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

AVIA5015 –Safety Management Systems

Course Outline

Course Staff

The course facilitator is Peter Wigens of the School of Aviation. Peter can be contacted via e-mail at peter.wigens@unsw.edu.au

Peter holds an Air Transport Pilot Licence with in excess of 10,000 hours accumulated in both domestic and international flight operations. He has held an instructor rating, a Command Instrument rating, and is a full member of the International Society of Air Safety Investigators (ISASI).

Joining the Bureau of Air Safety Investigation in 1995, Peter conducted a two-year research project into the safety issues surrounding advanced technology aircraft. This project included questions that probed the safety culture and safety systems of the respondent's airline. The survey included four identical questions used by Dr. Earl Weiner in his seminal work in this area, revealing that there was very little difference in perceptions of aviation culture and systems safety across the globe. Many of these issues will be covered in this course.

Peter joined a major Asia-Pacific international airline in 1997 as the Manager of Air Safety Investigation and went on to become Head of Corporate Safety. His challenge was to transform a traditional flight safety department into a corporate safety department in a multi-cultural environment. This tour of duty spanned the Asian economic crisis in the late 1990's, SARS, a prolonged industrial dispute and the Phuket tsunami. All of these challenges tested the airline's safety management system and revealed aspects of corporate and personal behaviour rarely seen in normal business operations.

Peter also has experience with international business jet operations and qualifications and experience in aviation security and corporate quality assurance.

Peter's experience allows him to view aviation systems from the perspective of both the system user and the system provider.

Peter was awarded an MBA (UNE) in 2002, an LLB (Hon.) London in 2012 and an LLB (UNE) in 2015.

Course Information

> **'In flying I have learned that carelessness and overconfidence are usually far more dangerous than deliberately accepted risks.'**
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> *— Wilbur Wright in a letter to his father, September 1900*

This course is intended to provide the student with an understanding of the principles of aviation system safety in order that the knowledge gained from such study can be used to better understand the often complex interaction between individuals and organisations, and their effect on aviation safety. Successful completion of this module is expected to equip the student with the tools to develop and maintain a safety program that meets the requirements for Safety Management Systems as described by the International Civil Aviation Organisation (ICAO) and the Civil Aviation Authority (Australia) (CASA). Modern jet transport systems now enable people to travel vast distances at high-speed, within a highly hazardous environment, yet paradoxically with minimal risk. A significant reason for this is associated with the development of safety management systems specifically designed to identify and safely manage risk.

Many of the improvements in safety have resulted from the investigation of aircraft accidents and incidents. In the past, engineering solutions to safety deficiencies led to significant improvements. Over time, the investigation of major disasters revealed that such events were not the product of a single cause, but were more likely to have resulted from a combination of factors. Many of those factors were linked to the ways in which the behaviour of individuals was adversely influenced by task related and systemic conditions, leading to a safety breakdown. With the growing complexity of aviation passenger transport operations it has therefore become increasingly necessary to look beyond the actions of individuals in order to understand those system based, error-producing conditions that adversely influence their actions.

Safety management systems are being increasingly used by organisations to ensure that all aspects of their respective operations that could affect safety have been adequately addressed. Typically, such systems provide for:

- The establishment of organisational safety objectives and policy;

- A commitment by senior management to safety;

- The promotion of a positive safety culture;

- The identification of safety hazards and the management of risk;

- The means of measuring and maintaining organisational safety health:

- Procedures for the rectification of safety deficiencies; and

- Emergency response procedures.

Aims

This 6 UoC course is intended to provide students with an understanding of the principles of aviation safety management systems in order that the knowledge gained from such study can be used to better understand the often complex interaction between individuals and organisations, and their effect on aviation safety. Successful completion of this module is expected to equip the student with the tools to develop and maintain a safety program that also meets the requirements for Safety Management Systems as described in ICAO Annex 19 and Safety Management Manual Document 9859 AN/474 3rd Edition (2013) and CAAP SMS - 1(0) [January 2009] as reflected in Civil Aviation Orders (CAO) 82.3 and 82.5 (as amended).

Learning Outcomes

While the principles of system safety addressed in this course will apply to all levels of commercial air transport operations, the course will be of particular relevance to low capacity operators who have previously not used safety management systems. It is recognised that for any such system to be effective it must be relevant, and capable of being implemented and maintained by the users of the system without undue penalty. The following course objectives are formulated with those beliefs in mind:

System safety. Understanding the principles of system safety. Recognising the benefits of adopting a Safety Management System, and learning how to utilise such a system, within the legislative framework;

Safety Culture. Learning the importance of establishing a positive organisational safety culture, how such a culture can be developed and maintained, and understanding the crucial need for the commitment of senior management to safety;

Identifying safety deficiencies. Learning the principles of investigating reported safety occurrences and hazards, how to utilise systems based processes to identify safety deficiencies, and understanding what safety actions can be taken to counteract those deficiencies;

Risk Management. Understanding the principles of identifying, evaluating and managing risk;

Evaluating system safety. Acquiring knowledge of safety auditing and system health monitoring processes; and

Safety Management. Acquiring the knowledge and skills necessary to undertake the functions and responsibilities of Safety Officer/Manager, and able to implement and maintain a safety management system as *will* be required by CASR Part 119.

Location

This course runs for 12 weeks of Semester. Please contact the School of Aviation for the start date of each semester.

The course is delivered electronically via UNSW Moodle, on a distance-learning basis. The core component of delivery is the course manual. Course manuals are written and facilitated by experts from various backgrounds within the aviation industry and a cross section of disciplines at UNSW. Each manual has been designed to guide the learner in the most effective and efficient way. As new concepts are introduced, practical exercises are provided so you can develop skills, which can be applied immediately in your workplace Students are able to study at their own pace, in accordance with their particular work schedules and locations. Academic review and feedback is delivered via e-mail or Moodle.

