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 2021
Tuesday/Thursday 12:05–12:55 pm
INGRAHAM B10

instructor Professor Florence Hsia
office hours: Tu 1:00–2:30 pm (323 Bascom)
& by appointment (please email)
florence.hsia@wisc.edu

teaching assistants
Hist Sci Aijie Shi (ashi25@wisc.edu)
Hist Sci Jais Brohinsky (brohinsky@wisc.edu)
ILS James Barnes (james.barnes@wisc.edu)
ILS JJ Reynolds-Strange (reynoldsstra@wisc.edu)
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
• recognize how science and its history have served a wide range of purposes
• understand how science has been deeply shaped by its historical and cultural contexts
• interpret historical sources to construct persuasive arguments concerning science and its history

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 the **course introduction** module carefully. Course materials will be delivered online on a weekly basis via Canvas. There are also 2 required textbooks (see below).

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 the **quiz** (must be taken by Sunday)

assessment

1. Attend lectures and discussion sections. Attendance & participation in discussion sections will count towards the final course grade.
2. Prepare readings for the day they are assigned.
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 & participation (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. If you think you may qualify for accommodation, please contact the McBurney Disability Resource Center at 263-2741 (phone), 225-7956 (text), mcburney@studentlife.wisc.edu, or http://mcburney.wisc.edu/students/howto.php to establish your eligibility for services. If you need such accommodation, please let me know as soon as possible, or by the end of the third week of the semester. All requests are confidential.

• 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.

• 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.

• Keep up to date on current university COVID-19 policies and requirements. Note that as of August 4, 2021, face masks are required in indoor instructional settings (classrooms) regardless of vaccination status. Those who can wear a face covering but refuse to do so will be asked to leave the building. Any absence from class, including discussion sections, due to refusal to wear a mask will be treated as an unexcused absence, with consequences as indicated in the assessment guidelines above. If you have a medical condition or disability that affects your ability to wear a face covering, please request a reasonable accommodation.

• **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. *It is your responsibility to understand what counts as academic misconduct*. See the University's policy and the Writing Center's guide to quotations.

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: https://search.library.wisc.edu/catalog/9912014063802121.

SCHEDULE OF TOPICS & READINGS

unit 1: scientific traditions

week 1 Sept 8–12 (Wed-–Sun)	**course introduction; ancient worldviews** Roughton, "An essay in story form" (2017); LBAT 1591 tablet Homer, *Odyssey*; Milesian fragments *Troy* (2004), Achilles versus Hector scene Lindberg, 1–29
week 2 Sept 13–19 (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 20–26 (M–Sun)	**the Platonic world** Plato, *Republic* and *Timaeus* **the Aristotelian world** Aristotle, *Physics* Lindberg, 34–44 (Plato); 45–52 (Aristotle)
week 4 Sept 27–Oct 3 (M–Sun)	**the Aristotelian world** Aristotle, *Physics* (same as last week's reading assignment) **Hellenistic celestial traditions** daily phenomena; Ptolemy, *Almagest* Lindberg, 52–76 (Aristotle); 41–43, 86–87 (Ptolemy)
week 5 Oct 4–10 (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 11–17 (M–Sun)	**Greek natural philosophy in Paris** | **exam 1** due Sunday, Oct 17 Aristotle in Paris documents Lindberg, 215–34, 243–53 **scientific renaissance** (medicine) Mondino de' Luizzi, *Anatomy* (1316/1493), illustrations Vesalius, *On the fabric of the human body* (1543), preface & illustrations Lindberg, 119–31; Dear, 29–32, 36–40
week 7 Oct 18–24 (M–Sun)	**scientific renaissance** (astronomy/cosmology) Regiomontanus (1496) frontispiece Lindberg, 261–70 **heliocentrism** Copernicus, *On the revolutions of the heavenly spheres* (1543) Dear, 10–23, 32–36

week 8 Oct 25–31 (M–Sun)	**responses to heliocentrism** Osiander, in Copernicus, *On the revolutions of the heavenly spheres* (1543) Brahe, *Instruments* (1598/1602); *On the most recent phenomena* (1588/1610) Dear, 40–43, 99–101
week 9 Nov 1–7 (M–Sun)	**heliocentrisms** Kepler, *Cosmographical mystery* (1596), *Rudolphine tables* (1627) image dossier: seeing with a telescope Galileo, *Sidereal messenger* (1610) Dear, 64–77, 101–106
week 10 Nov 8–14 (M–Sun)	**the Galileo affair** Castelli-Galileo letters (1613) Bellarmine-Foscarini letter (1615); Inquisition & Index documents (1616) Vatican letters (1631); Galileo, *Dialogue on the two chief world systems* (1632) Dear, 109–111

unit 3: new worlds

week 11 Nov 15–21 (M–Sun)	**the skeptical crisis** | **exam 2** due Sunday, Nov 21 Descartes, *Discourse on the method* (1637); van der Straet, *New discoveries* (160 **the Baconian world** Bacon, *Great instauration* (1620); *Sylva sylvarum* (1627); *New atlantis* (1627) Dear, 79–82 (skeptical crisis); 55–63 (Baconian world)
week 12 Nov 22–28 (M–Sun)	**scientific societies** Sebastien Le Clerc, "Louis XIV visits the Academy" (Paris 1671) engraving; Thomas Sprat, *The history of the Royal-Society of London* (London 1667), frontispiece & title page *Philosophical transactions* 1 (1665): 1–16 Dear, 109–26 **Thanksgiving**
week 13 Nov 29–Dec 5 (M-Sun	**the Cartesian world** Descartes, *Principles of philosophy* (1644/1647) Fontenelle, *Conversations on the plurality of worlds* (1686) Dear, 79–88, 93–98, and 152–53 (on salons)
week 14 Dec 6–12 (M–Sun)	**the Newtonian world** Newton, “The system of the world” (1685) Newton, *Mathematical principles of natural philosophy* (1687) Newton, *Opticks* (1706/1717), “Query 31” Dear, 145–63

week 15 Dec 13–19 (M–Sun)	**experimentation** Galileo, *Dialogue on the chief two world systems* (1632) Boyle, "New experiments," *Philosophical transactions* (1668) Baker, "1,500 scientists," *Nature* 533 (25 May 2016) Dear, 127–30, 137–44 **exam 3** due Sunday, Dec 19

Digital Course Evaluation (AEFIS)
UW-Madison uses a digital course evaluation survey tool called AEFIS. 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 Audio Recorded Lectures Statement

See more information about FERPA.

Lecture materials and recordings for this course are protected intellectual property at UW-Madison. Students in this course may use the materials and recordings for their personal use related to participation in this class. Students may also take notes solely for their personal use. If a lecture is not already recorded, you are not authorized to record my lectures without my permission unless you are considered by the university to be a qualified student with a disability requiring accommodation. [Regent Policy Document 4-1] Students may not copy or have lecture materials and recordings outside of class, including posting on internet sites or selling to commercial entities. Students are also prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 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.