22 July - 26 July	Lecture	Module 2: Air Traffic Services
	Tutorial	Air traffic services applications
Week 3 : 29 July - 2 August	Lecture	Module 2: Air Traffic Services continue
	Tutorial	ATS applications
Week 4 : 5 August - 9 August	Lecture	Module 3: Separation Methods and Minima
	Tutorial	Separation application examples
Week 5 : 12 August - 16 August	Lecture	Module 4: Procedures for Aerodrome Control Services
	Tutorial	Aerdrome control practices
	Assessment	Quiz 1
Week 6 : 19 August - 23 August	Lecture	Module 5: ATS Surveillance Services
	Tutorial	Practices for Surveillance services
Week 7 : 9 September - 13 September	Lecture	Module 6: ATC Communication and Phraseologies
	Tutorial	ATC Communication and Phraseologies practices
Week 8 : 16 September - 20 September	Lecture	Module 7: Human Factors in ATM
	Tutorial	Workshop for Human Factors
Week 9 : 23 September - 27 September	Lecture	Module 8: Automation in ATM
	Tutorial	Automation applications
Week 10 : 30 September - 4 October	Lecture	Module 9: Procedures for Unusual and Emergency Situations
	Tutorial	Emergency workshop
	Assessment	Quiz 2
Week 11 : 7 October - 11 October	Lecture	Module 10: Civil-Military Cooperation in ATM
	Assessment	Group assignment
Week 12 : 14 October - 18 October	Lecture	Module 11: UTM-Unmanned Aircraft Systems Traffic Management
	Assessment	Group Assignment
Week 13 : 21 October - 25 October	Lecture	Course recap

Attendance Requirements

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

General Schedule Information

Topics covered will include: Introduction to Air Traffic Management and Related Concepts and Terminology; Air Traffic Services; Separation Methods and Minima; Procedures for Aerodrome Control Services; ATS Surveillance Services; ATC Communication and Phraseologies; Human Factors in ATM; Automation in ATM; Procedures for Unusual and Emergency Situations; Civil-Military Cooperation in ATM; UTM-Unmanned Aircraft Systems Traffic Management.

Course Resources

Prescribed Resources

Nolan, M.S., (2011). Fundamentals of Air Traffic Control. Delamr, Australia.

Recommended Resources

CAA CAP 745, **Aircraft Emergencies-Considerations for Airtraffic Controllers,** 2005.

CASA, **MOS Part 65-Standarts Applicable to Air Traffci Services Licensing**, 2005.

Eurocontrol, **Guidelines for Controller Training in the Handling of Unusual/Emergency Situations,** 2003.

ICAO Annex 11, **Air Traffic Services,** 2018.

ICAO Doc 4444, **Air Traffic Management**, 2016.

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

Additional Costs

NA

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 this 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. Student opinions really do make a difference. Refer to the Moodle site for this 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 Policy

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

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Head lecturer	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 Sommerville					No	No