GTD 598: Technology and Development in Global Nuclear Energy

Global Technology and Development
School for the Future of Innovation in Society
Arizona State University
Summer 2016 (Session A: May 16- June 24)
Dr. Jennifer Richter
Jennifer.richter@asu.edu

Course Description:

GTD 598 examines different approaches to utilizing nuclear energy by looking at specific case studies from around the world. Using the idea of the “sociotechnical imaginary” (Jasanoff and Kim, 2009), we will investigate how nuclear technologies are envisioned, adopted, and utilized by different nation states around the globe. From the inception of civilian nuclear energy programs in the United States and the Soviet Union, to current nuclear energy powers such as South Korea, Japan, and Russia, it is evident that nuclear energy production continues to shape the geopolitical sphere of energy production, and will continue to impact different countries in many ways far into the future. This course will examine the political and social webs of nuclear energy including uranium mining, parts manufacturing, different reactor designs, energy production and waste disposal in several different geographical contexts, including emerging nuclear states such as China, Indonesia and India. The development of nuclear energy is rationalized by claims of increased political stability, economic growth, energy independence, and national security. Yet in the wake of nuclear disasters like Chernobyl and Fukushima, as well as concerns over proliferation, it is important to analyze how these claims are made in specific contexts, and how they are affected by mistakes and accidents that disrupt and destabilize local communities. How are risks from nuclear projects framed, and how is support gained, and opposition voiced in relation to global nuclear energy projects?

This course is not an exhaustive inquiry into all nuclear states, nor is it a course that engages with overly simplistic “pro or anti” nuclear debates. Rather, this is intended to be a survey course that introduces different political and social contexts of nuclear energy production globally with particular attention at the nation-state level, with an emphasis on understanding how national policies have specific local effects. Students are expected to explore different countries of their choice in a comparative study using the ideas, methods, and theories introduced throughout the course in making their inquiry into the controversial world of nuclear technologies. As such, the final project for this course is designed to encourage that exploration.

Course Objectives:

1. Students will gain a better understanding of the historical context, national aims and goals, and potential problems of modern nuclear states.
2. Students will learn about different approaches and rationales that inform states’ pursuit of nuclear energy production.
3. Students will gain an understanding of nuclear energy production not as a technology, but as a socio-technical system incorporating different cultural, political, environmental, and economic rationales.
4. Students will develop their reading, writing, and critical thinking skills by analyzing these issues in relation to modern nuclear energy production.

Readings:
All readings are available on Blackboard, where each weekly module contains the required readings for the week.

Assignments: All assignments are due by 11:59 p.m. on the date listed.

Discussion posts:
Each week, students are required to submit posts to the discussion board. There will be a question posed to the class, and your first response (of about 200 words) is due by Wednesday of that week. A follow-up post in response to another student (of about 100 words) is required by Friday.

Written Assignments:
Submitted assignments will be divided amongst odd and even weeks. In odd-numbered weeks (Weeks 1, 3, and 5) each student is required to submit a ~500 word essay connecting that week’s readings to an article or topic that you have found and researched outside of class. A description of the assignment can be found in the individual weekly modules. These will be due on Fridays. In even-numbered weeks (Weeks 2, 4, and 6), students will be developing a larger project that is a dual-case study comparing the origins, political and economic drivers, and future goals for nuclear technologies between two nuclear or nuclear-nascent states. The breakdown of assignments for those weeks is as follows:

Week 2 (Due by Friday, May 27): ~750 word description/ heavily annotated outline of initial findings for comparative study. Include three outside sources.

Week 4 (Due by Friday, June 10): 1000-1500 word essay developing initial ideas for comparative study.

Week 6 (Due by Friday, June 24): Final edition of comparative study essay (2500-3000 words) incorporating at least 5 outside sources and 3 in-class sources.

Grades: There are 400 total points in this class. The breakdown is as follows:
Initial post to Hallway Conversations = 10 pts.
Discussions: 6 discussion posts x 20 points each = 120 pts.
Essays in Weeks 1, 3, 5: 3 essays x 30 points each = 90 pts.
Week 2 Outline = 30 pts.
Week 4 Essay = 50 pts.
Week 6 Final Paper = 100 pts.

