[1] DESCRIPTION

The way the United States obtains and uses energy is a matter of national security. The nature of potential threats ranges from the geostrategic tensions that come with depending on oil to the destabilizing consequences of global climate change. This course will look at why energy security is such a significant challenge for the United States, and how the United States might meet that challenge.

You will look at the connection between energy and the economy in both the US and other states, and the connection between energy and military security and power. This will involve a detailed review of the US energy economy, the international energy market, and the energy economies of the major Middle Eastern states, Russia, Central Asia, China, India, and key African states. You will study how the distribution of strategic energy resources and technologies, particularly oil, natural gas, coal, nuclear energy and renewable resources will affect the national security of the United States.

Finally, you will use your knowledge of the economics, science, and politics of energy to evaluate and develop energy policies in an ever changing world of reduced conventional oil supplies, climate change, water shortages, and other critical issues.

[2] STUDENT LEARNING OUTCOMES

At the end of the course you will be proficient in analyzing four aspects of energy security: strategic (geopolitics, poverty, and conflict), economics (markets, jobs, and the resource curse), technology (extraction, carbon capture, renewable resources, and smart grids) and global governance of the environment (international organizations and treaty regimes). You will understand the history of energy security, be aware of the data sources for current policy analysis, and be familiar with the energy security policy debate both in the United States and in key energy producing and consuming states. Finally, you will be able to write policy memos, executive summaries, and country reports, as well as to persuasively present ideas and lead group discussions.

[3] PREREQUISITES

There are no prerequisites for the course.
[4] COURSE FORMAT

Each class will be comprised of both a lecture and class discussion. The instructor will provide the lecture and students will lead the discussion. Discussion can be more or less structured, combining readings to extract general themes.

Any student with a disability who is taking this class and needs classroom or exam accommodations should contact the Disability Resource Center, 257-2754, Room 2, Alumni Gym, jkarnes@uky.edu.

[5] COURSE OVERVIEW

1. Why is Energy a National Security Issue?/Overview of Course [August 24, 2011]
2. Oil Economics [August 31, 2011] Professor Hillebrand
5. The Americas and Energy Politics [September 21, 2011]
8. Russia, Central Asia / Pipeline Politics [October 12, 2011]
10. Africa / US vs. China for Oil [October 26, 2011]
11. China, India / Climate Change [November 2, 2011]
12. Energy Poverty and Development [November 9]
13. Transportation Efficiency and Fuel Alternatives [Friday, November 18, 2011]
   Site visit to Center for Applied Energy Research/Dr. Rodney Andrews
No Class (Thanksgiving) [November 23, 2011]
15. Class presentations [December 7, 2011]

[6] GRADE COMPUTATION

- Class participation - 25%
- Assignments - 75% (25/25/25%)

Grading/Participation

- Assignments will be graded based on your ability to cover the topics fully and logically.
- Assignments are expected on due date in class. Paper and electronic copies of each class assignment are expected.
  - For each day that an assignment is late, the grade will drop by 1 letter.
Class participation grade will be based on mandatory attendance (no absences unless approved in advance by instructor), and active (speaking) participation in the class. In addition, to get a maximum participation grade:

- Students will do the mandatory readings, and stay abreast of energy security current events in the local papers and/or in the national news.
- Laptops are permissible as long as they are used strictly for class note taking, though the instructor reserves the right to change this policy during the semester.
- If a student is not participating in class discussions, instructor will send an email to the student to encourage participation. A second email will result in a letter drop in the participation grade.


Assignments:

- Assignment 1: Write a 2-3 page policy memo from the Secretary of Energy to the President of the United States arguing whether the President should or should not be concerned about “peak oil” and why. Support your argument with data. Details of memo outline to be provided in class. See class readings for week 2. See also Department of Energy, Peaking of World Oil Production: Impacts, Mitigation & Risk Management (the Hirsch report), http://www.netl.doe.gov/publications/others/pdf/oil_peaking_netl.pdf and the Association for the Study of Peak Oil (ASPO), http://www.peakoil.net/. **Assignment 1 is due on September 21, 2011.**

- Assignment 2: Pick one of the major energy countries – China, Russia, India, Saudi Arabia, Iran, Iraq, Venezuela, Mexico, or Canada. Research their energy security issues, along with energy/climate change issues, and then discuss how these issues affect their national security relationships with the US, and/or others on the world stage, as appropriate. Research paper should be about 15 pages double spaced including references. **Assignment 2 is due November 9, 2011.**

- Assignment 3: Over the course of the semester, you will be drafting a 5 page think tank style memo (including 1-page executive summary). You will outline your vision for a new U.S. national energy security strategy. The plan will include a strategic goal, ways that goal can be implemented, and possible means for implementing your goal (i.e., incentives, programs, international agreements, etc.)
Assignment 3 is due December 7, 2011. You will present your idea to the class; use of power point is encouraged.

