The Advent of the Atomic Bomb
CORE 138 (+ Extended Study to Japan)
Syllabus
Spring 2005

Instructor: Karen Harpp
Office: Lathrop 408
Phone: x7211
Email: kharpp@mail.colgate.edu
Office Hours: by appointment (email or voicemail)

The best way to contact me is by email. We will communicate as a class by electronic mail, including changes in assignments and class schedule, so it is essential that check your email on a very regular basis, on the rather rare chance that you do not already. I do not have set office hours, because I’m around pretty much all the time. You can either call or send email to set up an appointment for a guaranteed meeting, or come by anytime (with no guarantee that I will be there at that moment, but it's likely).

Location and Meeting Times

**Mondays and Wednesdays 1:20-2:35 PM in Lathrop 404**

There will be a few extra meetings in the evenings for special events that need more than the normal class time and one required field trip during the term. See the syllabus for tentative dates on some of these events; others will be announced well ahead of time.

**Course Description**

This course will examine the scientific evolution of nuclear weapons and the historical context in which they were developed. World War II made urgent the exploitation of atomic power for military purposes. Topics include the scientific thought that made harnessing nuclear energy possible, the political pressure that shaped that process, the ramifications of the bomb for science and politics during and immediately after the war, and the subsequent impact of nuclear bomb use on the
population and the environment. If time allows, additional consideration will be made of post-WWII developments of nuclear weapons, weapons testing, and nuclear power generation, with an emphasis on their environmental impact.

Texts

1) Richard Rhodes, *The Making of the Atomic Bomb*. Available at the Colgate bookstore (and Amazon.com or BarnesandNoble.com; it is an easy book to find used). Required.

The following are for the extended study trip:
3) John Dower, Embracing Defeat. Same as above. Required.
4) George Feifer, The Battle of Okinawa. Same as above. Required.

Course Requirements: Bomb Class

There will be several different kinds of assignments in this course; some will emphasize writing and reading skills, others will focus on presentation and organization, and some will include a research component. Most of them are part of the class activities section listed below, and will be assigned as we progress through the semester. That means that you will often have homework for the next class in addition to keeping up with the readings. To pass the course, you must complete all the assignments; lack of completion of any one assignment may result in failure. **This course counts for one credit toward graduation, in the Core Scientific Perspectives category.**

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<td>Class activities/assignments</td>
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<td>Road to the Bomb Project assignments</td>
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Course Requirements: Extended Study Trip

There will be several different kinds of assignments in this course; some will emphasize writing and reading skills, others will focus on presentation and organization, and some will include a research component. Most of them are part of the class activities section listed below, and will be assigned as we progress through the semester. That means that you will often have homework for the next class in addition to keeping up with the readings. To pass the course, you must complete all the assignments; lack of completion of any one assignment may result in failure. **The extended study part of the course counts for ½ credit toward, as an Asian Studies course.**

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<td>Hiroshima Project</td>
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The approximate grading scale for both courses will be:

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<tr>
<td>A</td>
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<td>A/B</td>
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The letter grade awarded to those who fall in an intermediate range (e.g., A/B or 85 - 90%) will depend upon total points, as well as my perception of that student’s effort, participation, reliability, and aptitude. As a reminder, a grade of C means your work is acceptable; it just means you have room to improve. Do not get distressed at a grade of C, just crank up the effort and attention to detail. Always feel free to come discuss with me how you can improve your work. The grade of A requires exceptional work, in all aspects of the assignment.

Exams

The exams are designed to make sure you understand the nuts and bolts content of the issues we are discussing. They will be based primarily on material we’ve discussed explicitly in class, as well as information from the textbooks in detail.

Class Activities

We will be doing lots of different kinds of activities in class. Sometimes there will be short assignments associated with these, either beforehand to prepare for them or afterward as follow-up investigations; some of them we’ll finish during class. Others will be more substantial, and require several days’ worth of preparation; all details will be described in class well ahead of time. The sum of these assignments will make up a significant part of your final grade (see above). There will also be a required field trip, details to be announced well ahead of time (to Washington, DC). Finally, you will be required to attend several of the events related to the Center for Ethics and World Societies program entitled Weapons and War, also to be announced well ahead of time. For those Weapons and War events that you are not required to attend, you will receive extra credit if you attend them and then send me a brief email (a few sentences) summarizing your reactions and thoughts to the event. This includes films in the Weapons and War series.

Film Series Discussion (via Blackboard)

We will be using the BLACKBOARD software for exploration of a film series that will be running throughout the term (found at http://bb6.colgate.edu). The films represent many different cultural and moral issues related to the development and use of...
the atomic bomb, from the first films made after the bomb’s use to depictions of the construction of the bomb and of the horrors of the World Wars, to the Cold War...The idea is that we will use film to illustrate the situation leading up to the use of the bombs in 1945, to get into the mindset of the American people, and then to trace the incorporation of the concept of such powerful weapons into the culture. We will also look at some films made by Japanese filmmakers and some collaborative efforts between Japanese and North Americans. There are many films to choose from in constructing this series; the ones presented this term represent a cross-section of styles and eras, as well as goals of the filmmakers.

Some details: you are responsible for attending 10 of the films in the series (see choice system below), and then participating in subsequent web-based discussions about the film and its relevance to the topics in the course. To get credit for each film, you must not only watch the film in its entirety, but you must engage in the web-based discussion to a thoughtful, significant, and substantive degree. You must do the following to get credit:

1. Make an independent, thoughtful comment of your own about the film and its relevance to the topics in the course, such as how it affected you, how you reacted to it, how it illustrates some important point, etc.;
2. Respond to at least TWO additional comments made by other people, continuing their thread of the discussion. Obviously this means you will have to return to the Blackboard film site several times to accomplish this goal. The conversations get extremely interesting, so this is hardly a chore. You must make at least one of your comments on a different day from the other 2, to encourage you going back to Blackboard for conversations, and not just monologues.
3. Do all this within 1 week of the film’s showing.
4. Because of the nature of the discussion, it’s essential that you watch the film during the week in which it is scheduled on the syllabus. If you cannot make the showing in the evening, you may watch it at Case Library on reserve.
5. Your participation in these discussion groups is expected, and will constitute a significant part of your final grade. Should you watch or participate in less than the full number of films, you will receive NO credit for this component of the course. Should you attend more than the required number of films and participate in the web-based discussion, you will be awarded extra credit. So take this seriously, be thoughtful and forthright, and be absolutely sure to check the Blackboard site frequently for new issues and responses to your comments. Your grade will be evaluated based on the thoughtfulness of your comments and on your regular participation. If you get into the habit of participating in these discussions early in the term, we will have a very exciting class and some dynamic debates.
6. We may have a number of Colgate alumni participating in the web-based discussions about the films as well. They are doing this voluntarily out of sheer interest and a desire to interact with you. Just consider them as equal members of the class and treat them courteously and appropriately. Do not hesitate to respond to their comments as readily as you would to other students’ comments; just speak your mind.

The Advent of the Atomic Bomb
There are additional films being shown around campus in various film series (Center for Ethics, Weapons and War course, Peace Studies, etc.). I’ll announce these in class and if you attend, you will also receive extra credit.

**Project on Nuclear Ramifications**

In addition to requirements described above, you will be responsible for a project related to nuclear issues, near the end of the term. The project will be of your own design entirely, with a focus on the effects/ramifications of atomic bomb and atomic power development...be they environmental, cultural, psychological, historical, political.... It may be anything from a community service project, to producing and/or acting in a play (ask me for suggestions!), to collecting data (e.g., about fallout effects from nuclear testing) and drawing a conclusion, constructing a model, making a video, producing some original bomb-related art, researching the history of the atomic concept as it appears in advertising or music, investigating nuclear proliferation questions such as the development of new weapons, exploring the connections to Japan and how the bomb has affected Japanese history and culture...as long as it relates directly to the science of the atomic bomb and its effects on humankind.

You will have to clear the idea with me in some detail. At that time, we will discuss what type of written explanatory material must accompany the work. Your imagination is the only restriction on this project! You may work alone or in pairs; if you work in pairs, the project should be proportionally larger than if you work alone (if you do something like produce a play, then we can increase the group size). In addition, all members of the team will receive the same grade for the project; a component of the final grade will come from the class’ evaluation of the project. We will have an exhibit of the projects near the end of the term, science-fair style. You must also provide a written summary of the project and exhibit. I’ll have more details for you later in the term.

**All written assignments in this course (including the project) must be word processed.** Feel free to email all written work to me directly. I will help you with all these details if you are unfamiliar with them.

**See accompanying schedule for due dates.**

**Participation and Attendance**

Your participation grade is based on several different components. Atmosphere and morale in a course such as this are affected by your attendance and attention during class as well as your contributions in the web-based discussions. If you are drowsy or inattentive in class, or if you are habitually or even occasionally late to or absent from class, your grade will be adversely affected:

- Students with more than two unexcused absences from class will be penalized by a lowering of their course grade by one step (e.g., A will become A-; B+ will become B, etc.);
- Students with more than three unexcused absences will be penalized by a lowering of their course grade by a full letter grade (e.g., A will become B, B+ will become C+, etc.);
- Students with an excessive number of unexcused absences will receive an F in the course;
- Students who habitually come to class late or are drowsy or inattentive in class will be penalized by a lowering of their course grade by up to a full letter grade.

The Advent of the Atomic Bomb
Here’s another useful tidbit: if you have had a particularly rough night before class, and think you will be having big problems staying awake and alert, don’t hide on the back. Instead, sit near the front of the class or just tell me before we start. That way, you are letting me know that you are at least making a major effort to stay with us and be involved despite intense fatigue. As a result, you let me know you’re doing your best and I give you the benefit of the doubt.

You may obtain an excuse for missing class by contacting me in person, by phone, or by email if you will need to be absent. Excused absences are of two varieties:

1) Classes missed due to illness or personal calamity. You may obtain an excuse by contacting me. Supporting documentation ought to be forthcoming from either the Health Center or the Dean of Student’s Office.

2) Classes missed due to athletic or conflicting academic reasons. You will need to notify me at least 48 hours in advance.

It is not difficult to get an excused absence for the class; all I ask is that you be courteous and let me know ahead of time for things such as sporting events, other academic conflicts, family visits, and so forth. You must contact me at least 48 hours in advance for a valid excused absence (email, voicemail, or in person). If there is an emergency, simply contact me as soon as you can, within reason. You should deal with the problem first; don’t worry about getting in touch with me until things have cleared up.

I expect you to be prepared for class every time we meet. This means doing the readings assigned for that week carefully. You should have finished the week’s assigned readings by Thursday of each week, but should be part way through it on Tuesday. Occasionally I will ask people to summarize the readings and their reactions to them for the class, and some of the web-based discussions may include topics from the readings; as a result it is critical that you keep up to date with the readings. We do not have even remotely enough time to consider all the issues of these complex topics, so the textbook provides invaluable perspective and details on the topics we are focusing on in class. This doesn’t mean you should remember every single detail from the text; it’s a tremendously detailed book, and you should focus on the big picture. Nevertheless it should be clear that you have done the reading at all times. Please bring any questions that come up during your readings to class for us to discuss, anytime.

I also expect you to be alert and enthusiastic during class, and to contribute to class discussions frequently. Oftentimes we’ll work in small groups, where you should be an active participant. In addition, if you have specific directions or topics you’d like to see in the class, let’s discuss it and I’ll do what I can to accommodate your ideas.

A word about Academic Honesty…

It’s very simple, really. I expect 100% academic honesty from each and every one of you. Don’t cheat, don’t make up information or sources, don’t plagiarize, and don’t help anyone do any of the above. We will discuss in class the details of how to cite information you have researched, so make absolutely sure that you understand that information. If you have any doubts or questions, it is your responsibility to come see me for clarification.

I have absolutely no patience for anyone who cheats in classes in any way. Everything you hand in must be your own, original work; if someone helps you with your work, with proofreading, with ideas, then you must acknowledge them. I encourage you
to work with other people, to bounce ideas off each other, to brainstorm, to read each other’s writing; all you have to do is acknowledge that in the work you turn in.

The Enola Gay, the plane that delivered the first atomic weapon used in warfare to Hiroshima, Japan on August 6, 1945
Signed by the pilot and commander, Paul Tibbets.
And finally, a reminder....

**HOW TO DO HIGH QUALITY WORK**

The grades you receive for your work depends only in part on 'getting the right answer'. In fact, in this class, we often don't know *any* of the answers; we are looking at natural systems that change on a daily basis or we are considering complex, multi-tiered concepts in which history, science, politics, and ethics are all intertwined. It is also very important that you communicate what you know clearly and effectively, and so your grade will depend on the form of your work as well as its content. Heed the following, terribly simple advice:

Do high quality work!

This may seem obvious. But, what does it mean? The best advice I can give you is to avoid producing work in this or any course that looks like you are just going through the motions of something without knowing why except that you were told to do it, or hastily getting something done in time, or complying grudgingly with something that you are being made to do. Craft your work well. Plan and think before you write. Make your work both complete and precise: avoid vague generalizations and, whenever appropriate, include relevant details and show your logic and rationale. Make sure your tone and language are worthy of the occasion: scholarly and professional. Find a way to get into the spirit of things that is compatible with your basic nature. There are many ways to shine. Nevertheless, excellent work LOOKS excellent; mediocre work LOOKS mediocre. Some guidelines:

**FORM:**

1) **Correctness.** A basic issue is always the correctness of your work: punctuation, grammar, spelling. Make sure your handwriting is neat and legible. If I can't read it, how can I give you credit for it? And remember, spellcheck spellcheck spellcheck.

2) **Accuracy and precision of language.** A big problem many students have is the use of inaccurate and imprecise language. Avoid vague, cryptic and colloquial language. It reflects both inadequate thought formulation and inadequate facility with vocabulary. Time and care can fix this problem.

**CONTENT:**

3) **Focus and relevance.** Did you stay on one well-defined subject or fly off on tangents? Did you have a point or did you wander and ramble, as though lost?

4) **Verisimilitude.** Was you interpretation of the problem or issue reasonable or did it indicate a probable misunderstanding?

5) **Preparation.** Did your answer reflect adequate familiarity with the material we have studied, or did it look like you have not studied very much or paid attention in class?

If your work is weak in any of those ways, then it is hard to think of it as more than fair to mediocre in quality, and to give you more than about a C.
SOME QUALITIES OF EXCELLENCE: To get an honest and heartfelt B or higher for your work, it needs in addition to display at least some of the following qualities:

1) **A sense of mission.** Did you get the point of the exercise? Or did you seem confused?

2) **Deftness.** Was the tail wagging the dog, or *visa versa*? Did you seem as if you didn't have a clue about what you were doing or why, or did you have things under control?

3) **Insight.** Did you see deeply into the issue? Did you have an original thought about it?

4) **Awareness of context and significance.** Did you indicate when and how the problem called for a larger understanding of the material as well as the various contexts in which it could be usefully viewed?

5) **Subtlety.** Did you seem to appreciate the depth and complexity of the issue? Or were your thoughts facile, superficial, poorly formulated, hasty, or incomplete?

