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Nuclear Policy

Harris School Course #33510

Winter 2021

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Office hours: By appointment

Course Description

“With the unleashing of atomic energy, everything has changed save our way of thinking, and thus we drift toward catastrophe beyond comprehension.” Albert Einstein made this observation in 1953, when the United States and the Soviet Union were pitted against each other in the most dangerous arms race in history with the potential, at its peak, to destroy human civilization and lay waste to the planet. At the same time, the United States and the Soviet Union were also developing peaceful uses of nuclear energy for life-saving medical treatments and for generating electricity. While issues arising from technologies that have both military uses and civilian applications are not new, the nearly incomprehensible damage from exploding nuclear weapons focuses the mind as few other dual-use technologies can.

This course will examine the development of nuclear policy and the international regime on the uses of nuclear energy—both military and civilian. We will review nuclear doctrine and plans for nuclear war-fighting as well as the effects on societies of developing and using nuclear weapons. We will briefly review the history of international proliferation of nuclear technology and fissile material and examine efforts to curtail the spread of weapons. In the second part of the course, we will focus on the development of civilian nuclear power and on current policy arising from efforts to reduce accidents, dispose of nuclear waste materials, and prevent the spread of nuclear weapons.

In the domain of nuclear policy, political leaders often face policy dilemmas because nuclear technology and materials offer great benefit, as well as presenting great danger. Societies often must choose between two or more not very good alternatives. We’ll explore a number of these dilemmas throughout the course.

The course is organized around lectures, readings, video and podcasts, and small zoom group discussions in a weekly 80-minute format. Each week students will submit 500-800 word reflections on the readings and lectures by Wednesday at 12 noon CST following the Tuesday seminar.

Course Readings

Required (Please purchase)

Nuclear Weapons: A Very Short Introduction, Joseph M. Siracusa (Oxford University Press, 2015)

Hiroshima, John Hersey (New York: Bantam Books, 1946, 1986)

The Bomb: Presidents, Generals, and the Secret History of Nuclear War, Fred Kaplan (Simon and Schuster, 2020)

The Button: The New Nuclear Arms Race and Presidential Power from Truman to Trump, William J. Perry and Tom Z. Collina (BenBella, 2020)

Nuclear Energy: What Everyone Needs to Know, Charles Ferguson (Oxford University Press, 2011)

Voices from Chernobyl, Svetlana Alexievich. Translated by Antonina W. Bouis (Arum Press, 1999)

Recommended

The Making of the Atomic Bomb, Richard Rhodes (Simon and Schuster, 1986)

Command and Control: Nuclear Weapons, the Damascus Incident, and the Illusion of Safety, Eric Schlosser (Penguin Press, 2013)

The 2020 Commission Report on the North Korean Nuclear Attacks: A Speculative Novel, Jeffrey Lewis (Houghton Mifflin, 2018)

All other course readings and materials are available on the web and through the University of Chicago online journals library. They will also be available on Canvas.

You will find additional information and useful analysis on these sites.

Bulletin of the Atomic Scientists at www.thebulletin.org. Sign up on the website to receive twice-monthly newsletters.

Arms Control Today at www.armscontrol.org

International Panel on Fissile Material at <http://fissilematerials.org>

International Atomic Energy Agency at www.iaea.org

Course Requirements

1. Participation in class discussions will count for 25% of your grade, so attending and preparing for weekly discussions is a priority.
2. Weekly short reflection essays will count for 70% of your grade.

Each week students will write 500-800 reflection essays in response to the readings and lectures. Essays will be submitted by Wednesday at 12 pm CST after our Tuesday session. The instructor will meet with each student by zoom at a mutually convenient time at least once during the course of the quarter to discuss essays and answer questions.

3. Meeting with the instructor by zoom at least once during the quarter will count for 5% of your grade.

Grading

Class participation: 25%

Weekly essays: 70%

Zoom meeting with instructor: 5%

ADA Student Accommodations

Any student who believes they may need assistance should inform the Harris Dean of Students office by the end of the first week of class. The Dean of Students office will coordinate any student accommodations with Harris instructors.

Academic Dishonesty: Statement and Penalties

All University of Chicago students are expected to uphold the highest standards of academic integrity and honesty. Among other things, this means that students shall not represent another's work as their own, use un-allowed materials during exams, or otherwise gain unfair academic advantage. All students suspected of academic dishonesty will be reported to the Harris Dean of Students for investigation and adjudication. The disciplinary process can result in sanctions up to and including suspension or expulsion from the University. In addition to disciplinary sanctions, I will impose a grade penalty of "F" for students who have committed academic dishonesty. The Harris policy and procedures related to academic integrity can be found at <https://harris.uchicago.edu/gateways/current-students-policies>. The University of Chicago Policy on Academic Honesty and Plagiarism can be found at <https://studentmanual.uchicago.edu/academic/policies/academic-honesty-plagiarism/>

Course Outline and Readings

Week 1: Introduction: Dilemmas of Nuclear Energy

View at home: *The Day After Trinity*

Week 2: Developing Nuclear Bombs

Joseph M. Siracusa, *Nuclear Weapons: A Very Short Introduction*, pp. 1-59

Fred Kaplan, *The Bomb*, entire

Recommended: Report of the Committee on Political and Social Problems to the U.S. Secretary of War, June 1945. (Also known as the Franck Report) <https://fas.org.sgp/eprint/franck.html/>

Week 3: Effects of Using Nuclear Weapons

John Hersey, *Hiroshima*, entire

At the Brink, Episode 8, Hibakusha: Survivors of the Bomb (podcast)

