

**POLITICAL SCIENCE 154: WEAPONS OF MASS DESTRUCTION, SPRING 2016**  
**MONDAYS 5-7:50PM, COGNITIVE SCIENCE BLDG 001**

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Wednesdays 12-1PM  
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**Course Description:**

This course provides an overview of the threats posed to national and international security by chemical, biological, radiological, and nuclear weapons. Students will learn about how these weapons function, why states seek them, and how nations attempt to prevent proliferation. The course will do this in part by delving into the technical and policy challenges related to these weapons. It will further address how CBRN weapons shape states' national security strategies and regional security dynamics. Efforts at the international level to restrict the use and proliferation of these weapons will be discussed. We will also explore the future of WMD and CBRN terrorism.

**Course Requirements:**

- **Class Participation** (20% of course grade): Come to class prepared to discuss the readings for the day. You are encouraged to ask questions and to discuss your ideas. There is a *much higher premium* on being willing to question and debate than on being 'right.'
- **Short papers** (80% of course grade, 40% each): 3-6 pages, discussed further in class:
  - *First Short Paper*: Choose a nuclear power from the list at the end of the syllabus and write a short policy paper based on the writings provided and possibly other sources.
  - *Second Short Paper*: Write a paper detailing the policy position of your country. The policy must take into account other nuclear states and your country's regional context.
- **Final Exam** There is no final exam.

**Student Requirements/Standards:**

- **Plagiarism**: Students are encouraged to study and learn together. All assignments must be the sole product of the person submitting the work. Don't cheat and don't plagiarize. If you have *any* questions about what constitutes a violation of academic integrity, see me.
- **Disabilities/life issues**: It is your responsibility to apprise me of factors that may interfere with your performance in class *well in advance of scheduled assignments*. Appropriate measures for disabilities, acts of God, etc. will be taken in accordance with UC policies.
- **Grading/appeals**: All attempts to discuss grading decisions must be made in writing.

**Required Readings:**

There are three required textbooks. Each is available from the UCSB Bookstore or elsewhere.

- Scott Sagan and Kenneth Waltz. 2002. *The Spread of Nuclear Weapons: A Debate Renewed, 2<sup>nd</sup> or 3<sup>rd</sup> Ed.* New York: W.W. Norton & Co. ("**Sagan and Waltz**")
- Frank Barnaby. 2004. *How to Build a Nuclear Bomb: And Other Weapons of Mass Destruction.* New York: Nation Books. ("**Barnaby**")
- Joseph Cirincione, Jon B. Wolfsthal, and Miriam Rajkumar. 2005. *Deadly Arsenals: Nuclear, Biological and Chemical Threats*, Revised Edition. Washington, DC: Carnegie Endowment for International Peace. ([Carnegie link here](#)). ("**Cirincione**")

DATE

TOPIC/ASSIGNMENT

*WEEK 1 (March 28): Introduction/Syllabus/Levels, Methods, and Concepts*

- Wolfgang K. H. Panofsky. 1998. "Dismantling the Concept of Weapons of Mass Destruction" *Arms Control Today* (April). Access at: [http://www.armscontrol.org/act/1998\\_04/wkhp98.asp](http://www.armscontrol.org/act/1998_04/wkhp98.asp)
- George Perkovich. 2006. "Deconflating 'WMD.'" WMD Commission. Access at: <http://www.blixassociates.com/wp-content/uploads/2011/03/No17.pdf>

*WEEK 2 (April 4): An Overview of Nuclear Policy Dynamics*

- Cirincione. "Global Trends." *Deadly Arsenals*, 1-26.
- Paul Kerr. 2008. "Nuclear, Biological, and Chemical Weapons and Missiles: Status and Trends." *Congressional Research Service* (February 20). Access at: <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA477531>
- Thomas C. Schelling. 2009. "A World without Nuclear Weapons?" *Daedalus*. 138(4):124-129.