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**TEST: Grable**

**DATE:** May 25, 1953

**Operation:** Upshot/Knothole  
**Site:** Nevada Test Site Area 5  
**Detonation:** Artillery shell airburst, altitude - 500 feet  
**Yield:** 15kt  
**Type:** Fission

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The Advent of the Atomic Bomb
The Atomic Picture Show

Tentative List of Films (*subject to change*)

**Week I: All Quiet on the Western Front (1930)**
"This story is neither an accusation nor a confession and, least of all, an adventure because death is not an adventure to those who stand face to face with it. It will try simply to tell of a generation of men who, even though they may have escaped its shells, were destroyed by the war..."

With these opening lines written across the screen, the Oscar-winning Best Picture, "All Quiet on the Western Front" began its spiraling road of death, destruction, futility, and dreams turned into nightmares courtesy of a war that was billed as "the war to end all wars."

**Week II: Tora! Tora! Tora! (1970)**
Sir, there's a large formation of planes coming in from the north, 140 miles, 3 degrees east." "Yeah? Don't worry about it." This is just one of the many mishaps chronicled in *Tora! Tora! Tora!* The epic film shows the bombing of Pearl Harbor from both sides in the historic first American-Japanese coproduction: American director Richard Fleischer oversaw the complicated production (the Japanese sequences were directed by Toshio Masuda and Kinji Fukasaku, after Akira Kurosawa withdrew from the film), wrestling a sprawling story with dozens of characters into a manageable, fairly easy-to-follow film. The first half maps out the collapse of diplomacy between the nations and the military blunders that left naval and air forces sitting ducks for the impending attack, while the second half is an amazing re-creation of the devastating battle. The special effects won an Oscar, but the film was shut out of every other category by, ironically, the other epic war picture of the year, *Patton."

**Week III: The Sands of Iwo Jima (1949)**
John Wayne catapulted from Hollywood leading man to All-American hero with his Oscar-nominated performance as Sergeant Stryker, a hard-nosed Marine sergeant who must mold a company of raw recruits into a combat-ready fighting machine. Feared by many and hated by all, Stryker’s training is soon put to the test in a full-scale assault against the Japanese on Iwo Jima—an infamous battle that will live forever in one of cinema’s most famous scenes, the flag-raising on Mount Suribachi.

**Week IV: The Thin Red Line (1998)**
Adaptation of James Jones’ huge novel of the campaign to take Guadalcanal. Director Terrence Malick has bypassed generic war movie obligations to introduce clearly characters, establish tag traits that make them and their emotional/spiritual/military-team playing progress easy to track, and also lay out the tactical objectives clearly, with a big picture view of how this all fits into the war effort. The principal characters are Charlie Company, and the story is not only how they cope with the Japanese, and with their own intra-Army tensions. It’s also the awesome, metaphysically charged spectacle of man doing terrible things to man within the multicolored and multifarious cathedral of Nature. 

**Week V. Fat Man and Little Boy (1989)**

The Advent of the Atomic Bomb
This is an interesting film about the development of the atomic bomb at Los Alamos labs, personalizing the story by focusing on General Groves (Paul Newman), the bullheaded Army officer who was handed the job; and the brilliant J. Robert Oppenheimer (Dwight Schultz), who organized the brain trust that created the bomb.

**Week VI: Hiroshima (1995)**

Account of the events leading up to the dropping of the atomic bomb, as told from both sides in two separate, interwoven films--one Canadian (with Kenneth Welsh as Truman), the other Japanese, with subtitles. Recently uncovered footage, newsreels, armed forces clips, and dramatized encounters with the leading figures of the time provide stunning results for this ambitious TV effort. Interestingly, other than a few U. S. actors, no American hands were involved, despite dealing mainly with Harry Truman, his closest advisors, and the Manhattan Project. *Hiroshima* uses a unique structure to convey the story of that fateful decision, mixing newsreels with new sepia-toned footage, color dramatizations, and interviews with Hiroshima survivors and U.S. military personnel. At times, the transitions between the segments can be a bit jarring, but *Hiroshima* is an extraordinary look at the human element of the decision to use nuclear weapons. Its painstaking attention to period detail makes it a historical drama that plays nearly like a documentary. Kenneth Welsh, in particular, is an uncanny Harry Truman, having obviously studied the president's clipped Midwestern twang and ramrod-straight bearing at great length. Unlike many other films on the subject, *Hiroshima* also shows the Japanese side of the equation, with a diplomatic corps ready to sue for peace while the fanatics in the military would never hear of it. Its unswervingly objective, balanced tone, and sober direction make *Hiroshima* a thoughtful and informative look at the decision that changed the course of history forever.

**Week VII. Black Rain (1990)**

Somber, restrained, and very moving story detailing five years in the life of a family which survived Hiroshima, and the ways their bodies and souls are poisoned by the fallout--or "black rain." A quietly observant character study with a number of haunting black and white images. This is a wonderful black and white film by one of Japan's foremost directors, Shohei Imamura. "Black Rain" explores a difficult subject, the bombing of Hiroshima, but does it not by assigning blame for the bombing. Rather Imamura depicts the intolerance of humanity that leads to all wars and their equally terrible aftermath. The characters in the film, all very well acted, are dealing with radiation illness and their positions as new social outcasts in postwar Japan. Perhaps one of the most moving scenes is that of the three Buddhist prayers or "sutras" for Hiroshima's dead chanted by a layman in the absence of the clergy. Indeed the film is one long prayer for peace and tolerance.

**Week VIII: Hiroshima Mon Amour (1959)**

Alain Resnais's multi-award-winning film is neither an easy film to watch nor to synopsize, but it remains one of the high-water marks of the French "new wave" movement. Resnais weaves a complex story concerning a French actress's experiences in occupied France, juxtaposed with the horrendous ordeal of a Japanese architect who survives the atomic bombing of Hiroshima. These stories are offered in quick flashback vignettes, which permeate the contemporary story of the woman's relationship with the architect in contemporary Hiroshima.
Week IX: Grave of the Fireflies (1988)

Isao Takahata's powerful film has been praised by critics wherever it has been screened around the world. When their mother is killed in the firebombing of Tokyo near the end of World War II, teenage Seita and his little sister Setsuko are left on their own: their father is away, serving in the Imperial Navy. The two children initially stay with an aunt, but she has little affection for them and resents the time and money they require. The two children set up housekeeping in a cave by a stream, but their meager resources are quickly exhausted, and Seita is reduced to stealing to feed his sister. Despite his efforts, she succumbs to malnutrition. Seita painfully makes his way back to the devastated city where he quietly dies in a crowded railway station. The strength of the film lies in Takahata's evenhanded portrayal of the characters. A sympathetic doctor, the greedy aunt, the disinterested cousins all know there is little they can do for Seita and Setsuko. Their resources, like their country's, are already overtaxed: anything they spare endangers their own survival. No mention is made of Japan's role in the war as an aggressor; but the depiction of the needless suffering endured by its victims transcends national and ideological boundaries.

Week X: Barefoot Gen (1992)

Gen Nakaoka is on his way to school when the bomb detonates. He makes his way back to his home through hellish scenes of ruined buildings, corpses, and hideously mutilated survivors. Although his family is still alive, Gen and his pregnant mother are unable to free his father, sister, and brother from the rubble of their house and must leave them to burn to death. His mother goes into labor during their flight and his new sister is born amid the devastation. Holding the infant, Gen tells her to remember the horrors, so that they never occur again. The film is drawn from writer Keiji Nakazawa's true life experiences in the aftermath of the nuclear bombing of Hiroshima.

Week XI: Dr. Strangelove (1963)

Stanley Kubrick’s brilliant classic is the perfect showcase for the versatility of Peter Sellers, who takes on three distinctive roles in the film. Funny and frightening, this black comedy about a group of military men who plan a nuclear apocalypse seems as relevant today as ever. Fueled by paranoia and a fanatical sense of patriotism, two psychotic generals—U.S. Air Force Commander Jack D. Ripper and Joint Chief of Staff “Buck” Turgison—trigger an ingenious, irrevocable scheme to attack Russia’s strategic targets with nuclear bombs. The brains behind the scheme belong to Dr. Strangelove (Sellers), a wheelchair-bound nuclear scientist with bizarre ideas about mankind’s future. Rendered helpless to stop the bombers is the President of the U.S. (Sellers) and Ripper’s executive officer, Captain Mandrake (Sellers)—the only man who can stop them.

Week XII: War Game (1965)

A chilling documentary that imagines what would result if the Russians ever launched a nuclear attack on Great Britain. "The War Game" shows the terrifying physical damage caused by weapons of such magnitude, as well as the enormous disorder that would break out in the battle's aftermath. Filmmaker Peter Watkins uses newsreel techniques that make the horrors portrayed here even more realistic.


Artfully culled from newsreel footage and government archives of the 1940s and 50s, this film serves up the dark side of Cold War America in all its fear and paranoia,
and manages to blend this with a deep black humor. The result is what has been called by critics “a nuclear REEFER MADNESS” and a “non-fiction DR. STRANGELOVE”. Highpoints include scenes of soldiers wearing only sunglasses for protection when sent into areas devastated by nuclear detonation, happy suburban families practicing use of their bomb shelters and “Burt the Turtle” teaching children to “duck and cover” as protection from nuclear fall-out. The Atomic Café has proven to be a true classic and a darkly comic look at a defining period in the 20th century.

**ALL MOVIES WILL BE SHOWN IN 217 LATHROP HALL**

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<th>Week</th>
<th>Movie</th>
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<td>Week I</td>
<td>All Quiet on the Western Front</td>
<td>Thursday</td>
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<td>Week II</td>
<td>Tora! Tora! Tora!</td>
<td>Monday</td>
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<td>Week III</td>
<td>The Sands of Iwo Jima</td>
<td>Tuesday</td>
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<td>Week IV</td>
<td>The Thin Red Line</td>
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<td>Week IX</td>
<td>Grave of the Fireflies</td>
<td>Thurs</td>
<td>9pm</td>
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<td>Week X</td>
<td>Barefoot Gen</td>
<td>Wed</td>
<td>8pm</td>
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<tr>
<td>Week XI</td>
<td>Dr. Strangelove</td>
<td>Thurs</td>
<td>7pm</td>
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<tr>
<td>Week XII</td>
<td>War Game</td>
<td>Mon</td>
<td>9pm</td>
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<tr>
<td>Week XIII</td>
<td>Atomic Café</td>
<td>Wed</td>
<td>8pm</td>
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THE DARK SIDE OF BIOLOGY:
BIOLOGICAL WEAPONS, BIOTERRORISM, AND BIOCRIMINALITY

Course Instructor:  Prof. Kathleen Vogel,  
154 Uris Hall  
email: kmv8@cornell.edu  
Tel: 255-2248

Class meeting time:  8:40-9:55 a.m. TR  
Classroom location:  Goldwin Smith 156  
Office Hours:  Tuesday 10 am-12 noon, 154 Uris Hall

Course Description

Since biblical times, biological materials have been used in attacks on human, plant, and animal populations. Rapid advances in biotechnology, as well as changing social and political climates, have created new public fears that the malicious release of pathogens and toxins by states and/or terrorist groups is a clear and present threat. Analysts argue over what frameworks and methodologies should be used to assess these threats. Other debates have emerged within the domestic and international scientific and policy communities as to what biological research and publications should be restricted and censored to prevent misuse. At the same time, an expansion of biodefense activities since 9/11 has raised new concerns within the public about the misdirection of federal funding and the safety of new high containment research laboratories. What role do these various expert and lay communities, as well as larger public and government discourses, play in shaping threat perceptions and national security policies? This course will examine these issues and explore the various scientific, social, political, legal, and ethical dimensions related to biological weapons threats and dual-use biotechnology.

The primary goals for this course are as follows:
• To understand, evaluate, and apply a variety of frameworks for assessing the threat of biological weapons
• To understand how debates over biological weapons have emerged from and are shaped by particular social, cultural, and political contexts; and how a variety of actors are involved in shaping these debates.
• To learn how to interrogate popular notions of the bioterrorism/biological weapons threat.
I. INTRODUCTION

(8/24) First Day of Class: No reading assignment; introduction to the course

(8/29) Setting the Stage: What is the BW threat?

(8/31) What is a Biological Weapon?

(9/5) Introduction to Class Research Project
- No reading assigned

II. REAL AND IMAGINED THREATS INVOLVING BIOTERRORISM & BIOLOGICAL WEAPONS

(9/7) Historical Overview: The Use of Biological Agents for War & Terror
(9/12) **The Threat of Bioterrorism---circa 1998**


<table>
<thead>
<tr>
<th>GROUP: RESEARCH TOPICS DUE IN CLASS ON 9/12</th>
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</table>

(9/14) **Bioterrorism and Advances in Biotechnology: Post Sept 11th debates**


III. **Framing the Biological Weapons (BW) Threat**

(9/19) **Discussion of Library Resources for Group Project**

- Meet in Uris Library Electronic Classroom (lower level) from 8:40-9:55 a.m.
- No reading response due

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<tr>
<th>INDIVIDUAL: ESSAY #1 DUE IN CLASS ON 9/19</th>
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</table>

(9/21) **Science Debates**


(9/26) **Political Science Perspectives: Realist and Constructivist Approaches**


(9/28) **Terrorism Studies: Is the Past Prologue?**


**10/3**  
**The Anthropology of Risk**  

**GROUP: LITERATURE REVIEW DUE IN CLASS ON 10/3**

**10/5**  
**Views from Technology Studies**  

**10/10**  
**FALL BREAK: NO CLASS**

**IV. ROLE OF SOCIAL ACTORS AND STAKEHOLDERS IN BW DEBATES AND THREAT ASSESSMENTS**

**10/12**  
**Actors as Interest Groups**  

**10/17**  
**Pathogens as Actants: Guest Speaker: Professor William Ghiorse**  
• Readings TBA

**10/19**  
**The Bioterrorists**  
• Milton Leitenberg; “The Experience of the Japanese Aum Shinrikyo Group and Biological Agents,” in *Hype or Reality: The New Terrorism and Mass Casualty*
CORNELL UNIVERSITY

**Attacks** (Alexandria: Chemical and Biological Arms Control Institute, 2000): 159-172 (course packet).


**GROUP: QUESTIONNAIRE, LIST OF INTERVIEWEES, & METHODS DUE IN CLASS ON 10/19**

(10/24) **Biocriminals and Biohackers**

**INDIVIDUAL: ESSAY #2 DUE IN CLASS ON 10/24**

**GROUP: MEETINGS WITH PROFESSOR VOGEL DURING WEEK OF 10/24 TO DISCUSS PROJECTS**

(10/26) **The Military**

(10/31) **The Science Advisors and Bioweaponeers**
The Public


The Biological Science Community

- MIT town hall meeting on synthetic biology, watch webcast available via internet at: http://syntheticbiology.org/

Case Study #1: Sverdlovsk & Yellow Rain, Guest Speaker, Prof. Thomas Seely


**INDIVIDUAL: ESSAY #3 DUE IN CLASS ON 11/9**
(11/14) NO CLASS

(11/16) Case Study #1: Iraq: Pre-War Assessments
- U.S. Secretary of State Colin Powell Addresses the U.N. Security Council (February 5, 2003), (course packet); also see webcast accessible via internet at: http://www.whitehouse.gov/news/releases/2003/02/20030205-1.html

(11/21) Case Study #2: Iraq: Post-War Assessments
- Senate Select Committee on Intelligence, Report on the U.S. Intelligence Community’s Prewar Intelligence Assessments on Iraq (July 9, 2004): 15-35.