[7] READING LIST

Required Reading


Background Reading

- Goldwyn, David L. and Jan H. Kalicki, eds, *Energy and Security: Toward a New Foreign Policy Strategy*, Baltimore, MD: Johns Hopkins University Press, 2005. This is an excellent text and may be of value to you to understand the energy policies of international energy politics.

Recommended Viewing

*The Prize*, based on Daniel Yergin’s book of the same name. PBS mini-series, 7 episodes of about 50 minutes each in length. Available at: [http://video.google.com/videoplay?docid=3602293093015423860#](http://video.google.com/videoplay?docid=3602293093015423860#)

[8] RELEVANT REFERENCES
You should monitor at least the following academic journals, all of which contain relevant articles. Depending on your own interests, you will also need to monitor the relevant area studies journals.

Council on Foreign Relations, Energy and Environment
Meena Palaniappan and Peter H. Gleick, Peak Water,
http://www.worldwater.org/www/data20082009/ch01.pdf
Cambridge Energy Resource Associates,
http://www.cera.com/aspx/cda/public1/home/home.aspx
Harvard University, Belfer Center, Energy Technology Innovation Policy
http://belfercenter.ksg.harvard.edu/project/10/energy_technology_innovation_policy.html
Oil Drum Blog: http://www.theoildrum.com/
Stanford, Precourt Center for Energy Research, http://pie.stanford.edu/
White House Blog: Energy and the Environment:
http://www.whitehouse.gov/blog/issues/Energy-%2526-Environment
World Bank Energy:
LexisNexis accesses hundreds of energy sources: Platts, Oil and Gas Journal, Petroleum Economist, among many others.

You should also keep up-to-date with contemporary events by reviewing the quality international press e.g., The Economist Financial Times, International Herald Tribune, New York Times, Wall Street Journal, Washington Post etc.

You should also be a regular viewer of Energy Now (http://www.energynow.com/).

Movies to be shown during the course (schedule permitting):
Coal in Kentucky: A documentary
Last Mountain, http://thelastmountainmovie.com/
[9] COURSE SCHEDULE

Week 1 (24 August) Why is Energy a National Security Issue?

- What is energy security for consumers versus producers?
- How are energy and the environment interlinked?

Luft, chps. 1, 10 and 22

Orttung, chps. 1 (Orttung et al) and 2 (Perovic)

Pascual, chp. 6 (Elkind)


Review White House Blueprint for a Secure Energy Future, March 11, 2011,
http://www.whitehouse.gov/sites/default/files/blueprint_secure_energy_future.pdf
http://www.whitehouse.gov/issues/energy-and-environment

Week 2 (31 August): Economics of Oil

Special Guest Lecturer: Professor Evan Hillebrand

- What does the future hold for global oil supply?
- Should we be concerned that NOCs are increasing their share of a hydrocarbon sector previously led by IOCs?

Pascual, chp. 1 (Pascual and Zambetakis)

Kenneth S Deffeyes, Beyond Oil: The View from Hubbert’s Peak, 2006, chps 7, 8 and 9 (email)


**Week 3 (7 September) Modelling Energy Security**  
**Special Guest Lecturer:** Aron Patrick, Program Manager  

Watch: *Coal in Kentucky: A documentary*. A production of the Via Center and the College of Engineering of the University of Kentucky, Executive Producer W. Brent Seales.

**Week 4 (14 September): the US Military and Energy**  
- How does the oil dependence of the U.S. military affect national security?
- Can the U.S. military lead an energy transformation?


James Bartis and Lawrence Bibber, ‘Alternative Fuels for Military Applications,’ RAND, 2011 (read Summary),  

Week 5 (21 September) The Americas and Energy Politics

Note: Assignment 1 is due

- How important are energy relations between the U.S. and Latin America?
- Are Canada and the U.S. sacrificing climate concerns in return for gains from oil sands production?
- Should Latin America and the Caribbean integrate their energy systems?

