



AVIA 320: Aviation Safety
Held as AVIA 374 “Special Topics in Aviation” Winter 2018
Course Outline: Section – 001 / Winter

1. Course Information:

1.1 Class Location and Time:

Room: EV3 4412

Lectures: Mondays 8:30-11:20

1.2 Contact Information:

Instructor: Dr. Suzanne Kearns

Office: EV1-238

Office Hours: Monday 11:30-1:30 (or by appointment)

Phone: x32789

Email: suzanne.kearns@uwaterloo.ca

2. Course Description:

This course is an advanced exploration of how aviation safety is managed at the organizational level. Content will include explorations of pilot threat and error management, safety management systems (including risk analysis and hazard identification), and safety audits. The focal point of the course is on understanding the nature and causation of accidents.

3 hours lecture, 0.5 course

Prerequisite: AVIA 310 or professor consent

3. Textbook & Additional Expense

3.1 TBD – Readings will be recommended by the instructor

4. Outcomes and Format

- Course Objectives
 - To become aware of the organizational approach to safety and safety management systems
 - To be able to critically analyze, discuss, and make presentations regarding aviation safety cases
 - Course format
 - The course will be organized as a combination of lecture, case analysis, group discussion, group activities, and student presentations.

5. Evaluation

5.1 Class Attendance: A crucial element of this course is the sharing of ideas and opinions. Since each of us brings a unique background of experiences, much can be learned from class debate and discussion. Participation will account for 10% of your final grade.

Absences: All absences will impact your participation grade. As a rule of thumb, you can expect each absence to subtract 10% of your participation grade. For medical absences, refer to the policy on accommodation for medical illness. If you have a valid excuse for an absence you must inform the instructor *before* the intended date. It is the instructor's discretion whether or not to excuse an absence, based on University policy.

5.2 In-Class Presentations: Throughout the course you will be learning various approaches used by aviation to analyze and reduce the accident rate. After the instructor has presented a few themes for consideration, your group will be required to make a presentation to the class that analyzes how that theme could be used to address the safety issue being analyzed as part of the design challenge. You will be expected to demonstrate an advanced understanding of the safety theory, skillfully apply the theory to the issue your group is considering, and present a conclusion about that theme's fit to address your issue. Your presentation is expected to be 20 minutes in duration, use best practices in presentation materials and professionalism, incorporate some audience interaction, minimal/no use of note cards for reference. All members of your group must contribute to the presentation. The goal of the assignment is to give you an opportunity to practice making a business presentation as well as to become highly familiar with the various safety themes used in the aviation industry. Your group will also be required to submit a 2-3 page written analysis of how the theme applies to your design challenge case. The written analysis is expected to incorporate a variety of academic and industry references (8-10 expected) and the highest quality of writing and expression. In summary, for each presentation, your group must submit the following through LEARN: 1) slides used in the presentation, 2) copies of any handouts/activities/games used in the presentation as well as your 2-3 page written analysis, and 3) group assignment disclosure (please embed/scan this document as the final page in your written analysis). Additional details will be provided in class. Each presentation will account for 15% of your grade in the course (5% for the presentation and 10% for the written analysis).

5.3 Design Challenge: The final culminating experience in this course is the analysis of a real-world challenge from airline operations. Problem statements will be given to student groups at the beginning of the semester, from an airline partner. As we move through the semester, student groups are asked to continually explore new safety themes/approaches and consider how each applies to their problem. The three in-class presentations, described above in section 5.2 will allow for practice analyzing and presenting ideas about the design challenge. The final design challenge presentations will take place during the last class of the semester, during which time representatives from the airline industry will attend class to serve as judges. Student groups will present the solutions to their design challenge to the airline judges, who will determine which group did the best job addressing the safety issues and award a prize.

Evaluation Item	Percentage of Course Grade
5.1 Class Attendance	10%
5.2 In-Class Presentations (x 3)	45%
5.3 Design Challenge	45%
<i>Final Report – 30%</i>	
<i>Final Presentation – 15%</i>	

Hard-copy print outs of assignments and/or essays are due on the dates indicated. Any assignments turned in late will incur a 10% late penalty per day. There are no exceptions to this policy. If you are unable to turn in the assignment on the due date, you may ask another student to turn it in on your behalf. Electronic/mailed versions of assignments will not be accepted.

