

History of Science 201 | The Origins of Scientific Thought (3 credits H, elementary)
Integrated Liberal Studies 201 | Western Culture: Science, Technology, & Philosophy (3 credits N, elementary)
University of Wisconsin–Madison
Fall 2024
Tuesday/Thursday 12:00–12:50 pm
[Humanities 3650](#)

instructor Professor Florence Hsia
office hours Tu 1:00–3:00 pm (Bascom 323)
& by appointment (please email)
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course summary

What does science have to do with religion? What does it mean to have expertise about the natural world? And what difference do politics and funding sources make to scientific investigation? Learn how to think critically and historically about science in this course by exploring such fundamental questions across two millennia. We begin with ancient mythology and philosophy, then follow the movement of natural philosophical traditions into medieval Islam and Christendom, and finally turn to the ‘revolution’ in science of the 16th and 17th centuries with Copernicus, Galileo, Descartes, and Newton. These historical investigations provide vital insights into ideas of the ‘natural’, scientific observation, and experiment, as well as into our expectations of scientific knowledge and the scientific enterprise.

outcomes

On successfully completing this course, you should be able to:

- explain critical developments in how the natural world has been analyzed and understood (ILS)
- recognize how science and its history have served a wide range of purposes (ILS)
- understand how science has been deeply shaped by its historical and cultural contexts (HS)
- interpret historical sources to construct persuasive arguments concerning science and its history (HS)

modality & course credit information

This is an in-person course that meets for three 50-minute class periods each week over the fall semester. You can expect to work on course learning activities for about 2 hours outside of class for every class period. Plan to give an average of 6 hours per week to reading, writing, preparing for discussions, and/or studying for quizzes and exams for this course. This syllabus provides additional information about course expectations. For discussion section expectations, see the [Canvas TA pages](#).

how to succeed in this course

The *Course Introduction* module in the [Canvas course website](#) provides an overview of the course, guides to navigating Canvas, resources to support your learning, and links to important university services and policies. Please review it carefully. Course materials will be delivered online on a weekly basis via Canvas. There are also 2 required textbooks for this course (see below under **readings**).

To best manage your coursework time, use the **your week at a glance** schedules provided for each week in the [Canvas course website](#). Some tips:

- read & take notes on the assigned **readings before attending** lectures and discussion sections
- bring the assigned **readings** with you **when attending** lectures and discussion sections
- review the week’s **lectures and readings** to **prepare for** quizzes and reading checks

assessment

1. **Reading checks & engagement** in discussion sections will count 50% towards the final course grade.
2. **Content quizzes** are open-book and open-note. They are due on Sundays.
3. Unit **exams** are open-book and open-note.
4. Grades will be calculated using the following rough guidelines:

reading checks in discussion section (~weekly)	25%
discussion section engagement (weekly)	25%
content quizzes (weekly)	20%
exams (three total, one per unit; 10% each)	30%
5. Grade scale: A 93–100; AB 87–92; B 80–86; BC 75–79; C 70–74; D 60–69; F 0–59.

course policies

- I will make every effort to honor requests for reasonable **instructional accommodations** made by persons with disabilities in accordance with the Americans with Disabilities Act (ADA), Wisconsin State Statutes (36.12), and UW-Madison policy ([UW-855](#)). If you think you may need such accommodation, contact the [McBurney Disability Resource Center](#) as soon as possible to obtain accommodations approval. Please let me know about your accommodation needs during the beginning of the semester or as soon as possible after being approved for accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected by FERPA.
- **Missed coursework.** If you need to make up coursework due to a religious observance, please let your TA know within the first two weeks of class. If you need to make up coursework due to other unavoidable circumstances (such as a medical problem, family emergency, or university-approved athletic trip) you should notify me and your TA—preferably in advance—so that we can make arrangements.
- **Honors.** If you are registered for **honors credit**, please note that the honors component is separate from your grade for the course. I will contact you about the honors component after the start of the semester.
- **Health protocols.** Keep up to date on current [university COVID-19 information](#) on what to do if you experience respiratory symptoms or have been exposed to COVID-19. I encourage you to wear a face mask in the lecture hall and in your discussion section classroom as you prefer to protect your health.
- **Academic integrity** is expected of students at the University of Wisconsin-Madison in compliance with state law (UWS Chapter 14). Plagiarism and other forms of academic misconduct carry penalties.