Luft, chp 9 (Forman and Moreira)

Orttung, chp. 7 (Tissot)


Week 6 (28 September): The Persian Gulf and Resource Wars

- How has OPEC, in particular Saudi Arabia, affected the price of oil?
- What types of conflict are likely to occur over hydrocarbons?

Pascual, chp. 2 (Maloney) and chp. 3 (O’Hanlon)
Luft, chp. 4 (Klare); chp. 5 (Fettweis); chp. 6 (Jaffe)

Orttung, chp. 4 (Fattouh)


**Week 7 (5 October): Global Governance of Extractive Resources**

- Are resource abundant states more or less prone to economic and democratic development?
- Describe the web of agreements, institutions, and stakeholders that attempt to secure energy supplies?
- Can oil be globally governed?

Florini (Pascual, chp. 7)


http://cddrl.stanford.edu/publications/oilled_development_social_political_and_economic_consequences/


Week 8 (12 October): Russia, Central Asia and the Future of Natural Gas

- Will liquefied natural gas be the “new oil”?
- What is the possibility of a Gas OPEC and how would it function?
- What is the future of Caspian based gas and why does it matter?

Luft, chp. 7 (Cohen)
Luft, chp. 8 (Cohen)
Luft, chp. 18 (Hurst)
Orttung, chp. 5 (Perovic and Orttung)


Week 9 (19 October): Europe / Gas Dependency and Renewable Resources

- What are the challenges to Europe meetings its energy security goals?
- Can Europe move beyond its dependency on Russian gas?
- Do Europe and the US share policy goals in addressing energy security and climate change?

Luft, chp. 11 (Rosner)

Orttung, Chp. 9 (Roberts)


**Week 10 (26 October): Africa / US vs. China for Oil**

- How have American and Chinese companies differed in their approaches to extracting natural resources?
- Is it inevitable that the US and China will remain on a collision course?
- Is a trilateral US-Africa-china agenda possible?

Pascual, chp. 4 (Downs)

Orttung, chp. 6 (Enfield)

Ghazvinian ‘Untapped’: *the Scramble for Africa’s Oil*, chps. 4 and 7 (email)

Luft, chp. 15 (Goldwyn)

**Week 11 (2 November): China, India / Climate Change**

- How does China’s use of oil, natural gas, and other energy sources affect world energy security?
- Likewise, how does India’s quest for energy compete with China and the U.S?
- How affective will global governance be to mitigating climate change? Are China and India supporting or hindering these efforts?

Luft, chp. 13 (Howell) and chp. 14 (Carl)

Orttung, chp. 10 (Herberg) and chp. 11 (Madan)

Pascual, chp. 10 (Antholis)

Week 12 (9 November) Energy Poverty (show movie at 0930)

Note: Assignment 2 is due

- What is energy poverty?
- Is energy poverty a security threat?
- What are the obstacles to alleviating energy poverty?

http://pesd.stanford.edu/publications/energy_transitions_in_developing_countries_a_review_of_concepts_and_literature/


Douglas F. Barnes et al., ‘Modernizing Energy Services for the Poor,’ World Bank, December 2010 (Executive Summary and Chapters 1 and 5 only)

Week 13 (Friday, 18 November): Transportation Efficiency and Fuel Alternatives
Visit to CAER and talk with Dr. Rodney Andrews
• This discussion will focus on transportation needs, both public and individual, into the future.

• Which vehicle propulsion technologies – plug in hybrids, fully electrical vehicles, etc, offer the best chance for our future replacements?

• What are possible solutions to the transportation gridlock in the US?

Luft, chp. 19 (Werbos)


No Class: Thanksgiving (23 November)

Week 14 (16 November): Energy Conservation, Alternative Energies and the National Electrical Grid

• Can energy conservation bet the key to achieving greater energy security?
- What alternative electricity sources are most readily available and what can help make them scalable for a large market?
- What is the future for nuclear power?
- What is the “Smart Grid”, and how “smart” is it?

Luft, chp. 20 (Ferguson)

Orttung, chp. 3

Pascual, chp. 8 (Brown)


Review technologies (Hydrogen, solar, wind, geothermal, others) at the DOE Energy Efficiency and Renewable Energy (EERE) Website http://www.eere.energy.gov/


Review DOE ARPA high risk high reward energy research, http://arpa-e.energy.gov/ProgramsProjects/Programs.aspx

**Week 15 (7 December): Class presentations. Note: Assignment 3 is due.**