*WEEK 3 (April 11): Nuclear Weapons – Nuts and Bolts*

History

- Atomic Archives. 2008. "The Manhattan Project: Making the Atomic Bomb." Access at: <http://www.atomicarchive.com/History/mp/index.shtml>
- Barton Bernstein. 1995. "The Atomic Bombings Reconsidered," *Foreign Affairs*, 74(1):135-152.
- Michael Mandelbaum. 1980. "The Bomb, Dread, and Eternity." *International Security*. 5(2):3-23.

How Stuff Works

- Atomic Archives. 2008. "The Effects of Nuclear Weapons," pp. 1-24, Access at: <http://www.atomicarchive.com/Effects/index.shtml>
- Barnaby. "Nuclear Weapons." *How to Build a Nuclear Bomb*, 15-39.
- Cirincione. "Nuclear Weapons and Materials." *Deadly Arsenals*, 45-55.

*Optional reading:*

- Sarah Diehl and James Clay Moltz. 2002. "History of Nuclear Weapons and Non-proliferation." *Nuclear Weapons and Nonproliferation*. Santa Barbara: ABC-CLIO, 1-25.
- Lynn Eden. 2004. "City on Fire." *Bulletin of the Atomic Scientists* 60(1): 33-43.
- John Mueller. 2010. "Overstating the Effects." *Atomic Obsession: Nuclear Alarmism from Hiroshima to Al-Qaeda*. Oxford: Oxford University Press, 17-28.

*WEEK 4 (April 18): Why States Want WMD*

- Barnaby. "What Does It Take to Make a WMD?" *How to Build...*, 63-88.
- Scott Sagan. 1996/1997. "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb." *International Security* 21(3): 54-86.

- Etel Solingen. 1994. "The Political Economy of Nuclear Restraint," *International Security* 19(2):126-169.
- Nina Tannenwald. 1999. "The Nuclear Taboo: The United States and the Normative Basis for Nonuse." *International Organization* 53(3):433-468.

*Optional reading:*

- David Albright. 1994. "South Africa and the Affordable Bomb." *Bulletin of the Atomic Scientists* (July/August): 37-47.
- Avner Cohen and William Burr. 2006. "Israel Crosses the Threshold." *Bulletin of the Atomic Scientists* (May/June): 22-30.
- Matthew Fuhrmann. 2009. "Proliferation and Peaceful Nuclear Cooperation Agreements." *International Security* 34 (1): 7-41.
- Matthew Fuhrmann. 2009. "Taking a Walk on the Supply Side: The Determinants of Civilian Nuclear Cooperation." *Journal of Conflict Resolution* 53 (2): 181-208.
- Jacques Hymans. 2001. "Of Gauchos and Gringos: Why Argentina Never Wanted the Bomb, and Why the United States Thought It Did." *Security Studies* 10(3): 153-185.
- Jacques Hymans. 2002. "Why Do States Acquire Nuclear Weapons? Comparing the Cases of India and France." In D.R. SarDesai and Raju Thomas's *Nuclear India in the Twenty-First Century*. New York: Palgrave Macmillan.
- "Israel: Nuclear Overview." 2010. Nuclear Threat Initiative. Access at: [http://www.nti.org/e\\_research/profiles/Israel/Nuclear/index.html#fn1](http://www.nti.org/e_research/profiles/Israel/Nuclear/index.html#fn1)
- Dong-Joon Jo and Erik Gartzke. 2007. "Determinants of Nuclear Weapons Proliferation." *Journal of Conflict Resolution* 51(1): 167-194.
- Matthew Kroenig, "Importing the Bomb Sensitive Nuclear Assistance and Nuclear Proliferation," *Journal of Conflict Resolution* 53 (April 2009), 161-180.
- Ariel Levite. 2002/2003. "Never Say Never Again: Nuclear Reversal Revisited." *International Security* 27(3): 59-88.
- Alexander Montgomery. 2005. "Ring in Proliferation." *International Security* 30(2): 153-187.
- Maria Rublee. 2009. "Nuclear Decision-Making in Libya, Sweden, and Germany," *Nonproliferation Norms: Why States Choose Nuclear Restraint*. Athens: The University of George Press, 185-200.
- David Albright and Corey Hinderstein. 2005. "Unraveling the A. Q. Khan and Future Proliferation Networks." *The Washington Quarterly* 28(Spring): 111-128.