Lynn Eden, "City on Fire," *Bulletin of the Atomic Scientists*, January/February 2004, pp. 32-27, 40-43

Alan Robock and Owen Brian Toon, "How an India-Pakistan Nuclear War Could Start—and Have Global Consequences" *Bulletin of the Atomic Scientists*, 2019, Vol. 75, No. 6, 273-279
<https://doi.org/10.1080/00963402.2019.1680049>

Alex Wellerstein, Nukemap, <http://nuclearsecrecy.com/nukemap/>

Week 4: Avoiding Nuclear War

Siracusa, *Nuclear Weapons*, pp. 60-117

Francis J. Gavin, and Alexei Arbatov, *Meeting the Challenges of the New Nuclear Age: U.S. and Russian Nuclear Concepts, Past and Present* <https://amacad.org/publication/us-and-russian-nuclear-concepts-past-and-present>

James E. Doyle, “Inhumanity of Nuclear Deterrence,” *Bulletin of the Atomic Scientists* 75:2, 85-91 (<https://doi.org/10.1080/00963402.2019.1580893>)

Week 5: Reducing Risks from Nuclear Weapons

Perry and Collina, *The Button*, entire

At the Brink, Episode 2: The Biscuit and the Football (podcast)

Alexei Arbatov, “Saving Nuclear Arms Control,” *Bulletin of the Atomic Scientists*, April 2016 www.tandfonline.com/doi/full/10.1080/00963402.2016.1170393

Steven Pifer, “Washington-Moscow Nuclear Verification: Tensions and Solutions,” *Bulletin of the Atomic Scientists*, Vol. 74, 2018

Week 6: Spreading Nuclear Technology

Charles Ferguson, *Nuclear Energy: What Everyone Needs to Know*, pp. 103-136

Alex Glaser and Zia Mian, “A Frightening Nuclear Legacy,” *Bulletin of the Atomic Scientists*, September/October 2008, pp. 42-47

Week 7: Developing Civilian Nuclear Power

Ferguson, *Nuclear Energy*, pp. 3-85

IAEA, <https://www.iaea.org/newscenter/multimedia/videos/nuclear-power-in-the=21st-century>

Elisabeth Eaves, “Can North America’s Advanced Nuclear Reactor Companies Help Save the Planet?” *Bulletin of the Atomic Scientists* Vol. 73:1, 27-37 <https://doi.org/10.1080/00963402.2016.1265353>

MIT Interdisciplinary Study, *The Future of Nuclear Energy in a Carbon-constrained World*, 2018. Introduction and Executive Summary

Amory Lovins, “Does Nuclear Power Slow or Spread Climate Change?” *Forbes* November 18, 2019. <https://www.forbes.com/sites/amorylovings/2019/11/18/does-nuclear-power-slow-or-speed-climate-change/#947a/b506b4>

Week 8: Benefits and Risks of Nuclear Energy

Frank von Hippel, Editor, *The Uncertain Future of Nuclear Energy*, September 2010, Research Report No. 9, International Panel on Fissile Materials, <http://fissilematerials.org/library/rr09.pdf> pp.1-62

Alex Glaser and Robert Socolow, “Balancing Risks: Nuclear Energy and Climate Change,” *Daedalus*, Fall 2009, pp. 1-14

Allison Macfarlane, "It's 2050: Do you know where your nuclear waste is?" *Bulletin of the Atomic Scientists*, July/August 2011, pp. 30-36

Svetlana Alexievich, *Voices of Chernobyl*, entire

Yoichi Funabashi and Kay Kitazawa, "Fukushima in Review: A Complex Disaster, a Disastrous Response," *Bulletin of the Atomic Scientists*, Vol. 68, 2012
<https://www.tandfonline.com/doi/full/10.1177/0096340212440359>

Tatsujiro Suzuki, "Deconstructing the Zero-Risk Mindset: The Lessons and Future Responsibilities for a post-Fukushima Nuclear Japan," *Bulletin of the Atomic Scientists*, 67:5, 9-18
<https://doi.org/10.1177/0096340211421477>

Recommended: Adam Higginbotham, *Midnight in Chernobyl* (Simon and Schuster, 2019)

Week 9: Controlling Nuclear Technologies and Materials

Ferguson, *Nuclear Energy*, pp. 137-202

Von Hippel, *The Uncertain Future of Nuclear Energy*, pp. 63-86

Laura Rockwood, "How the IAEA Verifies if a Country's Nuclear Program is Peaceful or Not: The Legal Basis," *Bulletin of the Atomic Scientists* 2015 Vol. 71:2
<https://doi.org/101177/0096340215571909>

At the Brink, Episode 5: Project Sapphire (podcast)

Week 10: Public Opinion and Nuclear Policy

Jonathan Baron and Stephen Herzog, "Public Opinion on Nuclear Energy and Weapons: The Attitudinal Nexus in the United States." *Energy Research and Social Science* 68 (2020)101567. June 6, 2020

Tricia White and Matt Korda, "Nuclear disarmers can't forget the communities that rely on military spending," *Bulletin of the Atomic Scientists*, October 28, 2020

Steven Kull, Nancy Gallagher, Evan Fehsenfeld, Evan Charles Lewitus, and Emmaly Read, "Americans on Nuclear Weapons," May 2019. Program for Public Consultation, University of Maryland

Jonathan Baron and Stephen Herzog, "Poll: What the American Public Likes and Hates About Trump's Nuclear Policies." *Bulletin of the Atomic Scientists*, April 27, 2020.