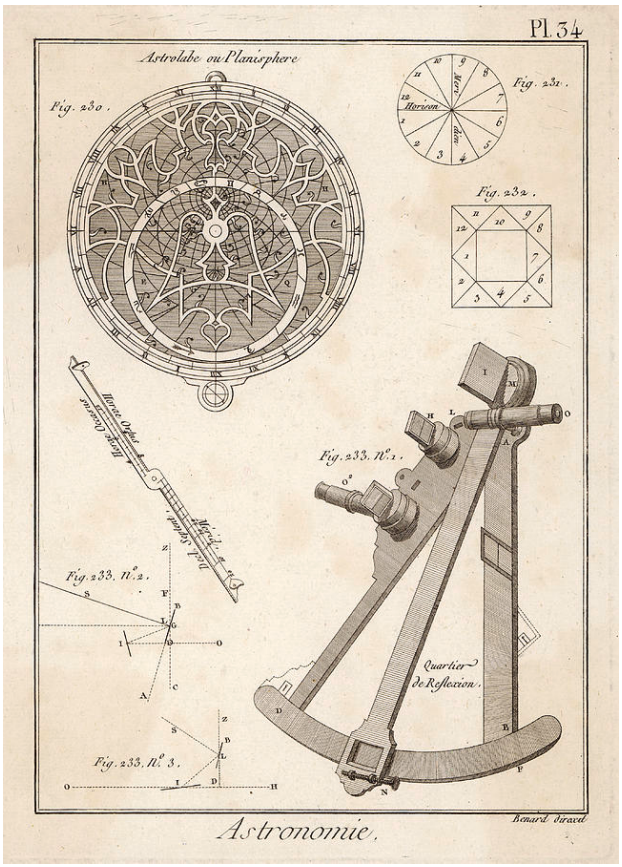

HIST 2100 Science and Technology in the Modern World

Professor: Germán Vergara
Meeting Place: Georgia Tech-Europe
Office Hours: By appointment
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Course Description

The purpose of this course is to examine and reflect on the history of science and technology in the modern era (ca. 1500-present). We will explore major themes, including the relationship between science and technology; the ways in which the global economy, science, and technology have shaped each other over time; the complex dynamic between science, technology, and industrial civilization; the reasons behind the increasingly rapid rates of scientific and technological change over the past two centuries; the effects, intended and unforeseen, that scientific and technological innovations have had on the global environment; and the multiple and sometimes contradictory ways that modern societies view, represent, and think about science and technology. To fully understand this history, the course takes a global approach. In essence, the course suggests that modern science and technology resulted from the complex exchange and interaction between different regions and peoples around the world, rather than from events that took place only in Europe and the U.S.

Objectives

Every reading assignment and classroom activity has been designed to improve your literacy on the global history of science and technology. Throughout the course, you will develop a good understanding of the main patterns and changes in the history of the relationship between human societies, science, and technology. You will also familiarize yourself with the key concepts, arguments, and debates in the scholarship on the topic as well as with the basics of how, where, when, and why science and technologies have changed (or not) in the past few centuries. Foremost, you will end this course better prepared to make informed ethical decisions about scientific and technological issues, a fundamental skill to have at a time when our choices and values have the potential to shape our planet for generations to come. Throughout the course, *we will use history to discuss the critical issue of what kind of ethical, social, and environmental responsibilities engineers and scientists have to their communities and the world as a whole.*

The other objective of the course is to develop your skills for engaging critically with reading material, be it primary or secondary sources. Course meetings will involve discussions of readings and other material covered in class. Our weekly readings, meetings, and discussions are central to this course. You should come to class each week having completed all assigned reading and reflected upon its relationship to previous course meetings, as well as its relationship to larger themes of the course.

Requirements/Evaluation

Your course grade, based on a 100-point scale, will be determined by **attendance, the quality and regularity of your participation, and the completion and quality of assignments**. This is how I will break it down:

1. Class participation and attendance (20 points). Students are expected to participate actively, thoughtfully, and respectfully in class. You should come to every class having done ***all*** the reading assignments. If you find participating in class discussion difficult, come talk to me and we can discuss strategies to help you jump in. Attendance: Students may have only two unjustified absences. Every additional unjustified absence after the two "free" absences will lower your final grade 5 points. If you miss 4 classes (or a total of 6), you will fail the course. **Every student will present in class once during the course**. Choose a week from the syllabus and develop a 10-15-miute-long presentation related to the themes under discussion during that week. Use primary sources to organize your talk. They could be documents, images, pieces of art, music, or any kind of object. Whatever you select, your sources should **support the key point or idea** in your presentation.

2. Written responses (5 points each; 50 points total). Each week, students will turn in a written response on Canvas under the “Assignments” tab. The objective for these assignments will be to paraphrase the readings’ main argument(s) and summarize the stories told in them (yes, historians like to make arguments about the past through narrative). With pieces that are largely analytical, paraphrasing the text’s main points will suffice. The written response will also provide students with an opportunity to engage in economic writing, as responses will have to be between 450 and 550 words long.

3. Final exam (30 points). The exam will cover materials from lectures and readings and will consist primarily of IDs and short and long essay questions. I will give you a study guide before the exam. The exam will take place in the week of July 25-August 1.

