

CUMBERLAND UNIVERSITY

COURSE SYLLABUS

Course Title: History of Science and Society		
Course Prefix & Number: HIST 495	Section Number: 01	Semester: Spring 2025
Semester Credit Hours: 3	Room: Labry Hall 220	Schedule: TR 12:30 - 1:45 PM
Required Course Materials: <div style="display: flex; justify-content: space-between;"> <div> <p>Shelly, Mary, <i>Frankenstein</i> Penguin (ISBN: 9780141198965)</p> <p>Frayn, Michael, <i>Copenhagen</i> Anchor Press (ISBN: 9780385720793)</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>Note: Both books are available in the bookstore. But you are free to get used versions of these works as well, even from different publishers.</p> </div> </div> <p>Further readings for this course will be added to Canvas and listed in the syllabus.</p>		

INSTRUCTOR INFORMATION	
Name of Instructor:	Dr. Miguel Angel Chavez
Telephone Number:	615.257.4402
E-mail Address:	mchavez@cumberland.edu
Office Hours:	Labry 230 - MW 12:30-2 PM and 4-5 pm / TR 9:30-11 AM

COURSE DESCRIPTION

This course serves as an introduction to the history of science. We will cover this history from the early modern era to today, looking at the development of both natural philosophy and natural history into modern scientific disciplines. Special attention will be paid to disciplines such as astronomy, chemistry, physics, exploration, geology, and psychology.

More than that, we will examine the embeddedness of science in culture and society. Not only will we examine how this European “way of knowing” became among the most secure and dominant ways of knowing about the world, but we will also examine how science is fundamentally connected with issues such as class, ideology, gender, politics, economics, imperialism, and religion.

This course will consist of lectures, class discussions, audio-visual presentations, and student presentations. Students are expected to take notes and participate in class discussions.

COURSE OBJECTIVES AND OUTCOMES

Students will come away with an understanding of the history of science by looking at the major developments, engaging with primary sources, and by engaging with the historiography of science studies. By the end of the semester, students will have a greater understanding of

scientific progress, knowledge creation, science's connectedness with social forces, and the tensions with other ways of knowing, such as religion, ideology, and pseudoscience.

Using primary and secondary sources, students will be required to think and write critically and logically about historical events and themes.

GRADING

# of Graded Course Elements	Graded Course Elements	Percentage or Point Values
2	Exams	40%
1	Multimedia Project	20%
1	Book Review	10%
1	Movie/TV Show Review	10%
1	Class Leadership Discussion & Précis	10%
-	Attendance and Participation	10%

Exams: There will be **two exams (a midterm and final)** over the material discussed in class as well as any assigned reading. The exams will consist of written essays. Each exam will be count towards 20% of your course grade, or 40% in total.

Multimedia Project: There will be **one multimedia assignment** during the semester. The assignment consists of a writing segment and a multimedia segment. In short, you are to create a piece of media (e.g. video, map, children's book, podcast, boardgame, whatever) that highlights the history of science, be it the life of a scientist, an era in scientific thought, a paradigm shift, or the development of a scientific discipline.

Students will also write an accompanying paper to detail the thought process, research, and meaning of this chosen media project. The paper will be **at least 1500 words in length**, typed, double-spaced. Papers must be turned in digitally on Canvas. Late papers will be penalized -10 points per every day late.

The assignment will count as 20% of your final grade. More details will be given in the coming weeks as to the project's requirement.

Book Review: There will be a **book review** during the semester. Students will select a book from an approved list and situate that book in the context of the other class readings. This will be 10% of the course grade. More details will be given as to the review's requirements.

Media Review: There will be a **media review** during the semester. Students will select a piece from popular media that pertains to scientific history and write a review to critically assess the

accuracy, message, and *lacunae* of that piece of media. This will be 10% of the course grade. More details will be given as to the review's requirements.

Class Leadership Assignment and *Précis*: Discussions will be an important part of this course. As such, it is imperative for you to read the weekly assignment and come prepared to discuss that with your classmate.

To facilitate this, each student will **lead a class discussion** by providing a 10–15-minute presentation at the start of a Thursday class discussion. Students will summarize the arguments of each week's readings. After this, the student will foster class discussion by asking questions and engaging with fellow classmates. More details will be given as to the review's requirements.

In addition, I will ask students to write up a **1–2-page review (*précis*) for that week of readings**. In all, this will count as 10% of your grade. More details will be announced in class and on Canvas.

Attendance and Participation: **Students will be expected to attend class daily and arrive on-time.** Roll will be taken at the start of every class, as per Cumberland University policy. Participation in class discussions is also necessary. This will count as 10% of your grade.

