HSCI 3833: The Scientific Revolution
MW 3:00 – 4:15 PM
Bizzell Library 521

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Course Description:
This course explores the "Scientific Revolution" of the sixteenth and seventeenth centuries. In this period there were a series of dramatic shifts in understanding of the natural world, including the replacement of geocentric cosmology with heliocentric, the rise of experimental methods, and the development of new techniques for observing and describing natural objects. Fifty years ago, historians of science located the birth of modern science in this period and dubbed it the "Scientific Revolution." Present historians of science are much more skeptical about whether modern science was "born" at any point in time. Although the term "scientific revolution" has stuck as a label of the period, there is no longer a clear consensus on what it entailed - when and why the Scientific Revolution happened, who and what were involved, even if the concept makes sense at all. These debates are not just about what happened in the past but about how we today define science and how we understand the place of science in the modern world. In this course we will explore some of the different definitions and interpretations of the Scientific Revolution through an in depth examination of the lives and work of four men: Galileo Galilei (1564-1642), René Descartes (1596-1650), William Harvey (1578-1657) and Antoni van Leeuwenhoek (1632-1723). Readings will include key primary texts as well as relevant secondary literature.

General rules
Everyone is expected to keep up with the reading schedule, and to participate in class discussion of the reading. You are examined both over the assigned readings and over the information the instructors give in class. If you have to miss a class, please let us know in advance. It is the responsibility of the students to find out what has been taught in classes they may have missed. Please use your OU email account, or arrange for email to be forwarded from that account to the one you use. This will ensure that you receive course-related emails. It is the policy of the university to excuse the absence of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required class work that may fall on religious holidays. Please see the instructors in advance.

Required Texts:


Ernan McMullin (ed.), *The Church and Galileo* (Notre Dame, Indiana: University of Notre Dame Press, 2005)


All other readings are available on-line.

**Assessment**

There are four sections in the course. Each of the four sections will be assessed by a take-home essay exam. At the end, the students will write a research paper. They have to choose a subject for the essay by the middle of the course. Please make sure that the instructors agree with the subject before you engage with the research.

**Grading Policy:**

- 4 essay exams (3-5 pages) 60% (15% each)
- Final research paper (ca. 10 pages) 40%

**Schedule:**

**INTRODUCTION: THE SCIENTIFIC REVOLUTION**

**Week 1**

Jan 19. Introduction

**Week 2**

Jan 24. The Scientific Revolution


Jan 26. The Scientific Revolution

Reading: Rossi, *The Birth of Modern Science*, intro, chs. 1, 3, and 4

**SECTION I: GALILEO GALILEI**

**Week 3**
Jan 31. Cosmology from Aristotle to Copernicus
   Reading: (1) Nicholas Copernicus, *On the Revolutions*, excerpts; (2) Rossi, chapter 5

Feb 2. Galileo and the Court
   Reading: (1) Biagioli, *Galileo, Courtier*, chapters 1-2; (2) Galileo, *Starry Messenger* (in Finocchiaro)

**Week 4**
Feb 7. Responses to the *Starry Messenger*

Feb 9. Galileo and the Church

**Week 5**
Feb 14. Responses to the *Letter to the Grand Duchess*

Feb 16. The Trial of Galileo

**FIRST ESSAY EXAM DUE FRIDAY, FEBRUARY 18, 5:00 P.M.**

**SECTION II: RENÉ DESCARTES**

**Week 6**
Feb 21. Newton
   Reading: Rossi, chapter 17 (Newton), 9 (mechanical philosophy)

Feb 23. The Newton Project (http://www.newtonproject.sussex.ac.uk/prism.php?id=1)

**Week 7**
Feb 28. Descartes, general principles
   Reading: Descartes, *The World*, 3-32
Mar 2. Descartes, specific theories
   Reading: Descartes, The World, 32-75

Week 8
Mar 7. Christiaan Huygens
   Reading: Huygens, On the motion of bodies from impact (http://www.princeton.edu/~hos/Mahoney/texts/huygens/impact/huyimpct.html)

Mar 9. Mechanistic physiology
   Descartes, The World, 99-169

SECOND ESSAY EXAM DUE FRIDAY, MARCH 11, 5:00 P.M.

SPRING BREAK

SECTION III: WILLIAM HARVEY

Week 9
Mar 21. Anatomy from Aristotle to Mondino

Mar 23. Renaissance Anatomy
   Reading: Cunningham, Anatomical Renaissance, chs. 4-6.

Week 10
Mar 28. Film: William Harvey and the Circulation of the Blood
   Reading: (1) Harvey, De motu cordis, excerpts; (2) Rossi, chapter 12

Mar 30. Reception of Harvey's Work

Week 11
Apr 4. Theories of Reproduction
   Reading: TBA

Apr 6. Harvey's Work on Generation
   Reading: Harvey, De generatione, excerpts
THIRD ESSAY EXAM DUE FRIDAY, APRIL 8, 5:00 P.M.

SECTION IV: ANTONI VAN LEEUWENHOEK

Week 12
Apr 11. Instruments

Apr 13. Leeuwenhoek

Week 13
Apr 18. Microscopy and natural philosophy

Apr 20. Malpighi

Week 14
Apr 25. Leeuwenhoek, primary sources
Readings: TBA.

Apr 27. Idem

FOURTH ESSAY EXAM DUE FRIDAY, APRIL 29, 5:00 P.M.

CONCLUSION

Week 15
May 2. TBA

May 4. TBA
FINAL PAPER DUE WEDNESDAY, MAY 11, 5:00 P.M.