SYLLABUS ARCHIVE

Course and Instructor Information:

Science and Technology in Ancient Greece and Rome (online)
Prof. Serena Connolly
Associate Professor of Classics, Rutgers, The State University of New Jersey

Helpful Context:

Course first designed in 2016
Average enrollment: 60
This is an undergraduate course primarily intended for non-majors.
It is taught completely **ONLINE**.
It fulfills a specific requirement of the university.

Reflections of the Instructor:

Q: What do you consider to be particular strengths of this course?
A: Its accessibility to non-majors, especially students in STEM fields

Q: In what ways do you think the course could still use improvements/adjustments?
A: Crafting the assignments can be hard, since STEM students--and indeed most undergraduates--find it hard to locate and work with ancient sources.

Q: How generally have students responded to the course? Have there been any patterns in student feedback?
A: STEM students have enjoyed the fact that a history/Classics course has been relevant to their studies. They have especially enjoyed the fact that the content is delivered in short videos, rather than 80-minute lectures.

This entry last updated: January 2020

Science and Technology in Ancient Greece and Rome (online)

Serena Connolly
Department of Classics
serena@rutgers.edu
Office hours: ---

Course description

STAGR is an introduction to the foundations of science and technology in the West. It is a course that fulfils the Core Curriculum's requirement in Historical Analysis (HST), specifically goals i and k:

> **HST** GOAL i – *Student is able to...* **Explain and be able to assess the relationship among assumptions, method, evidence, arguments, and theory in social and historical analysis.**

> **HST** GOAL k – *Student is able to...* **Explain the development of some aspect of a society or culture over time, including the history of ideas or history of science.**

The primary focus of the course will be on the scientific knowledge and technological skills of the Ancient Greeks and Romans and their importance for the development of science and technology from the medieval period through to today.

We will explore the foundations of science and technology of the ancient Mediterranean world within their cultural context to examine the impetus for them and explore them within their professional context to explain the development of science and technology as professions, their division into disciplines, and the development of scientific methods and approaches.

We will examine how and why ancient science and technology have often been (and sometimes have not been) adopted and revered in later periods, what led to criticism and development of them, and how and why knowledge, ideas, and skills travel across time and cultures. We'll also be interested in the conflict and cooperation between the scientific/technical worlds and political/cultural worlds.

The sources for ancient science and technology pose challenges: ancient scientists did not follow modern conventions of publishing and they did not use consistent or precise terminology; much of our textual evidence is fragmentary, and texts have not always been translated satisfactorily (if translated at all). Physical evidence, which has often suffered over several millennia, can be used only with caution in conjunction with texts. We will analyze the evidence for ancient science and technology along with modern scholarship in order to evaluate scholarly and popular understanding of these topics and the social significance of that understanding over time.

This course does not aim to offer a comprehensive history of science and technology, but rather an overview of key ideas and discoveries, their intellectual & cultural origins, and their subsequent impact. The broad topics we'll cover include geometry & mathematics, astronomy, physics, biology, medicine, and engineering, as well as agriculture, architecture, and warfare.

The course will be focused on ancient Greece and Rome, but we'll necessarily look back to the Near East and Egypt and look forward, especially to the Islamic Golden Age and frequently to the 21st century. Classes will be devoted to lecture and discussion, while course readings will comprise original sources (all translated into English) and academic and popular journal articles.

No prior knowledge of the ancient world or the history of science is expected, and no college-level science courses are required. There are no prerequisites for this course.

Science and Technology in Ancient Greece and Rome (190:213) is the fully online version of an in-class Classical humanities course that covers the same material.

Required texts

None! Currently there is no textbook suitable for this course. Online mini lectures will take the place of a textbook, and listening to them carefully and taking careful notes from them are therefore necessary for a good grade. They will be supplemented by readings, comprising mostly primary sources in translation supplemented by modern scholarly and popular studies. Primary sources will come from, for example, the surviving works of Aristotle, Euclid, the Hippocratic Corpus, Galen, Ptolemy, Theophrastus, Lucretius, Vitruvius and Hero of Alexandria, and will be accompanied by questions that facilitate comprehension and encourage reflection. All lectures and readings will be accessible through Canvas. Images and links from the lectures will also be posted on the course's Canvas site.

Learning goals and assessment

The assignments in this course will require you to develop and demonstrate the skills necessary to fulfil the two Core Curriculum goals i and k (see above).

Online chat posts (20%)

Posting in the Sakai Forum will give you an opportunity to respond to the material in the video lectures and in our assigned readings. You are expected to contribute a post for each topic, either directly in response to the material or in response to another student's post. Posts will be graded on your scholarly analysis, integration of material from lectures and other readings, and presentation and style. Posts should make specific reference to wording, an idea or a concept in a lecture or reading and, if possible, should refer also to other readings encountered in the course or the content of the online lectures. Posts that respond to other students will be graded on your contribution to the discussion, scholarly analysis, and presentation and style. A response to someone else's post must be constructive, that is it must

critique, refine, develop or build on what a classmate has said. It should make further reference to the reading discussed in the original post, as well as bring in other readings or content from the online lectures.

The readings include questions to help you think further about the knowledge you gain from the videos and to apply it to ancient sources. You can use these as starting points for posts.

While posts do not accrue points based on their length, a post must contain at least fifty words to be considered for a grade. You must post once per topic. You are warmly encouraged to post more than once, but additional posts will not accrue points. There is a deadline for posting for each topic, and you'll see that I have paired the topics to give you extra flexibility over timing. You can adopt these deadlines for your own progress through the course, but be sure to get through the relevant material by the time of the two quizzes.