Excused Absences: Students out for university-sanctioned events (e.g. athletics, academic events), for documented medical events, or for jury-duty will have their absences *excused*. There is no limit to the number of excused absences a student may have.

Unexcused Absences: Any other form of absence is considered *unexcused*. Students are allowed 2 free unexcused absences in the semester with no penalty. However, subsequent absences will be deducted from the Attendance and Participation grade.

Late Arrivals: Students who do not arrive on-time will be considered late. However, late arrivals can be excused if there is documented evidence of a medical appointment, school-sanctioned activity, or meeting with a faculty advisor. If a student arrives after attendance is taken, it is the student's responsibility to notify me to update the roll sheet.

Early Departures: In short, students are expected to be in-class until dismissed at the end of the class period. Students with a documented need to leave class early must notify me *before* class starts. Unexcused early departures will automatically be counted as absences.

Extra Credit: Extra credit *may* be given in this course to help students add points to their exam grades. The nature of these extra credit points will be announced in class before the exam.

A = 100-93 / A- = 92-90 / B+ = 89-87 / B = 86-83 / B- = 82-80 / C+ = 79-77 / C = 76-70 / D+ = 69-67 / D = 66-60 / F = 59-0

DROP & WITHDRAWAL INFORMATION

The last day to drop or add a course (without a penalty) is Jan. 21. Last day to withdraw from a course with a “W” is Feb. 10. Last day to withdraw with a “WP” or “WF” is on Mar. 24.

<http://cumberland.smartcatalogiq.com/Current-Catalog/Current-Catalog/Academic-Affairs/Registration-Policy/Drop-Process>

ACADEMIC INTEGRITY

Students are expected to follow all rules and regulations found in the “Academic Integrity Policy” section of Cumberland University’s 2024-2025 Catalog:

<https://cumberland.smartcatalogiq.com/en/Current/Current-Catalog/Academic-Affairs/Academic-Integrity-Policy>

Further, students are to live up to the *Cumberland Creed*: “Academic honesty is essential to effective learning. Therefore, we as seekers of knowledge hold these as our core values: personal integrity, individual worth, critical and independent thinking, discipline, community responsibility and accountability.”

Academic integrity violations include (but are not limited to): **plagiarism, cheating, re-submissions of prior assignments, using AI programs (e.g. Chat GPT), classroom disruptions, and damaging and destroying academic material. Violations will result in a grade of zero for the given assignment. Violations will be reported to the Dean of Students, to the Vice President for Academic Affairs and/or the Provost.**

You will be given the opportunity to re-do the assignment for partial credit. **Additional violations will result in an automatic F for the course grade.**

Cite your sources carefully when writing! Remember to use quotation marks when quoting from a primary or secondary source. Do not copy-and-paste information from Wikipedia or the textbooks and pretend it is your own work. Do not lend your writing to your classmates: numerous cases of plagiarism have been reported by that method.

TECHNOLOGY USE IN THE CLASSROOM

I highly recommend you take your lecture notes on paper. However, given the needs of students with accessibility issues to use laptops and recorders, I will allow students to use laptops and tablets for note taking. But do not be disruptive with your technology use. In addition, **do not use your smartphone in class**. If you end up distracted and miss part of the class, that’s ultimately your responsibility.

STATEMENT ON COMMUNITY HEALTH CONCERNS

As we are all aware, the COVID-19 virus continues to circulate in our communities. At the same time, other communicable illnesses are also present. Members of the Cumberland University community are asked to help maintain a campus that is safe for all by undertaking appropriate health precautions. We encourage community members to be vaccinated against COVID-19 and to practice good hygiene, including frequent handwashing.

If you do experience symptoms of COVID-19, the flu, or other ailments, we encourage you to seek medical attention through the University Health Services by making an appointment at <https://cumberland.edu/health-services/> or through your personal health provider. Students may be excused from class attendance with a note from University Health Services or a private health provider, though anyone receiving an excused absence will continue to be responsible for completing all required course assignments.

For further guidance on how to respond to COVID-19, please review the University's statement on health protocols at: <https://www.cumberland.edu/coronavirus/current-health-protocols/>.

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COURSE SCHEDULE – HIST 495: History of Science and Society

This schedule is tentative and subject to change. Readings are found in Canvas, but some links are provided below.

