

Chemistry 471-671: Introduction to Green Chemistry Fall 2007 Syllabus

Professor Timothy Dransfield
Office: S-1-85
Phone: X-6143
Email: timothy.dransfield@umb.edu

Professor Jason Evans
Office: S-1-84
Phone: X-6149
Email: jason.evans@umb.edu

Professor Bela Torok
Office: S-1-132
Phone: X-6159
Email: bela.torok@umb.edu

Human society is facing environmental issues and problems of air, soil and water pollution arising from the development of industrial processes. This course probes aspects of chemistry which are designed to benefit society and which search for pathways to minimize the environmental impact of human industry and technology.

The grading standards for the course will vary depending on whether the student is enrolled in Chem 471 or 671.

For the undergraduate students in Chem 471:

weekly problem assignments	25%
weekly analyses of primary literature*	25%
cumulative final exam	50%

For the graduate students enrolled in 671:

problem sets	20%
reading analyses*	20%
cumulative final exam	30%
one 20 minute presentation	30%

* - the manner of assigning these points may vary between Professors

Due to the multidisciplinary nature of Green Chemistry, there is no required textbook for this course. Recommended reading includes "Environmental Chemistry: 3rd Edition," by Baird and Cann, 2005, W.H. Freeman. Students who wish to review some fundamental aspects of environmental chemistry are directed to, "Chemistry in Context: Applying Chemistry to Society," Fourth

Edition, 2003, by Stanitski, Eubanks, Middlecamp and Pienta, published by McGraw Hill. Both supplemental texts will be on reserve in the library.

The following page presents an outline of the course topics for this semester. In addition to attending class and weekly discussion sections, students will be expected to read assigned handouts, to acquire and read primary literature from the holdings of Healey Library, and to be prepared to analyze and discuss those readings.

Section 504 of the Americans with Disabilities Act of 1990 offers guidelines for curriculum modifications and adaptations for students with documented disabilities. If applicable, students may obtain adaptation recommendations from the Ross Center for Disability Services, M-1-401, (617-287-7430). The student must present these recommendations and discuss them with each professor within a reasonable period, preferably by the end of Drop/Add period.

Students are required to adhere to the University Policy on Academic Standards and Cheating, to the University Statement on Plagiarism and the Documentation of Written Work, and to the Code of Student Conduct as delineated in the catalog of Undergraduate Programs, pp. 44-45, and 48-52. The Code is available online at: http://www.umb.edu/student_services/student_rights/code_conduct.html.

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Fall 2007 Topics Listing

Week Topic (Instructor)

Week 1: Green Chemistry, an Overview (Dransfield)

Weeks 2-4: The Chemistry of the Atmosphere (Dransfield)

2: The structure of the atmosphere, tropospheric chemistry

3: Photochemical smog, stratospheric chemistry

4: The Greenhouse effect, climate change

Weeks 5-7: Pragmatic Considerations of Alternative Energy (Evans)

5. Ethanol

6. Hydrogen

7. Other: solar, nuclear.

Weeks 8-10: Green Synthetic Methods (Torok)

8: Catalytic methods in synthesis

9: Synthesis in aqueous media

10: Unconventional energy sources in synthesis

Weeks 11-14: Specific Topics in Green Chemistry and Graduate Student Presentations
Topics, speakers and readings to be announced