***Rev 1/4/18***

**Nuclear Policy**

**Harris School Course #33510**

Winter 2018: Thursdays, 3:00-5:50 pm

Kennette Benedict, Ph.D., Lecturer

**E-mail:** [kbenedict@alumni.stanford.edu](mailto:kbenedict@alumni.stanford.edu)

**Office hours:** Room # 202 Thursdays 1:30-2:30 pm and 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 US national policy and the international regime on the uses of nuclear energy—both military and civilian. We will review military doctrine and the 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 prevent accidents and dispose of nuclear waste materials.

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, and look at two of the most difficult in the last class session.

**Course Requirements and Expectations**

The course is organized around class discussion, class presentations, and individual research and writing in a weekly three-hour seminar.

1. Please purchase:

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

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

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

*Voices of Chernobyl* by Svetlana Alexievich (Picador, 2006)

*The Fukushima Daiichi Nuclear Power Station Disaster: Investigating the Myth and the Reality* by the Independent Investigation Commission on the Fukushima Nuclear Accident (Routledge, 2014).

All other readings are available on the web and through the University of Chicago online journals library.

**On-line resources for background and current events:**

*Bulletin of the Atomic Scientists* at[www.thebulletin.org](http://www.thebulletin.org). Sign up on the website to receive twice-monthly newsletters.

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

*Arms Control Today* at [www.armscontrol.org](http://www.armscontrol.org)

International Atomic Energy Agency at [www.iaea.org](http://www.iaea.org)

2. Participation in class discussions will count for 25% of your grade, so attending and preparing for weekly discussions is a priority. As part of that preparation each student will come to class with one major discussion question based on the week’s reading. **Students will each submit one written question at each class session based on the readings.**

3. Each student will writ**e two (2)** papers exploring the following topics and implications for nuclear policymaking. Each paper should be 5-7 double-spaced pages (about 1300-1800 words) and due on the following dates:

**Essay due February 1: US-North Korea Relations and Implications for Nuclear Deterrence**

**Essay due March 1: The Fukushima Daiichi Nuclear Power Station Disaster and Consequences for the Future of Nuclear Power**

4. Each student will also select one of two debate topics listed below and team up with classmates to debate the topic. Select **one** topic for debate on **March 8**:

**Debate: Reducing risks from nuclear weapons: Deterrence or international cooperation?**

**Debate: The future of civilian nuclear power in an era of climate change**

5. Grading

Class participation and written questions: 25%

Two case study papers: 50%

Team debate presentation: 25%

**Course Outline and Readings**

Week 1: Introduction and Overview (January 4)

Film shown in class, *The Day After Trinity*

***Film to view at home—Command and Control: American Experience***

Week 2: Making Nuclear Bombs (January 11)

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

Richard Rhodes, *The Making of the Atomic Bomb*, pp. 394-485.

Robert S. Norris, Thomas B. Cochran, and William M. Arkin, “History of the Nuclear Stockpile,” *Bulletin of the Atomic Scientists* (August 1985), pp. 106-109

Week 3: Using Nuclear Weapons (January 18)

Rhodes, *The Making of the Atomic Bomb,* pp. 617-747

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

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

Alan Robock and Owen Brian Toon, “Self-Assured Destruction: The Climate Impacts of Nuclear War,” *Bulletin of the Atomic Scientists,* September/October 2012, pp. 66-74

***Recommended:***  John Hersey, *Hiroshima,* Alfred A. Knopf, 1946

Week 4:Preparing for and Deterring Nuclear War (January 25)

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

Albert Wohlstetter, “The Delicate Balance of Terror” <https://www.rand.org/about/history/wohlstetter/P1472/P1472.html>

Rhodes, *The Making of the Atomic Bomb,* pp. 749-788

Week 5**:** Reducing Risks from Nuclear Weapons: International Cooperation and Democracy (February 1)

Alexei Arbatov, “Saving Nuclear Arms Control, *Bulletin of the Atomic Scientists,* April 2016 [www.tandfonline.com/doi/full/10.1080/00963402.2016.1170393](http://www.tandfonline.com/doi/full/10.1080/00963402.2016.1170393)

Kennette Benedict, “Add Democracy to Nuclear Policy,” November 2016 <http://www.ploughshares.org/issues-analysis/article/add-democracy-nuclear-policy>

***Recommended:*** Elaine Scarry, *Thermonuclear Monarchy,* W.W. Norton, 2014, Summary edition available from instructor.

**First paper due February 1: US-North Korea Relations and Implications for Nuclear Deterrence**

Week 6: Spreading Nuclear Technology (February 8)

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

Leonard Weiss, “Atoms for Peace,” *Bulletin of the Atomic Scientists,* November/December 2003, 34-44

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 (February 15)

“How to Build a Nuclear Power Plant.” <https://www.theguardian.com/science/video/2012/aug/11/how-build-nuclear-power-plant-video>

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

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

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

Mycle Schneider and Anthony Froggatt, *The World Nuclear Industry: A Status Report 2017* <https://www.worldnuclearreport.org/IMG/pdf/20170912wnisr2017-en-lr.pdf>

Week 8: Benefits and Risks of Nuclear Energy (February 22)

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

Independent Investigation Commission, *The Fukushima Daiichi Nuclear Power Station Disaster*, p. 1-85

Svetlana Alexievich, *Voices of Chernobyl*, entire

Week 9: Controlling Nuclear Technologies and Materials (March 1)

*Fukushima Daiichi,* pp. 85-195.

Tadahiro Kutsuta, “The Rokkasho test: Has Japan learned the lessons of Fukushima?” *Bulletin of the Atomic Scientists,* Vol. 72,2016, Issue 3 <http://www.tandfonline.com/doi/full/10.1080/00963402.2016.1170398>

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

Frank von Hippel, *Uncertain Future,* 63-85

**Second Paper Due—March 1: Lessons from the Fukushima Daiichi Nuclear Power Station Disaster for the Future of Nuclear power**

Week 10**:** Major dilemmas of nuclear energy (**March 8**)

**Debate: Deterrence or cooperation to reduce risks of nuclear war**

Rely on deterrence to prevent nuclear war, but risk nuclear weapons use through arms races, miscalculation, or accident; OR reduce reliance on nuclear weapons by strengthening international cooperation, but risk use by outlaw countries.

**Debate: Whether or not to build new nuclear power plants**

Build more nuclear power plants to provide energy source without further disrupting the climate, but risk more accidents and proliferation of nuclear weapons to more countries; OR phase out nuclear power to prevent more accidents and further spread of nuclear weapons, but risk continued climate change.