V. Threats, Questions, and Future Policymaking (please be prepared to address the following issues in your class presentation and final paper)

Biodefense Funding: Is it enough? Too much? Right priorities?

(11/22-26) THANKSGIVING BREAK: NO CLASS

(11/28) Presentations of Class Projects

(11/30) Presentations of Class Projects
General Information

This course will serve as a senior seminar in the BSOC department major. As a result, the course will emphasize close reading and group discussion of the readings. You are expected to read actively and critically to comprehend the authors’ arguments. During the semester, the course will cover some technical aspects related to biological weapons. As a result, I strongly suggest that students have some prior introductory biology background (such as BIOMI 290 or similar biology course). However, I do not assume that students are biology majors and I will go over some of the more detailed technical readings in class.

Course materials

The majority of readings for the course will be found in the Coursepack available at the bookstore; additional readings will be found on e-reserve or course reserve in Uris library, or via the internet (as specified). The following books are required for this course:

- Richard Preston, *The Cobra Event;*

Grades

Grades will be based on the following:

- Class participation (20%)
- Reading responses (20%)
- Essays (30%)
- Group Project (20%)
- Group Presentation (10%)

Class participation

Each student is expected to come to class prepared to discuss the ideas in the readings and your reactions to them. Regular attendance and participation are expected, and more than two unexcused absences will result in a lower grade.

In addition, half of your participation grade will be based on each student leading one of the class discussions, **starting on 9/7.** A sign up sheet will be provided at the start of the semester. Students are welcome to meet with Professor Vogel during her office hours to talk about discussion strategies.

Reading Responses

Each student will prepare a 1-page discussion document for each class period’s readings, **starting on 8/29.** This paper is not a summary, but a personal reflection on the week’s readings and the points the student believes are worth discussing. The purpose of the
notes is to help focus discussion for each class. Some examples of responses could include a brief discussion of: (1) an issue or problem raised by that reading that you find interesting or that you will criticize; (2) a connection to previous assigned readings; (3) an outside reading that relates to the assigned reading; (4) a related news article; (5) questions or points of clarification. Be prepared to read your notes aloud in class since they will serve as part of class discussion. Notes will be due at the end of class on the days they are assigned. Notes will be given partial credit if they are late, poorly done, and/or submitted by a third party. These reading notes will be graded check (B), check plus (A), or check minus (C). During the course of the semester, you may skip two of these notes without penalty.

**Essays**
You will be responsible for submitting a short essay (~3-4 typed, double-spaced pages) on the due dates listed below (and in syllabus). One week before each essay is due I will announce the topic. The papers must be submitted in class on the day they are due. Late essays will be penalized by half a letter grade, each day after the due date.
• Essay #1: 9/19
• Essay #2: 10/24
• Essay #3: 11/9

**Group project**
The class will be divided into groups of ~3-4 students each, who will work together throughout the course of the semester on a group project involving original research and the writing of a final report. The group project will involve a technical and social science assessment of the bioweapons threat. Additional details on the group project will be announced on September 5th and updated at various points throughout the semester. For the project, each group will be expected to submit various project materials (research topic, literature review, questionnaire & methods, outline, final report) and meet with Professor Vogel on specific dates as indicted in the syllabus.

The final report for the group project should be prepared as if submitted to the journal, *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*. The journal guidelines will be posted on e-reserve. The final report should include a discussion of the methods, literature review, results of the data collection, and discussion/conclusion. In the discussion/conclusion, the report should explicitly address: (1) what is the bioweapons threat of the topic from a technical and social science perspective; for the latter each report should incorporate at least one of the assigned social science readings from the course; (2) policy recommendations for U.S. government officials. The Final Report should be 3000-5000 words, typed and double spaced in length; appendices should be included as relevant.

Each individual in the group will receive a grade for this portion of the course based on the group submission of the project materials throughout the semester and the final report. Each submission of project materials should meet the deadlines as outlined in the syllabus; the final report is due in class on Thursday, November 30th. Late papers will be marked down one-half grade per day.

**Group Presentation**
Each group will also give a 15-20 min in-class presentation of their group project. The presentation will be graded on organization of the talk, clarity of findings, argument clearly presented, and creative flair. The group presentation should not just be a summary of the findings and final report, but should also include creative presentation.

There is no final exam for this course.

**Statement on Academic Integrity**

The Cornell Code of Academic Integrity states: “Absolute integrity is expected of every Cornell student in all academic undertakings. Integrity entails a firm adherence to a set of values, and the values most essential to an academic community are grounded on the concept of honesty with respect to the intellectual efforts of oneself and others. . . .A Cornell student's submission of work for academic credit indicates that the work is the student's own. All outside assistance should be acknowledged, and the student's academic position truthfully reported at all times. In addition, Cornell students have a right to expect academic integrity from each of their peers.”

Each student in this course is expected to abide by the Cornell University Code of Academic Integrity. In the context of this course, academic integrity includes writing your own reading notes & responses, essays, and term paper, faithfully referencing all sources, and using quotation marks to indicate material that is quoted. Violations will be handled in accordance with the strictest applicable university policies. See the complete statement of student responsibilities: [http://plagiarism.arts.cornell.edu/tutorial/index.cfm](http://plagiarism.arts.cornell.edu/tutorial/index.cfm)
Physics 2206/Government 3847
Weapons of Mass Destruction
Spring 2009
Tuesday/Thursday: 2:55-4:10pm
Uris Hall Auditorium (Uris G01)

Instructors:
George Lewis (Physics)  
Office Hours: Wednesday 2.00-4.00
130C Uris Hall  
GNL3@is.cornell.edu  
607.255.8914
Sarah Kreps (Government)  
Office Hours: Thursday 4.15-5.15
317 White Hall  
sarah.kreps@cornell.edu  
Friday 2.30-3.30

Teaching Assistants
Bryan Daniels (Physics)  
Office Hours: Mondays 2.00-3.45
Clark 535  
bcd27@cornell.edu  
607.255.7128
Simon Cotton (Government)  
Office Hours: Tuesdays, 4.15-6.00  
src34@cornell.edu  
607.279.5482

Course Description
The 20th and early 21st centuries have been profoundly affected by the development of extremely destructive, technology-based weapons, often (and sometimes wrongly) lumped together under the term "weapons of mass destruction." This course will examine topics such as the physics, technology and effects of nuclear weapons. In addition, the course will explore the nuclear arms race, efforts to restrain it via arms control, important concepts and strategies, and recent and current issues associated with nuclear proliferation. Similarly, the technology of, effects of, past and future potential uses of, and prospects for preventing future use of biological, chemical, and radiological weapons will be covered. Finally, the delivery systems that enable the use of many of the above weapons will also be covered, ranging from the massive missile arsenals of the Cold War to current issues such as the deployment and effectiveness of missile defenses.

This course is offered jointly as Physics 2206 and Government 3847. Lectures and reading assignments are common (mostly) to both courses, but exams and sections have
different emphases. Students enrolled in Physics 2206 will do problem sets relating to the technical material discussed in the course. Students enrolled in Government 3847 will examine policy issues and write an analytic research paper of 8-10 pages, due on April 16. All students will take a mid-term and final exam but the content will be different for the physics and government students. Grades will be based on section work (problem sets/paper/participation) (25%), mid-term exam (25%), and cumulative final exam (50%).

Course Materials

The following texts are available at the bookstore or online:


Unless otherwise stated, readings will be posted on Blackboard.

News and Links

In addition to the readings, you should sign up for Google’s daily news alerts. At [http://www.google.com/alerts?hl=en](http://www.google.com/alerts?hl=en), type “nuclear” as the search term, and “once a day” as the frequency. This will allow you to keep up with nuclear-related news on a daily basis.

Also, the following links may be useful as additional reference material or for commentaries on WMD-related activities.

International Atomic Energy Agency news site [http://www.iaea.org/NewsCenter/index.html](http://www.iaea.org/NewsCenter/index.html)
Federation of American Scientists, [www.fas.org](http://www.fas.org)
Assigned Readings

**Week 1: January 20: Introduction**

Introduction (Kreps, Lewis); A 20 kt Nuclear Explosion over Cornell (Lewis)

**January 22: Atomic and Nuclear Physics (Lewis)**

Schroeer, pp. 14-33.
Bernstein, to page 89.

Optional for Physics students (But recommended – you will likely find it helpful for the first homework):

**January 27: The decision to build the bomb (Kreps)**


Hans Bethe, “How Close is the Danger,” and “Brighter than a Thousand Suns,” *The Road from Los Alamos* (blackboard)


Schroeer, pp. 34-36.

*For more background, browse the following:*
http://www.cfo.doe.gov/me70/manhattan/events.htm

**January 29: The Possibility of Nuclear Explosions (Lewis)**

Bernstein, pp. 93-188

**February 3: The Decision to Use the Bomb (Kreps)**

Gar, Alperovitz. 2001. Historians reassess: Did we need to drop the bomb. pp. 5-21 in Bird and Lifschultz.

Louis Morton, “The Decision to Use the Atomic Bomb,” part of an article available at http://www.history.army.mil/books/70-7_23.htm

*Decision-making simulation (in class)*

**February 5: The Effects of Nuclear Weapons (Lewis)**


Schroeer, pp. 36-56.

**February 10: The Decision to Build the Hydrogen Bomb (Kreps) and the Nuclear Physics (Lewis)**


Gaddis, “Implementing Containment,” 71, 79-82

Schroeer, pp. 58-81


*Optional:*
Bernstein, pp. 191-223.

February 12: Proliferation in the Early Cold War (Kreps)


Henry Sokolski, “The Baruch Plan,” Best of Intentions


February 17: Delivery Systems, Accuracy, and Targeting (Lewis)

Schroeer, Chapters 5 (“Strategic Bombers”), Chapter 6 (“Intercontinental Ballistic Missiles”) and Chapter 7 (“Nuclear Missile Submarines”)


Optional:


February 19: Nuclear Strategies of the Cold War (Kreps)

Gaddis, Strategies of Containment, Chapters 2, 5, 7, 9

Schelling, Arms and Influence, Chapter 2
February 24: The Arms Race (Kreps)


John Lewis Gaddis, “The Cuban Missile Crisis,” We Now Know, 260-280.


Optional Reading:
“The Intelligence Community Experiment in Competitive Analysis: Soviet Strategic Objectives: An Alternative View.”


February 26: Defenses (Lewis)


The full report is also available at the above link, and the “Executive Summary” and Chapter 3 “The Planned NMD System” are optional
March 3: Theories of Arms Control (Kreps)


March 5: End of Détente and Arms Race II: Strategic Defense Initiative and Weapons in Space (Lewis)


March 10: The Practice of Arms Control (Kreps)


**Sources on Arms Control:**


**March 12:**

*Midterm*

**March 17, 19:**

*Spring Break*

**March 24: Why Do States Proliferate and is More Proliferation Better? (Kreps)**


**March 26: Efforts to Prevent the Spread of Nuclear Weapons (Kreps)**

*Non-Military*


Military Counterproliferation:


Optional Reading:


IAEA, "Model Protocol Additional to the Agreement(s) Between State(s) and the International Atomic Energy Agency for the Application of Safeguards." INFCIRC540, September, 1997.

March 31: Nuclear Control after the Cold War (Lewis)


Read up to page 246. The rest is optional


Optional:


April 2: Nuclear Taboos and Can We Undo Nuclear Development? (Kreps)


Optional:

April 7, 9: Chemical and Radiological Weapons

The Physical Science of Chemical and Radiological Weapons (Lewis)

Cirincione, Chapter 4, “Biological and Chemical Weapons, Agents, and Proliferation,” including tables at end


Optional:

The History and Social Science (Kreps)


“Chemical and Biological Weapons Nonproliferation Regime,” Cirincione, 35-37

April 14, 16: Biological Weapons

The Physical Science of Biological Weapons (Lewis)


The Social Science of Biological Weapons (Kreps)

Wenger and Wollenmann, Bioterrorism: A Complex Threat, Chapters 1 and 9

Carol Atkinson, "Who Cares About Biological Warfare?" Working paper

April 21: Contemporary Nuclear Postures (Lewis)
Post-ABM, Nuclear Posture Review

Nuclear Posture Review, leaked excerpts,
Read the Foreword, the rest is optional, but recommended.


Sections on “Deploying a Test Bed” and “New Tests: Same Uncertainties” are optional.

Optional:

April 23: Enduring Nuclear Issues: Asia (Kreps)


US-India Nuclear Agreement
frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:h5682enr.txt.pdf

Optional:
“Pakistan,” Deadly Arsenals, 239-258.

“India,” Deadly Arsenals, 221-238.
“North Korea” in *Deadly Arsenals*, pp.279-294


**April 28: Enduring Nuclear Issues: The Middle East (Lewis)**


“Iran” chapter of *Deadly Arsenals*, pp.295-314.


Optional:

**April 30: Nuclear Policy in the 21st Century (Lewis and Kreps)**


History 94.2
Science, Technology and Culture in the Nuclear Age

Dartmouth College
Winter 2005

Goals of the Course

An examination of the social, political and cultural dimensions of nuclear technology from the discovery of fission in 1938 through the 1980s. We will consider how national contexts shaped the development of nuclear weapons and power reactors, and how these technologies in turn affected politics, culture and science. Topics include efforts in Germany, the USSR, Japan, the USA and Britain to build fission weapons during World War II; representations of Hiroshima and Nagasaki in American and Japanese memory; the arms race, atomic scientists and the Cold War; the nuclear power industry in international comparison; living in and resisting the Nuclear Age; literary and film representations of the Nuclear Age; and the impact of the Nuclear Age on the development of science and technology since 1938.

Course Requirements

Two short essays, 4-5 pages each (20%): Write a critical review of one of the films scheduled for the course, and write a critical review of one of the imaginative literary works scheduled for the course (Frayn, Hoban, Oe, Vanderbilt, or Wells). Each essay is due at the class session in which the work will be discussed.

Term essay (35%): Write a 12 to 15-page original research paper on any issue, for which adequate primary sources are accessible, related to the course. I will provide a list of suggested topics, which might include, for example, Hollywood and the bomb, reevaluations of Heisenberg and the German nuclear project, American and Soviet concepts of civil defense in the 1950s, the “matter of J. Robert Oppenheimer,” Japanese atomic-bomb poetry, the physics of “Star Wars” missile defense systems, etc. Your one-page preliminary bibliography and topic description is due in class on Tuesday, 25 January. Term essays are due on Thursday, 10 March, by 5 pm. I will offer suggestions on any preliminary drafts received by Tuesday, 1 March.

Class Participation (10%): Read assigned materials and view films critically, and participate actively in class discussions and symposia.