Learning and Teaching Philosophy

This course aims to provide an academic environment in which students are actively engaged in the learning process. The course aims to be interesting, challenging and enjoyable. Activities are linked to both research and scholarship, and the real world, and allow students to reflect on how system safety issues affect them and others in the aviation industry. Student diversity in terms of experiences and learning styles is valued. A supportive environment is provided but there is an expectation that students will take responsibility for their own learning and also learn co-operatively with their peers. 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 links with several other courses offered as part of the MScTech (Aviation)/MAvMgmt, that relate to human factors, organisational behaviour, risk and safety management, and aviation operations. This course focuses on human performance within a socio-technical environment.

Internet

Online content and study materials can be accessed via UNSW Moodle:
http://moodle.telt.unsw.edu.au

Course Schedule

The course comprises of 12 units to match the course duration of 12 weeks.

Unit 1	Introduction to Safety Management
Unit 2	Incident/Accident Causation Models
Unit 3	Regulatory Framework
Unit 4	Elements of a Safety Management System
Unit 5	Safety Policy and Objectives
Unit 6	Safety Risk Management
Unit 7	Safety Assurance
Unit 8	Safety Training and Promotion
Unit 9	Safety Culture 1
Unit 10	Safety Culture 2
Unit 11	Emergency Response Planning
Unit 12	Future Developments

These 12 units have been developed to achieve the preceding course objectives and to provide the student with a well-developed, general understanding of the system safety approach to aviation safety management. The course should be of interest to all participants and does not require specialist expertise in any particular sector of the aviation industry. The knowledge gained from successful completion of this course is readily transferable to other areas of safety management, well beyond the aviation industry.

Unit one provides an introduction to the general principles of system safety, its development and benefits.

Unit two examines the principles of Human Factors and an accident causation model developed by Professor James Reason (the Reason Model) and others.

Unit three describes legislative requirements as imposed by CASA, based on the ICAO framework.

Unit four overviews the general structure of a Safety Management System as needed in an airline environment, as interpreted by ICAO and CASA.

Unit five describes the requirements of safety policy and safety objectives.

Unit six specifically describes how a Safety Management System can be used in a practical manner to proactively manage and mitigate risk.

Unit seven introduces the concept of safety assurance.

Unit eight describes aspects of safety training and promotion in a modern context.

Unit nine explores the importance of safety culture.

Unit ten continues the topic of safety culture.

Unit eleven concerns the issue of emergency response planning.

Unit twelve addresses future needs and developments in safety management systems.

IMPORTANT

'Activities' are placed at strategic points throughout the unit. **DO NOT** proceed until you have completed the required activity. Those students who diligently complete the assigned activities invariably score better in assignments and examinations than those who do not.

Activity instructions include **read**, **review** or **view**.

Read – students are required to read the referenced document or specified section of the documents in full.

Review – students are required to *scan* the referenced document or specified section of the document, noting the content, purpose and information specifically related to the topic under study.

View – students are required to view the referenced electronic media in full.

Assessment

The MScTech (Aviation)/ MAvMgmt Program's approach to assessment closely follows that of the Australian Open Learning Program of the Australian Graduate School of Management. At all times assessment is intended to form a component of the learning process and assignments are designed to encourage you to apply what you learn to your own organization. Assignments will be assessed on the basis of how you apply course material to gaining new insight into your organization. Written comments will accompany your return assignments and exercises and should provide useful feedback. The examination will provide you and us with feedback about your comprehension of the course content.

Academic Honesty and Plagiarism

Plagiarism is the presentation of the thoughts or work of another as one's own[1]. 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;
- claiming credit for a proportion a 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 Undergraduate and Postgraduate Handbooks, and are encouraged to seek advice from academic staff whenever necessary to ensure they avoid plagiarism in all its forms.

The Learning Centre website is the central University online resource for staff and student information on plagiarism and academic honesty. It can be located at:

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

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

- correct referencing practices;

- paraphrasing, summarising, essay writing, and time management;

- appropriate use of, and attribution for, a range of materials including text, images,   formulae and concepts.

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[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.

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.

Resources for students

Additional texts

There are no mandatory textbooks for this module as all readings have been included within each unit; Internet references are provided, or the relevant e-Books are available through the UNSW library. This permits distance education to take place anywhere in the world at a reasonable cost, and with equitable access to resources. However, many students may wish to obtain additional texts to further their personal interest in this subject area.

Internet

Significant resources are also available through the Internet.

The following is a sample of sites that may also provide useful information and links:

The Australian Transport Safety Bureau has a well developed website that provides access to a wide range of ATSB and BASI investigation reports. The site also has links to other major international safety investigation agencies. The ATSB site can be accessed at http://www.atsb.gov.au

AirSafe.com is a useful source of worldwide accident data. http://www.airsafe.com/

One of the world's leading aviation safety resources, Flight Safety Foundation is known internationally for providing timely, practical and objective information to FSF members and everyone concerned with the safety of flight.http://www.flightsafety.org/home.html

The Civil Aviation Safety Authority contains much useful information concerning the safety regulation of civil aviation in Australia. http://www.casa.gov.au/

Many more sites can be revealed through the use of Internet search engines such as Google etc.

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 cohorts of students taking the course

Teaching Strategies

The MScTech (Aviation)/MAvMgmt and its associated programs, the Graduate Certificate in Aviation Management and the Graduate Diploma in Aviation Management, are offered through distance education and have been specifically designed for students who are unable to attend weekly sessions at the university. The MScTech (Aviation)/MAvMgmt is targeted towards professionals and managers who work in aviation related environments.

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 **aviam@unsw.edu.au** for any administrative enquiries.