Dates	Topics	Readings
<u>Week 1</u> Jan. 13-17	Course Orientation, Defining Science, and the Scientific Revolution	<p>Bowler and Rhys Morus, "Introduction," <i>Making Modern Science</i>.</p> <p>H. Darrel Rutkin, "Astrology," in <i>The Cambridge History of Science</i>, Vol. 3</p> <p>Ptolemy, "That the Earth Performs No Progressive Motion"</p> <p>Galileo, Letter to the Grand Duchess Christina of Tuscany, 1615.</p>
<u>Week 2</u> Jan. 20-24	The Scientific Revolution (Cont'd) & the Enlightenment (~1650 to 1750)	<p>Shapin, "What Was Known?", <i>The Scientific Revolution</i>.</p> <p>Skim: Various, "Documents in the Case of Galileo: Indictment, Sentence and Abjuration of 1633"</p> <p>Francis Bacon, "Epistle Dedicatory to James I," <i>The Great Instauration</i>.</p> <p>Excerpted writings of Robert Boyle: link.</p> <p>Voltaire, "Letter XII: On The Lord Bacon," <i>Letters on the English</i>: Link.</p> <p>Skim: Isaac Newton, <i>Mathematica Principia</i>, p. 73-82, 251-257, 384-385, 503: link.</p> <p>John Maynard Keynes, "Newton, the Man": link.</p> <p>Video: Founding of the Royal Society: link.</p>
<u>Week 3</u> Jan. 27-31	Emergence of Scientific Medicine Early Modernity to the 19 th century	<p>Mary Shelly, <i>Frankenstein</i></p> <p>Richard Holmes, "Science fiction: The science that fed <i>Frankenstein</i>," <i>Nature</i>: link.</p> <p>Skim: Audrey Shafer, "Why Frankenstein Matters," <i>Stanford Medicine Magazine</i>: link.</p> <p>William Harvey, <i>On the Motion of the Heart</i> (excerpts): link.</p>

		<p>Skim: Londa Schiebinger – “Women of Natural Knowledge,” from <i>Cambridge History of Science</i>, Vol. 3.</p> <p>Optional: Harold Cook, "Medicine in Western Europe," <i>The Oxford Handbook of the History of Medicine</i>.</p>
<p>Week 4 Feb. 3-7</p>	<p>Navigation and Developments in Science (ca. 1700 to ca. 1850)</p>	<p>David Turnbull, "Pacific Navigation: An Alternative Scientific Tradition," <i>Masons, Tricksters and Cartographers</i>.</p> <p>Dava Sobel, <i>Longitude</i> (Excerpts)</p> <p>Optional: TED-Ed, “How did Polynesian wayfinders navigate the Pacific Ocean?”: link.</p> <p>Skim: Cook’s Journals, National Museum of Australia: link.</p> <p>Benjamin Franklin, “Experiments with Balloons”: link.</p> <p>Excerpted writings of Antoine Laurent Lavoisier: link.</p>
<p>Week 5 Feb. 10-14</p>	<p>Darwin and the Theory of Evolution by Natural Selection 19th century</p>	<p>Charles Darwin, <i>On the Origin of Species</i> (Excerpts)</p> <p>Edward Larson, <i>Evolution: The Remarkable History of a Scientific Theory</i> (Ch. 1-4).</p> <p>Lord Kelvin, "The Age of the Sun's Heat," <i>MacMillan's Magazine</i>: link.</p> <p>Kimberly Hamlin, “Darwin’s bawdy: the popular, gendered and radical reception of the Descent of Man in the US, 1871–1910,” <i>BJHS Themes</i> (2021)</p> <p>Optional: “What About God?”, <i>Darwin’s Dangerous Idea</i>, pt. 7 (Documentary): link.</p>
The Media Review is due on Feb. 14		
<p>Week 6 Feb. 17-21</p>	<p>Science in the Age of Industry mid-19th to the early 20th century</p>	<p>Jan Golinski, “Chemistry,” <i>The Cambridge History of Science</i>, Vol. 4.</p> <p>Louis Pasteur, “Germ Theory and its application to Medicine and Surgery”: link.</p> <p>Melissa Stein, <i>Measuring Manhood</i> (Ch 2, but Intro is optional)</p> <p>Matthew Stanley, “By design: James Clerk Maxwell and the evangelical unification of science,” <i>BJHS</i> (2011)</p>