This syllabus is subject to further change or revision, as needed, to best realize the educational goals of the course. Necessary revisions will be announced with fair prior notice.
Week 1 (May 16-20): The Sociotechnical Imaginaries of Nuclear Technologies
Readings:
Assignments:
1) Post to Hallway Conversations by Friday, 5/20.
3) Essay due Friday, 5/20.

Readings:
Assignments:
2) Comparative essay outline due Friday, 5/27.

Week 3 (May 30- June 3): Emerging Powers
Readings:
Assignments:
1) Discussion Posts: Initial post due Wednesday, 6/1. Second post due Friday, 6/3.
2) Essay due Friday, 6/3.

**Week 4 (June 6-10): Rogue Nations, Energy Production, and International Security**

**Readings:**
Fuhrmann, Matthew, “Splitting Atoms: Why Do Countries Build Nuclear Power Plants?”
Anton Khlopkov, “Prospects for Nuclear Power in the East after Fukushima and the Arab Spring,”

**Assignments:**
2) Comparative essay rough draft due Friday, 6/10.

**Week 5 (June 14-28) Disasters, Disruptions, and the Production of Uncertainty in Japan**

**Readings:**

**Assignments:**
2) Essay due Friday, 6/18.

**Week 6: June 20-24: Nuclear Waste and Community Engagement**

**Readings:**

**Assignments:**
2) Final draft comparative study essay due Friday, 6/24.

**Other Course Information and Resources:**
**Academic Integrity**
All students are responsible for reviewing and following ASU’s policies on academic integrity:
http://provost.asu.edu/academicintegrity. If you fail to meet the standards of academic integrity in any of the criteria
listed on the university policy website, sanctions will be imposed by the instructor, school, and/or dean. Academic dishonesty includes borrowing ideas without proper citation, copying others’ work (including information posted on the internet), and failing to turn in your own work for group projects. Please be aware that if you follow an argument closely, even if it is not directly quoted, you must provide a citation to the publication, including the author, date, and page number. If you directly quote a source, you must use quotation marks and provide the same sort of citation for each quoted sentence or phrase. You may study for exams with other students and discuss your research paper, however, all writing that you turn in must be done independently. If you have any doubt about whether the form of cooperation you contemplate is acceptable, ask the TA or the instructor in advance of turning in an assignment. Please be aware that the work of all students submitted electronically can be scanned using SafeAssignment, which compares them against everything posted on the internet, online article/paper databases, newspapers and magazines, and papers submitted by other students.

**Incompletes:**
A mark of "I" (incomplete) is given by the instructor when you are otherwise doing acceptable work but are unable to complete the course because of illness or other conditions beyond your control. You are required to arrange with the instructor for the completion of the course requirements. The arrangement must be recorded using the form at http://students.asu.edu/forms/incomplete-grade-request. Students should be proactive and discuss this with their instructor and TA before the end of the semester.

**Late Assignments:**
No late assignments are accepted without prior consent of instructor. Advanced written or e-mailed notice that you will have to turn in an assignment late could help your cause.

**Student Standards**
Students are required to read and act in accordance with university and Arizona Board of Regents policies, including: The ABOR Code of Conduct: Arizona Board of Regents Policies 5-301 through 5-308: http://www.azregents.edu/policymanual/default.aspx

**Student Support and Disability Accommodations**
ASU offers support services through Counseling (http://students.asu.edu/counseling), the Student Success Center (https://studentsuccess.asu.edu/), and the Disability Resource Center (http://www.asu.edu/studentaffairs/ed/drc/). If you are a student in need of special arrangements we will do all we can to help, based on the recommendations of these services. For the sake of equity for all students, we cannot make any accommodations without formal guidance from these services.

**Campus Resources**
As an ASU student you have access to many resources on campus. This includes tutoring, academic success coaching, counseling services, financial aid, disability resources, career and internship help and many opportunities to get involved in student clubs and organizations.

- Tutoring: http://studentsuccess.asu.edu/node/24
- Financial Aid: http://students.asu.edu/financialaid
- Major/Career Exploration: http://uc.asu.edu/majorexploration/assessment
- Career Services: http://students.asu.edu/career
- Student Organizations: https://students.asu.edu/clubs/tempe