Alexander Jones  
Professor of the History of the Exact Sciences in Antiquity  
Institute for the Study of the Ancient World

Scientific Traditions in Ancient Civilizations  
Proposed Core Course CORE-UA 400 Texts and Ideas for Spring 2018

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 the Far East, 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: Babylonian tablets that reveal an organized school curriculum for mathematics, say, or a Greek inscription 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% attendance and participation
10% first writing assignment, 3-4 pp., on choice of set topics
15% second writing assignment, 5-6 pp., on choice of set topics
25% third writing assignment, 8-10 pp., on choice of set topics
15% midterm examination, emphasis on knowledge and understanding of readings and lectures
20% final examination, emphasis on knowledge and understanding of readings and lectures

Class schedule:

Week 1
1/22 Introduction: what do we mean by "ancient" and "scientific tradition"?
1/24 Introduction: kinds of evidence, and how we learn from them
   Recitation theme: What makes a system of thought "scientific"?

Week 2
1/29 Mesopotamia: writing, literacy, and scribal culture
1/31 Mesopotamia: numeracy and mathematics
   Selection of Babylonian mathematical texts (c. 12 pp.)
   Recitation theme: The uses of mathematics in an ancient culture.

Week 3
2/5 Mesopotamia: omens, the language of the gods
2/7 Mesopotamia: scholars in service of the king of Assyria
   Selection of omen texts (c. 12 pp.)
   Selection of letters and reports of Assyrian scholars (c. 15 pp.)
   Recitation theme: The persistence of belief in omens.

Week 4
2/12 Mesopotamia: contrasting approaches to healing
   Selection of Babylonian medical texts and omens (c. 15 pp.)
2/14 Mesopotamia: observing and predicting astronomical phenomena
   Selection of Babylonian astronomical tablets (c. 25 pp.)
   Recitation theme: Becoming and being a specialist in ancient Mesopotamia.
Week 5
2/21 Egypt: writing and medicine
   Selection of Egyptian medical texts (c. 40 pp.)
   *First writing assignment due.*
Recitation theme: "Rationality" and "magic" in Egyptian and Babylonian medicine.

Week 6
2/26 Egypt: numeracy, and time-keeping
   Selection of Egyptian mathematical texts (c. 30 pp.)
2/28 Egypt and Mesopotamia: contrasts and cultural interchanges
Recitation theme: How and why would scientific knowledge travel in antiquity?

Week 7
3/5 Greece: the Hippocratic physicians and their world
   Hippocratic writings: *Epidemics* Book 1 (33 pp.); *Airs, Waters, Places* (34 pp.); *On the Sacred Disease* (23 pp.)
3/7 Greece: philosophers on cosmology and material change
Recitation theme: The individual voice in the Hippocratic texts.

Week 8
3/19 Greece: explaining and proving
   Selection of Greek mathematical texts (c. 15 pp.)
3/21 Greece: anatomical theories and medical sects
   Hippocratic writings: *On Ancient Medicine* (26 pp.)
   Celsus, *On Medicine* (excerpt, c. 20 pp.)
Recitation theme: Scientific certainty and debate.

Week 9
3/26 Midterm
3/28 Greece: varieties of astronomy
   Selection of Greek astronomical texts (c. 12 pp.)
Recitation theme: The "histories" of science in *On Ancient Medicine* and Geminus.

Week 10
4/2 Greece and Rome: the rise of astrology

4/4 Greece and Rome: the public face of science
Galen, *On Prognosis* (36 pp.)
*Second writing assignment due.*

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

**Week 11**

4/9 Rome: Heron and mechanics
Selections from Heron, *Pneumatics and Dioptra* (c. 35 pp.)

4/11 Rome: Ptolemy and the astral and physical sciences

Recitation theme: Technology for wonder-working.

**Week 12**

4/16 Rome: Galen and the life sciences

4/18 China: sources and challenges

Recitation theme: Empiricism in Ptolemy and Galen.

**Week 13**

4/23 China: mathematics

4/25 China: astronomy and the mandate of heaven

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

**Week 14**

4/30 China: medicine

5/2 Circulation of scientific knowledge in antiquity and after

**Week 15**
5/7 last class, review of key themes
*third writing assignment due.*