

CHEM 150W: Beyond Petroleum as a Fuel:
Plastics, Pharmaceuticals and Textiles
Fall 2011

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Office hours: T 3:30-4:30 & W 1-2 (subject to change according to student needs) and by appt.

****Please make sure you put "CHEM 150W" or "Freshman Seminar" in the subject line****

I. General Information

Classroom Meeting Times: TR 11:00-12:20 p.m.; Andrews 207
Final Exam Date/Time: 09 Dec.2:00-5:00 p.m.—no final exam, but a final paper is due by 5:00 (see last page)

Required Books:

- 1) Lunsford, Andrea A., *Easy Writer, A Pocket Reference, 4th Ed. (With 2009 MLA and APA updates)*, Bedford/St. Martin's: New York, 2010; **ISBN: 978-0312554255; SRP = \$27.95??**
- 2) Roberts, Paul, *The End of Oil: On the Edge of a Perilous New World*, Houghton Mifflin: Boston, 2004; **ISBN: 0-618-56211-7; SRP = \$14.00**
- 3) Romm, Joseph J. *The Hype about Hydrogen-- Fact and Fiction in the Race to Save the Climate*, Island Press: Washington, 2005; **ISBN: 1-55963-704-8; SRP = \$24.99**

Suggested Book:

- 1) Black, Edwin, "The Plan, *How to Rescue Society when the Oil Stops -- or the Day Before,* " Dialogue Press: Washington DC, 2008; **ISBN: 978-091415307-8, SRP = \$12.95**

II. Course Description:

This course will emphasize the demands that our "consumer society" is placing on our natural resources and scientific establishment. Although generally not acknowledged, a large percentage of consumer goods, including pharmaceuticals, are now produced using petroleum-based raw materials (i.e., petrochemicals). The unfortunate aspect of this is that humans are now burning what is perhaps our most versatile chemical resource simply to fuel our transportation and delivery needs. We will discuss and write about many topics regarding transportation, energy use and supplies, use of petrochemical feedstocks and consumerism. Key questions could include: How will decreases in petroleum reserves and production affect our current lifestyles with respect to and beyond transportation? How will we find replacements for petrochemicals and petroleum? What are the financial, environmental, political, and opportunity costs of our current lifestyle?

III. Grading and Student Responsibilities.

Time commitment: Excelling in college level course work typically requires on average three to four hours per credit per week. Since this is a four credit course, in addition to the time we meet as class each week, you should expect to spend nine to twelve hours on average reading, writing or otherwise preparing for this class on a weekly basis.

Breaking News: New information relevant to this seminar appears every day. Relatively reliable sources for this information include:

- National newspapers (e.g., *The New York Times, The Washington Post, Washington Times, Boston Globe, Christian Science Monitor, Wall Street Journal, Chicago Tribune, LA Times, Atlanta Journal Constitution, etc.*).
- National news magazines (e.g., *Time, Newsweek, U.S. News and World Report*)
- Scientific news magazines (e.g., *Science News, Science, Scientific American, Discovery*)

- National public radio's news programs (e.g. *All Things Considered* heard M-F in Williamsburg on WHRO FM 89.5 from 4:00-6:00 pm and on WCVE FM 88.9 from 4:00-6:30 pm and *Morning Edition* hear M-F on WHRO and WCVE from 7:00 am-9:00 am).

News Summaries/Discussion. The ten minutes or so of each class session will be spent discussing news items relevant to the class (see end of the syllabus for key words and phrases) Contributions of breaking news items will be used as a partial basis for the class contribution grade. Two students will be the assigned "News Anchors" at each class meeting. These students will provide an overview of the most significant/interesting class-related news stories since our last class meeting and coordinate a news discussion.