		Skim: Michael Faraday, "Lecture V: Magnetism - Electricity," link .
<u>Week 7</u> Feb. 24-28	Science in the Age of Empire mid-19 th to the early 20 th century	Michael Robinson, "Shackleton Syndrome," <i>Isis</i> (2020) Johann Fabian, <i>Out of Our Minds</i> (Excerpts) Thomas Carlyle, "Occasional Discourse on the Negro Question," link . Sayori Ghoshal, "Experts of Identity: Race, Ethnicity, and Science in India, 1910s–1940s," <i>Isis</i> (2024) Skim: John Corr, "The Enlightenment Surfaces in Nineteenth-Century Mexico: Scientific Thinking Attempts to Deliver Order and Progress," <i>History of Science</i> (2014)
The Midterm Exam is on Feb. 27		
Spring Break!		
<u>Week 8</u> Mar. 10-14	Social Sciences: Psychology, History, and Sociology 1848 to 1960	Michael Burawoy, "Marxism as Science: Historical Challenges and Theoretical Growth," <i>ASR</i> (1990) Skim: Friedrich Engels, "Dialectics," in <i>Socialism: Utopian and Scientific</i> : link . Sigmund Freud, "Civilization & Die Weltanschauung," link . Max Weber, "Science as a Vocation," link . Andreas Boldt, "Perception, Depiction and Description of European History: Leopold von Ranke and his Development and Understanding of Modern Historical Writing"
<u>Week 9</u> Mar. 17-21	Early Twentieth Century: Revolutions and Relativity 1900-1939	Jon Agar, <i>Science in the Twentieth Century</i> (Ch. 2 and 3) Peter Galison, <i>Einstein's Clocks, Poincare's Maps: Empires of Time</i> (Excerpts) Marie Curie, "On the Discovery of Radium," link . Skim: Paul Forman, " <i>Kausalität, Anschaulichkeit, and Individualität</i> , or How Cultural Values Prescribed the Character and the Lessons Ascribed to Quantum Mechanics*"
		Michael D. Gordon, "Lysenkoism," <i>Encyclopedia of the History of Science</i> : link .

		Interview with Margaret Mead on her prewar research and thoughts (1959): link .
The Book Review is due on March 14		
<u>Week 10</u> Mar. 24-28	World War II 1939-1945	Michael Frayn, <i>Copenhagen</i> Skim: Lise Meitner and Otto Frisch, "Disintegration of Uranium by Neutrons: A New Type of Nuclear Reaction:" link . Selected readings from <i>Physics and National Socialism: An Anthology of Primary Sources</i> (ed. Klaus Hentschel) Christopher Smith, "How I learned to stop worrying and love the Bombe: Machine Research and Development and Bletchley Park," <i>History of Science</i> . Skim: Geert Somsen, "Science, Fascism, and Foreign Policy: The Exhibition "Scienza Universale" at the 1942 Rome World's Fair," <i>Isis</i> (2017)
<u>Week 11</u> March 31 – April 4	Postwar and Cold War Science 1945-1989	C.P. Snow, "The Two Cultures": link Frank James, "Rosalind Franklin (1920-1958)." Jesse Olszynko-Gryn, "Predictor: The First Home Pregnancy Test," <i>Journal of British Studies</i> (2020) Optional: Leslie Pray, "Discovery of DNA Structure and Function: Watson and Crick," <i>Nature</i> : link . Sharon Traweek, <i>Beamtimes and Lifetimes: The World of High Energy Physicists</i> (Excerpts) Elena Aronova, "Russian and the Making of World Languages during the Cold War," <i>Isis</i> (2017)
<u>Week 12</u> April. 7-11	The Science Wars, Postmodernism, and Anti-Science Sentiment 1970s to Today	Steven Weinberg, "Sokal's Hoax," <i>NYRB</i> , 1996: link Skim: Alan Sokal, "Transgressing the Boundaries..." <i>Social Texts</i> , link (try your best... 😊) "The Bogdanoffs: The Trolls who shook Physics": link Jeremiah Boh, "The Structure and Culture of Climate Change Denial," <i>ASA</i> : link . Nathan Geffen and Edwin Cameron, "The Deadly Hand of Denial: Governance and Politically-Instigated AIDS

		denialism in South Africa" (Read Intro and Onset of Denialism"
Week 13 April. 14-18	Project Presentations!	No Readings! 🎉
Final Project is due on April 22 by 11:59 PM		
Week 14 April. 21-25	The Future and Challenges of Science 2000 to ????	<p>Rohan Deb Roy, "Decolonise Science...": link</p> <p>Thomas Kuhn, <i>The Structure of Scientific Revolutions</i> (excerpts)</p> <p>Daniel Lametti, "Is a Science Ph.D. a Waste of Time?" <i>Slate</i>: link.</p> <p>Francis Collins, "Take It From a Scientist. Facts Matter, and They Don't Care How You Feel," <i>NYTimes</i>: link.</p> <p>Bruno Latour, "Agency at the time of the Anthropocene," <i>New Literary History</i>.</p> <p>Caroline Wagner, "China now publishes more high-quality science than any other nation - should the US be worried?," <i>The Conversation</i> (2023): link.</p> <p>Skim: Niels Mede, "Legacy media as inhibitors and drivers of public reservations against science: global survey evidence on the link between media use and anti-science attitudes," <i>Nature</i> (2022): link.</p>
The Final Exam is on Thursday, May 1 from 10:30 AM to 12:30 PM		

