INTRO TO GLOBAL WMD ISSUES

INTA 2042

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3 credits
TTh 0935 - 1055
IC 205

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Overview
This course will explore the challenges of weapons of mass destruction (WMD). We will examine the characteristics and address the problems posed by nuclear, chemical, and biological weapons. Topics covered will include history and major theoretical frameworks relating to WMD, such as the development, use, and motivations of major state weapons programs and non-state actors. We will explore efforts to control technology, material, and knowledge – to limit proliferation – via multilateral agreements, initiatives, export control, and national legislation, particularly evaluating the efforts to limit “rogue” state and terrorist acquisition. Strategies and regimes for implementing compliance and verification will be considered, along with their limitations. Counterproliferation strategies to deter, deny, and passively or actively defend against nuclear, biological, and chemical weapons will be studied. Also examined will be proliferation concerns related to emerging technologies, e.g., space weapons, biotechnology, nanotechnology, and synthetic genomics.
Learning Outcomes

- Students will understand causal and determinant relationships between science and technology (S&T) and international affairs across different topic areas.
- Students will be able to use their knowledge of international affairs in a practical problem-solving way to address issues of immediate international concern.
- Students will understand and be able to assess relationships between organizational institutions & structures at the local, national, regional & global levels and WMD.
- Students will become familiar with multiple major governance entities (e.g., international agreements and institutions) relevant to WMD.
- Students will understand and learn about how S&T shaped the history of WMD, promising S&T developments related to global WMD issues, and pressing S&T challenges for the future in an international context.

General Education

- Learning Goal E: Social Sciences. Student will demonstrate the ability to describe the social, political, and economic forces that influence social behavior.
- Learning Goal II: Global Perspectives. Student will demonstrate the ability to describe the social, political, and economic forces that influence the global system.

Course Materials

Two texts are required:

1) Joseph Cirincione, Jon Wolfsthal, Miriam Rajkumar, Deadly Arsenals: Nuclear, Biological, and Chemical Threats, Second Edition Revised and Expanded, 2005
2) Jonathan Tucker (editor), Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons, MIT Press, 2000

Other short articles will be required reading; these will be announced in class and posted on the T-square course website (https://t-square.gatech.edu).

Class Requirements

1) 1st Mid-term exam (30%)
2) 2nd Mid-term exam (30%)
3) Final Exam (30%)
4) Attendance (5%)
5) Participation (5%)

Attendance and Participation

You are expected to make reasonable efforts to attend all classes and participate actively. Attendance will be taken randomly throughout the semester. I recognize that both anticipated and unanticipated events may overlap with the regularly scheduled class. Attendance will be taken 11 random times throughout the semester. Student may miss one of those instances without any penalty.
Grade Change Policy

Appeals for grade changes should be reasonable both in argument and submission time, i.e., within two weeks of return. Specific detailed information on grade change will be distributed upon return of assignments.

Extra Credit Options

*Choose up to 2 from *different* categories*

- Book review, fiction or non-fiction, relevant to the course topic. Minimum 750 words.
- Synopsis and analysis of television episode, movie, or other non-print media relevant to the course topic. Critique perception and portrayal of WMD issues to/in the general public. Minimum 750 words.
- Summary and commentary on University seminar or colloquia related to global WMD issues. Due NLT 2 weeks after seminar/talk/etc. Minimum 750 words.
- Outside interview (GT faculty and staff exempt) with someone involved in work related to global WMD issues. Best way to build connections is to appeal to someone’s ego by being interested in their work. Ask meaningful questions. Minimum 750 words.

Each extra credit submission is worth up to 5% of the grade. Two submissions maximum.

Academic Integrity

For all assignments, materials, and exams, you are expected to maintain the highest academic integrity.

