Syllabus for ENST 320b Spring 2018, TTh 11-1220 WPH 206

**The Science, Policy, and Business of Energy and Air Sustainability**

**COURSE INSTRUCTOR:**

Dr. Victoria Petryshyn.

Office: CAS 108

Email: petryshy@usc.edu

Office Hours: Mon 10-12, and by appointment

**COURSE TEXTS:**

Wolfson, R., Energy, Environment, and Climate, W.W. Norton, 2017, ISBN  978-0-393-62291-1

Recent journal articles to supplement the course texts, provided by instructor

**TOP HAT**

We will be using the Top Hat (www.tophat.com) classroom response system in class. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or via text message (SMS).

You can visit https://app.tophat.com/register/student for the Student Quick Start Guide which outlines how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system. An email invitation will also be sent to your email account (if you don't receive this email, you can register by visiting our direct Top Hat course URL

Top Hat will require a subscription. There are three options to choose from:

- $26 for 4 months of unlimited access

- $38 for 12 months of unlimited access

- $75 for lifetime\* access

**COURSE OVERVIEW:**

ENST 320b presents an overview of issues related to energy and air sustainability, including the

science, policy, and business aspects (with a focus on the science part). We will also get into the issues of how our energy choices affect Earth’s climate, specifically how climate change has become a political and emotionally charged topic. Everyone who considers themselves an environmentalist has opinions on which sources of energy are “bad” and which are “good”, but what does that mean? How are these forms of energy harnessed by people, especially in the US, and how exactly are they good or bad? This course explores these questions, considering “cradle-to-grave” issues ranging from extraction of the energy resources from the environment to pollution from emissions or disposal of wastes.

**Recommended preparation:** ENST 100 and CHEM 103 or its equivalent.

**HOMEWORK**

The transformations of energy among different forms, and the transformation from energy to work are governed by quantitative physical principles. So yes, there will be math. It is important for us to carry out calculations in this course. Problem sets will be assigned most weeks. From time to time, students will work selected problems on the board in class. Other times, additional problems will be assigned and your work on these will be collected and graded in class. Please purchase either a green or red pen specifically for this purpose in this course.

*This semester, no late assignment will be accepted for credit.*

**COURSE GRADING:**

You will be graded on the basis of your performance on two midterms, a final, homework assignments, and a team video project. Test questions will be drawn from the material presented

in lecture. Missing more than one or two lectures for other than illness or approved travel will be

detrimental to success. At least 20% of the graded material will be quantitative analyses, you will

need a scientific calculator. **Cell phones ARE NOT allowed as calculators on exams**. The lecture presentations will be posted on the Blackboard system for download and subsequent study. Test questions will include short essay questions and quantitative analysis. Below is a list of the graded assignments, due date and their weighted value.

Homework and reading throughout semester 10%

Midterm 1 Feb 22 20%

Midterm 2 April 5 20%

Video Project Storyboards Feb 1 5%

Team Video Project Last week 15%

Final May 8 20%

Participation throughout semester 10%

**COURSE SCHEDULE:**

For the best learning experience, you are expected to have read the material listed below by the date it is discussed in class. The readings and schedule of topics may be adjusted throughout the semester depending on the progress of the class and addition of new content. That being said, the class lecture schedule may changed based on our discussions.

**Lecture Schedule (This may be modified- Roll With It)**:

**Week 1; Jan 9- Intro and Energy -**

 Wolfson Ch. 1 and 2

**Week 2: Jan 16 Engery Con’t**

**Energy - Wolfson Ch. 3
Projects discussed and groups assigned**

**Week 3: Jan 23 Energy and Heat**

 Work on Storyboards for project

 **Week 4: Jan 30 Energy and Heat**

 **Wolfson Ch. 4; Storyboards Due**

**Week 5: Feb 6 - Fossil Energy**

 Wolfson Ch. 5

**Week 6: Feb 13- Fossil Energy/Dirty Business**

**Week 7: Feb 20 – CATCH UP LECTURE/MIDTERM**

President’s day, Mon. Feb. 19
 Feb 22 – MIDTERM 1

**Week 8: Feb 27 – Nuclear Energy**

(Wolfson Ch. 6)

**Week 9: March 6 – Nuclear Energy Con’t**

Wolfson Ch. 6

**SPRING BREAK, MARCH 11-18**

**Week 10: March 20 – Direct from the Sun: Solar Energy**

Wolfson Ch. 9

**Week 11: March 27 Indirect from the Sun: Water, Wind, and Biomass**

Wolfson Chapter 10

**Week 12: April 3- Midterm 2; Catch up lecture**

 **APRIL 5- MIDTERM 2**

**Week 13: April 9 – March Energy Carries intro**

(Wolfson Ch. 11)

**Week 14: April 16 - Electricity and Hydrogen**

 Wolfson Ch. 11

**Week 15: April 23 – Class Presentations**

 Video screenings/write ups due

FINAL EXAM: Tuesday, may 8 , 11-1pm

**FINAL PROJECT:**

Students will be assigned collaborative working groups of ~3 people to create a short (~3 minute) informational or journalistic style video that addresses an environmental victory related

to air/energy sustainability. Groups may choose a case study, such as air pollution remediation efforts in Los Angeles, or focus on a particular place, such as Germany and their efforts to invest in solar energy. Each individual student must also provide a written account of the process and information sources they used to complete the project, based on a provided template. The goal of the project is to create informational videos that showcase environmental victories. So often we focus on the ways that humans are destroying the planet, leading to eco-depression (a very real condition among climate scientists). In this project, groups are asked to focus on the ways humans have worked collaboratively to make real change and better the environment. The project will be evaluated for originality, accuracy and thoroughness of research, attention to detail, and quality of finished project. Storyboards, which map out theplanned video, will be due during the 5th week of the semester.

**SUPPORT SYSTEMS**

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute*<http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students.

*The Office of Disability Services and Programs* <http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html> provides certification for students with disabilities and helps arrange the relevant accommodations. They are located in GFS 120. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* [*http://emergency.usc.edu/*](http://emergency.usc.edu/)will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

**STATEMENT ON ACADEMIC INTEGRITY**

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one’s own academic work from misuse by others as well as to avoid using another’s work as one’s own. ***The instructor maintains a zero tolerance policy for plagiarism and cheating***. Any instances of plagiarism or cheating will be reported to Student Judicial Affairs and Community Standards and will result in failure of the course as recommended by the University of Southern California. All students are expected to understand and abide by these principles. *Scampus,* the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.