

**The University of New South Wales
School of Aviation**

AVIA 5007 – Airport Operations Management

Semester 1, 2016

Course Outline

Course Staff

The course author and facilitator is Mr Rod Sullivan, a Senior Visiting Fellow with the School of Aviation. Mr Sullivan can be contacted by telephone on 0408 008 474 or via e-mail at r.sullivan@unsw.edu.au. Mr Sullivan does not visit campus during University semester and is available for student consultation only by special arrangement.

Mr Sullivan has a Bachelor of Civil Engineering Degree and a Bachelor of Economics Degree, both from the University of Queensland, and a Postgraduate Diploma in Public Administration from the University of Canberra. He is an airport operations specialist with extensive experience in airport engineering, planning and management, airport standards interpretation, the functional design of airport and helipad facilities, aircraft noise modelling and airspace protection.

Mr Sullivan joined the Australian Department of Civil Aviation as a graduate civil engineer in 1968 and spent the bulk of his career with that organisation and its successors till he left the Civil Aviation Authority in 1992. He then set up and directed what became one of the largest dedicated airport consultancy businesses in Australia until its sale in late 2004. He is now an independent consultant who:

- provides airport operators, aviation regulatory authorities and other consultants with operational, technical and standards advice;
- carries out airport technical inspections;
- prepares and regularly presents operational training courses for a variety of airports; and
- prepares aircraft noise exposure forecasts and airport master plans.

Mr Sullivan is also part owner of a regional airport in northern Tasmania and technical advisor to the airport board.

He is a Senior Visiting Fellow with the Department of Aviation at the University of New South Wales where, in addition to this course, he prepared and facilitates the unit on Airport Planning in Master of Science and Technology in Aviation and for nine years lectured to undergraduates in Airport Management.

Course Information

Aims

This 6 UoC course aims to assist students develop a broad understanding of the key elements of Airport Operations so that regardless of the student's specific personal involvement in aviation, they can take a realistic view of airport management, financing, regulation, risk mitigation and community impacts.

Students will gain an insight into the complexities and wide ranging nature of the issues confronting an airport operator. They will also develop an appreciation that the safe and efficient operation of airports underpins the safety and efficiency of airline and other aircraft operations since all journeys by air begin and end on the ground. Airports are a key, though often under acknowledged, component of the aviation industry.

Regardless of the industry sector with which students are involved, the course aims to provide an understanding of what is involved in the management of airport operations in order to equip students with a broader, more balanced and flexible approach to the job they perform.

Learning Outcomes

On completion of this course students should be able to:

1. demonstrate, by completion of two written assignments and exercises contained in the course notes, an understanding of:
 - airport ownership models and management structures;
 - airport financial arrangements;
 - the legislative framework and the primary means of assessing and ensuring airport operator provides a safe environment for aircraft operations;
 - the environmental impact of airport operations on the community;
 - the purpose of airport emergency planning;
2. conduct independent research and inquiry and apply analytical skills in finding solutions to complex and difficult issues having prepared two written research assignments relating to the operation of a regional airport;
3. apply good written communication skills by presenting solutions to such complex and difficult issues in a clear and concise manner;
4. apply knowledge gained in other disciplines or life experience to managing airport operations issues/problems;
5. demonstrate, by way of successfully completing assignments and unit exercises, a capacity for self motivated learning, intellectual development, resourcefulness and successful time management.

Location

This course runs for twelve weeks in Semester One and is part of the Master of Aviation Management degree, offered through distance education.

Learning and Teaching Philosophy

The course aims to be interesting, challenging and enjoyable. The assignments are linked to the real world to allow students to apply their own life experiences to a practical airport operations situation. Student diversity in terms of experiences and learning styles is valued. Student assessment is designed to reflect the learning outcomes, and meaningful and timely feedback will be provided on coursework.

Integration into Overall Program

The course relates to several other courses offered as part of the Master of Science and Technology (Aviation) eg Law and Regulation in Aviation, Aviation and Security and Airport Planning. This course focuses on the basic airport operational issues that have to be managed to allow for the safe and efficient conduct of aircraft operations and contribute to the profitability of the airport business.

Teaching Strategies

Students have been provided with a comprehensive set of notes supported by readings, a reading list and a list of useful internet sites. The course notes include exercises for the student to complete to focus and consolidate their understanding of the concepts and requirements involved in airport operations. These are not compulsory and answers are either present in the material or involve the student in making decisions, which as in life, may prove to be right or wrong by circumstance.