As an "anchor," you will be expected to: (a) Post the links/sources to articles you've chosen on the Discussion Board portion of *Blackboard* by 9:00 p.m. the night before your scheduled "broadcast;" (b) provide a *written summary* (factual—to hand in) of the news item(s) selected and provide the source; (c) identify the target audience; (d) try to identify any biases by the author; (d) provide some type of editorial commentary (e.g., implications beyond the article? Shortcomings? Most important point? Errors? Assumptions?); and (f) facilitate the discussion of the news item.

Preparation for class discussions: Unlike most chemistry classes, this will be a seminar class based on less-formal discussion of the reading assignments. For this reason, it is essential that students come to class prepared to discuss the reading. Students will be expected to bring a written (preferably typed) list of discussion points and questions to ask. These lists will be collected and used as a partial basis for the class participation grade. You may "miss" three of these during the semester without penalty.

Quizzes (2). Quizzes will count for 5% of your final grade.

Writing Assignments: Courses designated with a "W" can be used to satisfy the Lower Division Writing Requirement. Such courses are required to assign a **minimum of 24 pages** of writing. Instructors are expected to formally evaluate (i.e., grade) at least 50% of the submitted writing and provide opportunities for students to revise some papers based on instructor feedback. To meet these requirements, writing assignments will be distributed as follows:

**** Ungraded Assignments** which MUST be passed in to receive a grade in the course:

- 1) "Talking Points" on in-class reading.
- 2) Summary of news items that you are discussing/presenting.
- 2) 1-2 Page (>1) Letter to a Congressional Representative regarding a Recent News topic/area of legislation.
- 3) 1-2 Page "reviews/critiques of a fellow classmate's papers
- 4) 6-8 Page essay—DRAFT

Specific Graded Assignments:

- 1) 1-2 pages (>1) on why you are/are not worried about our collective future WRT petroleum.
- 2) 2-3 page Editorial (letter to a paper) on a news topic (e.g., should we ban or expand off-shore drilling in the U.S.?).
- 3) 3-4 page Pro/Con Essays.
- 4) 6-8 page Final Essay related to presentation project
- 5) Presentations (12-15 minutes per person; Possible topics will be discussed and presented throughout the course; a scientific Journal article presentation is a possibility)

Grades will be assigned based on the following:

| | | |
|---------------------|----|-----|
| Class Participation | | 15% |
| Quizzes | | 5% |
| Presentation | | 15% |
| Writing | #1 | 5% |
| | #2 | 10% |
| | #3 | 20% |
| | #4 | 30% |

Group Trip:

In the past, we have visited an oil refinery, the nuclear power plant in Surry, and GreenBuildit in Norfolk.

Manuscript Preparation:

Formal Papers. All papers should be written individually, computer-generated (including rough drafts), **double-spaced, with left justified one-inch margins** (NOTE: The default in Microsoft Word is 1.25" unless you change it!) and using **12-point Times or Times New Roman font**. Follow guidelines in Lunsford for formatting of citations (Chicago style). Direct quotes from sources should not be used unless they are a very short, unique phrase or "trademark phrase." Extensive paraphrasing of sources and failure to cite sources are unacceptable and possible causes for Honor Council deliberation of plagiarism. Papers which do not fulfill the stated requirements of the assignment will not receive a grade higher than a C. Papers printed by computer should always be handed in with the pages numbered, collated and **stapled** (no covers/folders, etc.) Proofread carefully and make any final corrections neatly with pen or pencil if necessary. Place the assignment topic and due date in *10-point font* in the "Header." *Please write your name on the back of the last page of the assignment.*

Drafts of essays must contain proper citations used for data and/or quotes (more later). Revisions of drafts should include substantial "re-working" of the essays rather than minor grammatical and typographical corrections. The general timetable for revisions is seven days. Each revision must be accompanied by the original draft(s) (*electronic and hard-copy!*) as well as the grading checklists.

Critiques of someone else's essay will entail two things: (a) annotate the other person's essay with correction marks, suggestions, etc.; and (b) write a one-page letter to the person to explain your overall impression(s) and provide *constructive* suggestions on ways to *improve* the essay. Your goal is to help your fellow student and to learn to be critical of their own writing.