All written work that you turn in under your name should be solely your work.

All sources must be acknowledged, including generative AI programs (ChatGPT, GPT-4, Bard, etc.)

 It is your responsibility to understand what counts as academic misconduct. Please review the University's [policy on academic misconduct](#). See the [Student Learning Support](#) page in the Canvas course website's [Course Introduction](#) module for specifics and resources.

readings

All course materials are available via the Canvas course website except for assignments in the following textbooks, which may be purchased at the University Book Store.

- David C. **Lindberg**, *The beginnings of Western science* (University of Chicago Press, **2007 edition**)
- Peter **Dear**, *Revolutionizing the sciences* (Princeton University Press, **2009 edition**; 2019 also OK)
The [Dear textbook can also be read as an e-book](#) through the UW–Madison Library Catalog.

SCHEDULE OF TOPICS & READINGS
(additional materials listed on Canvas)

unit 1: scientific traditions

week 1 Sept 4–8 (Wed–Sun)	course introduction; ancient worldviews Roughton, “An essay in story form” (2017); LBAT 1591 tablet Homer, <i>Odyssey</i> ; Milesian fragments Lindberg, 1–29
week 2 Sept 9–15 (M–Sun)	Greek medicine healing cults; “The sacred disease” Greek natural philosophy Zeno’s paradox; atomist fragments Lindberg, 111–19 (medicine); 29–34 (natural philosophy)
week 3 Sept 16–22 (M–Sun)	the Platonic world Plato, <i>Republic</i> and <i>Timaeus</i> the Aristotelian world [tradition] Aristotle, <i>Physics</i> Lindberg, 34–44 (Plato); 45–52 (Aristotle)
week 4 Sept 23–29 (M–Sun)	the Aristotelian world [causes, cosmos] Aristotle, <i>Physics</i> (same as last week’s reading assignment) Hellenistic celestial traditions daily phenomena; Ptolemy, <i>Almagest</i> Lindberg, 52–76 (Aristotle); 41–43, 86–87 (Ptolemy)
week 5 Sept 30–Oct 6 (M–Sun)	Hellenistic astronomy Greek natural philosophy in translation Anselm, Abelard, & Bernard of Clairvaux Lindberg, 88–105, 132–36 (astronomy); 146–57, 163–77, 193–215 (nat philo)

unit 2: renaissance & revolution

week 6 Oct 7–13 (M–Sun)	Greek natural philosophy in Paris exam 1 due Sunday, Oct 13 Aristotle in Paris documents Lindberg, 215–34, 243–53 scientific renaissance (medicine) Mondino de’ Luizzi, <i>Anatomy</i> (1316/1493), illustrations Vesalius, <i>On the fabric of the human body</i> (1543), preface & illustrations Lindberg, 119–31 Dear, 29–32, 36–40
week 7 Oct 14–20 (M–Sun)	scientific renaissance (astronomy/cosmology) Regiomontanus (1496) frontispiece Lindberg, 261–70 heliocentrism Copernicus, <i>On the revolutions of the heavenly spheres</i> (1543) Dear, 10–23, 32–36

