



Nuclear Security: Nonproliferation and Safeguards

STS/NSEG 5984
Thursday, 7:00-9:45PM

Spring 2013
Blacksburg: Torgersen 1000

3 Credit Hours
NCR: Falls Church

Instructors: Mark Pierson (Nuclear Engineering) and Sonja Schmid (Science and Technology in Society)

Nuclear energy is at a crossroads: on the one hand, control regimes to contain the spread of nuclear weapons are being refined, while the distribution map itself is still volatile. On the other hand, we see a revival of nuclear energy as a low-carbon source of energy, and simultaneously decisions to phase out nuclear energy as not worth the risk of beyond-design accidents. More than ever, then, effective communication is needed between the communities involved: nuclear scientists and engineers, energy strategists, regulators, policy-makers, the nonproliferation community, and the general public. This course offers the next generation of nuclear engineers and science and technology policy scholars a solid introduction to the main features of our global nuclear nonproliferation regime. The seminar combines an overview of technical questions, historical developments, and policy challenges relating to nuclear energy and proliferation, using current case studies. Topics include origins of the nuclear nonproliferation regime, technical basics of the nuclear fuel cycle, international safeguards, the threat of nuclear terrorism, and the “nuclear renaissance.”

Course format:

The course combines short lectures, group discussions, guest speakers, a simulation exercise, and other active learning activities. Students are expected to complete the required reading in time for class, participate actively in open discussion, and submit all assignments promptly. Graduate students from all disciplines are welcome, particularly those from technical disciplines, STS, and international policy studies. This is a distance learning course, with one instructor in Blacksburg and one in the National Capital Region.

Books recommended for purchase:

- Matthew Fuhrmann, *Atomic Assistance: How “Atoms for Peace” Programs Cause Nuclear Insecurity* (Cornell Univ. Press, 2012).
- Sharon K. Weiner, *Our Own Worst Enemy? Institutional Interests and the Proliferation of Nuclear Weapons Expertise* (MIT Press 2011).
- Nathan E. Busch and Daniel H. Joyner, eds., *Combating Weapons of Mass Destruction: The Future of International Nonproliferation Policy* (Athens, GA: University of Georgia Press, 2009).
- Joseph Cirincione, *Bomb Scare: The History & Future of Nuclear Weapons* (New York: Columbia University Press, 2007).

Contact: Dr. Mark Pierson mark.pierson@vt.edu or Dr. Sonja Schmid sschmid@vt.edu