COURSE DESCRIPTION AND OBJECTIVES
This course surveys the development of modern science from about 1650 to the present, since the so-called “Scientific Revolution.” In this period science became one of the central forms of western culture. By considering examples from the history of the physical, natural and social sciences as well as medicine and technology, we will explore how science shapes, and is shaped by, the culture in which it develops. We will consider scientific ideas, institutions, and practices. What is science? Who counts as a scientist? What does it mean to be scientific? We will also consider science’s power, promise, and problems. The course aims to teach historical narratives of modern science, to reflect on its broader ethical, political, and human significance, and to help students sharpen their general academic reading, writing, and critical thinking skills.

Required Textbooks

Optional/Recommended Reading

NOTES
[1] Please keep this paper copy of this syllabus. You will need to refer to it often and may want to mark it up with notes. An electronic copy with live weblinks will be available on D2L.
[2] This syllabus is a working document, designed to be flexible as needed. I reserve the right to make changes to assignments, due dates, schedule, readings and so on, but I will give fair warning in advance of any changes.
EXPECTATIONS, POLICIES, ASSIGNMENTS

Attendance/Participation
We take attendance each class period. Come to class having completed the readings and prepared to discuss them. Learning is an active, group process; the more we participate, the more we learn. Active participation—both speaking and listening—enriches learning for everyone. Your participation grade will reflect both quantity (how often you speak) and quality (how well you speak). Occasionally we will discuss sensitive or controversial topics like sexism, religion, or racism. Please be respectful, courteous and civil with your fellow students and with me, be attentive and sensitive to what we have to say, and above all use common sense.

Technology Policy
You may use laptops in class to take notes, but please do not browse the web (email, facebook, etc.). If you pay attention to your laptop instead of class, it is your loss. Please turn off or silence all cell phones and handheld devices; if your phone rings during class, this is not your loss, but disrupts class for everyone else.

Individual Circumstances or Needs
If you have to miss class for religious observance, let us know in advance and your absence and it will not affect your participation grade. If you have a learning disability, physical disability or other special needs, please let us know in the first week of class, provide documentation if necessary, and we will do everything we can to help meet your needs.

Assignments and Grading
This course is graded on a 1,000-point scale: A = 1,000–900 pts; B = 899–800 pts; C = 799–700 pts; D = 699–600 pts; F = 599–500 pts.

- **Short Paper** (150pts) – a 4-5 page response to and analysis of 2-3 of the primary source readings assigned in weeks 1-6, due Monday, February 27.
- **Midterm Exam** (175pts) – an in-class blue book exam, Wednesday, March 14.
- **Book Review Essay** (200pts) – an 8-10 page essay comparing and contrasting two books from our course: Frankenstein & The Invisible Man OR two of the remaining three books by Ogilvie, Blum, and May. Due Wednesday, May 2.
- **Final Exam** (225pts) – an in-class blue book exam, Thursday, May 10.
- **Participation** (250 pts) – an evaluation of your attendance and participation in class this semester. There are 44 class meetings this semester: you get 3 points for each one you attend, for a possible total of 132 pts just for showing up. The other 118 pts evaluate your participation.

Written Work
Papers should have standard margins (1-1.5 inches top, bottom, and sides), be in 11-12 point font, and be double-spaced. Please proofread carefully for grammar and spelling. Having someone else proofread your papers (a classmate, friend or parent, or a someone at the OU Writing Center) is a good idea. Others always notice mistakes in your work more readily than you will. All written work is governed the University of Oklahoma's Integrity Policy. Please print,
date and sign the Integrity Pledge on all assignments: http://integrity.ou.edu/faq.html. Academic misconduct, especially plagiarism, may result in the instructor (a) asking you to resubmit an assignment for a new grade, (b) giving you a formal warning and/or a zero on the assignment, or (c) filing an official complaint of academic misconduct with the Provost's office. For more on academic integrity and misconduct, see: http://www.ou.edu/honorcouncil/, and http://www.ou.edu/provost/integrity-rights/.

COURSE SCHEDULE

WEEK 1: 1/18 - 1/20 – Introducing the History of Science
Wed. 1/18: Course Introduction: What is History of Science? What is Modern Science?
Fri. 1/20: Discuss this week’s readings

Reading:
Bowler and Morus, Making Modern Science, Ch. 1 Introduction: Science, Society and History (1-23).
Raymond Williams, “Ideas of Nature” (1980), PDF on D2L.

WEEK 2: 1/23 - 1/27 - Founding Modern Science, c. 1500-1750
Mon. 1/23: Lecture: Was There a “Scientific Revolution”? 
Tues. 1/25: Lecture: The Age of Newton
Thur. 1/27: Discussion: Galileo, Descartes, Newton, and Voltaire

Reading:
Bowler and Morus, Making Modern Science, Ch. 2 “The Scientific Revolution” (23-55) and Ch. 14 “The Organization of Science” (319-341)

Internet Primary Sources:
Galileo, Letter to the Grand Duchess Christina (1615):
http://www.fordham.edu/halsall/mod/galileo-tuscany.html
http://www.fordham.edu/halsall/mod/1778voltaire-lettres.html

WEEK 3: 1/30 – 2/3 - The Enlightenment and the Chemical Revolution, c. 1750-1850
Mon. 1/30: Lecture: The Enlightenment
Wed. 2/1: Lecture: The Chemical Revolution
Fri. 2/3: Discussion: Priestly and Dalton

Reading:
Bowler and Morus, Making Modern Science, Ch. 3 The Chemical Revolution & Ch. 16 Popular Science (55-79, 367-391)
Begin Frankenstein