The documents for this class should all be considered "formal assignments" and cannot contain "IM/TM acronyms" or other informal phrases.

Absences and Late Assignments.

The success of *Freshmen Seminars* relies upon group discussions, class participation and writing assignments. Therefore, regular class attendance is required. Each of you may miss two classes regardless of the reason. You may not miss student *presentations* without an excuse, however. In order to be excused from attendance beyond the two absences listed above, you must contact me before the absence or provide documentation of an illness, or college sponsored function. If you have any scheduled, college sponsored travel that will cause you to miss a class, you need to notify me as soon as you find out about the trip. *Each unexcused absence will decrease your overall grade by one-third of a letter grade (e.g., A⁻ to B⁺).* If anyone habitually appears unprepared for discussions or news-items, I will schedule a mandatory meeting to determine the cause and discuss solutions or repercussions. Your grade is ultimately your own responsibility. Make sure that you talk to me if you're having any difficulties, but do not wait until the end of the semester!!!

Required work will be provided in class as well as posted on Blackboard, so check the course site regularly.

Assignments must be submitted both in electronic and hard-copy formats. For electronic submission, use the "SafeAssign" portion of Blackboard. Work that is handed in late will be marked down 25% per 24 hour period. If your assignment is >24 hours late, it counts as *two* days late an analogous criterion applies to >48h, >72 h, etc.. NOTE that all non-class days, including WEEKENDS AND HOLIDAYS COUNT AS DAYS LATE. If you submit over a weekend, holiday or at night, you must make sure that I get an electronic copy (that will record time of submission). I cannot be responsible for late papers for which I do not receive an electronic copy because of power outages or other circumstances. Essays more than four days late will not be accepted except in extenuating circumstances (usually a circumstance that involves the Dean of Students' Office). All assignments must be completed to receive a grade.

Students who earn a "C" or above in a freshmen seminar have satisfied the lower-division writing requirement. Those earning less than a "C" will need to complete and pass another course to fulfill this requirement.

Discussion Board Posts will be online discussions/chat-rooms that will contain dialog regarding posted questions or topics. This will become part of your class participation grade and can help augment the more reserved students' in-class participation.

More detailed and specific essay instructions will be posted throughout the semester.

IV. Class Environment

Freshmen seminars are opportunities to write, debate, and present in an academic area outside of that which may be your primary interest. We will examine issues from both the liberal and conservative perspectives and I will often play the role of “devil’s advocate” regardless of anyone else’s perspective. This broad approach will surely expose arguments and beliefs that are not universal among the members of the class. In order to foster open and thought-provoking discourse, *incivility will never be appropriate*. Each person has the right to her or his own views and the right to express any and all opinions without fear of denigration. Please turn off cell phones and do not eat in class since both phones and food can be very distracting for others.

If you have any disabilities or special circumstances that might affect completion of any assignment, please let me know!

V. Student Resources.

The Writing Resources Center (WRC) is located at the back of the first floor in Swem Library. This center is staffed by trained consultants. These people are a valuable resource, but do not expect them to write your paper(s) for you. Drafts of essays, revisions and corrections require significant effort *on your part*. Writing persuasive, cogent essays and letters takes practice, thought and critical thinking—the consultants will expect you to provide these and will only offer feedback so that you can improve your own work. This resource is provided free, but please schedule consultations in advance (221-3925?) to ensure that you get the help you need.

Purdue’s Owl website for writers (<http://owl.english.purdue.edu/>). This site provides some exercises and general rules for word use, spelling of similar sounding words, etc.

Picky Rules for Writers (<http://www.americanshakespearecenter.com/v.php?pg=184>). This list is from Shakespeare professor at the American Shakespeare Center at Mary Baldwin College. Some of the wording of the list seems “inappropriate” to me, but the items are worth reading.