CAMPUS SUPPORT

Disability and Accessibility: Students with a disability can register with the **Office of Accessibility**, located in **Labry Hall 226**, to discuss the possibility of accommodations. A "Registration for Accommodation Services" form should be completed as soon as possible, preferably by the end of the second week of the course. Documentation entailing a diagnosis is required. Once registered and approved, an electronic copy of the accommodations will be sent to the student and the professor. The Office of Accessibility can be reached by phone (615-547-1286), by email (mcurtis@cumberland.edu), or in person (Labry Hall 226). For more info, visit: <https://www.cumberland.edu/accessibility/>.

Counseling: The **University Counseling Center** is in Labry Hall 225. Appointments for individual personal counseling sessions, which may be in-person or virtual, can be

scheduled by calling or emailing Eddie Christian at 615-547-1397 and echristian@cumberland.edu, or by emailing Sandy Fields (virtual appointments only) at sfields@theratribe.com. The Counseling Center website also contains additional information that may be helpful: <https://www.cumberland.edu/office-of-counseling-services/>.

Library: The **Doris and Harry Vise Library** is very helpful in your studies for obvious reasons. The regular Fall 2024 hours of the library are:

Sunday 5 to 9 p.m.; Monday through Thursday 7:30 a.m. to 11 p.m.; and Friday 7:30 a.m. to 4:30 p.m.

The library website can be very useful as well: <https://library.cumberland.edu/home> - scroll down to "Quick Links" to find the Vise Library Catalog and other resources. If you need help from off campus, please call the library at 615-547-1299 or email: library@cumberland.edu.

Computer Labs: There are computer labs available to students, faculty, and staff, located in the basement of Labry Hall. There are also selected workstations available in the University Library and above the atrium on the second floor of Labry Hall, as well as on the second floor of Memorial Hall and in the Learning and Career Commons. If you have problems with any of these computer workstations, printers/copiers, or have other account issues, please submit an IT Service Request by emailing support@cumberland.edu. Student passwords can be reset by visiting: <https://cams3.cumberland.edu/rptool/index.html?s=1>

Academic Support: The **Office of Student Retention and TN Promise Support** exists to offer encouragement, support, and guidance as you navigate life at CU. Among other services, they can offer referrals to the Office of Student Success (Tutoring and Writing Center) as well as the Counseling Center and the Office of Accessibility, when needed. This office houses three academic coaches, who can offer one-on-one sessions to help with things like time management, study skills, etc. Additionally, TN Promise students will receive reminders about important deadlines and requirements from this office. Contact Student Retention and TN Promise Support by visiting LCC 202, calling 615-547-1206, or emailing: retention@cumberland.edu.

Student Success: The **Office of Student Success** is located in the Learning and Career Commons, room 122. This office oversees tutoring and testing services for all actively enrolled Cumberland University students, including the Writing Center (LCC 116) and subject-based academic tutoring labs that are widely available. You can sign up for individual tutors in most CU courses or small group sessions for foundations courses as well. Virtual tutoring sessions are also available for online students. You can visit LCC 122 or LCC 116 directly or email OfficeofSTudentSuccess@cumberland.edu or call 615-547-1238 for a referral. Additional information is also available on the website: <https://www.cumberland.edu/academics-2/office-of-student-success/>

Career Services: The **Office of Career Services**, located in the Learning and Career Commons, room 225, supports students and alumni in the development and achievement of career decisions and goals. Services are provided to all Cumberland students and graduates and include: Self-Assessment and Career Planning, Internship and Job Postings, Resume and Cover Letter Review, Graduate School Preparation, and Career-Related Workshops.

Remember to check out the Cumberland App and the website *HireCU* at <https://cumberland-csm.symplicity.com/> for part-time, full-time, and internship job opportunities! For more information or to schedule an appointment, contact the Career Services Director, Dixie Rury, by phone (615-547-1308) or via email (drury@cumberland.edu) or visit the website: <https://www.cumberland.edu/office-of-career-services-and-internships/>