Final examination (35%): The exam will consist primarily of essay questions, selected from a somewhat longer list of questions you will see in advance.

Course Policies
According to College policy (ORC, p. 104), there are no regularly excused absences for participation in College-sponsored extracurricular activities. Please see me immediately if you anticipate such conflicts to arise during the term. You are also expected to submit written work on time.

For this seminar, the Academic Honor Principle (ORC, pp. 67-70) means that you should write your own essays, with proper citations to sources used, and should not submit the same work in more than one course. Read Dartmouth’s Sources: Their use and acknowledgment (www.dartmouth.edu/~sources) for a definition and discussion of plagiarism. I encourage you, however, to discuss the readings, films and your research with other class members.

Any student with a documented disability needing academic adjustments or accommodations is requested to speak to me and give me a copy of your accommodations form by the end of the second week of the term. All discussions will remain confidential, although the Director of Student Disabilities may be consulted if questions arise.

Required Textbooks
(available in Wheelock Books)


CHECK
Michael Gordin, Five days in august: How WWII became a nuclear war (Princeton, 2007); idem, Red cloud at dawn: Stalin, Truman, and the end of the atomic monopoly (Farrar, Straus & Giroux, 2009)

Additional materials will be placed on 4-hour closed reserve in Baker Library.
CHECK http://digital.library.unlv.edu/ntsohp/ (6.09)


Kubrick, Stanley, director. “Dr. Strangelove or how I learned to stop worrying and love the bomb” [Columbia Pictures, 1964]. Columbia Tristar Home Video, 1999. DVD, 98 mins.


Syllabus and Assigned Reading

All *ed are on four-hour closed reserve in Baker Library

Jan 4  Introduction
Who owns history, I? The 1995 Enola Gay Exhibit and American memories of Hiroshima and Nagasaki

“The Enola Gay Controversy” (reader, distributed in class)

Background

Jan 6  Who owns history, II? Japanese memories of Hiroshima and Nagasaki

Oe, 1996.

Background


Jan 11  

**Science, power and war before 1939: Visions and realities**


Rhodes, 1986, Chapt 1-4.

**Background**


Jan 13  

**From moonshine to neutrons to chain reactions: Nuclear physics in the making**


Rhodes, Chapt 7-11.

Digital resources: Locate a major web site devoted to nuclear issues and present a critical review of its content. This list of sites may provide useful sources for your research papers.

**Background**


Heilbron, J. L. *The dilemmas of an upright man: Max Planck as spokesman for German science*. Berkeley, 1986.


**Jan 18**

Organizing and nationalizing science for World War II: Contrasting Europe, the USA, and Japan

Rhodes, Ch. 11-13.

**Background**


**Jan 20**

Hollywood’s initial version of the Manhatten Project

Taurog, Norman, director. "The Beginning or the End," MGM, 1947. 112 mins. This film, which we must rent, can be screened only once, during the regularly scheduled class session.

Rhodes, Ch. 14-17.
Jan 25  Soldiers out of uniform: Building the American bomb

Rhodes, Ch. 18.

Background
Norris, Robert S. Racing for the bomb: General Leslie R. Groves, the Manhattan Project’s indispensable man. 2002.

Dozens of autobiographical accounts by participants in the Manhattan Project have been published, especially around 1995. In addition to such accounts, see:

Research paper proposals due

Jan 27  Why didn't the Germans build a successful bomb?
Interpretations, justifications and historiography


Background
Feb 1

The American decision to use the bomb

Why didn’t the Soviets or the Japanese build a bomb before 1945?

Rhodes, Ch. 19.


Background


Bernstein, Barton. “Seizing the contested terrain or early nuclear history: Stimson, Conant and the allies explain the decision to use the atomic bomb.” Diplomatic history 17 (1993): 35-72.


Feb 3  European and American public reactions to Hiroshima/Nagasaki

The failure of internationalism, or the origins of the nuclear arms race

Cantelon, ed., pp. 69-96.
Rhodes, Epilogue.
Find at least one article from a newspaper or periodical published in
August through December of 1945 concerning the Manhattan Project
and/or the use of the atomic bombs. Be prepared to discuss the tone of
the article and the topics covered.
Hogan, Pamela, director. “Ultimate weapon.” Superbomb Documentary,

Background
Boyer, Paul. *By the bomb’s early light: American thought and culture at
Herken, Gregg. *The winning weapon: The atomic bomb in the Cold War,
Manzione, Joseph. “‘Amusing and amazing and practical and military’:
The legacy of scientific internationalism in American foreign policy,
Smith, Alice Kimball. *A peril and a hope: The scientists’ movement in

Feb 8  Building atomic and “super” (hydrogen) bombs in the USA and the
USSR, 1945-55: Spies, Oppenheimer and new “personae” for physicists

*Galison, Peter, and Barton Bernstein. “In any light: Scientists and the
decision to build the superbomb, 1952-1954.”* *Historical studies in the

Background
Bernstein, Barton J. “In the matter of J. Robert Oppenheimer.” *Historical
studies in the physical sciences* 12 (1982), 195-252.
Cassidy, David C. *J. Robert Oppenheimer and the American century.
Herken, Gregg. *Brotherhood of the bomb: The tangled lives and loyalties
of Robert Oppenheimer, Ernest Lawrence, and Edward Teller*. New
York, 2002.
Holloway, David. *Stalin and the bomb: The Soviet Union and atomic
Feb 10
The US debate on nuclear fallout: Expert interests versus political interests

Intellectuals in the early Nuclear Age


Background


Feb 15
The “peaceful atom” and postwar technologies and cultures of nuclear power


Background
Winter 2005 History 94.2


Henriksen, Margot A. *Dr. Strangelove’s America: Society and culture in the Atomic Age*. Berkeley, 1997.


Feb 17

The promise of controlled nuclear fusion: Physics, Politics, and Propaganda (Prof. David Montgomery, Dept. of Physics)

Anti-nuclear movements in Europe and the USA

Cantelon, ed., pp. 338-56.

Kubrick, Stanley, director. “Dr. Strangelove or how I learned to stop worrying and love the bomb” [Columbia Pictures, 1964]. Columbia Tristar Home Video, 1999. DVD, 98 mins.

Background


Friedman, Sharon M. “Chernobyl Coverage: How the U.S. Media Treated the Nuclear Industry.” *Public Understanding of Science* 1 (1992), 305-23 [look through entire issue, which deals with Chernobyl].


Feb 22

No class meeting. Furious work on research papers.

Feb 24

Four decades of nuclear arms races, strategies and controls: The place of science and technology in the “defense” game

Cantelon, ed., 163-301.


**Background**


Feb 28 Nuclear weapons “proliferation”: Israel, India, Pakistan, South Africa, China, and more?


Background

Mar 3 Literary musings on the Nuclear Age


Background


**Mar 8**

**Living in the Nuclear Age after the end of the Cold War**

Vanderbilt, 2002.


**Background**


**Mar 10**

**Research papers due, 5 p.m.**

**Mar 13**

**Final Examination, 3 – 6 p.m.**
NUCLEAR WEAPONS & WORLD ORDER

DESCRIPTION: Over the six plus decades of their existence, nuclear weapons have been of paramount concern for international politics and international theory. Vast disagreements exist about many aspects of this topic. This course examines what is perhaps the most basic question, what political arrangements are consistent with security from nuclear weapons? Debate about this question falls into roughly two parts, the First Debate during the years of the Cold War, and the Second Debate beginning roughly twenty years ago and encompassing the problem of non-state actors. The first part of the course is an intensive examination of the major school of thought during the first great debate, culminating in the role of nuclear weapons at the end of the Cold War. This debate was centered on the implications of nuclear weapons for interstate and great power relations, and came to be overwhelmingly dominated by deterrence and the measures necessary to achieve it. The second part is an intensive examination of the major issues and positions of the much newer and less settled second great debate. The scope of issues at play in the second debate is much more extensive, encompassing non-state actors as well as states, and the internal features of states, as well as their relations. The third part of the course examines in depth four select topics which have not been accorded sufficient attention by theorists.

REQUIREMENTS:  
1. Reading Assignments and Class Participation  
2. Three (3) ten (10) page papers evaluating the debate on a topic.  
   First Paper Due: Monday, March 8  
   Second Paper Due: Monday, April 12  
   Third Paper Due: Wednesday, May 12  

TEXTS: 
The following books will be used extensively and should be acquired:

Campbell Craig, *Glimmer of a New Leviathan* (Columbia, 2003)  
Lawrence S. Wittner, *Confronting the Bomb* (Stanford, 2009)  
Paul Lettow, *Ronald Reagan and His Quest to Abolish Nuclear Weapons* (Random House, 2005)  
Fred Ikle, *Annihilation from Within: the Ultimate Threat to Nations* (Columbia, 2006)  
Graham Allison, ed. *Confronting the Specter of Nuclear Terrorism*. Annals of the American
JOHNS HOPKINS UNIVERSITY

Academy of Political and Social Science, vol.607, September 2006,
Dahl, Controlling Nuclear Weapons, Democracy Versus Guardianship (Syracuse, 1985)
Dunoff, and Trachtman, eds., Ruling the World? Constitutionalism, International Law, and
Global Governance (Cambridge, 2009).

1. INTRODUCTION

PART I: THE FIRST GREAT DEBATE

2. NUCLEAR ONE WORLDISM & EARLY DETERRENCE

Campbell Craig, Glimmer of a New Leviathan: Total War in the Realism of Neibuhr,
Morgebnthau, and Waltz (Columbia University Press, 2003) [173 pgs]
[20 pgs] RESERVE
Daniel Deudney, “Anticipations of World Nuclear Government,” ch.9, Bounding Power
(Princeton, 2007), pp.244-264 [20 pgs] RESERVE
Campbell Craig and Sergey Radchenko, The Atomic Bomb and the Origins of the Cold War
(Yale University Press, 2008) BACKGROUND
John Mueller, Atomic Obsession: Nuclear Alarmism from Hiroshima to Al Qaeda (Oxford
University Press, 2009) BACKGROUND

3. WAR STRATEGISM & LATER DETERRENCE

Colin Gray, The Geopolitics of the Nuclear Era: Heartlands, Rimlands, and the Technological
Revolution (New York: Crane, Russak, 1977) [76 pgs] RESERVE
RESERVE
Robert Jervis, The Meaning of the Nuclear Revolution: Statecraft and the Prospect of
Armageddon (Cornell University Press, 1989) [257 pgs]
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Patrick Morgan, *Deterrence Now* (Cambridge University Press, 2003) BACKGROUND

4. ARMS CONTROL, DISARMAMENT & ABOLITION


Jonathan Schell, *The Abolition* (Knopf, 1984) [163 pgs]


George Perkovitch and James M. Acton, Abolishing Nuclear Weapons, Adelphi Paper 396, (International Institute for Strategic Studies, 2008), pp.118. BACKGROUND

5. NUCLEAR POPULISM

Lawrence S. Wittner, Confronting the Bomb: A Short History of the World Disarmament


6. NUCLEAR WEAPONS & THE END OF THE COLD WAR

Paul Lettow, Ronald Reagan and His Quest to Abolish Nuclear Weapons (Random House, 2005) [248 pgs].


PART II: THE SECOND GREAT DEBATE

7. PROLIFERATION & COUNTER-PROLIFERATION


Derek D. Smith, Deterring America: Rogue States and the Proliferation of Weapons of Mass Destruction (Cambridge University Press, 2006). BACKGROUND

8. TERRORISM & NON-STATE ACTORS (I)


9. TERRORISM & NON-STATE ACTORS (II)

Todd Masse, Nuclear Terrorism: Conventionalists, Skeptics, and the Margin of Safety (Johns Hopkins University, Applied Physics Laboratory, 2009) [61 pgs] DISTRIBUTED


PART III: PROBLEMS & TOPICS

10. TECHNOLOGICAL DETERMINISM, CONTRADICTION & LAGS

Bruce Bimber, “Three Faces of Technological Determinism,” in Merritt Roe Smith and Leo Marx, eds., Does Technology Drive History? The Dilemma of Technological Determinism (MIT Press, 1994), pp.79-100 [21 pgs] RESERVE

Geoffrey L. Herrera, Technology and International Transformation: The Railroad, the Atom Bomb, and the Politics of Technological Change (SUNY, 2006) [206 pgs]


Kier A. Lieber, War and the Engineers: The Primacy of Politics over Technology (Cornell
Chalmers Johnson, Revolutionary Change, second edition (Stanford University Press, 1982).

11. LIBERAL DEMOCRATIC CONSTITUTIONAL STATES


Robert Dahl, Controlling Nuclear Weapons, Democracy Versus Guardianship (Syracuse University Press, 1985), pp.1-90 [90 pgs] RESERVE (or PURCHASE)


Ian Shapiro, The State of Democratic Theory (Princeton, 2003) BACKGROUND


12. THE PLANETARY COMMONS: MILITARIZATION & DE-MILITARIZATION

The Atmosphere, Oceans, Orbital Space and Electromagnetic Spectrum

JOHNS HOPKINS UNIVERSITY


13. NUCLEAR CONSTITUTIONAL SECURITY UNIONS


Wesley T. Wooley, *Alternatives to Anarchy: American Supranationalism since World War II* (University of Indiana Press, 1988)   BACKGROUND

**SCHEDULE**

1. INTRODUCTION  Monday, February 1

    **PART I THE FIRST GREAT DEBATE**

2. NUCLEAR ONE WORLDISM & EARLY DETERRENCE  Monday, February 8

3. WAR STRATEGISIM & LATER DETERRENCE  Monday, February 15

4. ARMS CONTROL, DISARMAMENT & ABOLITION  Monday, February 22

5. NUCLEAR POPULISM  Monday, March 6
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6. NUCLEAR WEAPONS & THE END OF THE COLD WAR Monday, March 8

FIRST PAPER DUE: Monday, March 8

SPRING BREAK (March 15-19)

PART II: THE SECOND GREAT DEBATE

7. PROLIFERATION & COUNTER-PROLIFERATION, Monday, March 22

8. TERRORISM & NON-STATE ACTORS (I), Monday, March 29

9. TERRORISM & NON-STATE ACTORS (II), Monday, April 5

PART III: PROBLEMS & TOPICS

10. TECHNOLOGICAL DETERMINISM, CONTRADICTION & LAGS Monday, April 12

SECOND PAPER DUE: Monday, April 12

11. LIBERAL DEMOCRATIC CONSTITUTIONAL STATES Monday, April 19

12. THE PLANETARY COMMONS: MILITARIZATION & DE-MILITARIZATION April 26

13. CONSTITUTIONAL NUCLEAR SECURITY UNIONS, Monday, May 3.

THIRD PAPER DUE: Wednesday, May 12
March 30, 2009
Prof. Siegfried S. Hecker
Encina Hall, C-220
shecker@stanford.edu

TA: Philippe de Koning
pbkoning@stanford.edu
Administrative Support:
Alistair Dawson
aedawson@stanford.edu

Class Location: Encina Hall, East Wing
Conference Room E008 (Ground Floor)
2:15-5:05pm

Syllabus for Introductory Seminar 2009
MS&E 93Q, “Nuclear Weapons, terrorism and energy”

What are nuclear weapons and what do they do? Why do some nations want them? What are the risks of nuclear terrorism? What is radioactivity? What role does nuclear power play? Can it help with global warming? Emphasis is on policy options in the light of changes in the world. Recommended: a course in international relations, engineering, or physical science.