Professor’s “Pet-Peeves:”

- A) “Between you and I,” or “for you and I.” Why are these incorrect?
- B) “Me and Him/Her” when used as a subject
- C) The word “Like,” and the phrase “you know.” “Like” should never be used more than once in a sentence and probably not more once or twice in a paragraph. “You know” should never be used in formal writing.

Common “Pet-Peeves” for others:

- A) Beginning a sentence with “Because.”
- B) Beginning a sentence with “And.”
- C) Beginning a sentence with “However.”
- D) Split infinitives. I don’t have a problem with these, but many people do, so it’s best to avoid splitting your infinitives (e.g., “to boldly go” vs. “to go boldly”).

Other Notes:

- A) Sometimes you may have to save a PDF from Blackboard before it will print.

Tentative Course Calendar (Changed once because of Isabel)

- Aug. 25 Course intro, cover syllabus, student intro. #1, and questionnaire.
 Aug. 30 Group discussion of *Petroleum: An Energy Profile*, 1999, pp 1-24. Student Intro. #2 (**bring in an item and send me a favorite photo that says something about you**).
- Sept. 1 Group Discussion of *Petroleum: An Energy Profile*, 1999, pp 25-51.
 Sept. 5 1-2 Page essay (At least one page) due for the following topic: Are you worried about the future with respect to petroleum? **Due by 5:00 p.m. Monday.**
- Sept. 06 Group Discussion of *Petroleum: An Energy Profile*, 1999, pp 52-65 (there's a glossary at the end just to peruse); Discussion of Recent News (Jintong and Scott).
- Sept. 7** *Last day to drop a class!! If you drop beyond this point, a "Withdrawal" will always be on your transcript unless you have a major illness or other unusual circumstance that will convince the Dean of Students' Office that the "W" should be erased—this is NOT easy to do and involves a petition and a hearing.*
- Sept. 08 Recent News (Caitlin and Jahan); Reading of "R@evolution" and *Innovative Technologies* from API (on Blackboard).
 Sept. 09 2-3 page **Editorial to a PEER and Prof. Hinkle (electronically). As an example of a topic: should we ban or expand off-shore drilling in the U.S.?**
- Sept. 13 RETURN Peer Review to writer; Discussion of *Hydrogen Hype* (Romm), pp 1-52
 Sept. 15 Recent News (Michael Sloan and Clara); Discussion of *Hydrogen Hype* (Romm), pp 53-88;
 Sept. 20 Recent News (Tomas and Benjamin); In-class writing of 2-3 page Editorial for a newspaper/magazine.
 Sept. 22 Recent News (William and Hunter); Discussion of *Hydrogen Hype* (Romm), pp 89-150.
 Sept. 23 Editorial Final Draft due by 5:00 p.m.
 Sept. 27 **NO CLASS—Prof. in Michigan.**
 Sept. 29 Recent News (Zach and Hitoshi); Discussion of *Hydrogen Hype* (Romm), pp 151-186
 Oct. 4 Discussion of Recent News (Chris and Michael L.); Discussion of *Hydrogen Hype* (Romm), pp 187-212
 Oct. 6 Recent News (Michael P.); *The End of Oil* (Roberts): pp 1-17
 Oct. 7 1-2 Page Letter to Congressional Representative regarding some energy legislation due by 4:00.
 Oct 11 **Fall Break**
 Oct 13 Recent News (Jintong and Scott); Discussion of *The End of Oil* (Roberts): pp 21-90;
 Oct. 15 2-3 Page Comparison between **Power Hungry and Hydrogen Hype due by 5:00.**
 Oct. 17-20 Dates for meetings scheduled w/ Prof. Hinkle WRT Presentations—make an appointment!
 Oct. 18 Movie —tentative.
 Oct. 20 Recent News (Caitlin and Jahan).
- Oct. 21** *This is the last day to Withdraw from any class!!*
- Oct. 25 Recent News (Michael Sloan and Clara); *The End of Oil* (Roberts): pp 90-142.
 Oct. 27 Recent News (Tomas and Benjamin);
 Oct. 27 Meetings w/ Prof. Hinkle WRT Final Paper
 to Nov. 1
- Nov. 1 **Draft of 3-4 Page Pro/Con Paper due to Peer during class.** Recent News (William and Hunter);
 Nov. 3 **Critique of 3-4 page paper back to the writer. Mark Shmorhun, APTI talk on Ethanol**
 Recent News (Zach and Hitoshi).
 Nov. 8 Recent News (Chris and Michael L.); *The End of Oil* (Roberts): pp 143-164.
 Nov. 9 **Final Draft of 3-4 Page paper due to Prof. Hinkle by 08:00.**
 Nov. 10 *The End of Oil* (Roberts): pp 165-187; **Movie?**
 Nov. 15 Recent News (Michael P.); Movie II? *The End of Oil* (Roberts): pp 188-224.
 Nov. 17 Presentations (____, ____, ____, ____ and ____)
 Nov. 22 Presentations (____, ____, ____, ____ and ____).
 Nov. 24 **Thanksgiving**

