

**Science and Arms Control
IAFF 201**

Spring 2004: March 2 – April 27, 2004

Tuesday 6:10 p.m. – 8:00 p.m.

Location: 1957 E St., Room B16

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Course Description

Headlines in today's newspapers are filled with references to weapons of mass destruction and missile proliferation. These technologies pose both political and military challenges to the United States as it pursues its national security agenda around the globe. Arms control treaties have attempted to deal with these technologies for many years, but have met with mixed success.

This one-unit course is designed to give students a fundamental understanding of the technologies underlying arms control. It will cover the four classes of technologies that are the focus of most major arms control treaties: nuclear weapons, chemical and biological weapons, missile systems, and anti-ballistic missile systems. Each class will include an overview of the technologies themselves, as well as an analysis of the strategies used by arms control treaties to manage these technologies. Guest speakers will be used to provide a variety of perspectives on different issues. Students will be expected to participate in classroom discussions, work in teams, and carry out individual work.

Textbook/Materials

Required Reading:

- U.S. Congress, Office of Technology Assessment, *Ballistic Missile Defense Technologies*, OTA-ISC-254 (Washington, DC: U.S. Government Printing Office, September 1985).
- U.S. Congress, Office of Technology Assessment, *Technologies Underlying Weapons of Mass Destruction*, OTA-BP-ISC-115 (Washington, DC: U.S. Government Printing Office, December 1993).
- Nuclear Non-Proliferation Treaty.
- Chemical Weapons Convention.
- Biological Weapons Convention.
- Missile Technology Control Regime.
- Anti-Ballistic Missile Treaty.
- John M. Spratt, Jr., "Stopping a Dangerous Drift in U.S. Arms Control Policy," *Arms Control Today*, March 2003.

All required readings for this course are available on-line. Arms control treaties can be found at any of the following links:

http://www.state.gov/www/global/arms/bureau_vc/treaties_vc.html

<http://www.defenselink.mil/acq/acic/treaties/treaties.htm>

<http://www.armscontrol.org/treaties/>

OTA reports can be found at the following site:

<http://www.wws.princeton.edu/~ota/>

The Spratt article can be found at:

http://www.armscontrol.org/act/2003_03/default.asp

Additional materials may be handed out in class. Students may also be required to conduct independent research for their group projects.

Basis for Grading

Twenty five percent of the grade is based on individual class participation. Factors used in making this assessment include indications that you have read and thought about the required material, frequency of participation (not too much, not too little) and evidence of growing understanding of the role that science plays in arms control.

Twenty five percent of the grade is based on the quality of in-class presentations. Starting week two of the course, students will be presenting short (15 minute) presentations on issues related the topic of the week. These will be team presentations; two teams will present each week in a debate format. We will discuss the details of these assignments during the first class.

Fifty percent of the grade is based on the quality of the final paper, which will be an analysis for policymakers, not an academic research product. The paper should be concise, clear and contain information that will help senior officials to make policy decisions on a topic that will be presented during our first class. Papers will consist of a one page executive summary, five to seven pages of supporting material, and a bibliography (normally, such papers would not have a bibliography, but I want to see what materials you consulted). The papers should not contain footnotes. The papers should be typed, single-spaced within each paragraph and double-spaced between paragraphs and/or bullets, and use 12-point font of style Times New Roman. Papers will be due no later than 6pm on April 13. The topic of the paper will be presented during the first week of class.

Class Schedule

March 2: Introduction to the Course and Lecture on Nuclear Weapons

Required Reading:

- “Technical Aspects of Nuclear Proliferation,” pp. 119-172 in *Technologies Underlying Weapons of Mass Destruction*, OTA-BP-ISC-115 (Washington, DC: U.S. Government Printing Office, December 1995).

Course Overview & Lecture

March 9: Chemical Weapons

Required Reading:

- “Technical Aspects of Chemical Weapon Proliferation,” pp. 15-58 in *Technologies Underlying Weapons of Mass Destruction*.
- Chemical Weapons Convention

Lecture & Classroom Presentations

March 16: Biological Weapons

Required Reading:

- “Technical Aspects of Biological Weapon Proliferation,” pp. 71-117 in *Technologies Underlying Weapons of Mass Destruction*.
- Biological Weapons Convention.

Lecture & Classroom Presentations

March 23: Delivery Vehicles

Required Reading:

- “The Proliferation of Delivery Systems,” pp. 197-257 in *Technologies Underlying Weapons of Mass Destruction*.
- Missile Technology Control Regime.

Lecture & Classroom Presentations

March 30: Ballistic Missile Defense

- “Ballistic Missile Defense Technologies,” pp. 139-196 in *Ballistic Missile Defense Technologies* OTA-ISC-254 (Washington, DC: U.S. Government Printing Office, September 1985).
- ABM Treaty

Lecture & Course Wrap-Up

Office Hours

I will be available by telephone and email weekdays from 8am to 5pm (email hours may extend later into the evening). I can also make appointments to meet with students in person if needed.