week 8 Oct 21–27 (M–Sun)	responses to heliocentrism Osiander, in Copernicus, <i>On the revolutions of the heavenly spheres</i> (1543) Brahe, <i>Instruments</i> (1598/1602); <i>On the most recent phenomena</i> (1588/1610) Dear, 40–43, 99–101
week 9 Oct 28–Nov 3 (M–Sun)	heliocentrism Kepler, <i>Cosmographical mystery</i> (1596), <i>Rudolphine tables</i> (1627) image dossier: seeing with a telescope Galileo, <i>Sidereal messenger</i> (1610) Dear, 64–77, 101–106
week 10 Nov 4–10 (M–Sun)	the skeptical crisis Descartes, <i>Discourse on the method</i> (1637) van der Straet, <i>New discoveries</i> (1600) the Baconian world Bacon, <i>Great instauration</i> (1620); <i>Sylva sylvarum</i> (1627); <i>New atlantis</i> (1627) Dear, 79–82 (skeptical crisis); 55–63 (Baconian world)

unit 3: new worlds

week 11 Nov 11–17 (M–Sun)	the Cartesian world exam 2 due Sunday, Nov 17 Descartes, <i>Principles of philosophy</i> (1644/1647) Fontenelle, <i>Conversations on the plurality of worlds</i> (1686) Dear, 79–88, 93–98, and 152–53 (on salons)
week 12 Nov 18–24 (M–Sun)	the Galileo affair guest lecturer: Professor Michael Shank Castelli-Galileo letters (1613) Bellarmine-Foscarini letter (1615); Inquisition & Index documents (1616) Vatican letters (1631); Galileo, <i>Dialogue on the two chief world systems</i> (1632) Dear, 109–111
week 13 Nov 25–Dec 1 (M–Sun)	scientific societies Sebastien Le Clerc, "Louis XIV visits the Academy" (Paris 1671) engraving Thomas Sprat, <i>The history of the Royal-Society of London</i> (London 1667) <i>Philosophical transactions</i> 1 (1665): 1–16 Dear, 109–26 Thanksgiving Thursday, Nov 28
week 14 Dec 2–8 (M–Sun)	the Newtonian world Newton, "The system of the world" (1685) Newton, <i>Mathematical principles of natural philosophy</i> (1687) Newton, <i>Opticks</i> (1706/1717), "Query 31" Dear, 145–63

week 15 Dec 9–11 (M–W)	experimentation Galileo, <i>Dialogue on the chief two world systems</i> (1632) Boyle, “New experiments,” <i>Philosophical transactions</i> (1668) Baker, “1,500 scientists,” <i>Nature</i> 533 (25 May 2016) Dear, 127–30, 137–44 NIH Reproducibility Training video: “Lack of transparency” exam 3 due Tuesday, Dec 17
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Course Evaluation

UW-Madison uses a digital course evaluation survey tool called [HelioCampus AC](#). For this course, you will receive an official email two weeks prior to the end of the semester, notifying you that your course evaluation is available. In the email you will receive a link to log into the course evaluation with your NetID. Evaluations are anonymous. Your participation is an integral component of this course, and your feedback is important to me. I strongly encourage you to participate in the course evaluation.

Privacy of Student Records & the Use of Lectures and Instructional Materials Statement

On the privacy of student records, please see [information about FERPA](#).

Lectures and instructional materials for this course, including this syllabus, are copyrighted 2023, Florence C. Hsia. Students in this course may use lectures and instructional materials for their personal use related to participation in this class. Students in this course may also take notes solely for their personal use. Unless you are considered by the university to be a qualified student with a disability requiring accommodation, you are not authorized to record my lectures without my permission [[Regent Policy Document 4-1](#)].

Students may not copy or have lectures (including photos or recordings of lectures) and instructional materials outside of class, including posting on internet sites or selling to commercial entities, with the exception of sharing copies of personal notes as a notetaker through the McBurney Disability Resource Center. Students are otherwise prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without my express written permission. Unauthorized use of these copyrighted lectures and instructional materials constitutes copyright infringement and may be addressed under the university's policies [[UWS, chaps. 14 & 17](#)] governing student academic and non-academic misconduct.

Diversity & Inclusion Statement

[Diversity](#) is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals. The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background—people who as students, faculty, and staff serve Wisconsin and the world.