*WEEK 5 (April 25): Nuclear Strategy: Deterrence/Compellence [FIRST PAPER DUE]*

- Jeffrey Lewis. 2008. "Minimum Deterrence." *Bulletin of the Atomic Scientists* 64(3): 38-41.
- Kier Lieber and Daryl Press. 2006. "The End of MAD? The Nuclear Dimension of U.S. Primacy," *International Security* 30(4): 7-44.
- Sagan and Waltz. "Chapters 1-2." *The Spread of Nuclear Weapons*
- Robert Powell. 2003. "Nuclear Deterrence Theory, Nuclear Proliferation, and National Missile Defense," *International Security* 27(4): 86-118.

*Optional reading:*

- Kyle Beardsley and Victor Asal. 2009. "Winning with the Bomb," *Journal of Conflict Resolution* 53(2): 278-301.
- Lawrence Freedman. 2003. *The Evolution of Nuclear Strategy*. Basingstoke, U.K.: Palgrave MacMillan.
- Charles Glaser and Steve Fetter. 2005. "Counterforce Revisited: Assessing the Nuclear Posture Review's New Missions," *International Security*, 30(2):84-126.
- Paul K. Huth. 1999. "Deterrence and International Conflict: Empirical Findings and Theoretical Debates." *Annual Review of Political Science* 2: 25-48
- Joseph Nye. 1987. "Nuclear Learning and U.S.-Soviet Security Regimes." *International Organization* 41(3): 371-402.
- Keith Payne. 1996. "Introduction." *Deterrence in the Second Nuclear Age*. Lexington: University of Kentucky Press, 1-16.
- Robert Rauchhaus. 2009. "Evaluating the Nuclear Peace Hypothesis: A Quantitative Approach." *Journal of Conflict Resolution* 53, 2 (2009): 258-277.
- Sagan and Waltz. "Chapters 3-5." *The Spread of Nuclear Weapons*
- Thomas Schelling. 1966. "The Art of Commitment." *Arms and Influence*. New Haven: Yale University Press, 35-91.
- Waltz, Kenneth N. 1990. "Nuclear Myths and Political Realities." *The American Political Science Review*. 84(3):731-745.

*WEEK 6 (May 2): Chemical and Biological Weapons.*

Biological Weapons:

- Barnaby. "Biological Weapons." *How to Build a Nuclear Bomb*, 41-53.
- Cirincione. "Biological and Chemical Weapons, Agents, and Proliferation." *Deadly Arsenals*, 57-67.
- Federation of American Scientists. 2010. "Biological Threat Agents Information." Access at: <http://www.fas.org/programs/ssp/bio/resource/agents.html#rvf>

Chemical Weapons:

- Barnaby. "Chemical Weapons." *How to Build a Nuclear Bomb*, 55-64.
- Federation of American Scientists. 2010. "Types of Chemical Agents." Access at: <http://www.fas.org/programs/ssp/bio/chemweapons/cwagents.html>
- Richard Price. 1995. "A Genealogy of the Chemical Weapons Taboo." *International Organization* 49(1): 73-103.

*Optional reading:*

- Ingrid Fängmark and Lena Norlander. 2006. "Indicators of State and Non-State Offensive Chemical and Biological Programmes." WMD Commission. Access at: [www.wmdcommission.org/files/No30.pdf](http://www.wmdcommission.org/files/No30.pdf)
- Gregory Koblentz. 2004. "Pathogens as Weapons: The International Security Implications of Biological Warfare." *International Security* 28(3): 84-122.

