

THE WAGNER FREE INSTITUTE OF SCIENCE

Fall 2019

HISTORY OF SCIENCE SERIES

Great Books of the Scientific Revolution: A History

Professor Darin Hayton

This course meets at the **Independence Branch of the Free Library**, located at 18 South 7th Street (between Market and Chestnut Streets), Philadelphia, PA

Dates: 6 Wednesdays, September 25 - November 6, 2019

Time: Classes meet from 6:15 to 7:45 PM

No pre-registration necessary. Register by completing a registration form at the class.

Course Description

This course will explore the history of the Scientific Revolution through a series of biographies of the books we most commonly associate with that revolution. Each week will focus on a specific author and work. For each book, the class will look at the content as part of a broader set of questions, and try to understand the various motivations and anxieties that animated those questions. The class will also investigate the publishing history and dissemination of the books to get a better sense of who read these books, how they came to see certain ideas in them, and how they responded to those ideas.

Course Schedule – lectures begin at 6:15 PM

1. Wednesday, September 25, 2019 - Copernicus and *De revolutionibus orbium coelestium*

Nicolaus Copernicus's *De revolutionibus orbium coelestium* was published in 1543 and, thanks to its heliocentric model, tends to mark the beginning of the Scientific Revolution. Rather than see it simply as the start of something new, we will look at how it was a profoundly traditional text, engaged with questions and problems that were distinctly premodern. We will also try to recover how contemporary readers made sense of this text, and why.

2. Wednesday, October 2, 2019 - Vesalius and *De humani corporis fabrica*

Often overshadowed by Copernicus's *De revolutionibus*, Vesalius's *De humani corporis fabrica* was also published in 1543 and in many ways represents a much more innovative text. Not only was its content based on new observations and actual investigations, that content was represented in an innovative and incredibly expensive style. Nonetheless, Vesalius's text was engaging with questions that stretched back more than a millennium, and was using methods from the past to offer new answers to old questions. His approach seemed to usher in a new way to do anatomy and to present anatomical knowledge.

NO CLASS – October 9, 2019

3. Wednesday, October 16, 2019 - Gesner and *Historia animalium*

Natural histories—encyclopedic collections of amazing facts about the natural world—had since Pliny enjoyed considerable authority. The stories and specimens brought back from the new world only increased their appeal, as did the ability to print illustrations alongside descriptions. But those stories and specimens also challenged the comfortable categories that people had used to organize the world. Trying to make sense of these new marvels required a new science, new taxonomies, and new understanding of the natural world. Gesner's *Historia animalium* ushers in this new science of describing, depicting, and classifying.

4. Wednesday, October 23, 2019 - Galileo and *Dialogo sopra i due massimi sistemi del mondo*

Galileo was a strident and dogmatic defender of the Copernican model of the universe. In various books and pamphlets he presented what he considered evidence for the heliocentric system. Despite his telescope and his new observations, many people read and evaluated Galileo's texts, and argued with him in the margins of those texts. They regularly found his evidence problematic and his logic faulty.

5. Wednesday, October 30, 2019 - Hooke and *Micrographia*

Just as the telescope opened the celestial realm to our inspection, revealing worlds never before imagined, Hooke's microscope revealed the previously invisible (and often terrifying) worlds all around us. Hooke and his contemporaries used their microscopes, detailed artwork, and the opportunities offered by printed illustrations to investigate insects, materials, molds, and fossils. In the process they helped reshape our understanding not only of what was on earth, but also what organisms were and even how old the earth was.

6. Wednesday, November 6, 2019 - Newton and *Philosophiae naturalis principia mathematica*

In 1687 the first edition of Newton's *Principia mathematica* was published, synthesizing much of his work up to that point. Newton's three laws of motion unified the physics of the celestial and terrestrial realms in one neat explanatory framework grounded in mathematics. But Newton's project was more complicated than simply unifying physics. Like Copernicus 140 years earlier, Newton was pursuing distinctly premodern questions. But unlike Copernicus, Newton's contemporaries were perfectly happy to ignore those questions and put his method to use in their own projects.

Wednesday, November 13, 2019 - make-up class (if needed)

Suggested Readings

Readings for this course will be available for download online. Details will be provided at the class.

About the Professor

Dr. Darin Hayton is a historian of science whose research focuses on the creation and dissemination of scientific knowledge, especially the science of the stars (astrology and astronomy) in pre-Modern Europe and the late Byzantine Empire. He recently published a book, *The Crown and the Cosmos. Astrology and the Politics of Maximilian I*. He is currently working on an edition of the medieval Greek version of Ptolemy's collection of astrological aphorisms. He is an Associate Professor of the history of science at Haverford College and Chair of the Editorial Board for Lever Press. Learn more about him and his work at <http://dhayton.haverford.edu>.

The course is presented by the Wagner Free Institute of Science. Founded in 1855, the Wagner is dedicated to providing free science education. All classes are free and open to the public. To attend, please complete a registration/enrollment form at the class. For more information about the Wagner Free Institute of Science and its programs, please visit www.wagnerfreeinstitute.org or call 215-763-6529 x24 or 14.
