

## SCIENCE AND SOCIETY IN THE 20<sup>TH</sup> CENTURY WORLD (HIST 350)

MWF 10:30 – 11:20

WALC 2127

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Office Hours: MW 11:20 – 12:20

### Course Description:

An introductory survey of science and society in the Twentieth Century emphasizing cultural contexts, relationships with other institutions, and occasional forays into the biographies of major figures. Covering selected major achievements as well as the problems these generate. Topics will include: Continental Drift, Genetics, Eugenics, Conservation, Evolutionary Biology and Ecology, Physics and the Atomic Bomb, DNA and Molecular Biology, Environmentalism, and Global Climate Change. Neither science nor engineering background is required.

### Course Outcomes:

By the end of the course, students will be able to:

1. examine, interpret, and explain how personal, political, cultural, economic, and social experiences and/or structures shaped the history of science in the 20<sup>th</sup> Century.
2. analyze data using historical methodologies to evaluate causal arguments and analyze assertions, assumptions, and explanatory evidence related to the history of science in the 20<sup>th</sup> Century.
3. investigate the diversity of human experience within Western culture, considering, for example, ethnicity, gender, language, race, religion, sexual orientation, age, culture, disability, and social class, and appreciate the contributions of different social groups in science and society.
4. identify and explain the major themes of the history of science in the 20<sup>th</sup> Century.
5. Students will also be able to write about the role of science in society and social implications of science.

### Required Books (available at University Bookstore and Amazon and on reserve at HSSE Library):

Hersey, *Hiroshima*. Vintage

Watson, James. *The Double Helix*. Touchstone

Singer, Peter. *Animal Liberation*. Harper Perennial Modern Classics

Carson, Rachel. *Silent Spring*. Houghton Mifflin.

\*Additional readings on Blackboard. See Course Schedule.

**Student Responsibilities:**

1. attending class sessions.
2. reading assigned material (~ 50 pages per class) on time.
3. actively participating in class discussions.
4. maintaining respect for others despite clashing views on controversial subjects.
5. completing rough draft and final paper (~ 1800 word essay).
6. completing 2 essay exams (midterm and final).

**Grades:**

The final grade for the course will be based on the following:

Examination #1	200
Examination #2	200
Reading Quizzes	200
Term Paper	200
Presentation	50
Attendance	150
<b>Total</b>	<b>1000</b>

READING QUIZZES (50 points each, 200 points total): In order to reinforce concepts introduced in the course readings and discussions, there will be four quizzes and an additional make up quiz to replace one of the four regularly scheduled quizzes. Quizzes must be taken in class on the day indicated in the syllabus. Missed quizzes will receive no credit. One missed quiz can be replaced by the makeup quiz. Reading Quizzes will be given on Fridays of the designated week.

**EXAMINATIONS (200 points each):**

Exams will be based on all the material covered during the course, including lectures, discussions, films, and readings. They can be made up only if the absence is due to serious illness, death in the immediate family, or participation in an approved university activity. Arrangements for make-up exams should be made before (if possible) or (if not) immediately following the scheduled exam. The specific format for each test will be announced in class before the scheduled exam date.

TERM PAPER (200 points) and PRESENTATION (50 points): There will be one paper, 1800 words, DUE IN CLASS ON **FRIDAY, April 20, 2018.**

All papers must be double-spaced and typed. Handwritten papers will not be accepted. No paper extensions, except in the case of serious and documented illness. Papers must be submitted to Safe Assign (see Blackboard for Link to Submission) before the deadline. Email submissions will not be accepted. For each class the paper is late, it will drop 10 points out of 200. Papers placed in my mailbox in the History Department will not be accepted. It is your responsibility to confirm I have received your paper and it is in your best interest to submit them on time. The papers will be graded on the strength of their ideas, their ability to advance a thesis or interpretation, and how well they are written (their use of language, spelling, punctuation, grammar). To receive full credit, a paper must include an introduction, a thesis or argument and the details to support it, and a conclusion. The paper must have at least 1700

words and no more than 1900 words. The instructor and / or graduate assistants will provide detailed feedback on your paper. We will grade the papers on Form and Content.

*Important:* Each and every citation in papers must be clearly and correctly referenced. Even when you refer to another person's ideas, you must credit the original source. See the course website for online style manuals.

*Writing and Honesty:* Plagiarism is one of the most serious offenses at the Purdue University and at any academic institution. See the Purdue University *Student Handbook* section titled: "Violation of the Academic Honor Code" for explicit details of what constitutes plagiarism, but for the purposes of this course anything you write must be your original work. Quotations should be brief and must be clearly cited to the original source (this includes internet sources) according to an approved style guide such as MLA, Chicago, or Turabian (online versions of these style guides can be found on the course website). I am more interested in your honest thoughts about the material than long, unanalyzed quotations.

\*In order to assist you in avoiding plagiarism, you will need to submit your paper to Safe Assign, this will identify citation errors or problems. See Blackboard for the Safe Assign Submission link.

#### ATTENDANCE (150 points):

There is no better way to clarify your ideas and sharpen your opinions regarding a new subject than to discuss them with fellow students and the instructor. It is vital that you attend class and be prepared to engage each other. Starting Week 2, I will take attendance using a sign in sheet. After one unexcused absence, I will deduct 5 points for each subsequent unexcused absence.

#### **Attendance Policy**

Excused absences include documented illness, deaths in the immediate family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. Accommodations for these excused absences will be made and will do so in a way that does not penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

#### **Grading Scale**

A 93-100	A- 90-92	
B+ 88-89	B 83-87	B- 80-82
C+ 78-79	C 73-77	C- 70-72
D+ 68-69	D 60-67	
F <60		

#### **Academic Honor Policy:**

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches

campus life. Purdue's nondiscrimination policy can be found at: [http://www.purdue.edu/purdue/ea\\_eou\\_statement.html](http://www.purdue.edu/purdue/ea_eou_statement.html).

