SGBN 101: The Shape of the World
Fall 2022
MWF 9:20-10:25
Goldspohn 22

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Office: Seybert 102 (temporarily)
Office Hours: MWF, 10:45-1:15pm

Course Description

This course is about some of the biggest questions that human beings ask themselves: How is the world constructed? How does it work? What is the place of human beings in it? And how can we know whether the answers we give to those questions are correct? Focusing primarily on the Greek, Roman, and modern European tradition, with some attention to other world regions, we will trace the origins of modern empirical science and the shift from the ancient earth-centered worldview to something like our modern view of the solar system.

Course Objectives

Course-specific objectives:

- Compare assumptions in diverse traditions and account for their persuasiveness
- Articulate different traditions in the study of nature, their similarities and contrasts with each other and with the modern scientific approach
- Show understanding, through discussion and writing, of the fundamental elements of the knowledge of nature in the traditions examined in this course

Objectives for Science Gen Ed designation:

- Identify some of the fundamental principles and laws in the physical and/or life sciences.
- Explain how scientists ask and answer questions.
- Apply the methods of scientific inquiry.

Objectives for Global Understanding designation:

- Describe the implications of global interdependence including its effects.
- Explain how various cultures contribute to the development of a multicultural world.
- Explain local, national, and global identities and commitments with increasing awareness of their environment.

Required Course Readings

Please buy, rather than rent, all course texts in hard copy, to facilitate underlining and note-taking. The additional cost will be rewarded with greater understanding and easier preparation for class discussion and exams.

Thomas Kuhn, *The Copernican Revolution* (ISBN: 9780674171039)
Plato, *Timaeus and Critias* (ISBN: 9780140455045)
Aristotle, *Physics* (ISBN: 9780199540180)
Ibn Tufayl, *Hayy Ibn Yaqzan* (ISBN: 9780226303109)
Galileo, *Selected Writings* (ISBN: 9780199583690)

Additional readings, which should be printed and brought to class, are available on Blackboard and marked as follows: (**)

Student Assessment

Courses in the Shimer Great Books Program are heavily discussion-based and student-driven. Accordingly, class participation counts for a much higher proportion of student grades than in most courses: 50%. Written work of various kinds will account for the remaining 50%.

Class participation presupposes careful and thorough preparation and serious intellectual involvement in class discussion. Students should come to class not only having read the text through, but having underlined, taken notes, and scanned over the marked text at least one additional time after the initial reading. On the basis of such preparation, students should be prepared for an intensive, text-focused discussion.

My expectation for class participation is that every member of class will be able to contribute with remarks and citations that are on-topic and reflect solid preparation for class. A student who meets that baseline will receive a grade in the **B range** for their participation portion. Students whose contribution is notably lacking—for instance, those who speak very little, who give no evidence of having done the reading carefully, who consistently change the topic in a disruptive way, or whose primary contributions are jokes or personal anecdotes—will receive a participation grade in the **C or D range**. Students who distinguish themselves through some particular service—such as consistently contributing new topics that shape the discussion, serving as a resource for navigating the text, or making a special effort to draw in quieter classmates—will qualify themselves for a participation grade in the **A range**.

The baseline condition for class participation is of course physical presence in class. Absences not only affect the individual student, but the entire group, and the same is true of habitual lateness. Punctual attendance should be regarded as mandatory. Lateness will count against a student's participation for that session, and in extreme cases will be treated as the equivalent of an absence. An increasing number of absences carries with it increasing consequences, which are as follows:

1-2 absences No grade penalty, in recognition of our shared human frailties. (If students miss fewer than two classes, however, then in cases where a student is at the threshold between two grades, the professor will go with the higher one.)
3-5 absences A half letter grade is deducted from the student's final grade for each absence; this penalty may be lifted by doing an absence make-up for each missed class.
6-8 absences For each absence, the student *must* complete an absence make-up (described below) to avoid failing the course, and a half letter grade penalty is imposed on the student's final grade which *cannot* be made up.
9 absences Automatic failure of the course.

In order to make up for an absence, students must write a paper summarizing and reflecting on the day's reading (2 *full* pages, double spaced) or schedule a meeting of at least 15 minutes to discuss the reading with the professor. Absence make-ups must be completed **within two weeks** of the absence being made up.

Written work will take the form of 3 short papers (10% each, 30% of total), 2 reports on in-class lab activities (2.5% each, 5% total), and 2 long-term astronomical observation activities (7.5% each, 15% total).

The *short papers* will cover a variety of topics: one that develops an account of the creation of the world in the style of Plato's *Timaeus*, one that address aspects of scientific method in assigned texts and labs, and one that looks at multiculturalism in the history of science. Each essay must be 2-3 *full* pages in length and must focus on the texts and/or labs; you must use multiple direct quotations from the course texts per page to support your claims.

A *lab report* provides an account of the experiment carried out, with all relevant measurements included. While there is no specific length requirement for these reports, it is unlikely that you can do a good job in less than a full double-spaced page. For in-class lab, these assignments are due by the beginning of the next class session; for longer-term labs, the due date is listed on the class schedule.

All written assignments must be turned in on Blackboard by the due date listed on the course schedule below; in case of technical difficulties with Blackboard, you may submit the paper via email for the sake of meeting the deadline, but the paper must be posted on Blackboard as soon as possible in order to receive comments and a grade. Students submit ***all written work*** in Microsoft Word (.doc or .docx) format; in case of technical difficulties submitting in the required format, you may use another format for the sake of meeting the deadline, but must resubmit in the required in order to receive comments and a grade. Papers turned in within 24 hours of the deadline will receive a 5% grade penalty on the assignment; papers turned in within a week of the deadline will receive a 10% grade penalty, with an additional 10% penalty for each additional week (or portion of a week) the paper is late. There is no opportunity for rewrites in this class.

