

## History of Science 203: Science in the Twentieth Century--A Historical Overview

3 Credits; Z (Humanities or Social Studies)

2 hours lecture (1:20 MW, 6104 Social Science), 1 hour discussion

Prerequisites: None

Instructor: Mr. Siegel

Major themes in the physical and biological sciences  
in the twentieth century, with attention to:

- \* conceptual development in science
- \* interaction of science and society
- \* philosophical issues in science
- \* personalities in science

### Lecture Outline

- I. The Second Scientific Revolution (1890-1930)
  - A. Introductory
  - B. Chance Discovery and the Rise of Atomic Science, 1895-1915
  - C. The Theory of Relativity, ca. 1905
  - D. The Evolution of Quantum Theory, 1900-1930
  - E. The New World-View, 1920-1940
  
- II. The Double Helix and the Bomb (1900-1960)
  - A. Classical Genetics, 1860-1920
  - B. Toward Molecular Biology, 1920-1960
  - C. Energy--Cosmic and Nuclear, 1900-1930
  - D. Enrico Fermi and Nuclear Fission, 1930-1940
  - E. Ernest Lawrence and the Big Machines, 1930-1950
  - F. Mobilizing Science for War, 1939-1942
  - G. Robert Oppenheimer and the Bomb, 1940-1950
  
- III. New Horizons (1900-1980)
  - A. Toward a New Cosmology
  - B. Science and Society in the Post-War Period
  - C. New Directions for Science

### Course Requirements

Two midterm (evening) exams plus final; some informal writing for discussion section.

Attendance is required at all class sessions: 1) Attendance at discussion sections will be recorded and reflected in the section grade. 2) Although attendance at lectures will not normally be recorded, neither the assigned reading material nor any lecture notes will fill in reliably for a substantial number of missed lectures.

SCIENCE IN THE TWENTIETH CENTURY--A HISTORICAL OVERVIEW

Book List (University Bookstore)

Barbara Cline, Men Who Made a New Physics  
Banesh Hoffmann, Albert Einstein: Creator and Rebel  
James D. Watson, The Double Helix, ed. Gunther S. Stent  
Larry Gonick & Mark Wheelis, The Cartoon Guide to Genetics, updated ed.  
Robert Jungk, Brighter than a Thousand Suns  
Timothy Ferris, The Red Limit, 2nd ed.

Reading Selections

For Part I: Cline, Ch. 1-4, 6-11, 13  
Hoffmann, Ch. 1-7

For Part II: Watson, pp. ix-145, 153-157, 185-194, 200-207, 213-218  
Gonick & Wheelis, pp. 37-46, 53-67, 84-86, 91-96, 104-111, 116-125, 154-155  
Jungk, Ch. 1-13  
Hoffmann, Ch. 9

For Part III: Hoffmann, Ch. 8, 11, (12)  
Ferris, Ch. 1-5, (6), 7  
Jungk, Ch. (14-18), 19-20; Epilogue

Exams

Midterm I: 5:30-7:00 p.m., Monday, Feb. 22

Midterm II: 5:30-7:00 p.m., Monday, April 12

Final: 12:25 p.m., Tuesday, May 11