Scientific Traditions in Ancient Civilizations
Core Course CORE-UA 400 010, Texts and Ideas, Spring 2021

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Lectures: Online (Zoom via NYUClasses)
Recitations: Online (Zoom via NYUClasses)

Syllabus, revision 1.1 (January 24, 2021)

*Description.*
Systematic approaches to observing, describing, explaining, and predicting natural phenomena flourished in many parts of the ancient world, and the evidence for them is nearly as old as writing itself. Scholars, priests, and professionals pursued physical sciences such as astronomy, meteorology, and optics, as well as life sciences such as medicine, zoology, and botany both for their practical applications and out of intellectual curiosity. We will focus on scientific traditions of Egypt, Mesopotamia, Greece and Rome, and China, paying particular attention to the roles played by these traditions and their practitioners in society, and to cultural interactions that led to widespread transmissions and transformations of theories and practices.

The history of science is a major component of intellectual history, and the study of scientific thought and practices in diverse periods and kinds of society is a route to contemplating in what senses science may be universal or objective and in what senses it is shaped by its human context. When the period in question is antiquity, we also confront the challenges that arise from having large gaps in our evidence; on the other hand, much of the scientific content is approachable without requiring specialized knowledge of modern science. Some of the materials we will look at are books that were influential as authorities or as objects of debate for many centuries after their composition: for example, the medical writings attributed to Hippocrates, or Ptolemy's treatises deducing the detailed structure of an Earth-centered astronomy and arguing for the validity and usefulness of astrology as a physical science. Other sources will be everyday documents recovered by archeology that sometimes have surprising resonances in the contemporary world: like Babylonian clay tablets that reveal an organized school curriculum for mathematics, or Greek inscriptions on stone offering cyclic weather predictions. Material objects such as time-telling instruments as well as artistic representations and images will also come into play as indications of public access to and perceptions of science.

As part of the College Core Curriculum this class will exercise students' skills in critical reading (of both primary texts and documents and contemporary scholarship) and in clear, balanced and evidence-based writing. Certain of the
assigned readings in modern scholarship take contentious positions whose merits need to be weighed, but the ancient texts also cannot always be taken at face value but rather should be assessed in the light of genre, intended audience, and author's purpose.

Requirements and grading.

15% participation
10% first writing assignment, 3-4 pp., on choice of set topics, due Wed. March 3
15% second writing assignment, 5-6 pp., on choice of set topics, due Wed. April 7
25% third writing assignment, 8-10 pp., on choice of set topics, due Wed. April 28
15% short quizzes and exercises, emphasis on knowledge and understanding of readings and lectures (in weekly recitations, except the first week)
20% final examination, emphasis on knowledge and understanding of readings and lectures

All writing assignments are due at 11:59 PM (New York time) on the stated date. Late assignments submitted by 11:59 PM on Friday following the due date will have 20% deducted from the grade; those submitted after this time but before 11:59 PM on the following Sunday will have 50% deducted from the grade.

In cases of four or more absences from classes and recitations, 10% will be deducted from the final course grade.

Classroom rules, expectations, and etiquette.

Online classes (both lectures and recitations) will be done through Zoom, with meetings scheduled through NYUClasses. For the lectures, please keep your cameras (and microphones) off by default so we don't have bandwidth problems with 100+ participants, but make sure you are identified on screen by your full name. We will try to have a few minutes in the middle and end of the lectures to field questions you type in the chat. Each recitation leader will establish camera and microphone policy for the recitation meetings.

Classroom conduct should be respectful and tolerant towards others. The best learning environment is created by people who support and motivate each other. Any behavior that contradicts this directive (harassment based on race, gender, color, creed, and so on) will not be tolerated. NYU has strict guidelines, please familiarize yourself with them: Non-Discrimination and Anti-Harassment Policy and Complaint Procedures for Employees.

Computer and/or cell phone use should be limited to content that is directly relevant to the topic or activity being performed. It could be a good idea to turn off notifications and other tasks while in class to help you better ease into online learning. Whenever possible, go into "Full-Screen" mode for the activity at hand. Consider taking notes by hand so that your screen has fewer programs running at once. Please note that no quiz or exam is open-note (or open-Internet!) unless specified by the instructor. There is no way to control how you use your technology but, ultimately, you are an adult and it is up to you if you want to miss out on the
opportunity of learning something new. If you need to take a phone call, please excuse yourself from the class and come back when you are ready.

Note on reading primary texts.
Translations of original ancient texts are marked with an asterisk in the Class Schedule below. Many of them are excerpted from scholarly editions that also include the texts in the original languages and some notes and commentary on technical issues that are directed at specialists. You are only responsible for reading the translations of the texts and, where provided, the editors' introductions.

Don't expect to understand everything that is going on in every primary text. They were written for the use of people who lived centuries ago and whose education and training were very different from ours. The texts had various purposes that affected how they were expressed; for example, some were school texts, others were reference works, and others were notes and documents meant to be read only by the people who wrote them or to whom they were addressed. Some are very repetitive, so you don't need to pay equal attention to every line! Making sense of the texts will be part of what we do in class, but for this to be effective, make sure you have read and familiarized yourself with them as best you can beforehand.

Lecture class schedule.

Readings are uploaded to NYUClasses unless otherwise noted.