- Scott D. Sagan. 2000. "The Commitment Trap: Why the United States Should Not Use Nuclear Threats to Deter Biological and Chemical Weapons Attacks" *International Security*. 24(4):85–115.
- Jonathan B. Tucker. 1994. "Dilemmas of a Dual-Use Technology: Toxins in Medicine and Warfare." *Politics and Life Sciences* 13(1): 51-62.
- Kathleen Vogel. 2006. "Bioweapons Proliferation: Where Science Studies and Public Policy Collide." *Social Studies of Science* 36(5): 659-690.
- WMD Commission. 2006. "Chapter 4: Biological and Toxin Weapons," and "Chapter 5: Chemical Weapons." *Weapons of Terror: Freeing the World of Nuclear, Biological and Chemical Arms*. Stockholm. Access at: [http://www.blixassociates.com/wp-content/uploads/2011/02/Weapons\\_of\\_Terror.pdf](http://www.blixassociates.com/wp-content/uploads/2011/02/Weapons_of_Terror.pdf)

*WEEK 7 (May 9): Nuclear Proliferation/Counter Proliferation*

- Sheena Chestnut. 2007. "Illicit Activity and Proliferation: North Korean Smuggling Networks," *International Security* 32(1):80-111.
- Cirincione. "The International Nonproliferation Reg..." *Deadly Arsenals*, 27-43.
- Fuhrmann, Matthew and Sarah E. Kreps. 2010. "Targeting Nuclear Programs in War and Peace: A Quantitative Empirical Analysis, 1941-2000" *Journal of Conflict Resolution* 54(6): 831-859.
- William Langeweische. 2005. "The Wrath of Khan," *The Atlantic Monthly*.
- Andrew Winner. 2005. "The Proliferation Security Initiative: The New Face of Interdiction," *Washington Quarterly* 28 (2): 129–143.

*Optional readings:*

- David Albright and Corey Hinderstein. 2005. "Unraveling the A.Q. Khan and Future Proliferation Networks." *Washington Quarterly* 28(20): 109-128.
- Graham T. Allison. 2006. "Flight of Fancy," *Annals of the American Academy of Political and Social Science* 607(September): 167-202.
- Cirincione. "Appendix A: The Treaty on the Non-Proliferation of Nuclear Weapons." *Deadly Arsenals*, 421-426.
- Tom Z. Collina with Daryl G. Kimball. 2010. "Now More Than Ever: The Case for the Comprehensive Nuclear Test Ban Treaty." *Arms Control Association Briefing Book*. Available at: [http://www.armscontrol.org/system/files/ACA\\_CTBBriefingBook.pdf](http://www.armscontrol.org/system/files/ACA_CTBBriefingBook.pdf)
- James Goodby and Fred McGoldrick. 2009. "Reducing the Risks of Nuclear Power's Global Spread." *Bulletin of the Atomic Scientists* (May/June): 40-47.
- Scott Jones. 2006. "Resolution 1540: Universalizing Export Control Standards?" *Arms Control Today*. Access at: [http://www.armscontrol.org/act/2006\\_05/1540](http://www.armscontrol.org/act/2006_05/1540).
- "Nuclear Suppliers Group at a Glance." 2006. Arms Control Association. Access at: <http://www.armscontrol.org/system/files/NSG.pdf>
- Scott Parrish and Jean du Preez. 2006. "Nuclear-Weapon-Free Zones: Still a Useful Disarmament and Nonproliferation Tool?" *WMD Commission*.
- T.V. Paul. 2003. "Chinese-Pakistani Nuclear/Missile Ties and Balance of Power Politics," *The Nonproliferation Review* 10(2): 21-29.



- Jean du Preez. 2006. "Half Full or Half Empty? Realizing the Promise of the Nuclear Nonproliferation Treaty." *Arms Control Today* (December): 6-12.
- Douglas Stinnett, Bryan Early, Cale Horne, and Johannes Karreth. 2011. "Complying by Denying: Explaining Why States Develop Nonproliferation Export Controls." *International Studies Perspectives* 12(3): 308-326.