Objectives of Introductory Seminar Course

• Provide background on nuclear issues.
• Frame the critical nuclear issues of our times.
• Have you study, think deeply about, and debate these issues.
• Have you write about and present your work on selected topics.

This is a seminar course; not history, not science – but it will contain some of both. It is meant to engage you. For the most part, there are no right or wrong answers.

Seminar Questions

• What are nuclear weapons? What do they do? Why are they different?
• What is the nuclear weapon and nuclear weapon material situation around the world?
• What is the US policy to deal with the nuclear threats? What are the policies of other countries? How has the nuclear threat evolved? What are the primary challenges today?
• What is the threat posed by nuclear proliferation (Iran, North Korea, and others)? Is it inevitable? How is it being and should it be dealt with?
• What is the role of international institutions in providing nuclear security and oversight?
• Do nuclear safeguards and inspections work? How good is nuclear intelligence?
• What is the nuclear terrorism threat? What can a sub-national group really do? What does it need? How best can the threat be dealt with? What is the real threat of a “dirty bomb?”
What are the pros and cons of nuclear power? What is the role of nuclear power in meeting present and future electricity demand? In reducing climate change?
What is the problem of nuclear wastes? How can it be solved?
How can we best balance the benefits of things nuclear with their risks?

Daily Class Schedule

2:15 to 3:00 pm  Class
3:00 to 3:10 pm  Break
3:10 to 4:00 pm  Class
4:00 to 4:10 pm  Break
4:10 to 5:05 pm  Class

Grading

Your grade will be based on:
- 25 % for mid-term paper
- 25 % for class attendance, participation, and finals paper presentation
- 50 % for written finals paper

There will not be mid-term or final exams.

Course details

Seven lectures and discussions (see schedule below) All lecture material and references will be posted to class web site.

March 31: Introduction, nuclear primer and history

April 7: Nuclear weapons, effects, and nuclear fuel cycle

April 14: Nuclear nations, deterrence, arms control, demise of Soviet Union

April 21: Civilian uses and cross-cutting issues (Dr. Tom Isaacs)

April 28: Nuclear proliferation, international agencies and safeguards
        Plus Guest Lecture by Former Secretary of Defense William J. Perry

May 5: Nuclear proliferation, nuclear black market

May 12: Nuclear terrorism, risk and remedies

May 19: Field trip to Lawrence Livermore National Laboratory (All day trip plus dinner)

May 26: Class presentations

June 2: Class presentations

Mid-term research paper assignment
- Paper assigned on Tuesday, April 21, 2009.
This mid-term will count for 25% of your grade.

Completed papers due electronically by 5:00 pm Thursday, April 30 to Philippe de Koning pbkoning@stanford.edu and Alistair Dawson aedawson@stanford.edu. (No need for hard copy).

- 3 pages text maximum, space and a half, one-inch margins, Times New Roman #12 font. This paper should be written as a research paper on your selected topic. Please use class notes and additional research to write your paper. (Endnotes and references encouraged to demonstrate that you have done some research. These can be in addition to your 3-page text limit).

Problem: Why did xxx build the bomb?

- Put in context of why countries decide to acquire nuclear weapons.
- What were the key political and/or technical factors?
- Relate these considerations to what you have learned in this course to date.
- Conduct some background research, present your analysis (with some references – not Wikipedia), and state your conclusions.

[xxx – Russia, UK, France, China, Israel, South Africa, India or Pakistan].

You pick one country. Let Philippe know by e-mail by April 24 which one you selected.

Final papers Prof. Hecker will pose four or five policy paper problems. You will need to choose one no later than May 18.

- Your policy paper will require a decision by the National Security Advisor. You will be the national security analyst writing the policy paper for the NSA.
- Your paper should point to a decision. The general structure should include:
  - A concise history and background, including what's needed for a decision.
  - Identification and assessment of feasible options, including the best arguments pro and con for each option.
  - A reasoned recommendation.

- The main purpose of the paper is to think about an important question analytically: what is important, what is known, what would be reasonable decision options? The papers are analyses, not briefs for any specific answer. The main purpose of the papers is not primarily to gather data, although judgment in determining what is fact and what is propaganda or hearsay is important.

- This finals paper will count for 50% of your grade

- Completed papers due electronically to Prof. Hecker by June 5 with copy to Philippe De Koning. Deliver hard copy to Philippe only if you do not have electronic version.
  - 5 Pages text maximum, space and a half, one-inch margins, Times New Roman #12 font.
  - Endnotes and references encouraged demonstrating that you have done adequate research. Endnotes can be in addition to your 5-page limit.
  - Don’t hesitate to contact Prof. Hecker or Philippe if you have questions.

Presentations:
- Brief (15 minutes, plus 5 minutes for questions and discussion) oral student presentations on their papers. One half of the students will present on May 26, the other
half on June 2. If you decide to use Powerpoint, please bring your presentation to class on a memory stick.

- One student will be selected to be the lead discussant for each presentation. Each lead discussant will be given 2 minutes for a critique.

- The grade for your presentation will be factored into the 25% of your grade that will be based on attendance and class participation.

- The main purpose of the presentations is to give you some experience on how to present your results orally and so you can use the comments to help finalize your written paper.

**Possible topics for final papers (Prof. Hecker will narrow down these topics before the deadline.)**

- What drives the current nuclear weapons policies in one or several of the nuclear weapons states? How have these policies been changed to reflect the end of the Cold War and by concerns about catastrophic terrorism?
- What drives the nuclear ambitions and policies of other states – announced but not recognized states such as India, Pakistan, and North Korea; unannounced, but capable Israel; unannounced, but potentially capable Iran; other potentially nuclear-capable states?
- How do U.S. plans to build the Reliable Replacement Warhead (RRW) affect the nuclear weapons policies of other nations? How do they affect the nuclear nonproliferation regime?
- How should the U.S. or the UN Security Council deal with current concerns about nuclear proliferation, e.g. Iran, North Korea?
- Why did other states give up their nuclear weapons ambitions (for example, South Africa, Libya, Argentina, and Brazil, among others)?
- How should the world deal with India’s nuclear program? Should the United States – India nuclear deal proceed from either the U.S. or the Indian perspective? What are the consequences for non-proliferation? Can the nonproliferation regime encompass a U.S. – India nuclear deal? Should it, given India’s size and prospects?
- Examine some specific aspects of controlling nuclear proliferation, e.g. keeping materials under control or preventing nuclear materials export. Or examine the various proposals to control the fuel cycle (President Bush's February 11, 2004 proposal, IAEA Director General El Baradei’s proposals, UNSC Resolution 1540, etc.). Evaluate specific aspects from the standpoint of their prospective effectiveness and of the likelihood of their implementation.
- What is the importance of arms limitations and arms control today? Are the comprehensive test ban, Moscow treaty, etc., still effective measures of increasing security?
- Do we (can we) know whether the nuclear black market centered on Pakistan and extending to North Korea, Iran, Libya, and elsewhere has been shut down?
- Was the UN/IAEA system working so far as verifying the absence of a nuclear capability in Iraq? If so, why was it not trusted? If not, what is needed?
- Can nuclear material be traced to its source, either before or after an explosion? If so, can this ability be used to improve control of such materials?
• What would be the main consequences of a nuclear terrorist attack? What are the most effective measures to prevent such an attack?
• Examine the consequences of a “dirty bomb” attack? What is the best way to deal with this problem?
• What factors have led to large nuclear power use in some countries and limited it in others? What does that mean for the future of nuclear power?
• To what extent can nuclear power help abate greenhouse gas emissions? What else is needed? What are realistic time scales?
• How do the environmental impacts of nuclear and coal electric power, the two main sources of baseline power in most countries, compare? Are the present ways to internalize social and other external costs adequate?
• Why do different countries come to such different conclusions regarding the utility of reprocessing spent fuel for plutonium?
• Some utilities in the United States and elsewhere are looking at the possibility of building new nuclear reactors. Look at the situation from the standpoint of some utility, outline the main factors that would enter their decisions, and discuss what specific government help would do the most good, or whether there should be any government help at all.
• What are the prospects and challenges of substantial increases in nuclear power in China and in India?
• Is it a good idea to export nuclear power to developing countries? What are the safeguards that should be developed for such export?

Reference texts and papers (to be updated periodically)


STANFORD UNIVERSITY

TECHNOLOGY AND NATIONAL SECURITY
Management Science and Engineering 193/293
Fall Quarter, 2009-10

INSTRUCTORS: Siegfried S. Hecker and William J. Perry

Contact Information:
For contacting Prof. Hecker, please see Alistair Dawson: aedawson@stanford.edu
For contacting Prof. Perry, please see Deborah Gordon: dgordan@stanford.edu or Megan McCullough: meganm1@stanford.edu

TA: David Caswell (Head TA): dcaswell@stanford.edu

CLASS TIME: Monday/Wednesday 4:15-5:30PM, Gates B1

OVERVIEW: In this course you will explore the relationship between national security policy and technology from early history to modern day. Much of the course is focused on security challenges since World War II, including current security challenges and the impact that technology plays. We will discuss regional security challenges such as those of North Korea and Northeast Asia, Iran and the Middle East, Russia, China and South Asia. We will also cover topical security areas such as nuclear weapons and nuclear proliferation, terrorism, intelligence, failed states, and biosecurity. We will look at the most pressing security challenges faced by the Obama administration. Class presentations and discussion will feature the experience of practitioners in national security and/or technology, including several guest lectures by eminent people in key areas.

COURSE REQUIREMENTS: This course is offered to both undergraduate and graduate students. It will have the appropriate standards and assignments. There are no specific prerequisite courses, but an interest in international security and the role of policy and technology is advised. The course is offered on-line to SCPD students. For all other students, attendance at lectures and class participation is necessary since most of the material presented is not available in textbooks. Grading is based on students’ performance on two take-home exams and a policy paper.

EXAMS: Two take-home exams will be assigned to test your comprehension of the lecture material. The first exam will be posted Monday, October 5 following class; it is due Monday, October 12 prior to class. The second exam will be posted Monday, October 26 and will be due on Monday, November 2.

POLICY PAPER: During the quarter, students will be asked to write a policy paper (approximately 5 pages long), prepared as a briefing to the president, national security advisor, or equivalent senior official. The topic will be selected from materials covered in class lectures. The policy paper will be graded and returned to the student with suggestions for improving it. The student must re-submit the paper, incorporating suggested changes as appropriate, after which it will be re-graded. Students signed up for either MS&E 193 or 293 will write a policy paper that includes, at a minimum, a baseline quantitative analysis in the form of a decision tree. Graduate
students taking MS&E 293 will need to incorporate sensitivity analysis into their paper in addition to the decision tree. We will, of course, expect a more detailed analysis from graduate students than undergraduate students. There will be a tutorial on creating decision trees later in the quarter. Students are highly encouraged to meet with course TAs for one-on-one help if needed (TA office hours will be posted later in the quarter).

**Grading:** Your final course grade will be determined by the policy paper (50%), and two take-home exams (25% each).

**Readings:** There are no required textbooks for the course. Individual reading assignments and suggestions will be posted on the class website at [http://www.stanford.edu/class/msande193/](http://www.stanford.edu/class/msande193/). URLs are also provided for some selections. The reading materials will enhance your background understanding of the subjects and, in some cases, will give you pertinent current status of issues and challenges. Some are quite long and detailed – these are meant for students who have a serious interest in individual subjects.

**Office Hours:** Professor Hecker and Perry will not be holding office hours. They encourage you, however to sign up for one of the brown bag lunches being offered. Check the course web page for the schedule. For additional information regarding the brown bag lunches, please contact Alistair Dawson at aedawson@stanford.edu. The teaching assistants will have their office hours posted on the site for the weeks of 2 November, 9 November, and 30 November.

**Lecture Schedule and Dates of Note:**

**Monday, September 21**  
Prof. William J. Perry: Early History  
  - Chapters 1: Antiquity, Chapter 2: Middle Ages, and Chapter 3: Impact of Gunpowder

**Wednesday, September 23**  
Prof. William J. Perry: United States’ Civil War and World War I  

**Monday, September 28**  
Prof. William J. Perry: World War II  

**Wednesday, September 30**  
Prof. William J. Perry: Cold War and Offset Strategy
Monday, October 5 (Exams assigned)
Prof. Siegfried S. Hecker: Nuclear History and Fundamentals

Wednesday, October 7
Prof. Siegfried S. Hecker: Nuclear Weapons and Nuclear Energy, Evolution of Nuclear Threat

Friday, October 9 Last day to drop the class

Monday, October 12 (Exams due)
Prof. Siegfried S. Hecker: Cold War, Arms Control, Russia in Transition (Exams Due)

Wednesday, October 14
Dr. Joseph Martz: Evolution of Nuclear Arsenals, Current Nuclear Issues
• Reading material to follow

Monday, October 19
Prof. Siegfried S. Hecker: Nuclear Proliferation and Nuclear Terrorism
• Graham Allison, Nuclear Terrorism, The Ultimate Preventable Catastrophe, A Times Book, August 2004. Chapters 2, 3, 7

Wednesday, October 21
Prof. Siegfried S. Hecker: North Korea, Iran and Syria

Monday, October 26 (Exams assigned)
Prof. William J. Perry: Post Cold War, Nunn-Lugar Program, Modern Security Threats
- Ashton Carter and William Perry, Preventive Defense, Brookings Institution Press, 1999, Chapter 1, 2, 3, 5

Wednesday, October 28
Prof. William J. Perry: Introduction to Terrorism, Toward a Nuclear Weapons-Free World

Monday, November 2 (Exams due) (Policy paper assigned)
Dr. Thomas Fingar: Intelligence: Wrong on Iraq, right on Iran (Exams due) (Problem assigned)

Wednesday, November 4
Dr. Frank Pabian: Intelligence and Technology

Monday, November 9
Prof. Abbas Milani: Iran’s Nuclear Program: Past Contours, Future Challenges

Wednesday, November 11
Dr. Feroz Khan: Pakistan and Security in South Asia
• Paul Kapur, Dangerous Deterrent: Nuclear Weapons Proliferation and Conflict in South Asia, (Stanford University Press, 2007).

Monday, November 16 (Policy paper due)
Prof. Larry Diamond: Building Democracies after Conflict

Wednesday, November 18
Martha Crenshaw: Rethinking the ‘War on Terrorism’
• Reading material to follow

Monday, November 30 (Policy papers returned)
William J. Perry and Siegfried S. Hecker: North Korea, China, Iran, Zero, Wrapup

Wednesday, December 2
Paul Jackson: Biosecurity Challenges (And Prof. Hecker on guidance for re-writing policy papers)
• Reading material to follow.