Per the Georgia Tech Honor Code, plagiarism is an act of academic misconduct. The Georgia Tech Honor Code specifies: “’Plagiarism’ is the act of appropriating the literary composition of another, or parts of passages of his or her writings, or language or ideas of the same, and passing them off as the product of one’s own mind. It involves the deliberate use of any outside source without proper acknowledgment.” Plagiarism ranges from the blatant – purchasing a term paper or copying on an exam – to the subtle – failing to credit another author with the flow of ideas in an argument. Simply changing a few words from the writings of other authors does not alter the fact that you are essentially quoting from them. Paraphrasing of this sort, where you use the words of another almost verbatim without acknowledging your source, is the most common form of plagiarism among undergraduate students and academics. When you state another author’s viewpoint, theory, or hypothesis – especially when it is original or not generally accepted – you must also include a reference to the originator. In general citations are unnecessary when the information is considered common knowledge or a matter of widespread agreement or controversy.

More simply put: don’t cheat.

When in any doubt, give credit.
For more information on the Georgia Tech Honor Code, please see http://www.honor.gatech.edu.

**Accommodations for students with disabilities**
Per Georgia Tech policy: if you have a significant disability, special arrangements will be made to accommodate documented needs (through the ADAPTS office). Please contact me after class or at your earliest convenience.

**THE SYLLABUS IS DYNAMIC AND IS LIKELY TO BE UPDATED THROUGHOUT THE SEMESTER.**
Course Calendar and Content

WEEK 1
12 & 14 January
Overview of the class, syllabus, and class requirements.
Introduction to current issues.
Atomic physics & start of the nuclear age

Required Reading:

Required Web Subscription:
  //or//
- Nuclear Policy News: A daily email of news clips from around the world on nuclear issues from the Center for Strategic and International Studies’ Project on Nuclear Issues, http://poniforum.csis.org/nuclear-news
  //and//

WEEK 2
19 & 21 January
The nuclear revolution
Use at the end of World War II
Nuclear weapons complex, expansion, & testing
Nuclear proliferation

Required Reading:
- Deadly Arsenals, Chapter 1-3
Optional Podcast:

Optional Reading:

WEEK 3
26 & 28 January
Intro to arms control, disarmament, and nonproliferation
The Nuclear Non-Proliferation Treaty (NPT) & other treaties
Cooperative Threat Reduction (CTR)
The Iran nuclear deal

Required Reading:
- Deadly Arsenals, Chapter 6-10
- Deadly Arsenals, Chapter 11-13; Appendixes A (NPT), D (Nuclear Suppliers Group), E (CTBT)

Optional Reading:

WEEK 4
2 & 4 February
Nuclear terrorism

Required Reading:
- Deadly Arsenals, Chapter 14 &15
- Toxic Terror, Appendix
**Intro to Global WMD Issues**

**Required Viewing:**
- Watch and discuss: *Last Best Chance & Nuclear Tipping Point*

**Browse:**
- Documentary website: [http://www.nucleartippingpoint.org/home.html](http://www.nucleartippingpoint.org/home.html)

**WEEK 5**
9 & 11 February

Chemical Weapons – the agents, first use in WWI, non-use in WWII

**Required Reading:**
- *Deadly Arsenals*, Chapter 4; Appendix C (CWC), sections in state chapters on CW program (Iran, Libya, North Korea, Israel, India, US, France, Russia, China, South Africa)

**Browse:**

**Optional Reading:**

**1st EXAM – Thursday, 11 February**

**WEEK 6**
16 & 18 February

Guest lecture 16 February: Ms. Carmen Kifer, US Army, Chemical Materials Agency
Guest lecture 18 February: COL Michael Quinn, US Army

Chemical Weapons
State programs after WWII
CWC

**Required Reading (continued from Week 5):**
- *Deadly Arsenals*, Chapter 4; Appendix C (CWC), sections in state chapters on CW program (Iran, Libya, North Korea, Israel, India, US, France, Russia, China, South Africa)

