# Methods and Results of Ancient Astronomy — Syllabus

Fall 2023, Deep Springs College, Prof. **Brian Hill, https://brianhill.github.io**

## Overview

It is perhaps arbitrary where one might stop in the history of astronomy and astrophysics and deem whatever follows to be "modern." For our purposes, "ancient" means anything and everything up to but not including or beyond Brahe, Kepler, and Galileo. The shift that occurred very roughly at 1600, although actually it was progressive, not sudden, was to a process of increasing exactitude, that begins with Brahe's careful observations at Uraniborg, and then accelerated massively by the invention and use of the telescope.

We will be confining our survey to the science prior to the telescope. While this does not include much "modern physical science" it is nonetheless high-quality and instructive science that set the stage for all that came after. I could not create such a survey myself; my understanding of astronomy and astrophysics starts with Kepler and his Three Laws, and so I will be learning the history prior to this along with you.

Our author is principally focused on the astronomy of the Greeks. The reasons are two-fold: (1) prior to the Greeks, astronomy was quite inexact, and (2) for century after century following the Greeks, Ptolemy's *Almagest* held sway. Even Copernicus in 1543, while disputing the Earth-centered universe in his *On the Revolutions of the Heavenly Spheres,* is tremendously influenced by Ptolemy. Only towards the end of the final two chapters will we leave a Ptolemaic view and get to the theories and observations of Copernicus, Brahe, and Kepler.

## Unit Outline

### Term 2

Please examine the table of contents of the book by James Evans that we will use as our guide. His broad outline is:

1. The Birth of Astronomy
2. The Celestial Sphere
3. Some Applications of Spherics (includes making Sundials!)
4. Calendars and Time Reckoning

### Term 3

1. Solar Theory
2. The Fixed Stars
3. Planetary Theory

The detailed table of contents is reproduced on the following pages.

## Daily Schedules

Detailed daily schedules will be kept retrospectively:

- **https://brianhill.github.io/ancient-astronomy/daily_schedule-term_2.html**
- **https://brianhill.github.io/ancient-astronomy/daily_schedule-term_3.html**

## Text

- ***The History and Practice of Ancient Astronomy***, by James Evans
- Historical readings to be selected

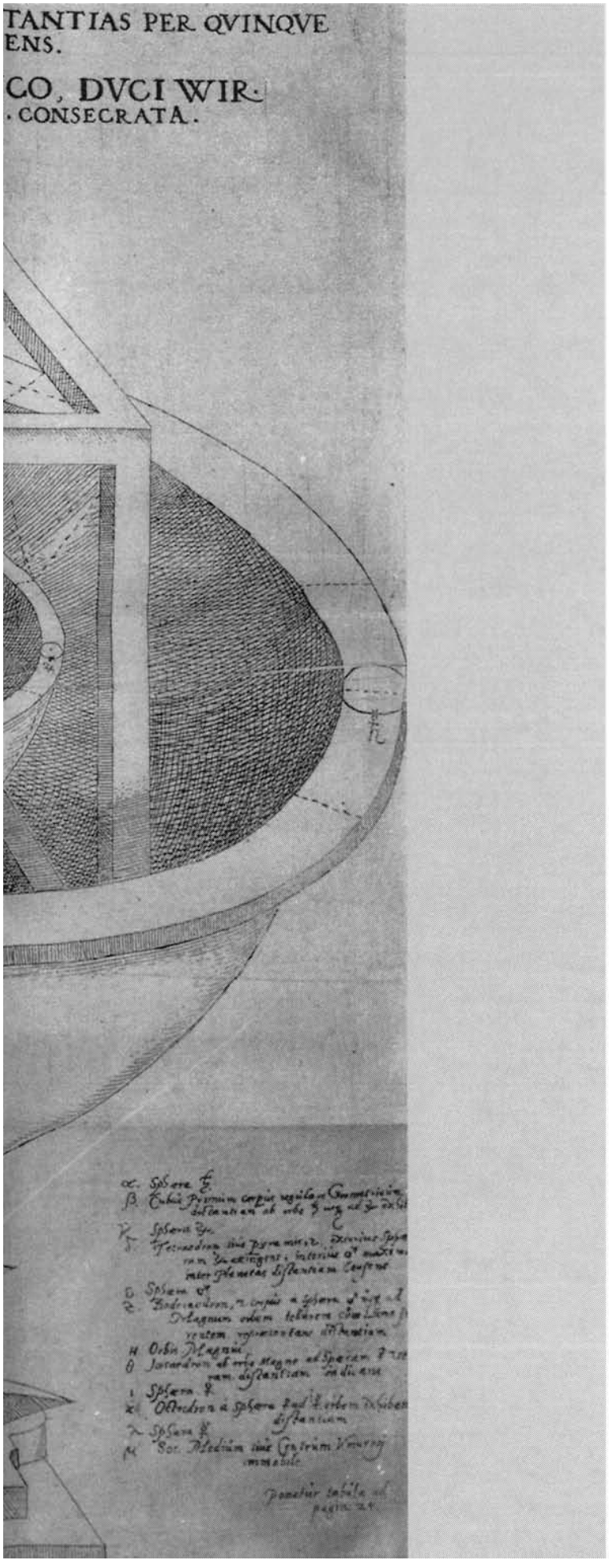
## Grading and Homework

- 40% submitted homework, including observational work
- 20% midterm (near the end of term 2)
- 20% final (near the end of term 3)
- 20% thorough preparation for class, leadership of class discussion, and maintenance of the course's pace and direction

## Absences

The College's general policies on absences (and late work) are applicable. There was an email from Ryan on this September 8, 2022 in response to a flagging Spring 2022 semester. Since that email predates most of you, the essential absence/late policies are reproduced from that email here:

Whereas missed coursework affects both your classmates and professors by lowering the thinking and understanding you bring to a given class, and interrupts the course schedule that has been set up and is adjusted on an ongoing basis with substantial care. The same is true for absences — whereas a handful of absences might be "normal" at colleges with large lectures or less serious academics, at Deep Springs we expect students to miss *no classes* save for legitimate health issues or emergencies requiring also missing labor and governance obligations. For a student wishing to submit a course assignment past its required deadline, the student may request an extension on the assignment directly from the professor 48 hours in advance. Within 48 hours of the due date, the student must request an extension directly from the Dean. Exceptions will be granted by the Dean only if the student faces unforeseen and unforeseeable circumstances. A student who misses the deadline will be penalized an amount that is roughly equivalent to a letter grade for each day the assignment is late. Assignments cannot be turned in after solutions and graded assignments have been passed back, which generally happens one to two classes after they were turned in.




# The History & Practice of Ancient Astronomy

JAMES EVANS

*New York* *Oxford*

*Oxford University Press*

*1998*

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