Week 1
2/1 (M) Introduction, part 1: overview of the course; what do we mean by a "scientific tradition"?
   Philip Ball, "Stop Calling the Babylonians Scientists." The Atlantic, February 10, 2016 [Not uploaded; available online at https://www.theatlantic.com/science/archive/2016/02/babylonians-scientists/462150/]
2/3 (W) Introduction, part 2: kinds of evidence, and how we learn from them
Recitation theme: What makes a system of thought "scientific"?

Week 2
2/8 (M) Mesopotamia: writing, literacy, and scribal culture
2/10 (W) Mesopotamia: numeracy and mathematics
   *"Before Pythagoras: Numbers on Clay"
   *Geometrical algebra problems from tablets YBC 6967 and BM 13901, in
   Victor Katz, ed., The Mathematics of Egypt, Mesopotamia, China, India, and
Recitation theme: What would be the uses of writing and mathematics in an ancient culture?

Week 3
2/15 (M) No class, Presidents Day
2/17 (W) Mesopotamia: omens, the language of the gods
2/18 (Th, "legislative Monday") Mesopotamia: scholars in service of the king of Assyria
   *Letters from the Assyrian scholar Balasi to the king, from Simo Parpola, Letters from Assyrian and Babylonian Scholars (Helsinki: Helsinki University Press, 1993), pp. 30-47.
No recitations this week.

Week 4
2/22 (M) Mesopotamia: contrasting approaches to healing
   Markham Geller, Ancient Babylonian Medicine: Theory and Practice (Chichester: Wiley-Blackwell, 2010), pp. 1-42. [Not uploaded; you can access this book in electronic form through BobCat, searching for "Geller ancient babylonian medicine"]
2/24 (W) Mesopotamia: observing, predicting, and using astronomical phenomena
   Asger Aaboe, Episodes from the Early History of Astronomy (New York: Springer, 2001), chapter 0, pp. 1-23, for basic concepts of ancient astronomy, and chapter 1, pp. 24-62, for Mesopotamian astronomy [Not uploaded; you can access this book in electronic form through BobCat, searching for "Aaboe astronomy"]


Recitation theme: What did it mean to be a specialist in ancient Mesopotamia, and how did you become one?

**Week 5**

3/1 (M) Egypt: writing and medicine


3/3 (W) Egypt: numeracy and mathematics


*First writing assignment due.*

Recitation theme: "Rationality" and "magic" in Egyptian and Babylonian medicine.

**Week 6**

3/8 (M) Egypt: time-keeping and star-watching

Readings TBA

First assignment returned.

3/10 (W) Egypt and Mesopotamia: contrasts and cultural interchanges

Readings TBA

Recitation theme: How and why would scientific knowledge travel in antiquity?

**Week 7**

3/15 (M) Greece: philosophers on cosmology and material change


3/17 (W) Greece: explaining and proving


Recitation theme: Scientific certainty and debate.

**Week 8**

3/22 (M) Greece: explaining and proving (continued)
3/24 (W) Greece: Medical practices and theories in the time of Hippocrates

*Epidemics Books 1 and 3, Airs, Waters, Places, and The Sacred Disease, translated by W. H. S. Jones [Not uploaded; you can access this text in the Loeb Classical Library online, accessed through BobCat: Browse for "authors", "Hippocrates of Cos"]

Recitation theme: The individual voices of the Greek medical writers.

Week 9

3/29 (M) Greece: anatomical theories and medical sects

*Ancient Medicine, translated by W. H. S. Jones [Not uploaded; you can access this text in the Loeb Classical Library online, accessed through BobCat: Browse for "authors", "Hippocrates of Cos"]

*Celsus, On Medicine, Prooemium, translated by W. G. Spencer [Not uploaded; you can access this text in the Loeb Classical Library online, accessed through BobCat: Browse for "authors", "Celsus"]


3/31 (W) Greece: varieties of astronomy

*Geminos, Introduction to the Phenomena, trans. James Evans & J. L. Berggren (Princeton: PUP, 2006), chapters 3-5, 8, 17, and excerpt from parapegma. [Read the notes only to the extent that you need them to follow the text.]

Recitation theme: The stories about science in On Ancient Medicine and Geminus.

Week 10

4/5 (M) Greece and Rome: the public face of science


4/7 (W) Rome: Heron and mechanics


Recitation theme: Lay people's understanding of their relation to the cosmos.

Week 11

4/12 (M) Rome: Ptolemy and the astral and physical sciences


[Not uploaded; you can access the book in electronic form through BobCat]

4/14 (W) Rome: Galen and the life sciences


[Not uploaded; you can access the book in electronic form through BobCat]

*Galen, excerpts from *On Prognosis* (see Week 10 above).


Recitation theme: Empiricism in Ptolemy and Galen. Second assignment returned.

**Week 12**

4/19 (M) No class

4/21 (W) China: sources and challenges


[Not uploaded; you can access the book in electronic form through BobCat]

Recitation theme: Wrapping up the sciences of Greece and Rome.

**Week 13**

4/26 (M) China: mathematics


4/28 (W) China: astronomy and the mandate of heaven


*third writing assignment due April 28.*

Recitation theme: Science and empire, Rome vs. China.

**Week 14**

5/3 (M) China: medicine


5/5 (W) Circulation of scientific knowledge in antiquity and after


Recitation theme: Review.

**Week 15**
5/10 last class, review of key themes and any loose ends