*WEEK 8 (May 16): Weapons Platforms (Ballistic & Cruise Missiles)*

- Cirincione. "Missile Proliferation." *Deadly Arsenals*, 83-117.
- Dennis M. Gormley. 2008. "Missile Contagion." *Survival* 50(4):137-154.
- Simon A. Mettler and Dan Reiter. 2013. "Ballistic Missiles and International Conflict." *Journal of Conflict Resolution* Forthcoming.
- WMD Commission. 2006. "Chapter 6: Delivery Means, Missile Defenses, and Weapons in Space." *Weapons of Terror: Freeing the World of Nuclear, Biological and Chemical Arms*. Stockholm: WMD Commission, 140-149.

*Optional readings:*

- Jeff Kueter and Howard Kleinberg. 2007. *The Cruise Missile Challenge: Designing a Defense against Asymmetric Threats*. Washington, DC: George C. Marshall Institute.
- Thomas L. McNaugher. 1990. "Ballistic Missiles and Chemical Weapons." *International Security* 15(2): 5-34.
- Dinshaw Mistry. 2005. *Containing Missile Proliferation: Strategic Technology, Security Regimes, and International Cooperation in Arms Control*. Seattle: University of Washington Press.
- Federation of American Scientists, "Ballistic Missile Basics" Available at: <http://www.fas.org/nuke/intro/missile/basics.htm>
- Janne Nolan. 1991. *Trappings of Power: Ballistic Missiles in the Third World*. Washington, DC: Brookings.
- Joshua Pollack. 2011. "Ballistic Trajectory: The Evolution of North Korea's Ballistic Missile Market." *Nonproliferation Review* 18(2): 411-429.

*WEEK 9 (May 23): CBRN Terrorism [SECOND PAPER DUE]*

- Gary Ackerman and Kevin Moran. 2006. "Bioterrorism and Threat Assessment." WMD Commission. Access at: <http://www.wmdcommission.org/files/No22.pdf>
- Graham Allison. 2004. "How to Stop Nuclear Terror." *Foreign Affairs* 83(1): 64-74.
- Matthew Bunn and Anthony Wier. 2006. "Terrorist Nuclear Weapon Construction: How Difficult?" *The Annals of the American Academy of Political and Social Science* 607(September): 133-149.
- Michael Levi and Henry Kelly. 2002. "Weapons of Mass Disruption." *Scientific American* (November). Access at: <http://www.fas.org/ssp/docs/021000-sciam.pdf>
- James M. Acton, M. Brooke Rogers and Peter D. Zimmerman. 2007. "Beyond the Dirty Bomb: Re-thinking Radiological Terror." *Survival* 49(3):151-168.

*Optional readings:*

- Gene Aloise. 2009. "Preliminary Observations on Preparedness to Recover from Possible Attacks Using Radiological or Nuclear Threats." U.S. GAO (September 29). Access at: <http://www.gao.gov/new.items/d09996t.pdf>
- Matthew Bunn and Andrew Newman. 2008. "Preventing Nuclear Terrorism: An Agenda for the Next President." Cambridge: Harvard University. Access at: [http://belfercenter.ksg.harvard.edu/files/uploads/Preventing\\_Nuclear\\_Terrorism-An\\_Agenda.pdf](http://belfercenter.ksg.harvard.edu/files/uploads/Preventing_Nuclear_Terrorism-An_Agenda.pdf)
- Matt Bunn and Susan Martin. 2010. "Is Nuclear Terrorism a Real Threat?" In Stuart Gottlieb's *Debating Terrorism and Counterterrorism*. Washington: CQ Press, 166-200.
- Malcom Dando. 2005. "The Bioterrorist Cookbook." *Bulletin of the Atomic Scientist* (November/December).
- William Dunlop and Harold Smith. 2006. "Who Did It? Using International Forensics to Detect and Deter Nuclear Terrorism," *Arms Control Today*, 36(8). Access at: [http://www.armscontrol.org/act/2006\\_10/CVRForensics](http://www.armscontrol.org/act/2006_10/CVRForensics).
- Charles Ferguson and William Potter. 2004. "Chapters 1-2." *Four Faces of Nuclear Terrorism*. Monterey: Monterey Institute for Nonproliferation Studies.
- Mark Juergensmeyer. 2003. "Armageddon in Tokyo Subway." *Terror in the Mind of God: the Global Rise of religious Violence*. Berkeley: University of California Press, 106-120.
- Jonathon Tucker. 2008. "Chemical Terrorism: Assessing Threats and Responses." In Russell Howard and James Forest's *Weapons of Mass Destruction and Terrorism*. New York: McGraw Hill, 212-226.