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breeches of this value by either emailing [integrity@purdue.edu](mailto:integrity@purdue.edu) or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern.

"As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue." For more information, see: [Purdue's Honor Pledge](#).

### **Academic Dishonesty**

*Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, [Student Regulations](#)] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972]*

For additional details, see Purdue's student guide for academic integrity: <https://www.purdue.edu/odos/academic-integrity/>

### **Disability Resource Center**

The Disability Resource Center (DRC) is a resource for students and instructors. Students may present a "Letter of Accommodation" to the professor at any point in the semester. If you have questions, please contact the DRC at: 765 494-1247. You may also visit the DRC at [drc@purdue.edu](mailto:drc@purdue.edu).

### **CAPS Information:**

Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765) 494-6995 and <http://www.purdue.edu/caps/> during and after hours, on weekends and holidays, or through its counselors physically located in the Purdue University Student Health Center (PUSH) during business hours.

### **Syllabus Change Policy**

"Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice."

### **Website**

The Syllabus, assignments, style guides, term sheets, and other information relevant to *Science and Society in the 20<sup>th</sup> Century* can be found at <https://mycourses.purdue.edu> You will need to

use your Purdue ID and Password to access the site via <https://mycourses.purdue.edu>. If you do not have a PUID or experience trouble logging in, contact IT Support for assistance.

### Course Schedule (subject to change)

#### Week 1: Introduction

1/08-12 Introduction to the *History of Science in the 20<sup>th</sup> Century*  
 Reading: Thomas Kuhn, *The Structure of Scientific Revolutions*, pp. 10-42

#### Week 2: Scientific Revolutions

1/15 Martin Luther King, Jr. Birthday – No Class  
 1/17-19 Lecture: Scientific Revolutions  
 Reading: Thomas Kuhn, *The Structure of Scientific Revolutions*, pp. 43-65

#### Week 3: The Darwinian Revolution

1/22-26 Lecture: Darwin and the *Origin of Species*  
 Reading: Selections from the *Origin of Species* (Darwin Online): Ch. I-IV, VI

#### Week 4: Darwin and Religion: The Scopes Trial

1/29-2/02 Lecture: Darwin and Religion: The Scopes Trial  
 Reading: *Inherit the Wind*  
 Film Excerpt: *Inherit the Wind*

#### Week 5: Genetics

2/05-09 Mendelian Genetics Morgan's Fly Lab Reading Quiz #1  
 Reading: Mendel, "Experiments in Plant Hybridization," pp. 1-14, 32-39  
 Morgan and Bridges, "Sex-linked Inheritance in *Drosophila*," 1915

#### Week 6: Eugenics

2/12-16 Eugenics and Intelligence Testing  
 Reading: Francis Galton, "The Judges of England," *Hereditary Genius*, pp. 55-83  
 Margaret Sanger, "Birth Control and Racial Betterment"  
 H.H. Goddard, *Feeble-mindedness*, pp. 1-46 [skim]

#### Week 7: The Double Helix and Gender in Science

2/19-23 The Race to the Double Helix  
 Reading:  
 Francis Crick, Letter to 9-year-old son (online)  
 James Watson, *The Double Helix*  
 Film Excerpt: *Photo 51*

Exam #1 Review

#### Week 8: Examination #1

2/26 Examination #1 Examination #1  
 2/28-3/02 Reading: Oppenheimer, "Atomic Explosives"  
 Film Excerpt: *The Day after Trinity*

Writing: The Thesis-What is your argument?

### **Week 9: The Manhattan Project and the Atomic Bomb**

3/05-09      Lecture: The Manhattan Project and the Atomic Bomb      Reading Quiz #2  
 Reading: Vannevar Bush, "Science: The Endless Frontier" July 1945  
<https://www.nsf.gov/od/lpa/nsf50/vbush1945.htm>  
 Schrodinger, "The Present Situation in Quantum Mechanics," pp. 152-157.  
 Writing: Evidence-Citations

### **Spring Break**

3/12-17

### **Week 10: Ethics and The Bomb**

3/19-21      Lecture: Ethics, Big Science, and the Atomic Bomb      Reading Quiz #3  
 Reading: "Atomic Bomb: Decision: The Franck Report," 1945.  
 Hiroshima and Nagasaki  
Reading: Hiroshima  
 Film Excerpt: *White Light / Black Rain*

### **Week 11: Ecology, and Environmentalism**

3/26-30      Lecture: Ecology and Environmentalism  
 Reading:  
 Writing: Analysis-How does your evidence support your argument?

### **Week 12: Animal Rights**

4/02-06      Lecture: Animal Rights      Reading Quiz #4  
 Reading: Peter Singer, *Animal Liberation*  
 Writing: Revision-Refining your essay

### **Week 13: Environment and Gender**

4/09-13      Lecture: Rachel Carson and *Silent Spring*      Reading Quiz #5 (make up)  
 Reading: *Silent Spring*  
 Writing: Synthesis-Drawing on Multiple Sources

### **Week 14: Population**

4/16-18      Lecture: The Population Bomb      Final Paper Due  
 Reading: Ehrlich, *The Population Bomb* (excerpt)  
 4/20      Final Paper Due

### **Week 15: Presentations**

4/23      Paper Presentations  
 4/25      Paper Presentations  
 4/27      Review for Examination #2

Final Examination

Examination #2

Date and Location: TBD