Note on Institutional Policies

Please note that the college-wide policy on plagiarism holds for this class and that student assignments may be run through plagiarism-detection software at the professor's discretion. Plagiarism is a very serious academic and ethical offence that can lead to failure of the assignment or course—or, after multiple instances, expulsion from college. Please consult the Student Handbook for more details of the plagiarism policy. All other institutional policies apply equally, including those related to accommodations for students with learning disabilities or differences and Title IX protections. More details on those policies are available in the Student Handbook, and students are encouraged to approach the professor with any questions or concerns they may have.

Class and Reading Schedule

This calendar provides the schedule for assignments and readings for our time together this semester. Students should be aware that the schedule may change. All students will be alerted as soon as possible via email and Blackboard announcement. ***Failure to check email regularly is no excuse for missing these updates.*** *Note that when one day's reading ends on a given page and the next begins on the same page, I intend for you to read to a section break (if one exists) or the end of the last full paragraph on that page on the first day.*

Wednesday	August 24	Course introduction and syllabus **In-class: Construction of astrolabe; Introduction of sun observation long-term lab**
Friday	August 26	Introductory videos on astronomy (**) **In-class: Introduction of star observation long-term lab**
Monday	August 29	Kuhn, *Copernican Revolution*, start ch. 1 (pp. 1-25)
Wednesday	August 31	Kuhn, *Copernican Revolution*, finish ch. 1 (pp. 25-44)
Friday	September 2	Plato, *Timaeus*, 27a-38c (pp. 15-26)
Monday	September 5	**NO CLASS—Labor Day**
Wednesday	September 7	Plato, *Timaeus*, 38c-47e (pp. 26-39)
Friday	September 9	Plato, *Timaeus*, 48a-61c (pp. 39-57)
Monday	September 12	Plato, *Timaeus*, 61c-79a (pp. 57-80)
Wednesday	September 14	Plato, *Timaeus*, 79b-92c (pp. 81-99)
Friday	September 16	Kuhn, *Copernican Revolution*, ch. 3 (pp. 79-99) **In-class: Introduction of Paper #1**
Monday	September 19	Aristotle, *Physics*, Book II, chs. 1-3, 7-9 (pp. 33-42, 48-55)
Wednesday	September 21	Aristotle, *Physics*, Book III (pp. 56-77)
Friday	September 23	Aristotle, *Physics*, Book IV, chs. 1-5, 10-11 (pp. 78-90, 102-108)
Monday	September 26	**NO CLASS—Paper #1 due by class time**
Wednesday	September 28	Aristotle, *Physics*, Book VIII, chs. 1, 4-6 (pp. 185-190, 195-212)
Friday	September 30	Aristotle, *Physics*, Book VIII, chs. 7, 9-10 (pp. 212-216, 224-231)
Monday	October 3	Aristotle, selections from *On the Heavens* (**)
Wednesday	October 5	Archimedes, “On the Equilibrium of Planes” (**)
Friday	October 7	Lab: Lever
Monday	October 10	Archimedes, “On Floating Bodies” (**)
Wednesday	October 12	Lab: Floating Bodies
Friday	October 14	Rovelli, “Aristotle’s Physics: A Physicist’s Look” (**)
Monday	October 17	**Fall Break—NO CLASS** **Sun and Star Observation Lab Reports due by 5pm**
Wednesday	October 19	Hippocrates selections 1 and 2 (**)
Friday	October 21	Galen selection (**)

Monday	October 24	Needham, "Fundamental Ideas of Chinese Science" (**), pp. 127-168 (up to heading "Element Theories"; skim tables)
Wednesday	October 26	Chinese cosmology selections (**)
Friday	October 28	Selections from *Yellow Emperor's Classic* (**)
Monday	October 31	Ibn Tufayl, *Hayy ibn Yaqzan*, pp. 103-119
Wednesday	November 2	Ibn Tufayl, *Hayy ibn Yaqzan*, pp. 119-134
Friday	November 4	Ibn Tufayl, *Hayy ibn Yaqzan*, pp. 135-149
Monday	November 7	Ibn Tufayl, *Hayy ibn Yaqzan*, pp. 149-166
Wednesday	November 9	Maimonides selection 1 (**)
Friday	November 11	Maimonides selection 2 (**) **In-class: Introduction of Paper #2**
Monday	November 14	Kuhn, *Copernican Revolution*, ch. 2 (pp. 45-77)
Wednesday	November 16	Kuhn, *Copernican Revolution*, start ch. 5 (pp. 134-160)
Friday	November 18	Kuhn, *Copernican Revolution*, finish ch. 5 (pp. 160-184)
Monday	November 21	**NO CLASS—Professor traveling for conference** **Paper #2 due by class time**
Wednesday	November 23	**NO CLASS—Thanksgiving Break**
Friday	November 25	**NO CLASS—Thanksgiving Break**
Monday	November 28	Galileo, "An Astronomical Message," in *Selected Works*, pp. 7-32
Wednesday	November 30	Galileo, "Letters on Sunspots," in *Selected Works*, pp. 33-54
Friday	December 2	Galileo, "Two New Sciences," in *Selected Works*, pp. 379-392 **In-class: Introduction of Paper #3**
Monday	December 5	Galileo, "The Trial," in *Selected Works*, pp. 360-378
Wednesday	December 7	Rovelli, *Seven Brief Lessons on Physics*, pp. 1-38
Friday	December 9	Rovelli, *Seven Brief Lessons on Physics*, pp. 39-81
Wednesday	December 14	**FINAL EXAM PERIOD—Paper #3 due by 10:00am**