

**History of Science 201 | The Origins of Scientific Thought** (3 credits H)  
**Integrated Liberal Studies 201 | Western Culture: Science, Technology, & Philosophy** (3 credits N)  
University of Wisconsin–Madison  
Fall 2023  
Tuesday/Thursday 12:00–12:50 pm  
[Microbial Sciences 1220](#) (Ebling Symposium Center)

**instructor** Professor Florence Hsia  
**office hours** TuTh 1:00–2:00 pm (Bascom 323)  
& by appointment (please email)  
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**teaching assistants**  
**Hist Sci** Cameron Daddis ([daddis@wisc.edu](mailto:daddis@wisc.edu))  
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for TA office hours, see the [Canvas TA pages](#)

**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:

- complete 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 readings and lectures to prepare for each week’s **quiz** (must be taken by Sunday)

### assessment

1. Prepare each week's readings before attending the week's lectures and discussion sections.
2. Weekly attendance & participation in discussion sections will count towards the final course grade.
3. The weekly quizzes are open-book and open-note. They must be completed by the due date (Sunday).
4. Grades will be calculated using the following rough guidelines:

attendance (weekly)	10%
discussion section work (weekly)	40%
content quizzes (weekly)	20%
exams (three total, one per unit; 10% each)	30%

### 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 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**)
- 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 6–10 (Wed–Sun)	<b>course introduction; ancient worldviews</b> Roughton, “An essay in story form” (2017); LBAT 1591 tablet Homer, <i>Odyssey</i> ; Milesian fragments Lindberg, 1–29
week 2 Sept 11–17 (M–Sun)	<b>Greek medicine</b> healing cults; “The sacred disease” <b>Greek natural philosophy</b> Zeno’s paradox; atomist fragments Lindberg, 111–19 (medicine); 29–34 (natural philosophy)
week 3 Sept 18–24 (M–Sun)	<b>the Platonic world</b> Plato, <i>Republic</i> and <i>Timaeus</i> <b>the Aristotelian world</b> [tradition] Aristotle, <i>Physics</i> Lindberg, 34–44 (Plato); 45–52 (Aristotle)
week 4 Sept 25–Oct 1 (M–Sun)	<b>the Aristotelian world</b> [causes, cosmos] Aristotle, <i>Physics</i> (same as last week’s reading assignment) <b>Hellenistic celestial traditions</b> daily phenomena; Ptolemy, <i>Almagest</i> Lindberg, 52–76 (Aristotle); 41–43, 86–87 (Ptolemy)
week 5 Oct 2–8 (M–Sun)	<b>Hellenistic astronomy</b> <b>Greek natural philosophy in translation</b> 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 9–15 (M–Sun)	<b>Greek natural philosophy in Paris</b>   <b>exam 1 due Sunday, Oct 15</b> Aristotle in Paris documents Lindberg, 215–34, 243–53 <b>scientific renaissance</b> (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 16–22 (M–Sun)	<b>scientific renaissance</b> (astronomy/cosmology) Regiomontanus (1496) frontispiece Lindberg, 261–70 <b>heliocentrism</b> Copernicus, <i>On the revolutions of the heavenly spheres</i> (1543) Dear, 10–23, 32–36

<p>week 8 Oct 23–29 (M–Sun)</p>	<p><b>responses to heliocentrism</b> 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</p>
<p>week 9 Oct 30–Nov 5 (M–Sun)</p>	<p><b>heliocentrism</b> 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</p>
<p>week 10 Nov 6–12 (M–Sun)</p>	<p><b>the Galileo affair</b> Castelli-Galileo letters (1613) Bellarmine-Foscarini letter (1615); Inquisition &amp; Index documents (1616) Vatican letters (1631); Galileo, <i>Dialogue on the two chief world systems</i> (1632) Dear, 109–111</p>

**unit 3: new worlds**

<p>week 11 Nov 13–19 (M–Sun)</p>	<p><b>the skeptical crisis</b>   <b>exam 2 due Sunday, Nov 19</b> Descartes, <i>Discourse on the method</i> (1637) van der Straet, <i>New discoveries</i> (1600) <b>the Baconian world</b> 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)</p>
<p>week 12 Nov 20–26 (M–Sun)</p>	<p><b>scientific societies</b> 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</p> <p><b>Thanksgiving</b></p>
<p>week 13 Nov 27–Dec 3 (M–Sun)</p>	<p><b>the Cartesian world</b> 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)</p>
<p>week 14 Dec 4–10 (M–Sun)</p>	<p><b>the Newtonian world</b> 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</p>

week 15 Dec 11–13 (M–W)	<b>experimentation</b> 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” <a href="#">exam 3 due Wednesday, Dec 20</a>
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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.