University of Minnesota Duluth
Department of Chemical Engineering

ChE 4603: Biorenewable Resources

TENTATIVE COURSE SYLLABUS – SPRING 2014

A. Instructor: Dr. Guy W. Sander
B. Office Hours: 2:00 PM to 4:00 PM on Mondays and Wednesdays, or by appointment
C. Office: Engr 215
   Phone: (218) 726 -7828
   E-mail: gsander@d.umn.edu
D. Course: ChE 4603 – Biorenewable Resources
   Liberal Education: Course fulfills Sustainability requirement of the Lib Ed program
   Prereq: ChE 2111
E. Course Time: MWF at 12:00 to 12:50 PM
   Course Location: Engr 118
F. Final Exam: Monday, May 12, 2014, 2:00 to 3:55 PM (comprehensive)

G. Course Objectives: (Fulfillment of ChE Program ABET Objectives in parenthesis)

1. Previous knowledge of math, science, and engineering will be applied to formulate mathematical descriptions of the conversion of biorenewable resources. (A)
2. The conversion of biorenewable resources will be used as a basis for the application of engineering problem solving. (E)
3. Discussion of the environmental impact associated with the consumption of bioresources. (F)
4. Discussion of public policy in the context of making biobased products competitive. (H)
5. Student will learn and use terminology as applied to biotechnology, biofeedstocks, bioenergy, and biobased products. (G)
6. Current advancements in biorenewable resources will be presented. (J)
7. Cost estimation for the manufacture of biobased products (K)

These are the general ABET Program Objectives the Course Objectives refer to:

(A) Apply knowledge of mathematics, science and engineering.
(B) Design and conduct experiments, as well as to analyze and interpret data.
(C) Design a system, component, or process to meet desired needs.
(D) Function on multi-disciplinary teams.
(E) Identify, formulate, and solve engineering problems.
(F) Understand professional and ethical responsibility.
(G) Communicate effectively.
(H) Appreciate the broad education necessary to understand the impact of engineering solutions in a global and societal context.
(I) Recognize the need for, and ability to engage in life-long learning.
(J) Develop and maintain knowledge of contemporary issues.
(K) Use the techniques, skills and modern engineering tools necessary for engineering practice.

H. **Text:** *Biorenewable Resources*, Brown, 1st ed. ISBN: 978-0-8138-2263-1

I. **Point Distribution:**
- Assignments and Quizzes 20%
- Midterm Exam 1 25%
- Midterm Exam 2 25%
- Comprehensive Final 30%

**Grade Scale:**

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<tr>
<th>Grade</th>
<th>Points</th>
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<tbody>
<tr>
<td>A</td>
<td>&gt; 92%</td>
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<tr>
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<td>60.0 - 67.9%</td>
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<td>F</td>
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J. **Topics (tentative):** (chapters in parentheses)

1. The history and future of biorenewable resources (1)
2. Chemistry and thermodynamics of bioresources (2)
3. Biomass and production of biomass (3, 4)
4. Bio-based products (5)
5. Conversion of biomass to energy, fuels, and chemicals (6, 7)
6. Natural fibers (8)
7. Environmental and Economic impact (9, 10)

**Midterms:**
- Friday, February 28, 2014 (tentative)
- Friday, April 11, 2014 (tentative)

K. **Special Requirements:** The use of a spreadsheet program (Microsoft Excel), Word processing software (Microsoft Word), scientific calculator, and internet search tools maybe required.
L. **Attendance:** Attendance of all exams is required to pass the course. If you do not attend a class, you will still be responsible for all information (assignments, due dates, etc.) provided in class. *E-mail is the University’s official means of communication with students.*

M. **Assignment Policies:**

- **Reading:** Topic chapters should be read prior to the lecture class.

- **Homework:** Homework is due at the beginning of the class period or at the designated time if it is due other than a class time. *Late homework will not be graded after the designated due time and given no credit.*

- **Exams:** Exams will be given in class. Exams maybe open book and notes. You may **not** use another person’s work, books, or notes during an exam.

- **Exam Time:** Exams will be given during the regular class period and are due at the end of the regular class period.

- **Student Intellectual Integrity:** All exams must be done independently. Cheating will result in a failing grade for the class.

N. **Make-up and Incomplete Policies:**

- **Make-up Exams and Quizzes:** Make-up exams or quizzes are possible if a valid reason exists and plans are made ahead of time.

- **Incomplete Grading:** The incomplete grade will only be allowed in cases where the student contacts the instructor before the scheduled last day of the course. A grade of incomplete will not be given unless the circumstances leading to the request are deemed by the instructor to be extreme and unforeseen. The student and instructor must agree in writing concerning the timing, quality, and quantity of work to be completed in order to remove the incomplete grade. Failure to complete the required and agreed to work before this time will result in a failing or other appropriate grade.

**Statement on Participation by Students with Disabilities:** It is the policy and practice of the University of Minnesota Duluth to create inclusive learning environments for all students, including students with disabilities. If there are aspects of this course that result in barriers to your inclusion or your ability to meet course requirements – such as time limited exams, inaccessible web content, or the use of non-captioned videos – please notify the instructor as soon as possible. You are also encouraged to contact the Office of Disability Resources to discuss and arrange reasonable accommodations. Please call 218-726-6130 or visit the DR website at www.d.umn.edu/access for more information.

**Student Conduct Code:** Disruptive classroom behavior is prohibited. Students are expected adhere to Board of Regents Policy: **Student Conduct Code:**

http://www1.umn.edu/regents/policies/academic/Student_Conduct_Code.pdf
Teaching & Learning: Instructor and Student Responsibilities: UMD is committed to providing a positive, safe, and inclusive place for all who study and work here. To reference the full policy please see: http://www.d.umn.edu/vcaa/TeachingLearning.html

Academic Integrity: Academic dishonesty is regarded as a serious offense by all members of the academic community. UMD’s Student Academic Integrity Policy can be found at: http://www.d.umn.edu/conduct/integrity/

Final Exams: All final graded components are to be administered or due at the time and place according to the final exam schedule and not during the last week of class. To reference the full policy please see: http://www.d.umn.edu/vcaa/FinalExams.html

Excused Absences: Students are expected to attend all scheduled class meetings. However, there are legitimate and verifiable circumstances that lead to excused student absence from the classroom. For complete information, please see: http://www.d.umn.edu/vcaa/ExcusedAbsence.html

Appropriate Student Use of Class Notes and Course Materials: Broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. For additional information, please see: http://www.d.umn.edu/vcaa/ClassNotesAppropriateUseof.html

Office Hours: I have set office hours but appointments at other times are possible. I do expect that you have read the assigned material and tried hard to solve the problem prior to contacting me.