The materials reflect Mr Sullivan's long involvement in the aviation industry, specifically his experiences in airport operations, planning and the development of standards. The role of the course facilitator is to support and encourage students, to provide them with additional information and answer queries as required. There is however an expectation that students will take responsibility for their own learning and time management as required for the completion of the course and timely submission of assignments.

Internet

A Moodle Module has been created to accompany this course. This will be the primary vehicle for student and facilitator interaction. Additional readings or supplementary course materials may be posted throughout the semester as necessary.

Use of this facility allows the student, learning at a distance to:

- establish a link to UNSW and create a sense of belonging;
- communicate and share relevant information and/or experiences with other students and the facilitator;
- access material as required;
- source information in the notes quickly; and
- evaluate materials before downloading and printing.

Students are encouraged to utilise the internet to establish current regulatory requirements. However students will find there is limited information on airport operations on the Internet or in text books generally. While some of the readings attached to the course notes may appear dated, they are included because they are still relevant and nothing more suitable has been found to replace them.

Continual Course Improvement

Periodically, student evaluative feedback on the course is gathered, using among other means, UNSW's Course and Teaching Evaluation and Improvement (CATEI) Process. Student feedback is taken seriously, and continual improvements are made to the course based in part on such feedback. Significant changes to the course will be communicated to subsequent groups of students taking the course.

Administrative Matters

Students should be familiar with the information contained in <https://my.unsw.edu.au> regarding expectation of students, enrolment, fees and other policies that affect you. Also students must be familiar with the information provided in the Postgraduate Aviation Student Guide. This essential document can be obtained from the School of Aviation and is available on UNSW Moodle. Please contact Jamie Lim at jamie.lim@unsw.edu.au for any administrative enquiries.

Course Schedule and Subject Matter

Schedule

This course is composed of an overview and 12 units to match the course duration of 12 weeks. However students are expected to manage their workloads so that relevant units are completed in conjunction with assignment requirements. The approach to each topic involves self paced learning utilising the course notes and readings supplied and supplemented by student research.

Unit	Topic	Unit	Topic
1*	Introduction to Airport Operations Management	7	Airspace Protection
2	Airport Economics	8	Environmental Management
3	Airport Safety Regulation	9	Aerodrome Works
4	Airport Safety Management Systems	10	Apron Management
5	Aerodrome Manual	11	Terminal and Landside Management
6	Airside Safety Management	12	Airport Emergency Management

* note the course begins in Week 2 of the Aviation Calendar on 9 March 2015

Subject Matter Overview

An airport is primarily a transport interchange which provides the interface necessary to allow passengers, their baggage and airfreight to be transferred between land and air transport modes.

Continuing expansion in world travel demand means the airport operator has to be able to fund high levels of capital investment. The airport ownership structure will need to be responsive and provide adequate access to the necessary finance. Airports, once provided and operated by governments, are now being financed and run as business enterprises entitled to seek an adequate rate of return on their investments. Some form of private ownership (or airport privatisation) is becoming increasingly common.

Even so privatised airports still have to be regulated by national authorities in the interests of public safety, security and amenity. Most governments will also impose some form of economic regulation to prevent the airport operator from exploiting its real or perceived market monopoly.

The modern high capacity passenger or freight aircraft utilised in long haul international operations typically requires runways over three kilometres long. Even a single large aircraft providing an infrequent service will require a runway of this size. A busy airport will also need to provide a complex taxiway system to allow efficient manoeuvring of aircraft while on the ground. The physical transfer of passengers, baggage and airfreight takes place on aprons and through terminals or similar specialist buildings which need to be of sufficient size to cope with the peak (or busy hour) demand placed on them. This often means the airport operator has to provide large facilities which are underutilised for much of the time.

External road systems may need to be augmented, and an internal airport road system and car parking areas will have to be provided to allow passengers, their friends and relatives, and airfreight delivery vehicles to access the airport.

Air safety and environmental concerns will dictate that an airport operator acquires or exercises development controls over more land than is required purely for the provision of airport facilities. Airport operators are now responsible for establishing the greenhouse gases for which they are operationally responsible.

The surrounding airspace needs to be protected so that aircraft can continue to make approaches to land and take-off from the airport in comparative safety. The airport facilities used directly by aircraft

must be maintained in a safe condition and operated in a manner which provides a safe environment for aircraft ground operations. Frequent inspections of airside facilities will be necessary since even minor problems risk the possibility of a large scale disaster should they contribute to an aircraft accident.

