

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

AVIA 5007 – Airport Operations Management

Semester 1, 2018

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 technical advisor to the airport board of a regional airport in northern Tasmania.

He is a Senior Visiting Fellow with the School 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 operations 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 the 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, Airport Planning and Airport Economics, Management and Policy. 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 a few 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 myExperience survey. 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 them. 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 Mike Williams at aviam@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*	An Introduction to Airport Operations Management	7	Airport Environmental Management
2	Airport Safety Regulation	8	Aerodrome Works
3	Airport Safety Management Systems	9	Apron Management
4	Aerodrome Manual	10	Terminal and Landside Management
5	Airside Safety Management	11	Airport Emergency Management
6	Airspace Protection	12	Airport Economics

* note the course begins in Week 2 of the Aviation Calendar on 5 March 2018

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 managing the greenhouse gas emissions 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. Few people want to live close to an airport, yet they value an airport that is close and easily accessible.

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.

Although creating a safe and secure airport environment is a primary consideration, the airport operator must also focus on the fact that modern airport is a business enterprise. To be successful and to provide for the airport's safe operation, its financial management involves the close monitoring of costs, revenue sources (including subsidies) and performance indicators.

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.

Units 2, 3, 4, 5, and 6 deal primarily with the safety regulation of airports and the key regulatory instruments by which this is achieved in Australia. Unit 2 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 3 deals with the need for and implementation of an airport safety management system (SMS) to complement the mandatory regulatory regime. Unit 4 considers how the Aerodrome Manual serves to describe the operator's procedures and may be used as a means of establishing compliance. Unit 5 considers how the operator safely operates, maintains and secures the airport's basic asset – the airside facilities provided for aircraft operations. Unit 6 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 7 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 8 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 9 and 10 deal with the operation and management of apron, terminal and landside facilities. Unit 9 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 10 deals with the operation of the terminal and landside facilities provided primarily for use by passengers and their friends and relatives.

Unit 11 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 12 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.

Unit Exercises

Some of the exercises contained in the units refer to Dalton Airport, a small regional airport in Australia. 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 is 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. Because Dalton is a small airport you are also the airport operations

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.

You are not required to complete these exercises in any specific time frame nor are you required to submit them as they are not part of the formal assessment. On the other hand if you have problems with them you can discuss the problem with the course facilitator or you can submit your answers for review. The course facilitator will not provide detailed feedback unless you have failed to understand fundamental concepts dealt with in the particular unit.

Course Assessment

Early Assessment

In this course you will be provided with a set of 12 multiple choice questions at the beginning of semester. These will cover the first 3 weeks of course materials. You should complete these questions with all serious intent one week prior to the Census Date (31 March). The course facilitator will provide the correct answers prior to the census date, and explanations for each. Marking yourself honestly therefore will provide you with formative feedback as to whether you have covered the key issues prior to census date. The marks will not be used as a summative contribution to your final mark.

Formal Assessment

Types of Assessment, Weighting and Due Dates

Assessment components relate specifically to the learning outcomes for this course and key graduate attributes expected of UNSW students. There are two forms of assessment for this course:

1. **Research Assignments (50%)** – There are two assignments based on a regional airport scenario. Both require the student to adopt the role of airport operations manager of this airport.

The first is 2000 words long, worth 25% and due on 16 April 2018.

It requires the student, in the role of airport operations manager, to prepare:

- an action plan outlining proposed responses to adverse findings about the existing state of airside operations and facilities; and
- an implementation plan.

The second is 2000 words long, worth 25% and due on 28 May 2018.

It requires the student, in the role of the airport operations manager, to prepare a project induction for a works contractor who has been engaged to carry out reconstruction of a critical section of the main apron.

Please note that the information above is an outline only of the assignment topics. Full details of the topics have been posted separately on Moodle.

The assignments relate to all five learning outcomes.

The assignments must be submitted by lodgement through Moodle. Submission should be confirmed by email to the facilitator. Any application for an extension of time must be made in writing prior to the due date. Late assignments, without a reason deemed satisfactory by the facilitator, may be penalised by a loss of 10% of the total possible marks for the assignment per working day. Overly long assignments may also be penalised.