Office Hours

You may meet with me throughout the semester as you progress with your reading and assignments. Please feel free to talk with me about any questions, concerns, time management or workload issues, writer's block or any other obstacles that may affect your work. I will answer emails within 24 hours, except during the weekend.

Course Website

A course website is available through Canvas. There you will find course-related information, including the syllabus, paper assignments, required readings, and supplemental materials such as current newspaper and magazine articles related to the course content. This site also features a board (in the "Assignments" tab), where you will post your weekly reading responses. Additionally, in the "Resources" tab you will find a variety of materials to assist you with the complexities of historical reading, research, and writing.

Plagiarism

Plagiarism means using the words AND ideas of others without giving them due credit. **The use of ChatGPT or any other essay-writing chatbot will be considered plagiarism**. Please review Georgia Tech's statement on plagiarism on http://osi.gatech.edu/content/honor-code

Computing Devices

Yes, this is a course on the history of science and technology, but unless you have a formal, sanctioned accommodation that requires it, laptops, smart phones, tablets, and other electronic devices are not allowed in the classroom. Unless a classroom activity requires that you use your laptop, we will rely on discussion, old-fashioned paper note-taking, and a variety of classroom techniques to enhance our understanding of the course material. The reason for this measure has nothing to do with Luddism and everything to do with common sense. Computing devices tend to be a source of distraction for the student using them and for the rest of the class.

This course fulfills the Ethics Requirement, International Relations (IP), Social Science Requirement.

Course Readings:

James Poskett, *Horizons: The Global Origins of Modern Science*, Mariner Books, Boston, 2022.

This is the course "textbook" and it's **the only book you'll have to buy**. Other than the main text, course readings will be available through the Canvas class website as PDF files.

Course Schedule

Week 1: Introduction

M, May 13: **No Class**
W, May 15: What is the History of Science?

Readings:
Lorraine Daston, "History of Science," *International Encyclopedia of the Social & Behavioral Sciences*, 2001.
Seymour Mauskopf, "The Historiography of Science and Technology," *The Oxford History of Historical Writing*.

Week 2: A New World of Science

M, May 20: The Spanish Empire and Science
W, May 22: Natural History and Empiricism

Readings:
Antonio Barrera-Osorio, *Experiencing Nature: The Spanish American Empire and the Early Scientific Revolution*, 2006, Introduction, chapter 4.
William Burns, *The Scientific Revolution in Global Perspective*, 2016, chapter 3.

Week 3: The Global Scientific Revolution

M, May 27: The Global Scientific Revolution
W, May 29: Empires, Enlightenment, and Science

Readings:
James Poskett, *Horizons: The Global Origins of Modern Science*, 2022, Introduction, chapters 1, 2, 3, and 4.

Week 4: Science, Technology, and Industrialization in the 19th Century

M, June 3: Steam, Textiles, and Geological Luck
W, June 5: Railroads, Steamships, and Industrial Warfare

Readings:
James McLellan, *Science and Technology in World History*, 2015, chapters 14 and 15.
Arnold Pacey, *Technology in World Civilization*, 2021, chapters 7, 8, and 9.

Week 5: Paradigm Shift: The Darwinian Revolution

M, June 10: Evolutionary Thought
W, June 12: Global Darwin

Readings:
Peter Bowler, *Evolution: The History of an Idea*, 2003, chapters 1, 4, and 5
Poskett, *Horizons*, chapter 5

Week 6: The Emergence of the Human and Social Sciences

M, June 17: Economics
W, June 19: Sociology and History

Readings:
Roger Backhouse, *The History of the Social Sciences Since 1945*, chapters 3 and 5.
Eugene Goodheart, "Is History a Science?," *Philosophy and Literature*, Volume 29, Number 2, October 2005, pp. 477-488

Week 7: Science, Technology, and the Cold War

M, June 24: The Cold War
W, June 26: Climate Science and the Cold War

Readings:
Naomi Oreskes and John Krige, *Science and Technology in the Global Cold War*, 2014, Introduction and chapters 1 and 5.
Everett Mendelsohn, "Science, Scientists, and the Military," in Krige, *Companion to Science in the Twentieth Century*, 2003.

Week 8: Climate Science

M, July 1: Brief History of the Climate
W, July 3: Climate Science/Climate Politics and Science

Readings:
Spencer Weart, *The Discovery of Global Warming,* selected chapters

Week 9: Merchants of Doubt

M, July 8: Film
W, July 10: Film/Discussion

Readings:
Naomi Oreskes, *The Collapse of Western Civilization*, 2014, entire essay

Week 10: Science and Technology in the Anthropocene

M, July 15: Techno-Fixing Global Warming?
W, July 17: Biodiversity Crisis and Technology: The Perils of De-Extinction

Readings:
Jürgen Renn, "The Evolution of Knowledge: Rethinking Science in the Anthropocene," *Journal of History of Science and Technology*, 12, pp. 1-22
Joyce and Michael Huesemann, *Techno-Fix: Why Technology Won't Save Us or the Environment*, 2011, chapters 1, 2, and 7

Week 11: Course Review

M, July 22: **Review Session**

Week 12: Finals Week

July 25-August 1

Final Exam