Monday, December 7 (Policy paper re-write due)
Speaker biographies:

Lecturers

Hecker, Siegfried is a professor (research) in the Department of Management Science and Engineering, a senior fellow at the Freeman Spogli Institute (FSI), and co-director of the Center for International Security and Cooperation (CISAC). He is also an emeritus director of Los Alamos National Laboratory. Over the past 15 years, he has fostered cooperation with the Russian nuclear laboratories to secure and safeguard the vast stockpile of ex-Soviet fissile materials. Hecker works closely with the Russian Academy of Sciences and is actively involved with the U.S. National Academies, serving as a member of the National Academies Committee on International Security and Arms Control Nonproliferation Panel. Hecker joined Los Alamos National Laboratory as graduate research assistant and postdoctoral fellow before returning as technical staff member following a tenure at General Motors Research. He led the laboratory’s Materials Science and Technology Division and Center for Materials Science before serving as laboratory director from 1986 through 1997, and senior fellow until July 2005.

Perry, William is the Michael and Barbara Berberian Professor at Stanford University, with a joint appointment at FSI and the School of Engineering. He is a senior fellow at FSI and serves as co-director of the Preventive Defense Project, a research collaboration of Stanford and Harvard Universities. He is an expert in U.S. foreign policy, national security and arms control. He was the co-director of CISAC from 1988 to 1993, during which time he was also a professor (half time) at Stanford. Professor Perry was the 19th secretary of defense for the United States, serving from February 1994 to January 1997. He previously served as deputy secretary of defense (1993-1994) and as under secretary of defense for research and engineering (1977-1981).

Speakers:

Crenshaw, Martha is a senior fellow at CISAC and FSI and a professor of political science by courtesy. She was the Colin and Nancy Campbell Professor of Global Issues and Democratic Thought and professor of government at Wesleyan University in Middletown, Conn., from 1974 to 2007. She is a Lead Investigator with START (the National Center for the Study of Terrorism and Responses to Terrorism), a Center of Excellence established by the Department of Homeland Security. Her current research projects focus on why the U.S. is targeted by terrorism and the effectiveness of counterterrorism policies.

Diamond, Larry is a senior fellow at the Hoover Institution, Stanford University, and founding coeditor of the Journal of Democracy. He is also co-director of the International Forum for Democratic Studies of the National Endowment for Democracy. At Stanford University, he is professor by courtesy of political science and sociology and coordinates the democracy program of the new Center on Democracy, Development, and the Rule of Law. During 2002–3, he served as a consultant to the U.S. Agency for International Development (USAID) and was a contributing author of its report Foreign Aid in the National Interest. Currently he serves as a member of USAID’s Advisory Committee on Voluntary Foreign Aid. He has also advised and lectured to the World Bank, the United Nations, the State Department, and other governmental and nongovernmental agencies dealing with governance and development. During the first three months of 2004, Diamond served as a senior adviser on governance to the Coalition Provisional Authority in Baghdad.
Fingar, Thomas was assistant secretary of the State Department’s Bureau of Intelligence and Research (INR) from July 2004 until May 2005, when he was named deputy director of national intelligence for analysis and chairman of the National Intelligence Council. While at the State Department he served as acting assistant secretary for intelligence and research, principal deputy assistant secretary, deputy assistant secretary for analysis, director of the Office of Analysis for East Asia and the Pacific, and chief of the China division. His intelligence career began in 1970 as the senior German linguist in the Office of the Deputy Chief of Staff for Intelligence, USAEUR & 7th Army in Heidelberg, Germany. Between 1975 and 1986 he held a number of positions at Stanford University, including senior research associate in the Center for International Security and Arms Control and director of the university’s U.S.-China Relations Program. Other previous positions include assignment to the National Academy of Sciences as co-director of the U.S.-China Education Clearinghouse, adviser to the Congressional Office of Technology Assessment, and consultant to numerous U.S. government agencies and private sector organizations. Fingar holds a BA in government and history from Cornell University and an MA and PhD in political science from Stanford University. He is a career member of the Senior Executive Service. His principal foreign languages are Chinese and German. Fingar has published dozens of books and articles, mostly on aspects of Chinese politics and policymaking.

Jackson, Paul: Biography to follow

Khan, Feroz Hassan (Brigadier General retired) is currently on the faculty of the Department of National Security Affairs in U.S. Naval Postgraduate School, Monterey California. He previously served with the Pakistani Army for 32 years. His last held the post of Director, Arms Control and Disarmament Affairs, within the Strategic Plans Division, Joint Services Headquarters, which is the secretariat of Pakistan’s Nuclear Command Authority. His military career blends with numerous diplomatic and scholarly assignments. He has experienced combat action and command on active fronts on the line of control in Siachin Glacier and Kashmir. He served domestically and abroad in the United States, Europe, and South Asia, in particular assisting Pakistan’s nuclear diplomacy. Among his academic degrees, General Khan holds an M.A. from the Paul Nitze School of Advanced International Studies, The Johns Hopkins University. He has held a series of visiting fellowships at Stanford University; the Woodrow Wilson International Center for Scholars; the Brookings Institution; the Center for Non-Proliferation Studies at the Monterey Institute of International Studies; and the Cooperative Monitoring Center, Sandia National Laboratory. Since mid 1990s, General Khan has been making key contributions in formulating and advocating Pakistan’s security policy on nuclear and conventional arms control and strategic stability in South Asia. He has produced recommendations for the Ministry of Foreign Affairs and represented Pakistan in several multilateral and bilateral arms control negotiations. He has published and participated in several security related national and international conferences and seminars. He has also been teaching as a visiting faculty member at the Department of the Defense and Strategic Studies, Quaid-e-Azam University, Islamabad. General Khan is currently writing a book on the history of Pakistan’s nuclear weapons and U.S. policy, expected publication in 2010.
Martz, Joseph has had a 20+ year career focused on issues surrounding nuclear security and nuclear weapons. The majority of his career has focused on nuclear weapons and materials, and he has led a variety of national and international projects related to nuclear weapon design and maintenance, plutonium storage and disposition, stockpile life extension and plutonium aging, nuclear operations, and nuclear intelligence analysis. Dr. Martz is a 25 yr. employee of the Los Alamos National Laboratory in which he has served in a variety of research, leadership and management positions. In addition to his research at Los Alamos, he has led national project teams including the recent reliable-replacement warhead design competition and several complex nuclear material experiments. Dr. Martz is the author of over 50 papers and invited presentations in these areas.

Pabian, Frank is a senior nonproliferation infrastructure analyst at Los Alamos National Laboratory, has over 37 years experience in the nuclear nonproliferation field including six years with the Office of Imagery Analysis and 18 years with Lawrence Livermore National Laboratory’s “Z” Division. Frank also served as a Chief Inspector for the International Atomic Energy Agency during United Nations inspections in Iraq from 1996-1998 focusing on “Capable Sites.” In December 2002, Frank served as one of the first US nuclear inspectors back in Iraq with UN/IAEA. While at Los Alamos National Laboratory, Frank has developed and presented commercial satellite imagery based briefings on foreign clandestine nuclear facilities to the International Nuclear Suppliers Group (NSG), the International Atomic Energy Agency (IAEA), and the North Atlantic Treaty Organization (NATO), and the Foreign Ministries of China and India on behalf of the NNSA and STATE.

Milani, Abbas is the Hamid and Christina Moghadam Director of Iranian Studies at Stanford University and a visiting professor in the department of political science. In addition, Dr. Milani is a research fellow and co-director of the Iran Democracy Project at the Hoover Institution. His expertise is U.S./Iran relations, Iranian cultural, political, and security issues.

Milani was a professor of history and political science and chair of the department at Notre Dame de Namur University and a research fellow at the Institute of International Studies at the University of California at Berkeley. Milani was an assistant professor in the faculty of law and political science at Tehran University and a member of the board of directors of Tehran University’s Center for International Studies from 1979 to 1987. He was a research fellow at the Iranian Center for Social Research from 1977 to 1978 and an assistant professor at the National University of Iran from 1975 to 1977.

Dr. Milani is the author of Eminent Persians: Men and Women Who Made Modern Iran, 1941-1979, (Syracuse University Press, Syracuse, NY, 2 volumes, November, 2008); King of Shadows: Essays on Iran’s Encounter with Modernity, Persian text published in the U.S. (Ketab Corp., Spring 2005); Lost Wisdom: Rethinking Persian Modernity in Iran, (Mage 2004); The Persian Sphinx: Amir Abbas Hoveyda and the Riddle of the Iranian Revolution (Mage, 2000); Modernity and Its Foes in Iran (Gardon Press, 1998); Tales of Two Cities: A Persian Memoir (Mage 1996); On Democracy and Socialism, a collection of articles coauthored with Faramarz Tabrizi (Pars Press, 1987); and Malraux and the Tragic Vision (Agah Press, 1982). Milani has also translated numerous books and articles into Persian and English.

He is a member of the American Association of Political Science, member of the board of directors for ISG (Iranian Studies Group at MIT), and the Association of Iranian Studies.

Milani received his BA in political science and economics from the University of California at Berkeley in 1970 and his PhD in political science from the University of Hawaii in 1974.
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<th>Date</th>
<th>Lecturer</th>
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<tr>
<td>29 Oct 2009</td>
<td>Prof. Perry</td>
<td>Early History</td>
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<tr>
<td>1-2 Dec</td>
<td>Prof. Hecker and Prof. Perry</td>
<td>Nuclear Energy, Nuclear Weapons Free World, Modern Security Threats (Exams due)</td>
</tr>
<tr>
<td>7-8 Dec</td>
<td>Prof. Perry</td>
<td>Nuclear History and Fundamentals, Evolution of Nuclear Threat (Exams due)</td>
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<tr>
<td>14 Dec</td>
<td>Dr. Joseph Martz</td>
<td>Evolution of Nuclear Arsenal, Current Nuclear Issues</td>
</tr>
<tr>
<td>16 Dec</td>
<td>Prof. Hecker</td>
<td>Cold War Arms Control Russian in Transition (Exams due)</td>
</tr>
<tr>
<td>17 Dec</td>
<td>Prof. Hecker</td>
<td>Peace &amp; Conflict</td>
</tr>
<tr>
<td>23 Dec</td>
<td>Prof. Perry</td>
<td>Nuclear Weapons and Nuclear Energy, Evolution of Nuclear Threat (Exams due)</td>
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</tbody>
</table>
Synopsis

Whether we discuss nuclear proliferation or nuclear containment, ballistic missiles or antinuclear weapons or vaccines, data mining or big brother, technology plays a central role in discourse about international security. Common and conflicting stories emerge around all of these technologies; new weapons signify apocalypse or utopia, civilization or barbarism, femininity or masculinity, raising provocative questions. How do weapons take on cultural significance? Why are some weapons stigmatized while others are deemed acceptable? How do images and language shape weapons policy, and vice versa? What is at stake in these images?

This course examines these questions through an analysis of discourse about a wide range of weapons, with an emphasis on innovations in the twentieth century United States. The course is organized around specific weapons systems, but the overarching goal is to learn how discourse about technologies shapes conceptions of their relation to national security. We will accomplish this both by studying scholarly analyses of discourse, and by conducting original analyses of discourse about technology and national security.

Course Requirements and Grading

Reading and Discussion (10%)
Be sure to complete all reading assignments and participate in discussions and other in-class activities.

Snapshot Paragraphs (30%)
Before each class meeting, formulate a single paragraph describing the most important idea or question raised in the reading. It may help to select a sentence or paragraph that best summarizes the reading, and explain why. Post your paragraph to the class discussion forum by midnight on the day before we meet. These will be discussed in class. Late paragraphs (i.e. those sent at 12:30 am) may help you prepare for class, but they will not receive credit.

Midterm (30%)
The midterm exam will consist of two parts, equally weighted. First, a draft outline of your final paper will be due via e-mail on midnight the day of the exam. Second, an in-class exam will consist of short essay questions.

Final Paper (30%)
There is no final exam, but a final paper 10-20 pages in length will be due on the last day of finals period, Friday, December 15. This should address a controversial issue at the intersection of technology and national security, and deconstruct the language of actors taking multiple positions in the debate.

Reading and Discussion Schedule

Tuesday, September 26: Introduction

Thursday, September 28: Atom Bombs and Superbombs

Tuesday, October 3: The Wizards of Armageddon
- Viewing: *Dr. Strangelove* (93 minutes)

Thursday, October 5: Techno-strategic Discourse

Tuesday, October 10: Ritualizing Nuclear Weapons
  - Chapters 6 & 7: sections from pp 152-175.
Thursday, October 12: Debating Bombs to Reactors…and Back

  - Chapter 1: The Rise And Fall Of The Freeze p 15-18
  - Chapter 5: The Freeze: Origins, Growth, And Decline, p 90-115

Tuesday, October 17: ‘Anti-missiles’ and ‘Peace Shields’

- Optional news articles

Thursday, October 19: Laser Weapons


Tuesday, October 24: “Smart Bombs” – Real Uses and Discursive Dangers

Syllabus: Technology in Modern Security Discourse

Dr. Rebecca Slayton


Thursday, October 26: Theaters of War


Tuesday, October 31: Safety Critical Systems


Thursday, November 2: Wargames

- Viewing: Wargames (114 minutes)

Tuesday, November 7: Midterm

//*****//     Old Threats, New Fears: Technology in the “War on Terror”     //*****//

Thursday, November 9: Is Big Brother Watching?

- Mary DeRosa, Data Mining and Data Analysis for Counterterrorism, Center for Strategic and International Studies, pp 1-23.
- Short articles:
Tuesday, November 14: Chemical Weapons


Thursday, November 16: Biological Weapons

- Short articles on polio virus synthesis
- Short articles on toxic milk
- Short articles on bio-defense:
Nov 21/23: Thanksgiving Recess, No Classes

Tuesday, November 28: Dirty Bombs
- Viewing: Dirty Bomb, Nova Program (2003) 60 min.
- Reviews of Dirty Bomb
    https://www.nationalreview.com/miller/miller022503.asp
- Short articles: Padilla & Dirty Bomb

Thursday, November 30: The Dilemmas of Dual-Use
- Special Guest lecture: Sonja Schmid

Tuesday, December 5: Nuclear Proliferation and Containment

Thursday, December 7: Concluding Class

/*****/ Final Papers Due /*****/
The Atomic Age – History 105A – Winter 2009

Instructor: Prof. W. Patrick McCray  
Time: 9:00 – 9:50 on M-W-F in NH 1006  
Office and Office Hours: HSSB 4224; Friday 10-12 or by appointment  
Phone: 805.893.2665  
E-mail: pmccray@history.ucsb.edu

COURSE DESCRIPTION: This course examines important aspects of the nuclear era from 1945 to the signing of the first arms treaties between the U.S. and the U.S.S.R in the 1960s. We will also pay some attention to nuclear issues during the Carter-Reagan years. A course on the atomic age could be taught from a number of perspectives – social history, history of technology, the impact of nuclear weapons on military history, the effect of atomic weapons on foreign policy, and so forth. The focus here is on two primary areas – the diverse roles that scientists had during the Atomic Age and the powerful influence nuclear weapons had over American military strategy, politics, and popular culture.

