

"The Nuclear Age: Its History and Physics"

TUFTS UNIVERSITY
DEPARTMENTS OF HISTORY AND PHYSICS
History 177/Physics 5

Spring Semester 1996

Tu/Thurs 2:30-3:45
Anderson 206

Instructors: Prof. Gary Goldstein, 157 Robinson Hall, 627-3591, e-mail: ggoldste@emerald.tufts.edu
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OVERVIEW: The semester will be divided into two distinct segments. *Prior to Spring vacation* the class will follow the pattern established during the Fall semester: assigned readings, lectures, discussions, and one midterm examination each in physics and history. *After Spring break* class time will be exclusively devoted to one of the following types of projects: an arms control negotiation related to the problems associated with the current USA and Russian nuclear arsenals, or a negotiation between a utility company and community activists opposed to the siting of a nuclear power plant, or an international negotiation seeking to create a nuclear free zone (South Pacific, Middle East, Cambridge, MA, etc.) arguments before a Congressional Committee on the question of whether the United States should be committed to a Comprehensive Test Ban Treaty (CTBT), or . . . The class will participate in choosing the topic and the details on this segment of the course will be made available in a separate handout after the choice is determined.

E-MAIL (Electronic Mail): This semester we are bringing the nuclear age into the computer age by integrating e-mail into the course. To do this **everyone in the class is required to arrange for an e-mail account** with computer services. Do this immediately, if possible, but **no later than Tuesday, January 23, before class**. Your "user name" will be collected in class and a class e-mail directory will be compiled and distributed. This is a **course requirement**.

REQUIRED READINGS: Several of the books assigned for the fall semester will be used as spring semester texts:

Craig and Jungerman, Nuclear Arms Race
Powaski, March to Armageddon
Williams and Cantelon (eds.), The American Atom
Kaplan, The Wizards of Armageddon
Wolfson, Nuclear Choices

In addition the following books will be used and are available at the bookstore:

Kurt Vonnegut, Slaughterhouse Five
Leo Szilard, The Voice of the Dolphins
"The Cuban Missile Crisis", [a Georgetown University "Case Study"]
Several other "case studies" will be added to ordered.

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EXAMINATIONS:

Physics: An in-class examination on DAYXXX, February XX.

History: A take-home examination distributed XXX Wed. March 4 & due Friday, March 6.

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SCHEDULE OF LECTURES, SECTION MEETINGS, & ASSIGNED READINGS

January

week

I. Thurs., Jan. 18: The Physics of Missile Delivery Systems

Nuclear Arms Race chap 8-P8-4; chap. 9-2, P9-2; chap. 3-1, 2, 5, 6, 8

handout on projectile motion

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II. Tues., Jan., 23: The Physics of Guidance and Targeting

Nuclear Arms Race, Chap. 3-3, 4, 7

American Atom: docs. 54

Thurs. Jan., 25 : The Cuban Missile Crisis *(Tisch Library AV room 314)

March to Armageddon, chap. 7

American Atom: docs. 55, 56, 57, 58

*Excerpts from CBS News Programs from October 24, 26, 28, 1962 (if we can get a room with a video projector)

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III.

Tues., Jan., 30: The Cuban Missile Crisis,

"The Cuban Missile Crisis" a case analysis by G.S. Brussel

Thurs., Feb.1, The Physics of ABM & SDI

Nuclear Arms Race, chap.20

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February

IV. **Tues., Feb., 6:** Nuclear MADness

Vonnegut, Slaughterhouse Five

Kaplan, Wizards of Armageddon, chap. 14

Powaski, March to Armageddon, xxxxxxx

Thurs., Feb., 8: How Nuclear Reactors are Designed to Work

American Atom, chap. 9 intro + docs: 68-73

handout

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V. **Tues., Feb., 13:** How Nuclear Reactor Designs Fail, and
What Happens When They Do.

Nuclear Arms Race, Chaps. 15, 16, 18, 19, pp. 366-69 (Chernobyl)

Bulletin of the Atomic Scientists, (Aug/Sep 1986) special issue on Chernobyl

Thurs., Feb., 15: 1 The Physics of Nuclear Winter

Nuclear Arms Race, Chap. 19

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VI. **Tues., Feb., 20:** proliferation -physics of arms control GG

Thurs., Feb., 22: MONDAY SCHEDULE - NO CLASS

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VII. **Tues., Feb., 27:** proliferation mjs

Thurs., Feb., 29: PHYSICS EXAMINATION in class

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March

VIII. **Tues., Mar., 5:** The Bishops Letter (Tisch Library AV room 314)

Thurs., Mar., 7: "Choosing Zero: Origins of the INF Treaty" [case discussion]

HISTORY EXAMINATION WILL BE DISTRIBUTED IN CLASS Today

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IX. **Tues., Mar. 12: title**

Szilard, The Voice of the Dolphins, lecture/discussion

Preparation for Projects

Thurs., Mar., 14: Dr. Strangelove

SPRING VACATION, NEXT CLASS TUESDAY, MARCH 26: DRIVE SAFELY!!!

Course continued on Project Syllabus

classes eliminated:

1. "Changing the Rules: President Reagan's SDI Decision" [case discussion] & [MA, chapter 12]
2. "Freezing the Arms Race" [case discussion] & [MA, chapter 13]