

Syllabus: ASEN 3046

Contact Information

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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

TTh 2:30-3:45

This course investigates human aviation and how it has impacted our lives. We begin by reviewing the history of human 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 regular flight.

We then consider the history military aviation, focusing on debates about the role and effectiveness of military airpower and its emphasis on strategic bombing.

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 individual, institutional, and administrative error.

We then explore current issues in aviation, focusing on ethical issues facing aviators, engineers, and policy makers.

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

Prerequisites

none, open to all majors at any level.

Required Texts

All REQUIRED texts for this class (including lecture slides, primary source documents, and excerpts from Wise, Hopkins, and Garland, *Handbook of Aviation Human Factors*) will be be digitally available on canvas under Modules.

OPTIONAL TEXT (for people generally interested in the history of flight) I recommend:

- *Flight the Complete History* By R.G. Grant, DK Publishing (2007). ISBN-10: 0756619025

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 lectures with student discussion. Students in ASEN 3046 are expected to attend class, take notes, 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, short attendance Discussions, and attendance sign-in sheet take place in-class and cannot be made-up without prior approval.**

Assignments and Grading

Assignments

- Participation (15%): best 4 of 6 attendance Discussion responses + attendance sheet submission
- Three in-class exams (35%): weighted equally
- Two writing assignments (25%): weighted equally
- Final Group Presentation (25%): Final document and final recorded presentation.

Assignments

Attendance sign-in and In-class written participation (during class throughout the semester): During many classes in the semester, we'll look at a primary source – a historical document – and we'll have some discussion of it in class. As part of that, six times this semester you will be asked to post your thoughts on the source to a Canvas discussion as an assignment. These won't be graded on their quality – if you post something that's a legitimate response to the source, you'll get full credit. This is both a way of adding a participatory element to class and a way of practicing some of the skills you'll draw on in the exams and writing assignments. We'll do 6 during the semester, but only your best 4 will combine with attendance sheet submission to count towards your final grade. *I will also pass around an attendance sheet periodically during the semester. Signing this sheet will be part of your attendance grade.*

In-class exams (February 5, March 10, April 29): There will be three in-class exams during the course. These will be primarily multiple choice, but they will also have short discussion questions. The exams will focus on interpreting the content that we have discussed in class and on integrating them with the assigned primary source documents.

Writing assignment 1 – Scientific American article (due February 20 at 11:59pm): You'll have two writing assignments for this class. For the first one, you'll write an article for Scientific American, as if it's 1957 or 1958, , focused on the Boeing 707, the first widely used jet airliner.

Writing assignment 2 – US Air Forces Report (due April 3 at 11:59pm): For your second writing assignment, you'll draw on material from the US Strategic Bombing Survey that was conducted for WWII to develop a report that makes a recommendation to the US Secretary of Defense, as if it is 1946, about the use of air forces in the US military.

Group crash analysis - video presentation (due April 23 at 11:59pm): For your final project, you will be in small groups. As a group, you will choose an aircraft accident and make a video presenting an Aircraft Incident Investigation. You'll also submit a short written brief with your presentation.

Submission Policies

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

Late assignments will receive a 5-point penalty, plus an additional five points for each 24 hours they are late.

Accommodations and In-Class Assignments

Those using extended time for exams in ASEN 3046 **will take their exam in AERO 403 or the Testing Center** depending on your accommodation) on exam days. Go ahead and go directly to the exam location to begin your assignment.

NOTE: Students should expect to receive accommodations for a timed assessment (e.g., exam) only if their faculty instructor(s) receives the student's accommodation letter at least 5 business days before the assessment, as a departmental policy, in order to facilitate administering the assessment.

