Course Syllabus

Jump to Today Edit

Welcome to EnvH 310, 2016 edition.

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Telephone Office hours: Thursdays, 4:30-5:30 and by email appointment

COURSE WEB SITE: (under construction)

Who this course is for: This is a course about chemistry, but also about many other things related to the world we live in. It is intended undergraduates, not necessarily science majors, who have had basic chemistry courses and who have interest in topics like environment a health, sustainability, and greener materials, products, and processes.

Course Description and Aims

This course aims to present the ideas and approaches of green chemistry, in the context of social impact and public health. The over-arc be the relationship between the science and application of chemistry, and the conditions of life that affect everyone, particularly in the deve

Throughout the industrial age and especially since WWII, commercial use of chemicals has grown expansively and affects everyone, every Historically, there are numerous examples of unintended consequences of chemical use resulting in environmental degradation, social and costs, and human suffering. Looking forward, we project even more extensive use of chemicals and more development and introduction ir of newly-synthesized or manufactured chemicals, with grave potential for more unintended adverse effects. Presently, many societies strug legacy of pollution, the difficulties of making decisions regarding chemical uses, and issues of sustainable chemical uses.




Green Chemistry is an approach to technological development and industrial practice that aims to prevent or minimize unintended adverse from chemical use, through implementation of specific principles that:

- Replace problematic chemicals with less toxic alternatives through molecular design and toxicity-driven alternatives assessment
- Eliminate or minimize chemical waste generation in research, product development, manufacturing, marketing and distribution, and e management
- Seek improved sustainability through emphasis on renewable feedstocks, energy efficiency, and reuse/recycle design goals
- Avoid long term environmental impacts by emphasizing natural attenuation and breakdown, avoiding chemical persistence beyond th the intended chemical use

Course Instructional Objectives

This course aims to provide foundational information regarding the need for, purposes of, and elements of Green Chemistry as both a set and as a decision-guiding framework. As part of this content, attention will be given to:

- the current and historical practices for the design, use and management of chemical substances and effects of health and environme
- environmental persistence and environmental fate and transport applied to chemical use and releases
- chemical toxicity and other types of hazards associated with chemical use
- lifecycle analysis and other waste minimization and management approaches
- formal alternatives assessment frameworks
- case studies representing successful and unsuccessful attempts to avoid adverse impacts from chemical use

see the flyer

Overview of Course Topics

The attached schedule is draft and may change during the quarter - it will not automatically update as other components of the website d this preliminary view will give you a sense of the topics and flow of the class.

(view draft class schedule)

Course Textbook

- Anne E. Marteel-Parrish and Martin A. Abraham, Green Chemistry and Engineering: A pathway to sustainability. Wiley, 2014. Ab "GCE" in Schedule. Available as an e-text through UW library: **LINK (http://alliance-primo.hosted.exlibrisgroup.com/primo_lib /action/dlDisplay.do?vid=UW&search_scope=all&docId=CP71229495800001451&fn=permalink)**

  This text is sponsored by the American Institute of Chemical Engineers, and is a good overview for those with relatively little chemist In addition to introducing chemical theory along with green Chemistry content, it puts a lot of emphasis on policy and other context i chemical practice per se.

  Once you are on the publisher's site, click the link under the cover image - "Read Online (available)". The page will reload with a viev the right (5) and text content navigation in the left column (4). Recommendation is to leave the view as 'Image' (3) to allow scrolling t text. You can change the size of the page at (1).

A second text that I will draw material from and that is recommended (a few will be ordered for this class by U bookstore) is: Green Chem introductory text, by Mike Lancaster (2010)

Other reading will be provided (linked in under "Modules"); for a review of texts and other books, go HERE. For a guideline to on-line reso to this course, go HERE.

Assignments and Grading

Under the modules section of the website is a link for each class session. There you will find a page labeled "session "x" materials" for ea containing a description of the focus for that session, reading assignments and questions to guide your reading. For some sessions there materials for you to review (videos to watch, web pages to look at, supplemental articles. etc). Most class sessions will include a second basis for class activities: discussions, or in-class exercises. These are often application topics related to the main topic of the session.

In addition, there will be a limited number of assignments made for you to complete outside of class and turn in. These are listed under th "assignments" tab of the website.

Your responsibilities are:

1. do assigned reading ahead of time
2. be prepared to respond to readings questions (in discussion or quiz)
3. review materials and preparation assignments for the in-class activities for that session
4. Complete and submit the "turn-in" assignments.

5. There will be a quarter-long project assignment, due by the last day of class, 12/8/16.

In addition, your grade will be based on exams and quizzes. These will be announced during the quarter.