2. **End of Semester Assessment (50%)** – This assessment, which will take place during the exam week, will take the form of an end of course examination based on course work. It will be posted on Moodle by UNSW at the beginning of the exam week. It is to be submitted electronically no later than the date nominated by UNSW.

The exam will comprise 10 multiple choice questions. You will be given the correct, or most appropriate, answers to these questions. For each question you will be required to explain why the correct answer is the most appropriate option of those provided and why each of the other four options are not, or are less, appropriate ie you will provide five comments in relation to each question. An example of what is required by way of response to one of this type of question will be provided by email and announcement on Moodle prior to the exam week.

This assessment also relates to all five learning outcomes but with much less emphasis on research since the questions are drawn primarily from the material in your Course notes which you should be familiar with having worked through them during the semester.

Assessment Criteria

The criteria for assessment of all written work will be:

1. overall understanding of the assessment requirement, demonstrated in terms of material selected for inclusion in and development and structure of the student response;
2. appropriate weight and balance given to the components of the assessment;
3. evidence of understanding of the concepts and problems being studied or reviewed;
4. evidence of relevant independent research;
5. ability to analyse and synthesise material;
6. ability to apply solutions in the aviation field from the student's own areas of experience;
7. ability to write in a concise and simple manner whilst solving complex and difficult issues
8. appropriate style of response utilised eg – report, briefing paper, paper for presentation, a critique etc;
9. presentation of the response allows the reader easy and clear access to the material presented and an understanding of the structure of the response;
10. appropriate referencing of researched material.

In general terms the assessments will be marked on:

- coverage - criteria 1, 2, 3 and 4 (40%);
- analytical skills and problem solving - criteria 5 and 6 (40%); and
- presentation – criteria 7, 8, 9, 10 (20%).

Final Course Result

All final course marks are scaled by the School and reviewed by the Faculty. The final approved course result will be officially released on myUNSW in July (S1) and December (S2). Students should not assume their final official marks directly from each assessment task even after all the marks for every assessment are received.

Special Consideration

You can apply for special consideration when illness or unexpected circumstances beyond your control interfere with your assessment performance.

Assignment Extensions – If you need an assignment extension up to one week, you need to make a formal request with supporting documentation to the course facilitator by email **PRIOR** to the due date. Assignment extensions are not guaranteed and students should not assume that they will be given one.

Exams and Significant Long-Term Issues – A formal Special Consideration request must be lodged online with supporting documentation via <https://student.unsw.edu.au/special-consideration> .

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., et al, 2012, Airport Operations, 3rd Ed, McGraw Hill, New York.

Ashford, N. et al 2011, Airport Engineering – Planning, Design and Development of 21st-Century Airports, 4th edn, John Wiley & Sons, Hoboken, New Jersey.

Bartsch, R.I., 2012, Aviation Law in Australia, 4th Ed, Thomson Reuters Australia, Sydney.

De Neufville R.& Odoni A. et al, 2013, 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., 2014, Managing Airports, 4th Ed, Routledge, London.

Kazda, A. & Caves, R.E. 2015, Airport Design and Operation, 3rd Ed, Emerald Group Publishing Limited, Bingley.

Young, S. & Wells, A., 2011, Airport Planning & Management, 6th Ed, McGraw Hill, New York.

Aviation Internet Sites

Airservices Australia

<http://www.airservicesaustralia.com/>

Aviation Statistics

<https://bitre.gov.au/statistics/aviation/index.aspx>

Bureau of Infrastructure, Transport & Regional Economics (BITRE)

<https://bitre.gov.au/>

Department of Infrastructure and Regional Development

<https://infrastructure.gov.au/>

Australian Transport Safety Bureau

<http://www.atsb.gov.au/>

Civil Aviation Safety Authority

<https://www.casa.gov.au/>

Australian Aviation Acts and Regulations

<https://www.legislation.gov.au/>

International Civil Aviation Organisation (ICAO)

<https://www.icao.int/Pages/default.aspx>

International Air Transport Association (IATA)

<http://www.iata.org/>

Airports Council International (ACI)

<http://www.aci.aero/>

Federal Aviation Administration

<https://www.faa.gov/>

Sydney Airport

<https://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 2018