Students are responsible for material covered in the lectures as well as the assigned chapters/readings. The midterm examination will be in class time. The final exam will be scheduled during the exam period. Exams will not be returned to students but may be reviewed in the instructor’s office.

Students are **REQUIRED TO COMPLETE ALL COMPONENTS** of this course. There are no exceptions to this. Extra assignments to improve grades will **NOT** be allowed.

Exams will be scored using the program Scan Exam which examines the answer sheets for unusual coincidences in the pattern of answers given which may be indicative and used as supporting evidence of cheating.

Grades will **not** be adjusted on the basis of need. It is important to monitor your performance in the course. Remember: *You* are responsible for your grades in this course.

6. Lecture Schedule

Lecture – Mondays 8:30 – 11:20am

Week 1 – January 8, 2018

- Course Introduction, Overview of Syllabus, Expectations of Professionalism
- Introduction to aviation accident statistics

Week 2 – January 15, 2018

- Historical review of aviation safety approaches
- The nature of human error and HFACS

Week 3 – January 22, 2018

- Crew Resource Management (CRM) Evolution & History
- NOTECHS Framework

Week 4 – January 29, 2018

- *Student Presentations – Addressing the issue based on CRM and an error-focused approach*

Week 5 – February 5, 2018

- Advanced Qualification Program (AQP) and Competency-Based Training

Week 6 – February 12, 2018

- Threat and Error Management & Line Operations Safety Audit

Week 7 – February 26, 2018

- Safety Culture

Week 8 – March 5, 2018

- *Student Presentations – Addressing the issue based on training and company-specific safety programs*

Week 9 – March 12, 2018

- Safety Management Systems, Handouts 1 & 2

Week 10 – March 19, 2018

- Safety Management Systems, Handouts 3 & 4
- Safety Management Systems, Handouts 5 & 6

Week 11 – March 26, 2018

- *Student Presentations – Addressing the issue using safety management systems (the organizational approach to safety)*

Week 12 – April 2, 2018

- Final presentations of aviation safety design challenge

7. University Policies Related to Assignments, Tests, and Final Exams

Intellectual Property:

Students should be aware that this course contains the intellectual property of their instructor, TA, and/or the University of Waterloo. Intellectual property includes items such as:

- Lecture content, spoken and written (and any audio/video recording thereof);
- Lecture handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides);
- Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and
- Work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner).

Course materials and the intellectual property contained therein, are used to enhance a student's educational experience. However, sharing this intellectual property without the intellectual property owner's permission is a violation of intellectual property rights. For this reason, it is necessary to ask the instructor, TA and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online (e.g., to an online repository).

Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many

cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of intellectual property rights.

Please alert the instructor if you become aware of intellectual property belonging to others (past or present) circulating, either through the student body or online. The intellectual property rights owner deserves to know (and may have already given their consent).

Academic Integrity:

In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. The University's guiding principles on academic integrity can be found here: <http://uwaterloo.ca/academicintegrity>. ENV students are strongly encouraged to review the material provided by the university's Academic Integrity office specifically for students: <http://uwaterloo.ca/academicintegrity/Students/index.html>

Students are also expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Students who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. Students may also complete the following tutorial: <https://uwaterloo.ca/library/get-assignment-and-research-help/academic-integrity/academic-integrity-tutorial>

When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline: <https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71>. Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance: <https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70>

Note for students with disabilities: AccessAbility Services, located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic 5 accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.

Mental Health: The University of Waterloo, the Faculty of Environment and our Departments/Schools consider students' well-being to be extremely important. We recognize that throughout the term students may face health challenges - physical and / or emotional. **Please note that help is available.** Mental health is a serious issue for everyone and can affect your ability to do your best work. Counselling Services <http://www.uwaterloo.ca/counselling-services> is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counselling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more.

Religious Observances: Students need to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. See Policy 70 - Student Petitions and Grievances, Section 4, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please contact your Undergraduate Advisor for details.

