Syllabus: ASEN 3046

Instructor and About the Course

Contact Information

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Teaching Assistants

- Teagan Browne
- Rudolf Hansen
- Polly Fitton

Professor Bio

Dr. Sarah Stanford-McIntyre researches how technology shapes communities, builds social worlds, and changes environments. Her current work focuses on the role of energy in society. She has multiple publications on the history of the Texas oil and gas industries and is currently working on a history of the "green" transition in the Rocky Mountain West.

Sarah Stanford-McIntyre is director of the Engineering, Ethics, & Society Certificate Program. More information about this program can be found at https://www.colorado.edu/herbst/certificate-option.

Communication Policies

Email is the preferred communication method for this class (rather than canvas message). **For questions about assignment logistics, due dates, grading, or class attendance, please contact the TAs first. We will make every effort to respond within 24 hours.** If your question is urgent, and someone has not responded to you, multiple emails are welcome. I am also available during office hours or before and after class.

Course Description

ASEN 3046 Introduction to Humans in Aviation
Fri 5:00-7:50 pm

This course investigates manned aviation and how it has impacted our lives.
We begin by reviewing the history of manned aviation in 1783 with the Montgolfier's and proceed through the major historic events that have advanced aircraft developments. We consider how each new historic milestone in aircraft development has impacted society and our acceptance of manned flight.

Students will gain an understanding of just how rapidly aviation has developed over the last century and how challenging it has been to adapt our psychological and physiological limitations to such dangerous environment. We will do this by looking at aviation accidents from the position of human error.

We then explore the socio-economic impacts of recent aviation related events such as the post 9-11 air travel fallout, the Katrina recovery and rescue efforts and the Icelandic Volcano. We will also discuss the future of aviation and how it will affect our lives.

Course Objectives

Learning Goals

- Engineering students gain knowledge of how technological development, and especially flight technologies and systems, are a product of political, economic, and social change.
- Students gain an understanding of the current issues and debates in the ethical and social dynamics of aerospace development, including the impact of drones, AI, and climate change on the industry.
- Students interrogate relevant concepts and terms in the field of science and technology studies.

Measurable Outcomes

- Students practice forming persuasive and well-researched arguments in both written and discussion settings
- Students gain skills in evaluating and assessing different forms of evidence – including formal writing, statistical data, popular cultural texts, and others

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Prerequisites

none, open to all majors at any level.

Required Texts

1. Either *Flight the Complete History* By R.G. Grant, DK Publishing (2007). ISBN-10: 0756619025
OR *Flight: 100 Years of Aviation* By R.G Grant DK Publishing (2007) ISBN-10: 0756653460

2. Handbook of Aviation Human Factors, 2nd Edition (Human Factors in Transportation) Wise, Hopkins and Garland (hardcover 2009).
***Digital copies are available via the CU Library ***
http://dx.doi.org.colorado.idm.oclc.org/10.1201/b10401Links to an external site.

Method of Instruction

This course will be taught in person, there will be no virtual or recorded option. Students are expected to attend class in person.

Student Responsibilities and Class Expectations

This class mixes short lectures with lively student discussion. Students in ASEN 3046 are expected to attend class and actively participate in meaningful discussions with their peers. Students are expected to prepare for class by reading the assigned short texts *before* coming to class. Exams, essays, and attendance quizzes take place in-class and cannot be made-up without prior approval.

Assignments and Grading

Assignments

- Participation (15%): best 4 of 6 attendance quizzes
- Three in-class exams (35%): weighted equally
- Two in-class essays (25%): weighted equally
- Final Group Presentation (25%): Final document and final recorded presentation.

Submission Policies

Each assignment details how you should submit them. Read each assignment carefully and submit accordingly.

Accommodations and In-Class Assignments

Those using extended time for essays and quizzes in ASEN 3046 **will take their exam/essay in AERO 232 beginning at either 4pm or 4:30 pm** (depending on your accommodation) on essay/exam days. Go ahead and go directly to AERO 232 to begin your assignment. We are continuing with lecture content beginning at 6:15 so when you are done, head back to our normal lecture hall.
The early start time and alternate room is to avoid you missing lecture content as you complete your assignment. However, if it is impossible for you to make the above times, please email me and we will schedule you a time slot at the testing center.

Grading Criteria and Points Breakdown

Your grade is determined by four parts: Participation, exams, essays, final presentation

- Participation (15%)
- Three in-class exams (35%)
- Two-in class essays (25%)
- Group Presentation (25%)

Grading Scale

Assignment grades and final grades will be assigned as follows

Table - Grading Scale

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
Percentage Grade	94-100	90-93	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	<60

Course Policies and University Policies

Attendance Policy

Students are expected to attend class. If a student is unable to attend class, they must inform the professor in advance. Excessive absences will impact students' grade in the class.