Grading Criteria and Points Breakdown

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

- Participation (15%)
- Three exams (35%)
- Two writing assignments (25%)
- Group Presentation + document (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 fully 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.](#)

Specific Honor Policies for this Class

Here is some more specific information about how to adhere to honor guidelines for your work in this class:

- In your essay assignments and final presentation document, you must follow guidelines for properly citing or crediting sources (these will be explained in each assignment's information sheet).
- You do not need to cite information that I tell the class (consider it common knowledge for the purposes of this course).
- You must follow academic norms for quotation, paraphrase, and summary (i.e., quotations must be the author's exact words and be indicated as such; paraphrases and summaries must be your own words and must not be "patchwritten").
- Assignments that you submit must be your original work, meaning that the claims and analysis that they make must fundamentally be the result of your

own thinking about the evidence and sources you have available, rather than someone else's ideas.

- You may, however, discuss your ideas with others and receive feedback on your work from others. Indeed, you are encouraged to do so. If you receive feedback from anyone other than me or a classmate in class, please include a brief acknowledgement of that at the beginning or end of your writing.
- Any use of generative AI in the course must adhere to the course policy on acceptable AI use (given below). This includes acknowledging and describing your use of AI if you've done so.
- You must fact-check your work to ensure your references (including things such as quotations and summaries) are factual, *especially* if you are using generative AI (see the guidelines below for more on this).
- Unless you have received clearance from me to do otherwise, work that you submit for this course must be unique to this course – you may not use all or portions of assignments submitted for other courses.

In general, when assessing academic integrity, I will distinguish between plagiarism (passing off others' work as your own) and misuse of sources (trying to acknowledge others' work, but doing so improperly, for example by failing to cite properly or "patchwriting" a paraphrase or summary). Plagiarism is a violation of academic integrity and will be treated as such following university policies. Misuse of sources, unless it's egregiously sustained (e.g., we work together on fixing the issue more than once, and it's still repeated), will be treated as a teaching and learning problem – it'll be reflected in your grade, but not treated as an academic integrity issue.

Acceptable Use of AI

In general, you must use AI in this course in a way that is consistent with course learning goals and CU's Honor Code. Here are the specific guidelines:

You MAY:

- Use proofreaders and spellcheckers such as Word's built-in functions or Grammarly's basic review function.
- Use LLMs (such as GPT, Claude, or Gemini) to generate ideas or offer feedback on your writing. If you do this, you must also submit a short explanation of how you used the AI along with your assignment. If you do this, it would also be wise to do a sanity check on anything the AI generates - LLMs can produce both obvious and subtle mistakes.
- Use LLMs to generate ideas or sources for further research. Again, if you do this, it would be wise to do a sanity check.

You MAY NOT:

- Directly submit text that was written by an LLM as your own work.
- Use LLMs (including Grammarly’s generative AI function) to rewrite your words directly (e.g., by using the “Improve It” function on Grammarly, or feeding all or part of your writing into Chat-GPT and prompting it to rewrite it). You should be careful doing this in general, even in situations when it is permitted! Even when prompted to rephrase, LLMs will frequently change the meaning of what you’ve written in both overt and subtle ways.

If you use generative AI, you MUST:

- Check any references the AI generates to ensure they are correct – this includes things like quotations, paraphrases, and summaries sources (both primary and secondary) and references to historical figures or events. AIs can and do “hallucinate,” even when you ask for quotations. **Including “hallucinated” material in your submitted assignments is grounds for an F**, even if you followed the other guidelines for using AI. This doesn’t mean that you’ll fail if you misunderstand or misinterpret a source, or if you struggle with its context. It means that if you, for example, include a “quotation” that isn’t actually in the source, say that it discusses something that it doesn’t, or reference a historical figure or event that didn’t happen, you’re committing an academic integrity violation by failing to take responsibility for the basic factual integrity of your work.
- Include a brief statement explaining how you used the AI. It’s not necessary to submit the prompts that you gave and the responses the AI gave, but it would be wise to save these (both for my course and any others in which you’re using AI) in case questions arise about how you’ve used AI or what the AI has told you.

