History 2198B Untold Science Winter 2025

Instructor: **Charan Mandur** Email: **cmandur2@uwo.ca** Office: Lawson Hall 2245 Office Hours: Thursday 10:30am-12pm



By Dickenson V. Alley, Nikola Tesla, with his equipment, 1899

Course Description

We look inside the black boxes of science and technology to see how they are constructed. Who gets credit for invention and discovery? Who gets overlooked? And why? We go through a history of science and technology while simultaneously exploring its boundaries. Something we'll consider are: How do oddities, marvels, and monsters get incorporated into the order of nature? How and why do we classify things the way we do? Is a whale a fish? And what's the relation between art, science and technology?

Prerequisite(s):

None

Antirequisite(s):

None

Learning Outcomes

By the end of this course students will be able to:

- Explain how science, technology, and society influence each other.
- Articulate how culture and society influence science and technology and vice versa.
- Understand core concepts of STS (Science and Technology Studies).
- Synthesize historical and scientific information.
- Understand different interpretations of history.
- Understand how the history of science and technology is relevant to current issues.

Assessment	Weight	Due Date
In-Class Test	20%	Friday, Feb 7
Summary and Reflection	20%	Monday, March 3 to Friday, March 7
Participation	15%	
Index Cards	10%	
Final Exam	35%	During April Exam Period (April 7 -30)

Methods of Evaluation

In-Class Test

The test will take place during class time on Friday, Feb 7. It will consist of providing information of key terms from lecture and reading material up until the week of the test.

Please note that this assessment is considered to be central to the learning objectives for this course. Accordingly, students seeking academic consideration for this assessment will be required to provide formal supporting documentation. Students who are granted academic consideration for this assessment will be provided with the following opportunity to make up this work: a make-up exam.

Summary and Reflection

You will be given a scientific research article AND a history article related to the science article. You must summarize the research article in your own words for a general audience AND provide a short reflection on your thoughts about the experiment and its history with references to both articles. The assignment should be between 500-750 words. You will be given a flexible deadline and it will be due to OWL Brightspace anytime between Monday, March 3 and Friday, March 7 by 5pm EST.

The Summary and Reflection should be uploaded to our course OWL Brightspace site. It has a flexible deadline and **is due between Monday, March 3 to Friday March 5 at 5pm**. The Summary and Reflection handed in after that but before the following Friday at 5 pm will be penalized 10%. The Summary and Reflection handed in after that but before the last day of classes (Friday, April 4) will be penalized 20%. No assignments will be accepted after the last day of classes. Note that late assignments may be returned late and receive less feedback.

Please note that because the submission deadline for this **Summary and Reflection** already includes flexibility in the form of 4 grace days the instructor reserves the right to deny academic consideration for assignments which are submitted following the end of the period of flexibility.

Participation

Each week a portion of the class will be detected to a discussion of the lecture materials and any assigned reading (if applicable). You must contribute to the discussion.

Index Cards

Each week an index card will be handed out at the start of the lecture and you will answer the question provided. Then, return the filled-out card at the end of lecture.

Final Exam

The final exam will be administered during the April Exam Period, and will cover the lecture and reading material from the In-Class Test until (and including) the final lecture.

Make-up tests, midterms, and exams can only be approved by Academic Counselling. Please see

<u>https://history.uwo.ca/undergraduate/program_module_information/policies.html</u> for department procedures and requirements involving make-up tests and exams.

Absences and Late Assignments:

Attendance will be taken at all lectures. You may miss up to one class without penalty or explanation; after that, each lecture or tutorial missed will reduce your Participation Grade and Index Card Grade. Please see the Department of History's Undergraduate Polices and Statements for procedures involving missed tests and exams. Make-up exams can only be approved by Academic Counselling.

Please note, because not all elements of this assessment **Participation** and **Index Cards** are required in the calculation of the final course grade, the instructor reserves the right to deny academic consideration for these missed elements.

University policy on academic considerations are described at

https://uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf. This policy requires that all requests for academic considerations must be accompanied by a self-attestation. Further information about academic considerations, and information about submitting this self-attestation with your academic consideration request may be found here. Please note that any academic considerations granted in this course will be determined by the instructor, in consultation with the academic advisors in your Faculty of Registration, in accordance with information presented in this course outline

Course Materials

All readings are available either through Western's library or open access, or available through the courses OWL Brightspace site.

Course Schedule and Readings

The course spans the Big Bang to present day, but the majority of the time will be spent from the 10th-20th centuries.

Overview:

- Week 1: Introduction to Science and Technology Studies
- Week 2: Origins of the universe and evolution of life
- Weeks 3-4: Religious thought, war, science, and technology
- Week 5: In-class Test
- Week 6: Who participates and who pays
- Weeks 7-9: The boundaries of science
- Weeks 10-12: Science and the public sphere

Week 1: Introduction (Jan 10)

The first lecture will consist of a brief introduction to the course, assignments, and ideas in science and technology studies such as what constitutes "good" science and the experimenters regress. We will also discuss analyzing sources critically.