The University of Washington and Academic Integrity

The University of Washington expects its students "to maintain the highest standards of academic conduct," as per its **State Academic Responsibility** (http://depts.washington.edu/grading/issue1/honesty.htm) . Students who plagiarize are not c jeopardizing their grade and losing the opportunity to really learn, but they also are devaluing the work of their fellow classma diminishing the reputation of the University of Washington--which can make your degree less valuable.

University of Washington general policy statement:

“Admission to the University carries with it the presumption that students will conduct themselves as responsible members c academic community. As a condition of enrollment, all students assume responsibility to observe standards of conduct that to the pursuit of academic goals and to the welfare of the academic community. That responsibility includes, but is not limite practicing high standards of academic and professional honesty and integrity.”

[Reference: WAC 478-120-020 Standards of Conduct (2a),**http://www.washington.edu/students/handbook/conduct.** (http://www.washington.edu/students/handbook/conduct.html#020)]

The UW School of Public Health (SPH) is committed to upholding standards of academic integrity consistent with the acade professional communities of which it is a part. Plagiarism, cheating, and other misconduct are serious violations of the Unive Washington Student Conduct Code (WAC 478-120). We expect you to know and follow the university's policies on cheating plagiarism, and the **SPH Academic Integrity Policy** (http://sph.washington.edu/students/academicintegrity/) . Any suspec academic misconduct will be handled according to University of Washington regulations. For more information, see the Univ Washington Community Standards and Student Conduct website.

For web-resources on understanding and avoiding plagiarism, go to: http://courses.washington.edu/hsstudev/studev/plagia

Accommodations for Students with Disabilities

The UW Disability Resources for Students office is the eMPH program's partner in identifying learning challenges and enabli our educational programs. We encourage students with concerns to consult with the office after matriculation to the prograr a letter from the office indicating you have a disability that requires academic accommodations, please contact the instructo possible in order to discuss the accommodations you might need per the on-site classroom or distance-based delivery of th content.

If you would like to request accommodations for this course due to a disability, please contact Disability Resources for Stude Schmitz, (206) 543-8924 (Voice), 543-8925 (TTY) or **uwdss@u.washington.edu** (mailto:uwdss@u.washington.edu) .

Assignments Summary:

Date	Details	
Thu Sep 29, 2016	**Prep for session 1: origins of Green Chemistry and sustainability** (https://canvas.uw.edu/courses/1065255/assignments/3358504)	du

Date	Details	
Tue Oct 4, 2016	Prep for session 2: R&D as a process; Concept mapping (https://canvas.uw.edu/courses/1065255/assignments/3358551)	du
Thu Oct 6, 2016	Prep for session 3: GC principles (https://canvas.uw.edu/courses/1065255/assignments/3358552)	du
Tue Oct 11, 2016	Prep for session 4: chemical reaction efficiency (https://canvas.uw.edu/courses/1065255/assignments/3358571)	du
Thu Oct 13, 2016	TURN-IN 1) Concept map a: chemistry and sustainability (https://canvas.uw.edu/courses/1065255/assignments/3358655)	du
	session 5 in-class activity assignment (https://canvas.uw.edu/courses/1065255/assignments/3358573)	du
Tue Oct 18, 2016	Prep for session 6: waste generation, management, fate (https://canvas.uw.edu/courses/1065255/assignments/3358611)	du
Thu Oct 20, 2016	TURN-IN 2) calculating chemical reaction efficiency metrics (https://canvas.uw.edu/courses/1065255/assignments/3358657)	
	Prep for session 7: anthropogenic chemicals in the environment (https://canvas.uw.edu/courses/1065255/assignments/3358612)	du
Tue Oct 25, 2016	Prep for session 8: understanding toxicity (https://canvas.uw.edu/courses/1065255/assignments/3358614)	du
Thu Oct 27, 2016	Prep for session 9: regulation of chemical hazards (https://canvas.uw.edu/courses/1065255/assignments/3358615)	du
Tue Nov 1, 2016	TURN-IN 3) Concept map b: Chemistry and Environmental Impact (https://canvas.uw.edu/courses/1065255/assignments/3358662)	du
	session 10 in-class activity assignment (https://canvas.uw.edu/courses/1065255/assignments/3358616)	du
Tue Nov 8, 2016	Prep for session 12: GC and energy production (https://canvas.uw.edu/courses/1065255/assignments/3358638)	du
Thu Nov 10, 2016	TURN-IN 4) Concept map c: Sustainable energy production and use (https://canvas.uw.edu/courses/1065255/assignments/3358693)	du
	Prep for session 13: chemical reactions and synthesis (https://canvas.uw.edu/courses/1065255/assignments/3358639)	du
Tue Nov 15, 2016	Prep for session 14: alternatives assessment / eco-labels	du