SYLLABI

GRADUATE/UNDERGRADUATE LECTURES

These lectures are designed for senior level undergraduate and graduate students. The students enrolled in this class would earn credit towards their degree program. Assignments and tests would be prepared according to student’s knowledge level, i.e. graduate and undergraduate students would get different tests and assignments. A typical course syllabus would be as follows but it would be modified in collaboration with the host institute teaching staff at a later date.

Course Title: Advanced Bioproducts and Bioprocess Engineering

Instructor: Nurhan T. Dunford
Nurhan.Dunford@okstate.edu
Office Hours: By appointment

Class Lecture

Time: To be announced (TBA)

Location: TBA

Course Objectives

1. Become familiar with food and industrial bioproducts
2. Learn to utilize engineering principles to develop bioproducts
3. Learn about advanced bioprocessing techniques and unit operations
4. Become familiar with the principles of protein, oil, fiber and starch recovery from biomass and purification techniques.
5. Understand challenges involved in bioproduct development and processing
6. Learn about feedstocks used for bioproduct development and their physical structure and chemical/biochemical compositions
7. Become familiar with process design principles
8. Enhance team skills, particularly working with inter-disciplinary majors and other graduate students.

Drop Policy

Please see the host university course drop policy (related web address will be inserted later).

Accessibility

Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact the Office of Student Disability Services before the end of the first week of the class (web address will be inserted later).

Contacting your instructor
Please include “Advanced Bioproducts and Bioprocess Engineering” in the subject line when communicating with the instructor. The instructor will respond as soon as possible, but no later than 24 hours during the week days (Monday to Friday). Weekend inquiries will be addressed on the Monday following the receipt of the message.

**Online Classroom and Community**

Lecture notes will be made available via the host department web site (Here I am assuming that I will have access and allowed to post course related information on the host institution’s web site). Assignments, exam solutions, project information, and any additional handouts will also be posted on the same site.

**Assignments**

The assignment will be due at the beginning of class. If you turn in the assignment after the start of class, your score will be reduced by 10% of what the assignment is worth, unless alternative arrangements were approved by the instructor prior to class. For example, if the assignment is worth 10 points, the score will be reduced by 1 point. No work will be accepted after the completion of class. You will be working in groups. Copying will result in a zero for the assignment (see note on Academic Integrity Policy below).

**Exams**

There will be one exam during the semester.

**Make-up Policy**

No early, late, or make-up exams will be given unless approved by the instructor. A missed exam will be counted as a score of zero.

**Academic Integrity Policy**

The instructor is committed to the maintenance of the highest standards of integrity and ethical conduct. This level of ethical behavior and integrity will be maintained in this course. Participating in a behavior that violates academic integrity (e.g., unauthorized collaboration, plagiarism, multiple submissions, cheating on examinations, fabricating information, helping another person cheat, unauthorized advance access to examinations, altering or destroying the work of others, and fraudulently altering academic records) will result in your being sanctioned. Violations may subject you to disciplinary action including the following: receiving a failing grade on an assignment, examination or course, receiving a notation of a violation of academic integrity on your transcript (F!). You have the right to appeal the charge.

**Other University Policies**

Please see the host department web site for other policies, including pre-finals week policy, drop dates, etc.
I strongly encourage you to look at the University Policies and Procedures Pertaining to Environmental Health & Safety.

**Required Text Book**
There is no required text book for this course. Reading assignments will be given a week before each class and they will be available through the university library and the electronic full text journals provided by the university. Reading assignments should be completed prior to the lecture date. Lectures will generally follow the assigned reading material.

**Grades**

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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<tbody>
<tr>
<td>Midterm</td>
<td>250 pts.</td>
</tr>
<tr>
<td>Final Exam</td>
<td>300 pts.</td>
</tr>
<tr>
<td>Term project</td>
<td>300 pts.</td>
</tr>
<tr>
<td>Assignment</td>
<td>150 pts.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1000 pts.</td>
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</tbody>
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The following letter grades are guaranteed if you have the following percentage of points:

- **A** > 90%
- **B** 80-89.9%
- **C** 70-79.9%
- **D** 60-69.9%

**Lecture Topics**

Introduction
Feedstocks for bioproduct manufacturing
Oilsseed and cereal processing and bioproducts derived thereof
Lignocellulosic biomass processing, lignocellulosic biomass based bioproducts
Biomass production from microorganisms and utilization for bioproduct development
Supercritical fluid technology (Extraction, Fractionation, reactions and particle formation)
Nano technology and utilization of electrospinning technique for bioproduct development
Non-thermal processes
Enzyme aided processing and conversions
Advanced nutrient delivery systems (microencapsulation, nanotechnology, controlled release delivery systems)
Vegetable oil based lubricants, ink and biodegradable polymers
Glycerol based bioproducts