The airport operator will often be faced by hostile local resident groups concerned about their safety, quality of life and the adverse environmental impacts of aircraft/airport operations. The airport operator will need to be able to demonstrate that it recognises and is prepared to deal meaningfully with these issues.

In most cases airport maintenance and expansion programmes will have to be scheduled so that aircraft operations can continue for the duration of works. This will have significant cost implications because construction crews cannot be given free access to airside works sites, work may be frequently interrupted, and additional supervision will be needed to prevent conflict between aircraft and construction vehicles/equipment.

Aircraft ground handling and passenger processing are the core business activities and key performance areas for an airport operator. The apron and terminal complex must function efficiently, while providing a safe and secure transition between the landside and airside of the airport.

Ground handling of aircraft involves a range of activities such as marshalling, towing or push back, baggage handling, refuelling, catering, cleaning and minor servicing. Each of these activities must be coordinated and completed within the shortest possible time so that the airline can have maximum utilisation (i.e. flight time) of its aircraft.

Terminal operations include passenger ticketing and check-in, baggage handling, security, government controls such as customs, immigration and quarantine, information systems, and passenger loading/unloading. The terminal building may also include a range of retail outlets to enhance the level of service available to passengers and their friends/relatives. At large airports these may also become a significant source of non-aeronautical revenue.

Related landside facilities such as access roads and car parks must be designed to handle expected peak demands and managed to minimise congestion and delay to both arriving and departing passengers.

While the airport operator naturally focuses on maintaining safe day to day operations it must be recognised that it is still possible for an aircraft accident to occur on or in the vicinity of an airport. Government regulations require the airport operator to plan for such an eventuality, and for other emergencies including building fires, bomb scares or aircraft hijack, spillages of hazardous materials, and natural disasters. These plans must be prepared in conjunction with Police, Fire Service, Ambulance and other agencies expected to respond should such an emergency occur. The airport operator must also plan to resume normal operations as soon practicable after the emergency has been dealt with.

The Units

The 12 units follow the above overview and the unit titles give a reasonable indication of their contents.

Unit 1 is structured to introduce the airport sector of the aviation industry and briefly cover the range of ownership models and management structures likely to be implemented. This Unit provides essential background material.

Unit 2 considers airports as businesses, their financial management, revenue opportunities and cost structures, and their economic impacts on the wider community. The Unit also considers whether a case can be made for airports with insufficient traffic/revenue to receive subsidy so that they can continue to provide important community services. Issues regarding economic regulation of airports in a privatised environment are also briefly considered.

Units 3, 4, 5, 6 and 7 deal primarily with the safety regulation of airports and the key regulatory instruments by which this is achieved in Australia. Unit 3 establishes Australia's international obligations as a Member State of ICAO and identifies the roles played by the Civil Aviation Safety Authority (CASA), Airservices Australia (AA) and the Department of Infrastructure and Regional Development (DIRD) in prescribing appropriate standards and monitoring compliance by the airport operator. Unit 4 deals with the need for and implementation of an airport safety management system (SMS) to complement the mandatory regulatory regime. Unit 5 considers how the Aerodrome Manual serves to describe the operator's procedures and may be used as a means of establishing compliance. Unit 6 considers how the operator safely operates, maintains and secures the airport's basic asset – the airside facilities provided for aircraft operations. Unit 7 considers the need for protection of airspace in the vicinity of the airport to allow aircraft to make an approach to land and take-off in safety. This Unit also considers a range of administrative measures involving state and local government authorities which may be implemented to achieve the necessary airspace protection.

Unit 8 deals with the major environmental issues which commonly arise from the operation of an airport. The airport operator needs to plan to minimise environmental disturbance caused by current operations, and at the same time ensure that the surrounding environment does not unnecessarily limit the long term expansion and operation of the airport.

Unit 9 deals with the management of airside works – including both capital works and maintenance projects – and the precautions which must be taken to ensure continued compliance with normal safety standards. In most cases, special arrangements must be negotiated with contractors or works parties to allow aircraft operations to continue while works are in progress.

Units 10 and 11 deal with the operation and management of apron, terminal and landside facilities. Unit 10 considers reasons why the apron is a high risk area in terms of aircraft safety because of the mix of activities which take place there, involving both aircraft and ground equipment/vehicle operations. The Unit also discusses what actions the airport operator might take to promote a safe apron environment. Unit 11 deals with the operation of the terminal and landside facilities provided primarily for use by passengers and their friends and relatives.