Facts and concepts quizzes (20%)
Two brief quizzes will test your knowledge of key facts and concepts from the semester. The questions will be a mix of multiple choice and short-answer. Successful preparation for and performance in these quizzes will ensure that you have basic knowledge and understanding of the key names, dates, terms and developments in ancient science and technology and that you understand key concepts.

If you choose to make an astrolabe (instructions and templates will be provided) there will be an opportunity to earn extra credit by answering correctly a series of related questions included on the first quiz.

Project 1 (20%)
You will make a model of an object that demonstrates a concept or discovery in ancient science or recreates ancient technology. Previous successful examples include a *ballista*, battering ram, constant-level bowl, cross-section of a Roman road, *groma*, Archimedes screw, and sheet of papyrus. You must produce an accompanying video presentation that brings together text, image, oral commentary and video (including video of you with your object). You should explain the evidence for your object and the materials and techniques you employed and demonstrate how your model functions. You should also discuss changes to the design of the object in the ancient world and, if applicable, thereafter.

The model will be evaluated on its relevance to the course and the success and authenticity of its construction and the authenticity of its materials (as far as is reasonable). If your model does not work as you expected it to do, be sure to explain why this is the case. (A "failed" model will not necessarily lose points: failure is often more instructive than success. But you will need to explain why the model failed.) The complexity of the object will be factored into the evaluation. Presentations should run at least five minutes and no more than twenty minutes and will be evaluated on your effective synthesis of materials, the accuracy and relevance of their content and the clarity of your ideas and delivery. Presentations must be rehearsed and polished.

Project 2 (20%)

You will produce a two-part project, as a paper or using video, that discusses a topic relevant to our course. Previous successful examples include the lighthouse of Alexandria, triremes, the development of ancient weaponry, Aristotelian logic, sundials, knowledge and treatment of cancer, and ancient kitchens. The first part of your project will apply historical research methods and reasoning to the ancient evidence for your topic. (You may also consult modern scholarship.) The second part will survey the development of the topic through to today. You are encouraged to include images and video and may format it as a video presentation, though a written paper is also acceptable.

Video presentations should run at least five minutes and no more than twenty minutes; papers should be at least two pages in length and no more than five (excluding images, links to videos, notes and bibliography). Your project will be evaluated on the appropriate theme and scope of your topic; the accuracy of and relevance of your factual content; the relevance and range of your evidence, your ability to apply historical research methods and reasoning to it, your synthesis and analysis of it; your ability to consider your topic and its development over time and in different contexts. Your project must be polished—free from typos and errors of syntax, well-written, and professionally presented.

Project 3 (20%)

You will compile an anthology of ancient texts, modern scholarship, images and artifacts about a key figure in the history of ancient science and technology and weave these into a narrative. For each element in your anthology, you should justify its inclusion, pick out its most important features, describe its historical, social and intellectual context, and explain how it illustrates an important aspect, idea or approach to your figure. You must be sure to offer a critical commentary on each element, explaining its shortcomings or advantages as evidence. You may format this assignment as a regular text-focused "paper" or as a video presentation that combines text, image and video and includes voice annotations to those elements. In either case, your work must be polished and well prepared—free from typos, rehearsed, and professionally formatted.

Video presentations should run at least ten minutes and no more than thirty minutes; papers should be at least four pages in length and no more than ten (excluding images, links to videos, notes and bibliography). Your project will be evaluated on the appropriate theme and scope of your figure; the accuracy of and relevance of your factual content; the relevance and range of your evidence, your ability to apply historical research methods and reasoning to it, your synthesis and analysis of it, and your critical evaluation of it. Your project must be polished—free from typos and errors of syntax, well-written, and professionally presented.

Dates, deadlines, and other information

All dates and deadlines have been posted on Canvas – be sure to check your calendar there.

Quizzes

The quizzes are 1 hour, 20 minutes.
Quizzes will be administered online and in person.

If you take a quiz online, you can begin anytime that day, but you will have only 1 hour, 20 minutes to complete it. This course uses LockDown Browser. Any indication that during a quiz you are consulting notebooks, books or other papers, checking notes or websites on your computer or any other device, or communicating with another person will result in an immediate report to Judicial Affairs.

If you take a quiz in person, I will offer a couple of possible start times. The quiz will take place in the Academic Building, CAC.

I will post further information nearer the date of the midterm quiz.

Assignments

Assignments must be submitted via Canvas, under the relevant Module.

If the technology needed to make a video presentation proves impossible, write a paper instead.

Schedule

The following is a list of the topics that we will cover over the course.

1. Introduction to the course
2. Measurement and expression
3. Seasons
4. Dissemination
5. Scientific methods
6. Mathematics
7. Cosmology
8. Astronomy
9. Astrology
10. Alchemy
11. Natural history, pt. I, fauna
12. Natural history, pt. II, flora
13. MIDTERM QUIZ
14. Medicine, pt. I, medical profession
15. Medicine, pt. II, anatomy
16. Medicine, pt. III, pathology
17. Medicine, pt. IV, pharmacy
18. Medicine, pt. V, public health
19. Agriculture
20. Food
21. Hydraulic engineering
22. Travel and transportation
23. Architecture and construction
24. Warfare
25. Craft and workshops
26. Gadgets
27. Legacy