

Chemistry 489 Advanced Environmental Chemistry – Spring 2020
Part I: Introduction to Green Chemistry
Journal Club #2: “Undergraduate Degree Programs in Green & Sustainable Chemistry”

Journal Club #2: Your topic is “Undergraduate Degree Programs in Green & Sustainable Chemistry”.

Your goal is to find at least three (3) undergraduate programs using one or more of the following search terms:

- Undergraduate green chemistry programs
- Undergraduate green and sustainable chemistry programs
- Undergraduate green chemistry engineering programs
- Undergraduate green and sustainable chemistry engineering programs
- Undergraduate green chemistry certificate programs
- Undergraduate environmental engineering programs

By next Tuesday, you need to send me an email that contains:

- I. A brief (one sentence) description for each of the three (or more) programs you found, and the URL for each (minimum of three), and
- II. Identify your favorite program that you will discuss with the class on Thursday.

In class next Thursday, February 6 you will give a 5 minute, informal presentation on your favorite program where you will address the following points:

- 1) You will call up the program web page on screen.
- 2) Identify program and institution.
- 3) Give an overview of the program including courses required for the degree.
- 4) Discuss special highlights, career benefits, your personal assessment, etc.

Belmira:

1- <https://osha.washington.edu/MoDRN/module-3>

This is a Green chemistry certificate online program, that focus in; the 12 principles, Environmental, economic, and societal benefits of green chemistry, and Business drivers and barriers to implementing sustainable practices along with other green chemistry related topics.

2- <https://www.iit.edu/academics/programs/environmental-chemistry-bs>

This program is Environmental Chemistry B.S, it involves gaining skills in environmental science, environmental analytical chemistry, hydrologic science, atmospheric science, environmental toxicology, and environmental health science.

3- <https://seas.yale.edu/departments/chemical-and-environmental-engineering/undergraduate-study-environmental/undergraduate-c>

Students are given the choice of doing either B.S or B.A in environmental engineering. Each degree program depends on the student's willingness to learn and focus more on environmental engineering. For example, student who wish to have a strong background should go for the B.S.

Ben:

Topic: Undergraduate green chemistry programs

School: UMASS Boston; center for green chemistry, renewable energy, benign synthesis and more

Offers: a PhD in green chemistry, research in chemical fate

Link: <https://www.acs.org/content/acs/en/greenchemistry/students-educators/academicprograms.html>

Topic: Undergraduate green and sustainable chemistry programs

School: University of Washington

Offers: Green chemistry and chemical stewardship online certificate program

Details: 3 course programs from 9/28/2020-6/4/2021

Link: <https://osha.washington.edu/MoDRN/module-3>

Topic: Undergraduate green chemistry certificate program:

School: Green Valley State University

Offers: A certificate in green chemistry, (this does not count as a major or a minor) but rather a focus investigation towards green chemistry

Details: 13-14 credit hour certificate that can be completed in one year

Link: <https://www.gvsu.edu/chem/green-chemistry-certificate-2.htm>

Carine:

[University of Massachusetts, Boston; Center for Green Chemistry](#)

Offers a PhD in Green Chemistry; Research in chemical fate, renewable energy, benign synthesis, and more

[University of Massachusetts, Lowell](#)

Offers a PhD in Green Chemistry

[Warner Babcock Institute for Green Chemistry](#)

Offers professional training in green chemistry for scientists and engineers (non-academic)

I am interested in presenting about the undergraduate program in green chemistry at Lowell university

<https://www.acs.org/content/acs/en/greenchemistry/students-educators/academicprograms.html>

<https://www.uml.edu/Sciences/chemistry/Programs-of-Study/Graduate/Doctoral-Program/Green-Chemistry-Option.aspx>

Sara:

Virginia Tech College of Engineering has:

Minor in Green Engineering

URL: <https://eng.vt.edu/academics/undergraduate-students/minors/green-engineering.html>

Green Engineering is defined in this college as “environmentally conscious attitudes, values, and principles, combined with science, technology, and engineering practice, all directed toward improving local and global environmental quality.” This minor consists of 2 engineering courses and 2 general electives, but also intro to green engineering course and 1 environmental life cycle course. Both core courses are broad discussion based courses that touch on what they refer to as a “Triple Bottom Line” which includes environment, economics, and society. As well as analyze risks and discuss more sustainable technology and design.

