Teaching the Historical Context of Computing

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Motivation

- CS is becoming increasingly interdisciplinary
- Provide an alternative entry course that is <u>not</u> about programming
- 75% of students at our institution pursue a B.A.
- New Gen Ed curriculum since 2008
  - Categories decoupled from specific departments
  - Departments encouraged to offer a wider array of Gen Ed courses
  - CS department has successfully taught Data Mining course to satisfy the social science requirement
- No sci/tech history course previously existed

The course

CS 273: History of Technology and Discovery

- Mission statement: CS is the heir of a great tradition of innovation and curiosity. People have always sought ways to improve their condition.
- Initial intent: to be broad survey
- "discovery" – scientific breakthroughs, analogous to voyages of discovery
- No pre-requisite
- Does not count toward CS major (okay for IT)
- Satisfies different GenEd requirement from Intro CS.

Course content

- Four units
  - Ancient World
  - Early Modern Science
  - Industrial Revolution, genres of technology
  - Computer history

- Historiography
  - Recurring lessons, e.g. respect for intellectual freedom
  - Watershed moments

- Historical analysis
  - Look at wider context to see how life is "multithreaded"

Student activities

- Readings: *Engineering in the Ancient World, Science and Technology in World History, The Innovators*
- Selected videos: *Cosmos, Connections, Ascent of Man, Nova, What the Ancients Did For Us*
- Similar to seminar, with discussion questions
  - How did historians settle on a date and origin of the Antikythera device?
- Assignments
  - Compare engineering curricula, then and now
  - Find 6 historical notes in science textbook
  - Essay: find a scientific theory recently disproved

Labs

- Abacus
- Quadrant in the planetarium
- Make 2-d timeline to practice historical analysis
- Slide rule (2 weeks)
- Put military hardware in chronological order
- FORTRAN (2 weeks)

Logistics

- Met with history department for advice
- How to assign DVDs for students to watch before class?
  - Need to comply with TEACH Act, confer with university copyright officer
  - Use Handbrake to convert to video files
  - Upload to campus' cloud file server
  - Invite only enrolled students to stream the videos
- Purchase 25 slide rules

Results

- Course taught twice so far, total enrollment 34
- CS + IT majors comprised 70% of class
- Survey: Most popular topics
  - Computer history
  - Space race
  - Development of chemistry and physics
  - Genres of technology
- Least popular
  - Before Ancient Greece
  - Medieval and Renaissance period

Conclusion

- History course offered by CS department focusing on science and technology
  - Satisfies general education
  - Suitable for interdisciplinary majors, e.g. IT
  - Highlights the liberal arts tradition behind CS
  - Substantial reading and video watching
  - Labs!
- Looking ahead
  - Broad survey approach worked
  - Fall 2018: part of study abroad program in UK