- Nov. 29 Presentations (_____, _____, _____, _____ and _____)
- Dec. 1 *The End of Oil*, pp 225-280 and LAST DAY OF CLASSES
- Dec. 2 ***Rough Drafts of 6-8 Page Paper due to Prof. Hinkle by 4:00—I am flexible on this, BUT . . . you need to give it to me at least four days prior to 12/09.***
- Dec. 09 ***Final, revised Essay due by 4:00.***

The above schedule and procedures in this course are subject to change in writing in the event of student schedule difficulties, extenuating circumstances, the discovery of new articles, or breaking news.

Very useful websites:

- 1) Energy Information Administration (EIA)
<http://www.eia.doe.gov/>
- 2) National Renewable Energy Laboratory (NREL)
<http://www.nrel.gov/>
- 3) American Petroleum Institute (API)
<http://www.api.org/>
- 4) Beyond Petroleum (formerly British Petroleum)
<http://www.bp.com/bodycopyarticle.do?categoryId=1&contentId=7052055>
- 5) Rocky Mountain Institute (Energy Think-Tank)
<http://www.rmi.org/rmi/>

Possible Search Terms for Recent News/Science Articles:

| | | | |
|-------------------|--------------------|-------------|-------------------------------|
| Gasoline (gas) | Diesel | Natural Gas | Liquified Natural Gas (LNG) |
| Ethanol | E85 | Bio-Diesel | Liquified Petroleum Gas (LPG) |
| Sustainable Fuels | Sustainable Energy | OPEC | Renewable Energy |
| Plastics | Plastic Recycling | Hydrogen | Hydrogen Economy |
| Fuel Cell | Ethylene | Propylene | butylenes |
| Butadiene | benzene | naphtha | Bioplastics |

Potential story sources/ideas:

- 1) www.gaslandthemovie.com/
- 2) gasification
- 3) bio crude
- 4) Pyrolysis
- 5) Photovoltaics
- 6) nuclear power
- 7) green construction
- 8) offshore oil drilling
- 9) carbon trading
- 10) carbon capture
- 11) global warming
- 12) Arctic and Antarctic ice shelves
- 13) direct methanol fuel cells
- 14) hydrogen fuel cells
- 15) Bio plastics

Potential Paper Topics:

- 1) Gasoline tax increase (USA Today, ~ 10 July 2010)

- 2) Nuclear power permits (streamline approval process?)
- 3) Expand/contract federal subsidies for biofuels?
- 4) Eliminate corn EtOH subsidy?
- 5) Moratorium on deep-water drilling (US coast)
- 6) Add Hydrogen fuel cell subsidies?
- 7) Mandatory 30% increase in CAFE standard
- 8) Eliminating trucks and SUVs from CAFE standard exemption.