**Browse:**
Optional Reading:

*Interim Grades due at end of Week 6*

**WEEK 7**
23 & 25 February

Chemical Weapons - terrorism

**Required Reading:**
- *Toxic Terror*, Chapters 1, 5, 6, 9, 11, 12, & 14

**WEEK 8**
1 & 3 March

Biological Weapons – state programs from Kaffa to Sverdlovsk

**Required Reading:**
- *Deadly Arsenals, Deadly Arsenals*, sections in state chapters on BW program (Iran, Libya, North Korea, Israel, India, US, France, Russia, China, South Africa)

**Optional Reading:**

**WEEK 9**
8 & 10 March

Biological Weapons proliferation & nonproliferation efforts

Political and technical challenges of limiting and verifying biological weapons

**Required Reading:**
- *Deadly Arsenals*, Appendix B (BWC)

**Optional Reading:**
**WEEK 10**
17 March

WMD Destruction Programs
Libya & Syria

**Required Reading:**

**2nd EXAM – Tuesday, 15 March**

**WEEK 11**
29 & 31 March

Biological Weapons – terrorism from Aum Shinrikyo to Amerithrax

**Required Reading:**
- *Toxic Terror*, Chapters 7, 8, 10, & 13

**Optional Reading:**

**WEEK 12**
5 & 7 April

US policy responses to proliferation concerns and the terrorist threat of WMD
Dark Winter & Atlantic Storm table-top exercises
DHS TOPOFF Full-scale exercises

Guest lecture 5 April: COL Lonnie Carlson, US Army

**Required Readings:**
http://www.sciencemag.org/cgi/content/summary/296/5573/1592

Optional Reading:

WEEK 13
12 & 14 April
Missiles & Delivery Vehicles
Space Weapons

Required Readings:
– Deadly Arsenals, Chapters 5 & 17

Browse:

Optional Reading:

WEEK 14
19 & 21 April
Future WMD
Emerging technologies: synthetic biology, nanotechnology, and trans-humanism

Required Reading:

Optional Reading:
- Christopher Chyba and Alex Greninger (who was a political science undergrad at the time he co-authored the article), “Biotechnology and Bioterrorism: An Unprecedented World,” Survival, January 2004, vol 46, pp 143-162, http://cisac.stanford.edu/publications/biotechnology_and_bioterrorism_an_unprecedented_world/

Week 15
26 April
Review for final exam

FINAL EXAM Thursday, 5 May 5 AM - 10:50AM
One Last Thought

Collaboration, sharing ideas, etc.

“Talk about your ideas. Help your colleagues work out their problems. Pay attention to what other people are doing, and see if you can learn something, or if you can contribute.

“Other than the mundane goal of getting your degree, you are in school to push back the frontiers of knowledge. You do this by generating and exploring new ideas. There is no way that you will ever be able to explore all of the ideas that you generate, but some of those ideas that you discard might be just what some of your colleagues are looking for.

“Human nature tends to make us want to hoard our own ideas. You have to fight against that. Human nature also tends to make us treat other people’s ideas with disrespect. The closer the idea to our own area of research, the more likely some part of our brain will try to find fault with it. Fight against that even harder.

“You will find many people in academia who give in to the dark side. These Stealth Researchers never discuss what they are working on, except in vague and deceptive terms. They are experts at finding fault with the work of their colleagues. The Stealth Researcher writes papers that make very grand claims, but you can never quite figure out what they’ve accomplished and what they haven’t. He is a master at omitting the key detail of the design or process that would enable others to follow his work. The Stealth Researcher is a knowledge diode, a roach motel for information. He has replaced the fundamental goal of discovery and publication with the twin evils of ego and empire.

“Be open about what you are working on. Be honest about what you’ve done, and even more honest about what you haven’t. Don’t ever hide an idea for fear that someone will steal it, even if you are talking to a Stealth Researcher. With patience, maybe we can cure them.”

Prof Kristofer S.J. Pister
Electrical Engineering and Computer Science
UC Berkeley