TEXTBOOKS: Please purchase the following paperback books. There is also a short reader available for purchase at The Alternative Copy Shop in Isla Vista
6. Class reader; available at Alterative Copy Shop in IV

RECOMMENDED BOOKS FOR ADDITIONAL INFORMATION
WEB RESOURCES
The web can be a very useful source of information. It can also be a source for
information that is misleading or simply wrong. Therefore, you are welcome to use web-
based resources in your written assignments with the following condition – web-based
materials and references you use MUST BE CITED with the appropriate URL. Five web
sites that I find to be useful AND reliable are listed below. If you are interested in others
but unsure of their objectivity, reliability etc., send me the URL and I’ll check them out.


COURSE REQUIREMENTS AND EXPECTATIONS:
What I expect from you:
1. You will exhibit academic honesty – This includes not lifting materials from web site
   without proper citation; I am especially aware of what exists on Wikipedia. Please
   review UCSB’s student conduct guidelines if you have any questions about what
   constitutes cheating or plagiarizan: http://hep.ucsb.edu/people/hnn/conduct/disq.html.
   Assignments found to contain plagiarized passages (i.e. you have included material
   written by others without giving proper credit or citing the source) will be given an F
   and you will be referred to the Dean for disciplinary action. I’m not kidding. These
   matters receive a hearing from the Student-Faculty Committee on Student Conduct
   where I will ask for the maximum penalty – either suspension or expulsion.
2. You will come to class and arrive on time.
3. You will keep up with the readings. See the note below on ‘Readings.’
4. You will complete all assignments and papers on time and take exams at scheduled
times. Please do no ask for make-up exams, etc. except in the case of a (documented
with writing) medical emergency or other reason deemed serious by the instructor.
Not taking the final will result in an automatic “F.”
5. You will visit me or the TA during office hours. Try to meet with me least once. This
is the best way for me to get to know you and address any questions you may have.
6. If you have a medical emergency or some other situation that requires you to be
   absent for an extended period of time, you will inform me immediately and work out
   an alternate arrangement.
7. You will observe proper email etiquette – I routinely provide information to students
   and answer questions via email. This is part of our professional relationship. If you
   are writing me, you will be courteous and professional in your communications.
   Please do not use formatting and slang that you would not include in a professional
   letter (for example, it is not appropriate to begin messages with “Hey Prof!”)
   Messages written in a non-professional manner will naturally be ignored.

What To expect from me:
1. Lectures will be prepared in advance and organized.
2. I will make available on a weekly basis question sets designed to help you with readings and historical IDs.
3. I will see that exams and papers are graded and returned as quickly as possible.
4. I will hold regular office hours.
5. Material in the class is sometimes of a controversial nature. I will do my best to be impartial and identify views that are my own when presenting them.

**Readings:** History courses involve a lot of reading – pay close attention to documents you will be reading. Many texts need to be read slowly and maybe twice. History isn't just about learning facts and dates. It’s also about understanding how and why things happened. Don't get bogged down in all the facts and dates, at the expense of the big picture. Ask yourself – what is the historical significance of this document? Why is this important? How does it relate to other persons, places, and events? Your goal is not to memorize facts but to develop an appreciation for the historical context being presented here. Finally, doing history means offering interpretations of past events – this is what historians do and is why history is so fascinating. Sometimes different historians will tell different stories, come to different conclusions, or place emphasis on different evidence or stories. This is what doing (and reading) history is about. Expect the story to be complicated and not the neat and pretty stories presented on The History Channel. Don’t be put off because there are inconsistencies. Instead, make note of these and ask yourself how these came to be.

**Grading Policy:** Class attendance is meant to enhance participation, deepen knowledge of the themes of the course, and identify problems in understanding the information. Attendance is therefore required. Your grade for this course will be based on the following:

- **Essay Assignment** – 20%
- Two in-class exams (multiple choice and/or historical ID (single/double)) – 20% each
- **Final Exam** (cumulative, long-essay format) – 40%

**Weekly Discussion Section**
There is an optional one hour weekly discussion section for History 105A, **Fridays from 1-2 PM in Buchanan 1920 led by TA Jef Dinkler.** This optional section is to assist you in better understanding the required readings and helping prepare for assignments and exams. Weekly discussion sections will focus on key topics in the readings and assist students in connecting the readings to the lecture materials. Meetings will be primarily lecture-based due to the variable number of students that may attend each week, but you are encouraged to bring questions and concerns to section to facilitate discussion.
<table>
<thead>
<tr>
<th>Lecture/Date</th>
<th>Topics</th>
<th>Readings and Notes</th>
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</thead>
<tbody>
<tr>
<td>1; 1/5</td>
<td>Course introduction</td>
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<tr>
<td>2; 1/7</td>
<td>New Discoveries</td>
<td>Badash, Ch. 1 &amp; 2</td>
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<tr>
<td>3; 1/9</td>
<td>Radiation, Scientists and the Public Imagination</td>
<td>CHW, Document 1; <em>Weart’s “The Physicist as Mad Scientist”</em></td>
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<td>4; 1/12</td>
<td>Fission!</td>
<td>CHW, Document 2</td>
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<tr>
<td>5; 1/14</td>
<td>The Manhattan Project - Prologue</td>
<td>Badash, Ch. 3; CHW, Docs. 3-5</td>
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<td>6; 1/16</td>
<td>The Manhattan Project, (1942-44)</td>
<td>CHW, Docs. 6 &amp; &amp;, 9 &amp; 10</td>
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<tr>
<td>Jan 19</td>
<td>NO CLASS</td>
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<tr>
<td>7; 1/21</td>
<td>Life at Los Alamos</td>
<td><em>Life at Los Alamos</em> Documents in Class reader</td>
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<tr>
<td>8; 1/23</td>
<td>Atomic Bomb Decision I</td>
<td>Badash, Ch. 4; CHW, Docs. 11-15</td>
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<tr>
<td>9; 1/26</td>
<td>Atomic Bomb Decision II</td>
<td>CHW, Docs. 16, 17, 18, 19; <em>Walker’s “Recent Literature...A Search for Middle Ground.”</em></td>
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<tr>
<td>10; 1/28</td>
<td>Hiroshima and Nagasaki</td>
<td>CHW, Doc. 20, 21</td>
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<tr>
<td>11; 1/30</td>
<td>Reactions to the New Atomic Age</td>
<td>Ogburn’s article “Sociology &amp; the Atom”; John Hersey’s <em>Hiroshima</em></td>
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<tr>
<td>12; 2/2</td>
<td><strong>First mini-midterm</strong></td>
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<tr>
<td>13; 2/4</td>
<td>Attempting to Control the Bomb, 1945-50</td>
<td>Badash, Ch. 5; CHW, Doc. 22-24</td>
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<tr>
<td>14; 2/6</td>
<td>Stalin’s Bomb</td>
<td>CHW, Doc. 27-28; <em>Kojevnikov’s Ch. 6 from Stalin’s Great Science book</em></td>
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<tr>
<td>15; 2/9</td>
<td>Early Nuclear Strategy</td>
<td>Smoke, Ch. 1-4; CHW, Doc. 45</td>
</tr>
<tr>
<td>16; 2/11</td>
<td>Race for the Super, Pt. I</td>
<td>Badash, Ch. 6 up to p. 97; CHW, Doc. 30-31</td>
</tr>
<tr>
<td>17; 2/13</td>
<td>Race for the Super, Pt. II</td>
<td>CHW, Doc. 32, 33, 34</td>
</tr>
<tr>
<td>Feb. 16</td>
<td>NO CLASS</td>
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<tr>
<td>18; 2/18</td>
<td>Espionage and Loyalty in the Atomic Age</td>
<td>Badash, rest of Ch. 6; CHW, Docs. 35, 36, 37; <em>Kaiser’s “Atomic Secret in Red Hands”</em></td>
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<tr>
<td>19; 2/20</td>
<td>Civil Defense in U.S.</td>
<td>CHW, Doc. 39</td>
</tr>
<tr>
<td>20; 2/23</td>
<td>Life Under a Cloud: Atomic Culture and the Nuclear</td>
<td>Winkler’s “The Atom and American Life”;</td>
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<tr>
<td>Date</td>
<td>Reading/Assignment</td>
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</tbody>
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| 20; 2/25 | The Peaceful Atom  
May’s “Explosive Issues: Sex...”  
Kay’s “Public Opinion and the Atom”  
CHW, Docs. 25, 26, 65, 68 |
| 22; 2/27 | Second mini-midterm |
| 23; 3/2 | Nuclear strategy in the Thermonuclear Era  
Smoke, Chs. 5-7;  
CHW, Docs. 46, 47, 48 |
| 24; 3/4 | Arms Control: Securing the Limited Test Ban  
Smoke, Ch. 8  
CHW, Docs. 41, 42  
Start reading McPhee’s Curve of Binding Energy (CBE) |
| 25; 3/6 | Nuclear Issues in the 1970s and 1980s, Part I  
Smoke, Ch. 11-15  
CHW, Docs. 50, 51, 52, 60 |
| 26; 3/9 | Nuclear Issues in the 1970s and 1980s, Part II  
CHW, Docs. 70, 71;  
Westwick’s “Strategic Offense Initiative”  
Finish CBE |
| 27; 3/11 | Atomic Age 2.0: New Nuclear Powers  
5 Page Essay Assignment Due  
Broad and Sanger’s “Restraints Fray and Risks Grow” |
| 28; 3/13 | Legacy of the Atomic Age  
“4 Trillion Dollars and Counting” article from December BAS;  
Marc Trachtenberg’s “Bush Strategy in Historical Perspective” |

**FINAL EXAM: March 19, 8 to 11AM**
INTL 4470 Syllabus

Politics of Weapons Development and Proliferation
Spring 2006
Oasis Title: POL WEAPONS DEV.

Instructors:
Dr. Anupam Srivastava [asr2@uga.edu] and Dr. Seema Gahlaut [sga@uga.edu]

Class meetings:
Tuesdays and Thursdays; 2:00 – 3:15 PM in Room 145 (Auditorium), Brooks Hall

Office hours: By appointment

Instructor contact information:
Center for International Trade and Security
Suite 120, Holmes-Hunter Academic Building
Main Tel: 542-2985 Fax: 542-2975

Course Summary:
This course provides an introduction to the issue of weapons development, proliferation, and nonproliferation around the world. Part I will examine the basic technologies and motivations, and impact of the development of nuclear, chemical, and biological weapons and ballistic missiles on international security. Part II will discuss the various international strategies to counter weapons proliferation – treaties, multilateral conventions and informal arrangements. Part III will examine the challenges of weapons proliferation – such as domestic safety, regional stability and security, and transnational terrorism. This will be done through national and regional case studies – where we will discuss actual and potential US and international strategies/responses to each case.

Requirements:
1) First Exam (20%)
2) Research Paper (35%)
3) In-class Participation (10%)
4) Final Exam (35%)

Textbook:

Required Readings:
All of the required readings (not from Deadly Arsenals) are included in the course packet that can be bought from Bel Jean Copy Center in downtown Athens.

Basic online resource: WMD 411 available at http://www.nti.org/f_wmd411/f_index.html
This is a comprehensive survey of WMD issues [glossary of terms, chronologies, and bibliography].

Other web resources for current events and analyses related to the course:
Arms Control Association http://www.armscontrol.org
Bulletin of the Atomic Scientists http://www.bullatomsci.org/
Class calendar

Jan 10 & 12: Course introduction & Overview of Weapons Proliferation

Required Readings:
Deadly Arsenals chapter 1


Recommended Readings:
National Research Council, Making the Nation Safer: The Role of Science and Technology for Countering Terrorism, http://www.nap.edu/html/stct/


Counterproliferation Policy and Doctrine http://www.counterproliferation.org/policy/index.html

Jan 17, 19 & 24: Technology and development processes involved in WMDs
(Jan 17 nuclear, Jan 19 chem-bio, Jan 24 missile)

Required Readings:
Deadly Arsenals chapters 3, 4 and 5

Recommended Readings:
Jan 26: Why do states acquire or give up WMDs?

**Required Readings:**


**Recommended Readings:**

Jan 31: Proliferation of Conventional Weapons and Small Arms

**Required Readings:**


**Recommended Readings:**
Suzetter Grillot, “Small Arms Control in Central and Eastern Europe,” 2003 (can be accessed at [www.international-alert.org](http://www.international-alert.org))

Feb 2 & 7: The Nuclear Nonproliferation Regime - I
(Feb 2 NPT & Feb 7 IAEA)

Feb 7 is also Midpoint withdrawal deadline

**Required Readings:**
*Deadly Arsenals* Appendix A

**Recommended Readings:**

IAEA Safeguards Overview: Comprehensive Safeguards Agreements and Additional Protocols, [http://www.iaea.org/Publications/Factsheets/English/sg_overview.html](http://www.iaea.org/Publications/Factsheets/English/sg_overview.html)

**Feb 9 & 14: The Nuclear Nonproliferation Regime - II**  
(Feb 9 CTBT and FMCT; Feb 14 NSG)

**Required Readings:**
Deadly Arsenals Appendix E and D

George Bush, “Plan for limiting Nuclear Arms”, Speech at the National Defense University, Fort McNair, Washington, 2004

**Recommended Reading:**

Background on FMCT, [http://www.reachingcriticalwill.org/legal/fmct.html](http://www.reachingcriticalwill.org/legal/fmct.html)


**Feb 16: First Exam (in class)**

**Feb 21, 23 & 28: The Chem-Bio Nonproliferation Regime**  
(Feb 21 BWC; Feb 23 CWC; and Feb 28 Australia Group)  
Feb 23 is the LAST DAY to register your research paper topic with the instructor.

**Required Readings:**
Deadly Arsenals Appendix B and C


**Recommended Reading:**


**Mar 2 & 7: Problems of Controlling Missile Proliferation**

**Required Readings:**
Deadly Arsenals chapter 5


**Recommended Reading:**


**Mar 9: Problems of Controlling Advanced Conventional Weapons & technologies**

**Required Readings:**


**Mar 14 & 16: Spring Break week**

**Mar 21, 23 & 28: Case Studies of P-5**
(Mar 21 US and Russia; Mar 23 UK/Fr and Mar 28 China)
Mar 28, 5 pm is the deadline for submitting research papers.