Inclusivity

In this class, we are committed to creating an inclusive learning environment where all students feel respected, valued, and supported. Diversity in backgrounds, perspectives, and experiences enriches our discussions and enhances our learning outcomes. We recognize and celebrate the unique contributions that each student brings to our classroom community.

It is our collective responsibility to promote a culture of inclusivity, where differences are embraced and everyone has equal opportunities to participate and succeed. Discrimination, harassment, or any form of disrespectful behavior will not be tolerated. We encourage open dialogue, empathy, and mutual respect among all members of our learning community.

Course Plagiarism Policy

Academic integrity is of utmost importance in ASEN 3046. Plagiarism, which includes using AI or any other automated tools to generate reflections or assignments, is strictly prohibited. All work submitted must be your own, representing your individual thoughts, analyses, and conclusions. Any instances of plagiarism or misuse of AI will be addressed according to university policies on academic dishonesty. It is essential to uphold ethical standards and ensure that all academic work reflects your own effort and understanding.. Review the campus options and requirements for reporting plagiarism.

University Policies

You can find a copy of the University Policies on the CU Resources page.

Weekly Subjects, Readings, and Due Dates

1. *History of Manned Flight*

Week 1 Jan 17 Introductions, The Invention of Aviation *READ: Flight the Complete History, Ch 1*

Week 2 Jan 24 Early successes and failures, Wright Brothers, The Early Novelty of Aviation, flying competitions and their role in the growth of Aviation, *READ: Flight the Complete History, Ch 2*

Week 3 Jan 31 World War I, Aviation finds a purpose: mail, combat and commercial transportation, The "Golden Age," *READ: Flight the Complete History, Ch 3*

Week 4 Feb 7 World War II, Post-war R&D, the Cold War, Airlines and the Jet Age, *READ: Flight the Complete History, Ch 4*

Week 5 Feb 14 The Private Aviation phenomenon, Civilian acceptance of Aviation, *READ: Flight the Complete History Ch 5 & 7*

Week 5 Feb 14 Essay 1 (1 hr, in class)

2. *Flight Safety and Human Error*

Week 6 Feb 21 Human Factors in Complex Systems, Organizational Behavior (and the Reason Model)*, READ Aviation Human Factors, Ch 1 & 5*

Week 6 Feb 21 Exam 1 (1 hr, in class)

Week 7 Feb 28 The Role of Culture – Power-Distance Culture, The Role of Human Performance Limitations*, READ Aviation Human Factors, Ch 5.5.3-4 & 7*

*** Guest Speaker: Kara Greene, PhD PE, Senior Consultant ESi*

https://www.engsys.com/Links to an external site..
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Week 8 March 7 Group Behavior and Social Interaction in Complex Systems, Crew Resource Management (Stress, Situational Awareness, Information Processing) (*READ Aviation Human Factors Ch 9 & 10)*

*** Guest Speaker: Michael Charles, Retired United Airlines Pilot ***

Week 9 March 14 Social Impacts of Aviation Accidents, Accident Investigation, recommendations and the Ethics vs. Economics debate*, (READ Aviation Human Factors Ch 28 & 29)*

Week 9 March 14 Essay 2 (1 hr, In clas)

*** Guest Speakers: Lisa Ventura and Ben Jones, US Air Force and Aviation Instructors ***

Week 10 March 21 NO IN-PERSON CLASS: COMPLETE READING + WATCH RECORDED LECTURE

The Role of Training – Learning Theory in Aviation Safety (*READ Aviation Human Factors Ch 13 & 7.3.2.2)*

3. *Socio-Economic Impacts of Aviation*

Week 11 March 28 SPRING BREAK

Week 12 April 4 Accident repercussions, regulation and innovation Life without aviation, assess the Post 9-11 aviation freeze, Icelandic volcanic disruptions, *READ Flight Ch 7 Pg 402 - 411*

Week 12 April 4 Exam 2 (in class, 1 hr)

Week 13 April 11 Impact of aviation on the environment and the climate, Aviation in Developing Nations

Week 14 April 18 Aviation's role in Humanitarian Aid/ Emergency Relief

Week 15 April 25 Future issues in Aviation (congested airspace, NEXGEN, green propulsion)

Week 15 April 25 Exam 3 (In Class, 1 hr)

Week 16 Turn in Group Presentation video.

****Final Group Presentation Document due on day of scheduled class final exam****