Unit 12 deals with airport emergency management. This contrasts with earlier units which mostly deal with routine operational requirements. The airport operator must also anticipate and be prepared to manage any emergency situation on the airport. Such planning encompasses those measures required for a direct response to an aircraft emergency and also to return the airport as quickly as possible to its normal operational status.

Unit Exercises

Some of the exercises contained in the units refer to Dalton Airport. Dalton Airport and its staff do not exist. They have been created to provide a realistic scenario on which to develop an understanding of the subject material. Details about the airport and recent financial data are included with the assignment topics which are posted as a separate file on Moodle.

Where the exercises refer to Dalton Airport carry out the exercise as though you are the recently appointed airport manager. Draw on your own work experience and utilise the course notes and common sense to provide the answers. As you work your way through the notes you may want to go back and revise some of your answers as your knowledge of the airport's operation increases.

You are encouraged to complete these exercises to enhance your understanding of the practical nature of, and issues involved in, managing airport operations. They will also assist you in your approach to, and preparation of, the course assignments and exam.

Academic Honesty and Plagiarism

Plagiarism is the presentation of the thoughts or work of another as one's own¹. Examples include:

- direct duplication of the thoughts or work of another, including by copying work, or knowingly permitting it to be copied - this includes copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and,
- claiming credit for a proportion of work contributed to a group assessment item that is greater than that actually contributed.²

Submitting an assessment item that has already been submitted for academic credit elsewhere may also be considered plagiarism.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does not amount to plagiarism.

Students are reminded of their Rights and Responsibilities in respect of plagiarism, as set out in the University Postgraduate Handbook, and are encouraged to seek advice from academic staff whenever necessary to ensure they avoid plagiarism in all its forms.

UNSW Academic Skills and Support website provides information on plagiarism and academic honesty. It can be located at:

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

Also the Learning Centre <http://lc.unsw.edu.au/> provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

1. correct referencing practices;
2. paraphrasing, summarising, essay writing, and time management;
3. appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

¹ Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle.

² Adapted with kind permission from the University of Melbourne.

Resources for students

Recommended Texts

- Ashford, N., Stanton, H.P.M., Moore, C.A., 1997, Airport Operations, 2nd Ed, McGraw Hill, New York.
- Ashford, N. & Wright, P.H. 1992, Airport Engineering, 3rd edn, John Wiley & Sons, New York.
- Bartsch, R.I., 2009, Aviation Law in Australia, 3rd Ed, Lawbook Co., Sydney.
- Campbell, R., 1999, Crisis Control, Prentice Hall, Maryborough.
- De Neufville R.& Odoni A., 2003, Airport Systems, Planning, Design and Management, McGraw, New York.
- Doganis, R., 2005, The Airport Business, Routledge, London and New York.
- Forsyth, Peter (ed),. 2004, The Economic Regulation of Airports, Ashgate, London.
- Graham, A., 2008, Managing Airports, 3rd Ed, Butterworth-Heinemann, London.
- Kazda, A. & Caves, R.E. 2008, Airport Design and Operation, 2nd Ed, Pergamon, Amsterdam.
- Thomas, G, and others, 2008, Plane Simple Truth, Aerospace Technical Publications International Pty Ltd, Perth.
- Wells, A.T & Young, S., 2008, Airport Planning & Management, 5th Ed, McGraw Hill, New York.

Aviation Internet Sites

- Airservices Australia
<http://www.airservices.gov.au>
- Aviation Statistics
<http://www.bitre.gov.au/statistics/aviation/index.aspx>
- Bureau of Infrastructure, Transport & Regional Economics (BITRE)
<http://www.btre.gov.au>
- Department of Infrastructure and Regional Development
<http://www.infrastructure.gov.au>
- Australian Transport Safety Bureau
<http://www.atsb.gov.au>
- Civil Aviation Safety Authority
<http://www.casa.gov.au>
- Australian Aviation Acts and Regulations
<http://www.comlaw.gov.au>
- International Civil Aviation Organisation (ICAO)
<http://www.icao.int>
- International Air Transport Association (IATA)
<http://www.iata.org>

Airports Council International (ACI)
<http://www.aci.aero/>

Federal Aviation Administration
<http://www.faa.gov>

Sydney Airport
<http://www.sydneyairport.com.au>

Brisbane Airport
<http://www.bne.com.au>

Essential Readings

Each study unit is accompanied by readings. A list of these has been posted on Moodle with the Course Units.

Rod Sullivan
January 2016