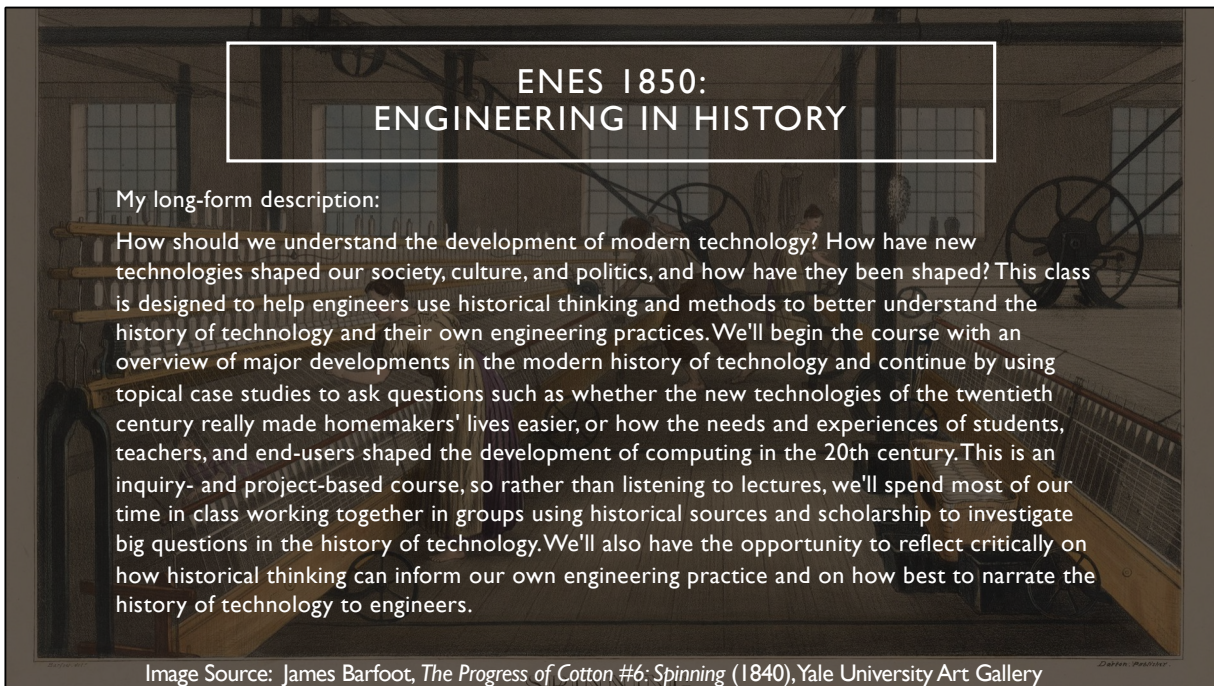


DESIGNING AN ACCESSIBLE AND INCLUSIVE HISTORY OF
TECHNOLOGY COURSE

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An overview of my project: designing an accessible and inclusive history of technology course. I chose something focused on my own practice because I'm new to CU Boulder, so I don't yet have a good sense of institutional gaps.



I am developing a new course - ENES 1850 – a history of technology and engineering survey. Note that this is a CEAS class, so the audience is specifically (and only) undergrad engineering students. The course is meant to be a survey of history of modern engineering and technology - it's listed as a lecture course, but I want to make it project-based so that it's more interactive and engaging for students (and doesn't rely on a "banking model").

The slide shows my long-form description (for the Herbst website and CEAS advisors). I've tried to follow some of the suggestions from our reading to make it more inclusive and inviting for students. Unfortunately, the registrar's version needs to be very short and dry.

CORE ISSUES

I want, and and am to some extent expected, to make this course inclusive and accessible, but there are no formal models for what that looks like in the Herbst Program or CEAS.

- In historical survey courses, it's easy to default to a "banking" model of pedagogy.
- It's easy to unconsciously make a history of modern technology course overwhelmingly western- and male-focused.
- This course will require students to engage with sources in multiple media (videos, images to analyze, historical documents, contemporary scholarship), so making it accessible requires conscious effort.
- I'd also like to share my efforts with my colleagues to help them improve accessibility in their courses.

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ACTION PLAN

- Intentionally design an inquiry-based, inclusive syllabus to engage a diverse body of students in active learning. (In progress)
- Consult with CU Boulder's Digital Accessibility Office on course materials so that they are designed from the outset to be broadly accessible. (In progress)
- Develop a working knowledge of Universal Design for Learning and other accessibility principles so that I can do this in the future without needing to burden the DAO. (In progress)
- Share what I've learned with my Herbst colleagues in one of our pedagogy meetings to begin a conversation about accessibility and inclusivity in Herbst courses.
- Teach an inclusive and accessible course that meets students' needs.
- Continue to revise the course to reflect student feedback and my own ongoing professional development.

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EXAMPLE PROGRESS: COURSE COMPONENTS

- Course is framed around big questions: What is technology? How do technologies affect our societies, and vice versa? How can historical thinking benefit engineers?
- Inquiry- and project-based structure to facilitate active learning and inclusive content. Sample project themes:
 - Why don't better technologies always lead to less work? An investigation of technology and household labor in the 20th-century U.S.
 - How is technology connected to identity? An investigation of the relationship among electrification, class, and nationalism in colonial India.
- Regular critical reflection assignments to give students the opportunity to consider what they have learned and connect it to their own lives as engineers and citizens.
- Integrative capstone project asks students to create a narrative of an important episode, theme, or idea in the history of modern technology to an audience of other engineers through a medium of their choice.

Some examples of how I've been trying to implement this in the course design:

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**EXAMPLE PROGRESS:
ACCESSIBLE IMAGE
DESCRIPTIONS**

We see a view of a steam locomotive crossing a bridge over a river and heading into a train and telegraph station. The locomotive is in the center of the scene. A metallic green engine, its smokestack spewing black smoke into the air, carries seven cars behind it. A conductor stands on an open platform on the engine car, driving the train. Behind him, a worker scoops coal from a large bin, feeding the engine. . .

. . . In the foreground is a large drawing of a telegraph machine – it is clearly there to represent the importance of the telegraph and is not part of the rest of the scene (the actual telegraph machine would have been inside the station). On the left is the telegraph's receiver, with two electromagnetic coils connected to a spool feeding paper through printing rolls. In the middle is the sending key, a lever on which the sender would tap out a message in Morse code by depressing the lever to close a circuit. On the right is the gravity battery, a set of three nested glass jars with electrodes emerging from it. All three parts of the telegraph machine are connected by thin, black wires.

Image source: H.J. van Lummel, *Spoorweg en Telegraaf No. 27* (c. 1845), Science Museum Group Collection Online



An example of accessibility work: detailed image descriptions so that students can use them for analysis. I'm trying to follow guidelines for museums established by Art Beyond Sight and adapt them to a history classroom setting.

Other work I'm doing beyond following the basic guidelines that Ally Bartley presented to our class include learning about and implementing accessibility standards for videos and developing a framework for presenting manuscript sources accessibly in a way that preserves some of the intellectual work of reading them (for example variant spellings and abbreviations; this is largely for other courses that I teach).

THANK YOU!

I'd like to thank Rachana Bhave and Kalpana Gupta for putting together a great course – I've learned a lot and it's really pushed me to consider my teaching practice.

I'd also like to thank Ally Bartley and her colleagues at the DAO for their support and feedback on designing accessible course material.

Thank you to Kalpana Gupta and Rachana Bhave, and also to Ally Bartley from the DAO, who has been extremely helpful in giving me feedback.