University of Toledo's School of Green Chemistry and Engineering has:

Minor in Green chemistry and engineering

Major in Chemical engineering

URL: <https://www.utoledo.edu/nsm/sgce/undergraduateprograms.html>

The minor requires 21 credits of green chemistry and engineering. Included in these are courses in organic chemistry, biofuels, hazardous waste management, environmental economics and policies, etc.

Grand Valley State University has Green Chemistry Certificate

URL: <https://www.gvsu.edu/chem/green-chemistry-certificate-2.htm>

This is a certificate program that can be earned along with a bachelor's degree. Focuses on chemistry, environmental sciences, engineering and sustainability. It is meant to augment a bachelors program in order to create better opportunities as students reach the work force. So they will have a more concentrated expertise. This is a 12-13 credit certificate program.

Katie: Undergraduate environmental engineering programs

University of California - Berkley, CA

#1 in environmental health; #3 in engineering (doctorate)

"BCGC was part of an academic/industry/government team comprising researchers from the Western Regional Research Center (Albany, CA) of the USDA, University of Victoria, the household products manufacturer Method Products, and the green chemistry venture capital fund Safer Made."

<https://bcgc.berkeley.edu/category/environmental-chemistry/>

Stanford University - Stanford, CA

#2 in environmental health; #2 in engineering programs (doctorate)

"The department is committed to developing technologies what will improve and maintain environmental health."
(examples of technologies described on the website)

<https://cheme.stanford.edu/research/chemistry-environment>

Massachusetts Institute of Technology -Cambridge, MA

#4 in environmental health; #1 in engineering (doctorate)

"The Parsons Laboratory for Environmental Science and Engineering in the Department of Civil and Environmental Engineering has a long history of highly respected water and environmental research. From its inception as a hydrodynamics laboratory in the 1950s, the lab has evolved into a multidisciplinary research center focused primarily on natural waters and the environment."

<http://cee.mit.edu/research/parsons-lab/>

Ryan:

Environmental Engineering: University of Michigan-Ann Arbor

Course Site: <https://bulletin.engin.umich.edu/depts/cee/ug/>

Course Schedule: <http://bulletin.engin.umich.edu/wp-content/uploads/sites/306/2019/10/Environmental-Engineering-Sample-Schedule-2018-2019-1-8-19.pdf>

The degree program for environmental engineering at the University of Michigan has a strong development of mathematical and civil engineering principles as well as chemistry, particularly in regards to aquatic chemistry.

Environmental Science: University of Florida-Gainesville

Course Site/Schedule: https://catalog.ufl.edu/UGRD/colleges-schools/UGNTR/EVS_BA_BS/

The degree program for environmental science at the University of Florida requires students to study a wide variety of environmental issues across many facets of the science including not only chemistry, hydrology, geology, and ecology but also the ethics and politics of environmentalism.

Environmental Chemistry: Oregon State University

Course Site: <https://chemistry.oregonstate.edu/content/curricula>

Course Schedule: <http://sites.science.oregonstate.edu/chemistry/undergrad/advising/promoEnvChem.html>

The environmental chemistry degree program at Oregon State University requires students to extensively study biology and microbiology as well as acquire an understanding of how chemicals interact with the natural environment.

Akilah:

Green and Sustainable Chemistry: <https://osha.washington.edu/MoDRN/module-3>

This program is designed to help extend sustainability practices into the field of chemistry

Environmental Engineering (This is the article i would like to present on Thursday):

<https://www.mccormick.northwestern.edu/civil-environmental/academics/graduate/environmental-engineering-science/>

This program focuses on teaching students how to provide safer living conditions. One of the programs "active research topics" is developing tools/methods that can be used to connect biological, chemical, and physical processes.

Green Chemistry program: <https://bcgc.berkeley.edu/>. This program guides research in designing chemical processes that will give students a better understanding of chemical toxicity.