Appeals: A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 – (Student Discipline) may be appealed if there is a ground. A student who believes he/she

has a ground for an appeal should refer to Policy 72 (Student Appeals)
www.adm.uwaterloo.ca/infosec/Policies/policy72.htm

Unclaimed assignments:

Unclaimed assignments will be retained for one month after term grades become official in quest. After that time, they will be destroyed in compliance with UW's [confidential shredding procedures](#).

Communications with Instructor and Teaching Assistants:

All communication with students must be through either the student's University of Waterloo email account or via Learn. If a student emails the instructor or TA from a personal account they will be requested to resend the email using their personal University of Waterloo email account.

Turnitin: Text matching software (Turnitin®) may be used to screen assignments in this course. This is being done to verify that use of all materials and sources in assignments is documented. To better understand the meaning of 'similarity' in Turnitin, see

https://guides.turnitin.com/01_Manuals_and_Guides/Student/Classic_Student_User_Guide/17_Similarity_Check#Viewing_an_Originality_Report.

Students will be given an option if they do not want to have their assignment screened by Turnitin®. In the first week of the term, details will be provided about arrangements and alternatives for the use of Turnitin® in this course.

Recording lectures:

- o Use of recording devices during lectures is only allowed with explicit permission of the instructor of the course.
- o If allowed, video recordings may only include images of the instructor and not fellow classmates.
- o Posting of videos or links to the video to any website, including but not limited to social media sites such as: facebook, twitter, etc., is strictly prohibited.

Co-op interviews and class attendance: Co-op students are encouraged to try and choose interview time slots that result in the least amount of disruption to class schedules. When this is challenging, or not possible, a student may miss a portion of a class meeting for an interview. Instructors are asked for leniency in these situations; but, a co-op interview does not relieve the student of any requirements associated with that class meeting. When a co-op interview conflicts with an in-class evaluation mechanism (e.g., test, quiz, presentation, critique), class attendance takes precedence and the onus is on the student to reschedule the interview. CECA provides an interview conflict procedure to manage these situations.

Students will be required to provide copies of their interview schedules (they may be printed from WaterlooWorks) should there be a need to verify class absence due to co-op interviews.

Important Dates: Please refer to <https://uwaterloo.ca/quest/undergraduate-students/important-dates/2017-2018>

8. Other Information

- Bring student identification to exams.
- Nothing is to be on/at one's desk during an exam except a pencil, an eraser, and the individual's student card
- Do not wear baseball caps to exams
- Do not bring music players, cell phones, beepers, or other electronic devices to exams

9. FREQUENTLY ASKED QUESTIONS

Question	Answer
How can I succeed in this course?	Attend class and tutorials, complete homework, focus on understanding the principles in a way that lets you apply them to new situations.
When will the exam grades be posted?	Grades are posted on Learn when they become available.
There is so much material. How can I possibly remember everything?	You do not need to remember everything. You need to understand the fundamental principles and how to apply them.
This mark is going to prevent me from getting accepted into graduate school/NASA.	Grades are given based on actual performance, as set out on the course outline. In order to be fair to all the students in the course, grade adjustments, extra assignments, and the reweighting of course components are not available.
I need a certain mark to get or maintain a scholarship.	
I tried really hard but I still got a poor mark.	

10. Group Assignment Disclosure

Group Assignment Disclosure

Please read the disclosure below following the completion of your group assignment. Once you have verified these points, hand in this signed disclosure with your group assignment.

1. All team members have referenced and footnoted all ideas, words or other intellectual property from other sources used in the completion of this assignment.
2. A proper bibliography has been included, which includes acknowledgement of all sources used to complete this assignment.
3. This is the first time that any member of the group has submitted this assignment or essay (either partially or entirely) for academic evaluation.
4. Each member of the group has read the full content of the submission and is assured that the content is free of violations of academic integrity. Group discussions regarding the importance of academic integrity have taken place.
5. Each student has identified his or her individual contribution to the work submitted such that if violations of academic integrity are suspected, then the student primarily responsible for the violations may be identified. Note that in this case the remainder of the team may also be subject to disciplinary action.

Course: _____

Assignment: _____

Date: _____

Name (print)	Signature	Section Contributed	Section Edited