WEEK 10 (May 30): No Class (Memorial Day Holiday).

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#### MINIMUM SOURCES FOR FIRST PAPER

##### China

- Cirincione. "China." *Deadly Arsenals*, 163-187.
- M. Taylor Fravel and Evan S. Medeiros. 2010. "China's Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure." *International Security* 35(2):48-87.
- Shirley Kan. 2011. "China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issues." *Congressional Research Service* (May 26). Access at: <http://www.fas.org/sgp/crs/nuke/RL31555.pdf>.
- Mark Schneider. 2009. "The Nuclear Doctrine and Forces of the People's Republic of China." *Comparative Strategy* 28(3):244-270.

## Iran

- William Burr. 2009. "A Brief History of U.S.-Iranian Nuclear Negotiations." *Bulletin of the Atomic Scientist* (January/February): 21-34.
- Paul Kerr. 2009. "Iran's Nuclear Program: Status." *Congressional Research Service* (November 25). Access at: <http://www.fas.org/sgp/crs/nuke/RL34544.pdf>
- Leonard Weiss. 2009. "Israel's Future and Iran's Nuclear Program." *Middle East Policy* 16(3): 79-88.
- "Iran: Profile." 2011. *Nuclear Threat Initiative*. Access at: [http://www.nti.org/e\\_research/profiles/Iran/index.html](http://www.nti.org/e_research/profiles/Iran/index.html).

## North Korea

- Larry Niksch. 2009. "North Korea's Nuclear Weapons Development and Diplomacy." *Congressional Research Service* (May 27). Access at: <http://www.fas.org/sgp/crs/nuke/RL33590.pdf>
- Jacques E. C. Hymans. 2007. "North Korea's Neurosis," *Bulletin of the Atomic Scientists* 63(3): 44-49, 74.
- "North Korea: Profile." 2011. *Nuclear Threat Initiative*. Access at: [http://www.nti.org/e\\_research/profiles/NK/index.html](http://www.nti.org/e_research/profiles/NK/index.html)

## Russia

- Jeffrey M. Bale. 2004. "The Chechen Resistance and Radiological Terrorism." *Nuclear Threat Initiative*. Access at: [http://www.nti.org/e\\_research/e3\\_47a.html](http://www.nti.org/e_research/e3_47a.html)
- Stephen J. Blank. 2011. *Russian Nuclear Weapons: Past, Present, and Future*. Carlisle Barracks, PA: U.S. Strategic Studies Institute. Read in particular, Chapters 1 and 3.
- Cirincione. "Russia." *Deadly Arsenals*, 121-162.
- Anatoly Diakov, Eugene Miasnikov, and Timur Kadyshev. 2011. "Nuclear Reductions After New START: Obstacles and Opportunities." *Arms Control Today* (May). Access at: [http://www.armscontrol.org/act/2011\\_05/Miasnikov](http://www.armscontrol.org/act/2011_05/Miasnikov).

## United States

- Amy Woolf. 2008. "Nuclear Weapons in U.S. National Security Policy: Past, Present, and Prospects." *Congressional Research Service* (December 30). Access at: <http://www.fas.org/sgp/crs/nuke/RL34226.pdf>
- Amy Woolf. 2011. "U.S. Strategic Nuclear Forces: Background, Developments, and Issues." *Congressional Research Service* (May 4). Access at: <http://www.fas.org/sgp/crs/nuke/RL33640.pdf>.
- Stephen Schwartz. 1998. "U.S. Nuclear Weapons Cost Study Project." Brookings. Access at: <http://www.brookings.edu/projects/archive/nucweapons/schwartz.aspx>