**Required Readings:**
Deadly Arsenals chapter 6 and 10

Deadly Arsenals chapter 7, 8 and 9

**Recommended Reading:**
Nuclear Weapons: Who Has What at a Glance

UK profile: [http://www.nti.org/e_research/profiles/UK/index.html](http://www.nti.org/e_research/profiles/UK/index.html)

France profile: [http://www.nti.org/e_research/profiles/France/index.html](http://www.nti.org/e_research/profiles/France/index.html)

China profile: [http://www.nti.org/e_research/profiles/China/index.html](http://www.nti.org/e_research/profiles/China/index.html)


**Mar 30 & Apr 4: Case Studies of n-renunciation: Germany & Japan**

**Required Readings:**


**Recommended Reading:**
Germany profile: [http://www.nti.org/e_research/profiles/Germany/index.html](http://www.nti.org/e_research/profiles/Germany/index.html)

Japan profile: [http://www.nti.org/e_research/profiles/Japan/index.html](http://www.nti.org/e_research/profiles/Japan/index.html)

**Apr 6: Case Studies of de-nuclearization: Brazil-Argentina & South Africa**

**Required Readings:**
*Deadly Arsenals* chapters 19, 20, and 21

**Recommended Reading:**
Argentina profile: [http://www.nti.org/e_research/profiles/Argentina/](http://www.nti.org/e_research/profiles/Argentina/)

Brazil profile: [http://www.nti.org/e_research/profiles/Brazil/index.html](http://www.nti.org/e_research/profiles/Brazil/index.html)


**Apr 11 & 13: Case Study: the Middle East (Israel, Iran, others)**

**Required Readings:**
*Deadly Arsenals* chapters 13, 15 and 16


**Recommended Reading:**
Israel profile: [http://www.nti.org/e_research/profiles/Israel/index.html](http://www.nti.org/e_research/profiles/Israel/index.html)

Iran profile: [http://www.nti.org/e_research/profiles/Iran/index.html](http://www.nti.org/e_research/profiles/Iran/index.html)

Libya profile: [http://www.nti.org/e_research/profiles/Libya/index.html](http://www.nti.org/e_research/profiles/Libya/index.html)


“Will Saudi Arabia Acquire Nuclear Weapons?” [http://www.nti.org/e_research/e3_40a.html](http://www.nti.org/e_research/e3_40a.html)

**Apr 19 & 20: Case Study: South Asia (India, Pakistan)**

**Required Readings:**
*Deadly Arsenals* chapters 11 and 12


**Recommended Reading:**
India profile: [http://www.nti.org/e_research/e3_66a.html](http://www.nti.org/e_research/e3_66a.html)

Pakistan profile: [http://www.nti.org/e_research/profiles/Pakistan/index.html](http://www.nti.org/e_research/profiles/Pakistan/index.html)

Leonard Weiss, “Pakistan: It’s Déjà vu All over Again,” *Bulletin of the Atomic Scientists*


**Apr 25: Case Study: North Korea**

**Required Readings:**
*Deadly Arsenals* chapter 14

**Recommended Reading:**

North Korea Profile: [http://www.nti.org/e_research/profiles/NK/index.html](http://www.nti.org/e_research/profiles/NK/index.html)


**Apr 27: Summing up**

Last day of class

**Required Readings:**


**Wed May 3 – Tue May 9**

Final exam week
In this research seminar, every student will undertake an independent research project. The course is structured around the research process, and my goal is to help each student produce a paper that can be published in some venue.

Our general questions will focus on the history of the technical development, use, and political and cultural interpretation of those weapons conventionally identified as weapons of mass destruction, that is, nuclear, biological and chemical weapons. We are interested in why these particular forms of military destruction have been understood to raise novel problems of national management, public investment, scientific responsibility, international law and ethics. We consider the weapons systems as a global phenomenon with global effects, and we interpret them as not only material and technical objects, but also as symbolic systems that acquire meaning in a wide range of settings, from government reports, to scientific papers, to the images and texts of popular culture.

WMD, as defined here, are entirely the result of scientific research in the industrialized world. Some forms of biological and chemical warfare are very old—bodies infected with plague and other diseases were catapulted into besieged cities from about 1300 on. But modern WMD are produced as a result of laboratory research, by persons with formal training in the scientific method, and with funding from national military establishments. They are profound intellectual achievements, reflecting the specialized techniques of modern science, an enterprise commonly understood to exemplify all that is most rational and most beneficent in human intellectual life. They have also been interpreted, from many different perspectives, as unusually brutal, and almost primitive. It is the fusion of reason and brutality, and of rationality and violence, as it plays out in the history of weapons of mass destruction, that will interest us this semester.

For grades:

The research paper is the most important factor in your final grade. But you won’t do well in the class if you do not participate in every class in our discussions, and actively join in our efforts to understand the historical problems raised.
All students will write a research paper, of about 20 pages (text), with an additional 6 to 8 page bibliography, based on original research with primary sources. Deadlines for each phase of this project are noted in the syllabus, and you will be graded for every phase. Expect to devote at least 5 to 7 hours per week to this independent project, every week, all semester.

All classes will be organized as follows: For the first 2 hours we will focus on the readings or the assigned problem. We will then take a brief break (10-15 minutes) and return to discuss a research issue of some kind.

In the course of the semester, each student will lead the discussion of a single reading or source in the course of the semester. Leading a discussion will involve presenting a brief (3-minute) summary of the content of the reading, followed by raising a few questions to which other students can respond. Generally, expect to be responsible for about 20 minutes of class time.

**Buy or get from library these books:**


**Reading packet is at Campus Copy Center.**

**Week 1 Frames**

*January 22*

Discuss syllabus, organization of course, plans for the semester. Come to first class with a working definition of “mass destruction.” Look up definitions online, or in printed sources; think about why both biological weapons (which have not yet been particularly effective in any military engagement) and nuclear weapons (which could destroy the planet) are seen as similar. What do they have in common? What makes them “weapons of mass destruction”? Think about when this term emerged (check the OED) and how it has been used. Is WMD a neutral, apolitical term? If not, what are its politics?
Read online:
Pay attention to how the idea of weapons of mass destruction worked in public discussions of the Iraq war.
http://www.lrb.co.uk/v27/n03/print/wein01_.html
Also read the FBI advice page, for what you as a citizen can do about WMD:
http://www.fbi.gov/page2/april07/wmd041107.html

Week 2 The state’s monopoly on violence
January 29
Some theoretical perspectives
Read online the sociologist Max Weber’s 1919 lecture in which he outlines the ways that the state depends on violence, and holds a monopoly on violence, Politics as a Vocation:
This is tough going at times; try to stick it out.
In EBSCO Megahost in Library (search EBSCO to get to the PDF):

In reading packet:

Discussion after class break: Identifying a possible research problem. What kinds of questions can you ask? How to develop a problem.

Week 3 Chemical Weapons
February 5
Also look at:
1993 OTA report on chemical weapons:
And, the Chemical Weapons Convention:
http://www.cwc.gov/
Some primary sources you can track down, for optional reading, relevant to those interested in doing a project on chemical weapons:
* Time Magazine, 18 May 1925. “Gasology”
Week 4 Biological weapons  
February 12

*By this week, you must have identified an area of interest for your research project. It can be somewhat vague, eg “chemical weapons” or “Iran.” Or is can be very specific. But you should be able to say why it interests you, and what kind of questions you want to ask about it. Turn in a one-page description of your interest.*


Federation of American Scientists and “dual-use” research: [http://fas.org/main/content.jsp?formAction=297&contentId=150](http://fas.org/main/content.jsp?formAction=297&contentId=150)

The CDC and emerging infectious disease: [http://www.cdc.gov/ncidod/EID/vol5no4/kortepeter.htm](http://www.cdc.gov/ncidod/EID/vol5no4/kortepeter.htm)

Week 5 Actual mass destruction: Hiroshima and Nagasaki  
February 19

*By this week, turn in a bibliography listing at least ten sources relevant to your research interests. These can be primary or secondary sources. You do not have to have them all, but you should have looked at some of them.*


In reading packet:

Lindee, S. *Suffering Made Real*, pp. 117-165.

Discussion after class break: Questions of overload: too much data, too many questions. How to narrow a project into a practical research plan. Moving from “What is the meaning of the universe” to “how did this policy become acceptable.”

Week 6 How to tell technical and social stories about WMD  
February 26

In reading packet:


Lynn Eden *Whole World On Fire*, pp. 221-252.


Discussion after class break: Practical questions: Publishing venues for undergraduates. Also, research $$.
Week 7 NO CLASS-- MEET WITH PROFESSOR
March 4
I will be meeting all day with individual students for one-half hour sessions to discuss research plans. You must bring to our meeting a four-to-six page proposal for your project, with a bibliography listing at least 20 sources. In this proposal, answer the following questions: What time period will I focus on? What institutions? Which people? What question do I want to answer? What kinds of sources will actually permit me to answer that question? What do I know about what other scholars have already written about the issues I will be exploring? Why are the questions that interest me important?

Week 8
March 11 NO CLASS SPRING BREAK
Work on your projects!!

Week 9 Discuss Research Projects
March 18
Discussion of research projects. Be prepared to present your project to the class. Bring questions to the group about your research, how to carry it out, how to think about it. Bring a power point if you have it; bring charts; consider this a “work-in-progress” presentation to the group. At the end of this class, turn in a 10-15 page draft/outline/prospectus of your project, with a detailed bibliography, expanded proposal, and a description of methods.

Week 10 The Nuclear Club
March 25
NY Times story:
Assignment: Choose a country and do basic research online to find out when and how it “went nuclear.” Turn in a short (1 page or more) description of what you found and be prepared to describe what you found to the rest of the class. Think about: Who supported this new nuclear state? Who tried to stop it? Where did the expertise to make nuclear weapons come from? What has the international response to the nuclear status of this nation been? In the club: US, USSR/Russia, UK, France, China, India, Pakistan, (Israel?), North Korea, (Iraq?) Iran? and (formerly) South Africa.
Discussion after break: Bias, neutrality, politics. Doing research on difficult subjects, subjectivity, situated knowledge, nationalism, interests, etc.
Also: WORK ON YOUR RESEARCH PROJECTS
Week 11 Pizza and Mass Destruction at the Movies

April 1 NO CLASS: Instead: movie night Friday, April 4, at professor’s home in W. Mt. Airy
6 p.m. Friday April 4.

We will order pizza and watch movies. We will be looking at and discussing key scenes depicting science, technology and mass destruction, in a variety of movies such as Dr. Strangelove, On the Beach, The Day After, Wargames, maybe also in 24? (chemical weapons) In other television shows? Suggestions welcome as professor rarely watches TV shows or even movies about terrorism.

Also this week: WORK ON YOUR RESEARCH PROJECTS

Week 12 Iraq, WMDs, Terror

April 8


For class discussion: peruse “War on Terror” on sites like You Tube and its kin. How is the internet implicated in “terror”? How does “terror” look on the internet? What weapons exactly are most important in this war? What role do WMDs play?

Also:
Troll the SIPRI website: http://www.sipri.org/ CNN.com reports about calling off the search for WMDs, January 2005.
Look at/read/skim the following:
http://www.wmd.gov/report/
http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB80/
Come to class with an explanation of why the United States invaded Iraq.

Also: WORK ON YOUR RESEARCH PROJECTS

Week 13 NO CLASS
April 15

WORK ON YOUR RESEARCH PROJECTS

Week 14
April 22

Formal presentations of research in class.

Week 15
April 29

Formal presentations of research in class.
Since the discovery of nuclear fission in the 1930s, the potential of nuclear energy both for war and for peace has presented an ongoing challenge to humanity. Daily newspaper accounts of developments in Iran and North Korea and of the need for sources of energy other than fossil fuels highlight the importance of understanding the potential of the nucleus. This course will examine the development of nuclear weapons and the treaties limiting them, as well as the ongoing danger of nuclear terrorism. It will also examine peaceful uses of nuclear energy for the generation of electricity and for medical diagnosis and treatment, as well as the waste disposal problems that result from these uses. Course materials will include primary and secondary historical documents, literature, music and films.

“The Nuclear Challenge” will meet once a week for 150 minutes. There will be a 10 minute break in the middle of the class period. Classes will be in a discussion format. Guest lecturers from the Wellesley faculty and beyond will share their expertise on such topics as the historical background leading to the development of nuclear weapons, nuclear weapons as seen through drama and music, nuclear disarmament treaties, and electricity production. We will visit the Seabrook Nuclear Power Station.

Assignments will include two or three short papers during the semester and a final paper/presentation. Quizzes may be given to encourage mastery of factual material.

Tentative Outline:
I. Introduction
II. The science of the nucleus: radioactivity, nuclear fission and fusion
III. Setting the stage: Europe and Asia between World Wars I and II
IV. The Manhattan Project; the development and use of nuclear weapons by the U.S. in Japan
V. The Arts and nuclear weapons: “Copenhagen” and “Doctor Atomic”
VI. Post-WW II atomic weapons development and controversy
VII. Nuclear non-proliferation treaties
VIII. Peaceful uses of nuclear energy: generation of electricity; nuclear medicine
IX. Nuclear waste disposal
X. Nuclear terrorism
WELLESLEY COLLEGE

Your grade in EXP 105 will depend on:

- Papers and Quizzes 40%
- Class participation 20%
- Final project/presentation 40%

**Course Resources**

Books we will read extensively:

   
   *Also available as electronic resource: Megawatts and megatons [electronic resource]: a turning point in the nuclear age? / Richard L. Garwin & Georges Charpak.*


   *Also available on reserve PR6056.R3 C64 2000*


   *Also available on reserve JZ5675 .S66 2001*


   *Also available on reserve TK1345.H37 O85 2004*


Other books and journals from which we will read chapters and articles are on e-reserve on our course conference.

**Research Resources:**

Ms. Betty Febo of the Clapp Library has prepared an extensive Research Resource page that includes documents, websites, etc. It may be accessed through the Library home page, Research Resources by Subject, Library instruction class guide, EXP 105 or [http://www.wellesley.edu/Library/Research/Classes/exp105.html](http://www.wellesley.edu/Library/Research/Classes/exp105.html)
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| 1     | 9/9  | Introduction  
|       |      | “Nukes in the News”  
|       |      | Science of the nucleus |
| 2     | 9/16 | Asia in the 1930’s and 40’s  
|       |      | Guest: Professor Y. Tak Matsusaka  
|       |      | Europe in the 1930’s and 40’s  
|       |      | Guest: Professor Quinn Slobodian |
| 3     | 9/23 | The Manhattan Project: Nuclear weapons development  
|       |      | “The Day After Trinity” |
| 4     | 9/30 | The Arts and nuclear weapons: “Copenhagen” and “Doctor Atomic”  
|       |      | Guest: Professor Nora Hussey (“Copenhagen”) |
| 5     | 10/7 | Debate on President Truman’s Decision  
|       |      | Nuclear proliferation/Nuclear Non-proliferation Treaties  
|       |      | Guest: Professor Robert Paarlberg |
|       | 10/14 | Monday Schedule – no class |
| 6     | 10/18 | Make-up class (for pre-Thanksgiving cancellation): “Doctor Atomic” Guest: Professor Rebecca Cypess, New England Conservatory of Music |
| 7     | 10/21 | Nuclear energy: science/technology/politics/economics  
|       |      | Development of student survey on nuclear issues |
| 8     | 10/28 | Introduction to research resources  
|       |      | Guest: Ms Betty Febo  
|       |      | Electricity Generation & Distribution in U.S.  
|       |      | Guest: Mr. Jeremy Newberger, National Grid |
| 9     | 11/4 | Visit to Seabrook Nuclear Power Station |
| 10    | 11/11 | Three Mile Island (TMI), Chernobyl and beyond |
| 11    | 11/18 | Discussion of results of student survey on nuclear issues  
|       |      | Nuclear Medicine; Nuclear Waste Disposal; Nuclear Terrorism |
| 12    | 11/25 | No class (rescheduled above) |
| 13    | 12/2 | Student presentations: Global nuclear energy |
|      | 12/9 | Student presentations: Global nuclear energy |