

**UNIVERSITY OF CALGARY  
DEPARTMENT OF CHEMISTRY  
COURSE SYLLABUS  
Winter 2015**

**COURSE: CHEMISTRY 423**, Green Chemistry-Principles and Techniques

LEC	DAYS	TIME	ROOM	INSTRUCTOR	OFFICE	PHONE	EMAIL	OFFICE HOURS
L01	TuTh	9:30- 10:45	EEEL 349	Dr. Mahadev	EEEL 237C	220-7602	<a href="mailto:mahadev@ucalgary.ca">mahadev@ucalgary.ca</a>	TBA

**TEXTBOOK:** *“Green Chemistry- An Introductory Text”* by Mike Lancaster, RSC Publishing, Second Edition, 2010

**ADDITIONAL RESOURCES:** The following resources are available in the Library’s Reading Room:

James Clark & Duncan Macquarrie, *“Hand book of Green Chemistry and Technology”*, 2002

Mukesh Doble, *“Green Chemistry and Engineering”*, 2007

Tundo, Pietro, *“Methods and reagents for green chemistry : an introduction”*, 2007

Roger A. Sheldon, Isabel Arends, Uulf Hanefeld, *“Green chemistry and catalysis”*, 2007

Anne E. Marteel-Parrish and Martin A. Abraham *“Green Chemistry and Engineering”* , 2014

**Journals and publications:**

**Green Chemistry Journal** (on line) <http://www.rsc.org/Publishing/Journals/GC>

**Chemical and Engineering News**, An ACS weekly publication covering all new developments in the fields of chemistry and engineering.

**Green Chemistry Letters and Reviews**, Taylor and Francis (on line)

<http://www.tandfonline.com/doi/full/10.1080/17518253.2011.620009>

**Some useful URLs:**

American Chemical Society, Green Chemistry Institute,  
<http://greenchemistryinstitute.org>

“Green Innovations,” *Chemical and Engineering News*,  
<http://pubs.acs.org/cen/coverstory/8228/8228greenchemistry.html>

Green Chemistry at the University of Oregon,  
<http://www.uoregon.edu/~hutchlab/greenchem/>

Green Chemistry at the University of Scranton,  
<http://academic.scranton.edu/faculty/CANNM1/greenchemistry.html>

Green Chemistry, US EPA, <http://www.epa.gov/greenchemistry/>

Canadian Green Chemistry Network. <http://www.greenchemistry.ca/index.html>

**TOPICS COVERED (Tentative):**

1. Introduction to green chemistry
2. The 12 principles of green Chemistry
3. Atom economy
4. Waste : production, problems and prevention
5. Environmental Performance
6. Catalysis and Green Chemistry
7. Renewable Resources
8. New Technologies in Green Chemistry
9. Industrial Chemistry (some examples)

**Individual in class presentations (2) and peer Review:**

During the course each student will do at least two presentations selecting topics from current literature relating to green chemistry, sustainability and synthesis. The presentations will be critiqued by the rest of the class as a way to improve presentation technique as well as learning about research and development in the area of green chemistry. Presentations and critical evaluation of the presentations will account for 10% of the course mark.

**Group Projects on “Green Chemistry and Chemical Industry” \***

- Annotated bibliography
- Project report web-based in the form of a WIKI page
- Final group poster presentation of project

\* *Some suggested **general** topics.*

1. Designing greener, safer chemical synthesis
2. Greening the oil-sands processing technology
3. Green chemistry in paper and pulp industry
4. Petroleum from renewable resources
5. New technologies in green engineering
6. Nanotechnology and green chemistry

**This course does not have a laboratory component.**

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