Optional Pre-class Reading(s):

- Herodotus, and Henry Cary. *The Histories of Herodotus*. New York: D. Appleton and Co., 1904. <u>http://archive.org/details/historiesofherodoohero</u>. 192-193
- Collins, Harry, and Trevor Pinch, eds. "Introduction: The Technological Golem." *In The Golem at Large: What You Should Know about Technology*. Canto Classics. Cambridge: Cambridge University Press, 2014. <u>https://doi.org/10.1017/CBO9781107589049.002</u>. Pg 1-8

Week 2: Where it all Began (Jan 17)

The lecture is about the origins of the universe, stars, planets, the Earth, and life. It's about tackling the idea when history begins, and the concept of Big History. We will also discuss modern endeavours to learn about the origins of life and how the research (and history in general) is presented to broader audiences, and why.

Pre-class Reading(s):

• "Astrobiology: Prebiotic Chemistry and the Origin of Life. a History of Exobiology and Astrobiology at NASA." Washington, D.C.: National Aeronautics and Space Administration, 2019. <u>https://purl.fdlp.gov/GPO/gp0145518</u>.

Week 3: The Heavens and the Earth... (Jan 24)

This week will we will discuss how religion, spiritualism, science, and technology have intermingled.

Pre-class Reading(s):

• Witte, Marleen de. "The Electric Touch Machine Miracle Scam: Body, Technology, and the (Dis)Authentication of the Pentecostal Supernatural." In *Deus in Machina: Religion, Technology, and the Things in Between*, edited by Jeremy Stolow, 61–82. Fordham University Press, 2012. <u>https://doi.org/10.1515/9780823249831-006</u>.

Week 4: Espionage, Science, and Gadgets (Jan 31)

We will look at how war has influenced science and technology, and vice versa. It will examine technologies and science developed during, and for, war and in particular we will examine intelligence agencies and their relation to science and technology.

Pre-class Reading(s):

• Edgerton, David. "War." In The Shock of the Old: Technology and Global History since 1900. London: Profile, 2008. Pg. 138–59.

Week 5: In-Class Test (Feb 7)

The entirety of the time will be devoted to writing the In-Class Test.

Week 6: Patronage and Funding (Feb 14)

This week we will talk about how science and technology is funded. *Pre-class Reading(s):*

• Sismondo, Sergio. "Power and Knowledge in Drug Marketing." In *Ghost-Managed Medicine Big Pharma's Invisible Hands*. Manchester: Mattering Press, 2018. Pg. 7- 39

Reading Week (Feb 15 – Feb 23)

Week 7: The Weird and the Wonderful (Feb 28)

The majority of this week, if not all, will be a lecture on how the experience of wonder stimulated discovery by forcing people to look for ways to incorporate oddities and marvels into the order of nature. We will delve into why people were fascinated with the unknown and otherworldly, and how it influenced science and the development of technology.

Pre-class Reading(s):

• Daston, Lorraine. "Introduction: At the Limit." *Wonders and the Order of Nature, 1150-1750*. Zone Books, 1998. <u>https://hdl.handle.net/2027/heb05324.0001.001</u>. Pg. 13-20

Week 8: Plagues, Disease, and.... Vampires? (March 7)

This week will be a continuation of the previous week, but with a focus on disease. The lecture will cover how disease and plagues influenced society, the various ideas to find solutions, and how it all influenced medical knowledge and technology. We will discuss the idea of how monsters relate to advances in medicine and how we think of modern Western medicine.

Pre-class Reading(s):

 Daston, Lorraine. "Monsters: A Case Study." Wonders and the Order of Nature, 1150-1750. Zone Books, 1998. <u>https://hdl.handle.net/2027/heb05324.0001.001</u>. Pg. 173-214

Week 9: That's not a Fish! (March 14)

This week will be a lecture on how scientists classify things. Particularly, it will look at a court case that examined if a whale is a fish. We will discuss why the case is important and what it tells us about science and society's influence. We will then discuss consequences of classification and how they were used for racial inequality.

Pre-class Reading(s):

 Bowker, Geoffrey C., and Susan Leigh Star. "The Case of Race Classification and Reclassification under Apartheid." In *Sorting Things Out: Classification and Its Consequences*. The MIT Press, 2000. <u>https://doi.org/10.7551/mitpress/6352.001.0001</u>. Pg. 195-225

Week 10: Art and Science (March 21)

We will look at the relation between art and science. It delves into how artists, scientists, and engineers have worked together throughout history, and how art and science influence public perception.

Pre-class Reading(s):

• McCray, W. Patrick. "Parallel Processing." *Making Art Work: How Cold War Engineers and Artists Forged a New Creative Culture*. The MIT Press, 2020. <u>https://doi.org/10.7551/mitpress/10822.001.0001</u>. 185-212

Week 11: Invasive Species (March 28)

We'll examine the role of science and technology on the environment, in particular invasive species. We see how science, public perception, and policy intertwine to deal with invasive insects, animals, and plants devastating ecosystems.

Week 12: Science PR (April 4)

This week will be about the loss of authority and decay of the concept of truth. How do science and technology fare in a world of fake news and alternate facts? We well also spend a portion of the class time preparing for the Final Exam.

Additional Statements

The use of generative AI tools, such as ChatGPT, is permitted in this course for activities such as brainstorming and refining your ideas, drafting an outline to organize your thoughts, or checking grammar and style. Any use of such tools should be clearly acknowledged and explained. If in doubt, please ask me for clarification.

Please review the Department of History's shared policies and statements for all undergraduate courses (<u>https://history.uwo.ca/undergraduate/program_module_information/policies.html</u>) for important information regarding accessibility options, make-up exams, medical accommodations, health and wellness, academic integrity, plagiarism, and more.