

**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 2020

**instructor** Professor Florence Hsia  
 virtual office hours: Th 12:00–2:00 pm  
 (email for appointment)  
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**teaching assistants**  
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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
- 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**

This is a blended course. Lectures and other course components, including discussion section activities, will be delivered asynchronously (no mandatory day/time) online on a weekly basis via Canvas (<https://canvas.wisc.edu/courses/208287>).

You can expect to work on course learning activities for about 2 hours outside of class for every credit hour. Plan to give an average of 9 hours per week to viewing lecture videos, reading, preparing for and participating in discussions, and completing assignments for this course.

To best manage your coursework time, please use the **Your Week at a Glance** schedules provided for each week in the Canvas course website. Be sure to have access to the assigned readings when viewing the lecture videos and participating in discussion section activities.

Some sections will meet synchronously (real-time), either in person or online. Your TA will provide specific information about any such synchronous (real-time) meetings as well as asynchronous discussion section activities and office hours.

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.

For **in-person classes**: instructors may halt the class and, if necessary, leave the classroom if anyone in the room is not wearing a properly fitted mask. To best support your own learning and that of your classmates, please wear your mask properly, use the supplies provided to clean your desk, and observe 6-foot physical distancing as well as other university guidelines (<https://smartrestart.wisc.edu/badgerpledge/>). For details on in-person guidelines, see the end of this syllabus.

### assessment

Grades will be based on completion of course activities as noted on the Canvas course website.

Grades will be calculated using the following rough guidelines:

lecture video quizzes (weekly; completion credit)	5%
content quizzes (weekly)	15%
midweek inventories (weekly; completion credit)	25%
portfolio activities (weekly)	25%
portfolio capstones (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), 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 in the semester, and by the end of the third week of the semester. All requests are confidential.
- If you need to make up course activities due to a religious observance, please let your TA know within the first two weeks of class. If you need to make up course activities 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.
- 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. The University's policy is outlined here: <https://conduct.students.wisc.edu/academic-integrity/>. See the Writing Center's guide to quotations: <http://writing.wisc.edu/Handbook/QuotingSources.html>.
- If you are taking either Hist Sci 201 or ILS 201 for honors credit, the honors component will be separate from your grade for the course. If you are registered for honors credit, I will contact you about the honors component after the start of the semester.

### readings

All course readings, videos, and activities 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 READINGS**  
**Unit 1: Scientific Traditions**

- week 1**  
 Sept 2 (W)      **objectives, questions, sources**  
 Roughton, “An essay in story form” (2017); LBAT 1591 tablet  
 Lindberg, 1–20, 82–86
- week 2**  
 Sept 7 (M)      **Homeric/Milesian worldviews; Greek medicine**  
 Homer, *Odyssey*; Milesian fragments  
 healing cults; “The sacred disease”  
 Lindberg, 21–29, 111–19  
*Troy* (2004) scene
- week 3**  
 Sept 14 (M)      **Eleatics, pluralists, and atomists; the Platonic world**  
 Zeno’s paradox; atomist fragments  
 Plato, *Republic* and *Timaeus*  
 Lindberg, 29–44  
*The Matrix* (1999) scenes
- week 4**  
 Sept 21          **the Aristotelian world**  
 Aristotle, *Physics*  
 Lindberg, 45–66
- week 5**  
 Sept 28          **the Hellenistic world**  
 Ptolemy, *Almagest*  
 Lindberg, 86–105, 132–36  
 animations

**Unit 2: Renaissance & Revolution**

- week 6**  
 Oct 5            **natural knowledge in translation**  
 Anselm, Abelard, & Bernard of Clairvaux  
 Aristotle in Paris documents  
 Lindberg, 146–81, 193–234, 243–53
- week 7**  
 Oct 12          **scientific renaissance: medicine**  
 Mondino de’ Luizzi, *Anatomy* (1316/1493), illustrations  
 Vesalius, *On the fabric of the human body* (1543), illustrations  
 Vesalius, *On the fabric of the human body* (1543), preface  
 Lindberg, 119–31  
 Dear, 7–9, 29–32, 36–40
- week 8**  
 Oct 19          **scientific renaissance: astronomy/cosmology**  
 Sacrobosco (1482), Peurbach (c. 1474), Regiomontanus (1496) illustrations  
 Copernicus, *On the revolutions of the heavenly spheres* (1543)  
 Brahe, *Instruments* (1598/1602); *On the most recent phenomena* (1588/1610)  
 Lindberg, 261–70  
 Dear, 10–23, 32–36, 40–43, 99–101

**week 9**                    heliocentrism  
 Oct 26                    Kepler, *Cosmographical mystery* (1596), *Rudolphine tables* (1627) illustrations  
 image dossier: the telescopic moon  
 Galileo, *Sidereal messenger* (1610)  
 Dear, 64–77, 101–106

**week 10**                  the Galileo affair  
 Nov 2                    Castelli-Galileo letters (1613)  
 Bellarmine-Foscarini letters (1615); Inquisition & Index documents (1616)  
 Vatican letters (1631); Galileo, *Dialogue on the two chief world systems* (1632)

### Unit 3: New Worlds

**week 11**                  the Cartesian world  
 Nov 9                    Descartes, *Discourse on the method* (1637)  
 Descartes, *Principles of philosophy* (1644/1647)  
 Fontenelle, *Conversations on the plurality of worlds* (1686)  
 Dear, 79–88, 93–98, 152–53 (on salons)

**week 12**                  Baconian reform  
 Nov 16                    image dossier: monsters  
 Bacon, *Great instauration* (1620)  
 Bacon, *New Atlantis* (1627)  
 Dear, 55–63, 109–20

**week 13**                  scientific journals  
 Nov 23                    *Philosophical transactions* 1 (1665): 1–16 & Oldenburg, “To the Royal Society”  
*Philosophical transactions* exercise  
 Dear, 114–20 (Royal Society – review)  
 Nov 26 (Th)              Thanksgiving

**week 14**                  the Newtonian world  
 Nov 30                    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**                  experimentation  
 Dec 7                    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

**Face Coverings During In-person Instruction Statement (COVID-19)**

Individuals are expected to wear a face covering while inside any university building. Face coverings must be [worn correctly](#) (i.e., covering both your mouth and nose) in the building if you are attending class in person. If any student is unable to wear a face-covering, an accommodation may be provided due to disability, medical condition, or other legitimate reason.

Students with disabilities or medical conditions who are unable to wear a face covering should contact the [McBurney Disability Resource Center](#) or their Access Consultant if they are already affiliated.

Students requesting an accommodation unrelated to disability or medical condition should contact the Dean of Students Office.

Students who choose not to wear a face covering may not attend in-person classes, unless they are approved for an accommodation or exemption. All other students not wearing a face covering will be asked to put one on or leave the classroom. Students who refuse to wear face coverings appropriately or adhere to other stated requirements will be reported to the [Office of Student Conduct and Community Standards](#) and will not be allowed to return to the classroom until they agree to comply with the face covering policy. An instructor may cancel or suspend a course in-person meeting if a person is in the classroom without an approved face covering in position over their nose and mouth and refuses to immediately comply.

**Quarantine or isolation due to COVID-19**

Students should continually monitor themselves for COVID-19 [symptoms](#) and get [tested](#) for the virus if they have symptoms or have been in close contact with someone with COVID-19. Students should reach out to instructors as soon as possible if they become ill or need to isolate or quarantine, in order to make alternate plans for how to proceed with the course. Students are strongly encouraged to communicate with their instructor concerning their illness and the anticipated extent of their absence from the course (either in-person or remote). The instructor will work with the student to provide alternative ways to complete the course work.