

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

AVIA5015 –Safety Management Systems

Course Outline

Course Staff

The course facilitator is Peter Wiggins of the School of Aviation. Peter can be contacted via e-mail at peter.wiggins@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.

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 and to develop a safety management system 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. He is an admitted solicitor with interests in criminal, aviation and family law.

Course Information

‘In flying I have learned that carelessness and overconfidence are usually far more dangerous than deliberately accepted risks.’

— Wilbur Wright in a letter to his father, September 1900

This course is intended to provide the student with an understanding of the principles that apply to an aviation safety system and an understanding the often-complex interaction between individuals and organisations to which those principles apply.

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 the development of Safety Management Systems (SMS) that is part requires the identification and management of risk. Successful completion of this module is expected to equip the student with the theoretical knowledge of the requirements of a SMS as described by the International Civil Aviation Organisation (ICAO) and the Civil Aviation Authority (Australia) (CASA).

Another aspect of a modern SMS is the investigation of aircraft accidents and incidents. In the past, engineering solutions led to significant improvements. However, over time, such investigations revealed that accidents and incidents were often 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, which has led to a breakdown in safety. 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 now increasingly used by organisations to ensure that all aspects of their 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.

NB: Every system of education comprises students of varying backgrounds, including their age, ethnicity and culture perspective, work experience and academic ability. At some stage, you may find some aspects of this course very challenging and at other

times not so challenging. From experience, those students who take this course range from recent graduates to PhDs; from students aged in their 20s to their 80s. The common element is that all of them have an interest in aviation and a desire to improve or refresh their knowledge in this fascinating subject. For those who find the going 'tough', do not hesitate to ask questions. For those who are at times 'coasting', use this course to challenge your existing knowledge.

Aims

This 6 UoC course is intended to provide the student with an understanding of the principles of an aviation safety system and 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 theoretical knowledge of the requirements of a SMS as described by the International Civil Aviation Organisation (ICAO) and the Civil Aviation Authority (Australia) (CASA) in their respective publications.

Learning Outcomes

The principles of system safety addressed in this course apply to all levels of aviation, from recreational groups (e.g. gliding associations) to international regular public transport operators. The same principles also apply to all other forms of transport, industry and personal safety.

The following course objectives are formulated with this 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 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 Manager, and to be able to implement and maintain a safety management system.

Location

This course runs for 12 weeks of the 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 over the course duration of 12 weeks.

Week 1	Unit 1	Introduction to Safety Management
Week 2	Unit 2	Incident/Accident Causation Models 1
Week 3	Unit	Regulatory Framework
Week 4	Unit	Elements of a Safety Management System
Week 5	Unit	Safety Policy and Objectives
Week 6	Unit	Safety Risk Management
Week 7	Unit	Safety Assurance
Week 8	Unit	Safety Training and Promotion
Week 9	Unit	Safety Culture 1
Week 10	Unit	Safety Culture 2
Week 11	Unit 11	Emergency Response Planning
Week 12	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 recent initiatives, and future needs/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 perform 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, of varying detail, will accompany your return assignments and exercises and should provide useful feedback. The examination or final assignment will provide you and us with feedback about your comprehension of the course content.

Criteria for Assessment

Unless otherwise specified, the following criteria will be applied in assessing your written work:

- evidence of understanding of the concepts, theories and ideas developed in the course;

- ability to apply those concepts to situations from your own experience;
- capability to structure an assignment logically and limit it to the length required;
- the degree to which the material submitted for assessment addresses the specified or negotiated assignment requirements; and
- the proper use of grammar, spelling, style, and academic referencing, together with an appropriate mix of research and original thought.

The examiner is looking for interesting and innovative answers and not a 'model answer' derived from the text. Answers that consist of a succession of "quotes" will not attract high marks.

NB: Clearly state at the beginning of (or throughout) each assignment which question is being answered.

Students are referred to the University's rules on academic conduct, which are contained within the Student Handbook. Specifically, **plagiarism** is absolutely unacceptable and may lead to failure of the course, or in extreme cases exclusion from the University. Students are referred to the University's *Student Handbook* for full details on academic regulations.

Assessment Tasks

There will be one assignment and one final examination. The weighting will be as follows:

Assignment 1	50%
Assignment 2	50%

Final Course Results

All final course results are reviewed and scaled by the School and the Faculty. The final approved course results will be officially released via zMail and 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 each every assessment are received.

Non-assessment Requirements

Students are required to complete a multiple choice quiz comprising 12 questions on or before 31 March 2018. The questions will cover material from weeks 1 to 3. This

quiz is designed to allow students to self-assess if they are on track early in the course.

Assignment 1

Submission: Week 8 (i.e. 23:59 AEST **29 April 2018**)

Weighting: 50%

Length: An essay of 2000 words (+/- 10%).

Details of Assignment 1 will be released on Moodle in Week 2 (**i.e. 11 March 2018**).

Assignment 2

Submission: End of Exam Week (i.e. 23:59 AEST **15 June 2018**)

Weighting: 50%

Details of Assignment 2 will be released on Moodle in Week 10 (**i.e. 13 May 2018**).

Assignment 2 is worth 50% of the total assessment.

Students will be asked to complete a mixture of short answer and essay questions. The assessor is looking for thoughtful, interesting and innovative answers and not the repetition of the course notes.

The purpose of these assignments is to test: (1) your knowledge and understanding of the course material, (2) your ability to apply that understanding, and (3) your ability to critically assess current safety systems and suggest how these systems might be developed.

NB: Students are required to complete BOTH Assignment 1 and Assignment 2 in order to complete the requirements of this course.

Essay format

Every essay MUST include 3 sections:

1. Introduction – state whether you agree or disagree with the thesis and briefly outline your argument.
2. Development – logically layout your argument (stated in the Introduction). Start a new paragraph for each new element or sub-element of your argument.
3. Conclusion – make a logical conclusion and possibly suggest future needs or developments.

Assignment Format

- Font: Aerial size 12
- Spacing: double space
- Headings: use headings to frame your argument
- Graphs, tables and illustrations: use only as necessary
- Referencing: insert references into “footnotes”
- Bibliography: every essay must include a Bibliography. Make sure you know the difference between a “Table of References” and “Bibliography”
- DO NOT INCLUDE:
 - Artistic templates
 - Table of contents
 - Summary or synopsis
- DO INCLUDE:
 - The question you are attempting to answer
 - Word count

NB: Students will be penalised if they fail to follow these instructions.

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;
- 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.

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>

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/>

The UNSW library contains a large number of eBooks and articles on this subject. Please contact the librarian for assistance.

Safety News

There are many safety news services available on the Internet. One such service is Flight Safety Information published by Curt Lewis & Associates (USA). Subscription to this service is free of charge. For further details see www.fsinfo.org.

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 **Mike Williams** at aviam@unsw.edu.au for any administrative enquiries.