Finally, note that you are ultimately the one who is responsible for your work. I don’t think it’s reasonable or feasible to forbid you from using AI entirely, so I’ve tried to set guidelines for its use that I think are compatible with you doing the learning you’re meant to achieve in this course. But you’re the human, so you’re the one with judgment and agency. Be wary of how you’re using AI, even if it’s within the acceptable bounds for the class. AI can make all manner of mistakes, and while it might be easy to catch obvious “hallucinations,” subtle mistakes can be especially pernicious. Likewise, part of the nature of taking a class is that I’ve got a lot more expertise than you do on most of the subjects you’ll be writing about (otherwise I wouldn’t be teaching the course!). That means that AI-generated mistakes that are clear to me might not be immediately obvious to you. But you’re the one who’s submitting the assignment, so you’re the one who’s responsible for everything in it. “The AI told me it was ok” isn’t a reasonable excuse for anything that’s gone wrong in an assignment. Use your own judgment and take responsibility for what you produce.

University Policies

You can find a copy of the University Policies on the [CU Resources](#) page.

Weekly Subjects, Readings, and Due Dates

Schedule

Week 1 - Intro

Reading: Syllabus

Thursday, January 8 – Class introduction

Week 2 – The Invention of Flight

Reading: Canvas

Tuesday, January 13 – Flight in the 19th century

Thursday, January 15 – The Wright Brothers and early aviation

Week 3 – Civil Aviation: The Rise of Civil Aviation

Reading: Canvas

Tuesday, January 20 – Innovation and air mail

Thursday, January 22 – The first airlines

Week 4 – Civil Aviation: The Jet Age

Reading: Canvas

Tuesday, January 27 – The postwar context

Thursday, January 29 – Jets take over

Week 5 – Civil Aviation: The Economics of Aviation

Reading: Canvas

Tuesday, February 3– Why Boeing and Airbus?

Thursday, February 5 – Exam 1

Week 6 – Military Aviation: WWI and its aftermath

Reading: Canvas

Tuesday, February 10 – Aviation in WWI

Thursday, February 12 – Interwar fears

Week 7 – Military Aviation: WWII

Reading: Canvas

Tuesday, February 17

Thursday, February 19 – World War II: Early phases

Friday, February 20 – Writing Assignment 1 due (due to Canvas at 11:59pm)

Week 8 – Military Aviation: WWII continued

Reading: Canvas

Tuesday, February 24 – World War II: The Combined Bomber Offensive

Thursday, February 26 – NO CLASS (mid-semester reading day)

Week 9 – Military Aviation: A Revolution in Military Affairs?

Reading: Canvas

Tuesday, March 3 – Military aviation and training

Guest Lecturers: Maj. Lisa Ventura and Maj. Ben Jones

Thursday, March 5 – Failures in Vietnam, Successes in Iraq?

Week 10 – Accident Investigation

Tuesday, March 10 – Exam 2

Thursday, March 12 – Accident investigation and forensic engineering

Guest Lecturer: Dr. Kara Greene

Week 11 - NO CLASS SPRING BREAK

Week 12 – Intro to Human Factors

Reading: Wise, Hopkin, and Garland, Chs. 1 & 5

Tuesday, March 24 – Human factors in complex systems

Thursday, March 26– Organizational behavior

Week 13 – Performance and leadership

Reading: Wise, Hopkin, and Garland, Chs. 11 & 12

Tuesday, March 31– Writing Workshop

Thursday, April 2 – Guest speaker (tentative)

Friday, April 3 - Writing Assignment 2 due (due to Canvas at 11:59pm)

Week 14 – Performance and leadership

Reading: Wise, Hopkin, and Garland, Chs. 9 & 10

Tuesday, April 7 – Human performance and aviation safety

Thursday, April 9 – – Leadership and culture

Week 15 – Contemporary Issues in Aviation

Reading: Canvas

Tuesday, April 14– Aviation and the environment

Thursday, April 16 – The ethics of drone warfare

Week 16

Reading: Canvas

Tuesday, April 21 – The state of contemporary aviation

Thursday, April 23 – Final Group Presentation due (due to Canvas at 11:59pm)

Exam 3 on day of assigned class final exam (Spring 2026 Wednesday April 29, 1:30 pm)