Internet Primary Sources:
Joseph Priestley, *The Discovery of Oxygen*, 1776
http://www.fordham.edu/halsall/mod/1776priestley.html
John Dalton, *A New System of Chemical Philosophy*, 1808
http://web.lemoyne.edu/~giunta/dalton.html

**WEEK 4: 2/6 – 2/10 - The Industrial Revolution and Geological Time, c. 1750-1850**
Mon. 2/6: Lecture: The Industrial Revolution
Wed. 2/8: Discussion: Carlyle
Fri. 2/10: Lecture: Geology and the Age of the Earth

Reading:
Bowler and Morus, *Making Modern Science*, Ch. 4 The Conservation of Energy, Ch. 5 The Age of the Earth & Ch. 17 Science and Technology

Continue Frankenstein

Internet Primary Source:
Thomas Carlyle on the "Mechanical Age" from *Signs of the Times* (1829)
http://www.fordham.edu/halsall/mod/carlyle-times.html

**WEEK 5: 2/13 – 2/17 – Biology, Evolution and Darwin, c. 1820s-1900**
Mon. 2/13: Discussion: Frankenstein
Wed. 2/15: Lecture: Changes in Biology
Fri. 2/17: Lecture: Darwin and Evolutionary Biology

Reading:
Bowler and Morus, *Making Modern Science*, Ch. 6 The Darwinian Revolution, Ch. 7 The New Biology, Ch. 8 Genetics (129-212)

Finish Frankenstein

**First Short Paper Assignment (3-5 pages):** analyze and respond to any 2-3 of the online primary sources assigned in Weeks 1-6. Due Monday February 27.

**WEEK 6: 2/20 – 2/24 - Biology, Culture, Ideology, Politics**
Mon. 2/20: Discussion: Darwin, his Critics, and his Champions (primary sources)
Wed. 2/22: Discussion: Gould on Kropotkin
Fri. 2/24: Lecture: Connecting Science, Ideology, and Religion

Reading:

Internet Primary Sources:

**WEEK 7: 2/27 - 3/2 – Science, Culture, Imagination, Representation, late 1800s - early 1900s**
Mon. 2/27: Lecture: Science and Culture *** First Paper Due ***
Wed. 2/29: Lecture: Science Fiction
Fri. 3/2: Discussion: *The Invisible Man*

Reading:
H.G. Wells, *The Invisible Man*

**WEEK 8: 3/5 - 3/9 - Science, Medicine, and Politics late 1800s - early 1900s**
Mon. 3/5: Lecture: Science and Medicine
Wed. 3/7: Lecture: Public Health
Fri. 3/9: Science and Politics
In-class activity with Albert Calmette, “The Plague at Oporto” (1899)

Reading:

**WEEK 9: 3/12 - 3/16: MIDTERM**
Mon. 3/12: MIDTERM REVIEW
Wed. 3/14: MIDTERM EXAM
Fri. 3/16: TBA

**WEEK 10: 3/17 (Saturday) – 3/25 (Sunday): SPRING BREAK**

**WEEK 11: 3/26 – 3/30 – Science and Society, early 1900s**
Mon. 3/26: Lecture: Science and Gender
Wed. 3/28: Science, the Media and the Public
In-class activity with *The Popular Science Monthly*, editor’s statements, 1872 and 1915
Fri. 3/30: Discuss first half of Marie Curie.

Reading:
Bowler and Morus, Making Modern Science, Ch. 21 Science and Gender (487-511)

Marylin Ogilvie, Marie Curie, pp. 1-63

WEEK 12: 4/2 - 4/6 - Science and Society, early 1900s Pt. 2
Mon. 4/2: An International Republic of Science?
Wed. 4/4: Lecture: Disease and the Stranger: Immigration and Globalization
Fri. 4/6: Discuss second half of Marie Curie.

Reading:
Second half of Marie Curie, pp. 63-146

Begin Book Review Essay (8-10 pages, due Wednesday, May 2)

WEEK 13: 4/9 - 4/13 - Revolution in Physics, the Age of World Wars, c. 1900-1945
Mon. 4/9: Physics, Late 1800s to early 1900s
Wed. 4/11: TBA, maybe Movie
Fri. 4/13: Science, Technology, and Total War

Reading:
Bowler and Morus, Making Modern Science, Ch. 11 Twentieth-Century Physics & Ch. 20 Science and War (253-277, 463-487)

Begin The Poisoner’s Handbook

WEEK 14: 4/16 – 4/20 – Science: the Endless Frontier?
Mon. 4/16: Discuss first half of The Poisoner’s Handbook
Wed. 4/18: Discuss second half of The Poisoner’s Handbook
Fri. 4/20: Discuss John Rudolph on Scientific Method

Reading:
Finish The Poisoner’s Handbook

Begin America and the Pill

Mon. 4/23: Lecture: Ecology
Wed. 4/25: Lecture: Cosmology
Fri. 4/27: Lecture: Bioethics

Reading:
Bowler and Morus, *Making Modern Science*, Ch. 9 Ecology and Environmentalism, Ch. 10 Continental Drift & Ch. 12 Revolutionizing Cosmology (213-253, 277-299)

Finish *America and the Pill*

**WEEK 16: 4/30 - 5/4 - Science and Society Revisited**
- Mon. 4/30: Discuss *America and the Pill* & hand out review sheets
- Wed. 5/2: Lecture: The CSI Effect *** Book Review Essay Due ***
- Fri. 5/4: FINAL EXAM REVIEW

**WEEK 17: FINAL EXAMS WEEK**
FINAL EXAM: Thursday, May 10, 1:30-3:30 pm, Adams Hall 0315