

Bioenergy Systems, ACES 409
Syllabus – Fall, 2009
Hans Blaschek and Jason Barton – Instructors
Email: blaschek@uiuc.edu, jasonjbarton@mac.com
Tuesdays and Thursdays, 9:30 – 10:50 a.m.
Room 107, Animal Sciences Lab

<u>Dates</u>	<u>Topics</u>	<u>Instructor</u>
August 25	Introduction and Overview	Blaschek & Barton
August 27	Energy fundamentals	Barton
Sept. 1	Soil ecology and the nitrogen cycle	Barton
Sept. 3	Agronomy of bioenergy crops	DK Lee
Sept. 8	Crops, feedstocks, and harvesting	Barton
Sept. 10	Land use, crop allocation, and distribution	Barton
Sept. 15	Ethanol from corn and sugarcane	Blaschek
Sept. 17	Lignocellulosic biomass to ethanol	Blaschek
Sept. 22	Engineering yeast for biofuels	Jong Su Jin
Sept. 24	Economics of bioenergy	Barton
Sept. 29	Economics of bioenergy II	Barton
Oct. 1	Waste and co-product utilization (e.g. DDGS)	Blaschek
Oct. 6	Bio-butanol and the ABE fermentation	Blaschek
Oct. 8	Biodiesel from waste streams	Tim Lindsey
Oct. 13	Physical and chemical processes (thermochemical, gasification, etc.)	Barton
Oct. 15	Exam I	Barton
Oct. 20	Energy Farm Visit	Tim Mies
Oct. 22	Genomic-based tools for bioenergy (systems bio)	Nathan Price
Oct. 27	Life cycle analysis (Refinery Visit at noon)	Barton
Oct. 29	Strategies for bio-products production	Graciela Padua
Nov. 3	Systems informatics and analysis	KC Ting
Nov. 5	Downstream processes for product recovery	Vijay Singh
Nov. 10	Environmental Implications of Bioenergy	Barton

Nov. 12	Legal aspects of bioenergy	Jody Endres
Nov. 17	Comput. tools for bioenergy (modeling, simulation, GIS)	Luis Rodriguez
Nov. 19	Bioenergy policy issues	Barton
Nov. 24	Holiday	
Nov. 26	Holiday	
Dec. 1	The Federal Perspective for Biofuels	John Regalbuto
Dec. 3	Other biological approaches for energy	TBD
Dec. 8	Commercialization of bioenergy technologies	James Keating

Dec 11-18 (TBD) Final Examination

Recommended Texts: These texts are not required, but there will be readings to be completed **before** each session, some of which will come from these texts. The rest will be available at the library or posted for you to access.

Wall/Harwood/Demain (eds.), Bioenergy, ASM Press 2008

Mousdale, Biofuels: Biotechnology, Chemistry and Sustainable Development, Taylor & Francis 2008

Shelley Minteer (ed.), Alcoholic Fuels, Taylor & Francis 2006

Session Format: This will vary, but will generally follow this format.

5-10 mins	Overview of day's schedule, housekeeping
30-40 mins	Presentation-based discussion
10-20 mins	Questions and comments on presentation
10-20 mins	General discussion of readings, other sessions, etc.

Course Expectations: (Marks for FSHN 595 students in parentheses)

Exam I 30% (25%)

Final Exam 40% (30%)

Class Participation and 10, one-page responses 30% (20%)

(FSHN Final Project: 25%)

The midterm and final will be based on the assigned readings and content from the class sessions.

Reading responses should be no more than one page, 1.5 spaced. They will be due each Friday by 5:00 p.m. and can be emailed to Jason at jasonjbarton@mac.com. They should focus on one of that week's two sessions (or both if they are closely connected) and should not summarize the class and readings for that day but should show analysis and critical thinking on your part, such as connection to other subjects discussed in the course, strengths and weaknesses of specific aspects of bioenergy systems, other topics relevant to that specific aspect, etc. This is left intentionally vague for you to decide what you think is important to be discussed.

There are basically 14 weeks in the semester, not including the Thanksgiving break and the last week of class when we have only one session. Therefore, you may choose four weeks when you will not submit a response. We will select one of these writings per month to be marked.

The responses will be graded as follows:

10 pts Understanding of the subject matter

10 pts Critical analysis of the subject

5 pts Response organization (clearly focused, cohesive, etc.)

5 pts Clarity of writing

Jason Barton's office hours are by appointment, except during midterm and final review when they will be posted and held in Animal Sciences Lab., 484.

Prof. Blaschek is available by appointment.