You need access to a copy of the textbook. This does allow joint ownership of copies of the textbook.

Class Info: 3 credits. Lectures 1:00 to 1:50 p.m. M & W. ABEN 208. Lab 2:00 – 4:50 p.m. M. Service Center.

Instructor: Dr. Tom Bon, Office ABEN 202, phone 701.231.7275
Email: Thomas.Bon@ndsu.edu

Office Hrs: 10:00 – 10:50 a.m. M, Tu, W, Th, & F.
Also you can call for an appointment or drop by and see if I am in my office, I am usually available if I am in my office unless it is just before a class or meeting.

Pre-Reqs: ME 221 and ME 222.

References:

Overview:
Agricultural and off-road machinery design and development includes both synthesis and analysis. Synthesis is the collection and building up of ideas into an over-arching concept such as the development of a large round baler or a combine. Analysis is the detailed study and selection of components. Both aspects are important to the successful development of machinery and equipment that provides value and function to the owner/user. Both aspects will be included in this course. However, the greatest area of study will be the analysis portion.

Components can include the frame, parts, assemblies, bearings, springs, etc. to form the final machine or piece of equipment. Fasteners can also be included.
Objectives:

1. Apply knowledge of mathematics, science, and engineering (abet a)
2. Design a system, component, or process to meet desired need within realistic constraints such as economic, environmental, social, political, ethical, health, and safety, manufacturability, and sustainability. (abet c)
3. Identify, formulate, and solve engineering problems (abet e)
4. A knowledge of contemporary issues (abet j).
5. Use techniques, skills, and modern engineering tools necessary for engineering practice. (abet k)
6. Write laboratory reports and make short presentations (abet g and k)

Grading:

The course will be graded with the following weights:

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<tbody>
<tr>
<td>1 hr exams and quizzes (2 or 3)</td>
<td>35%</td>
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<tr>
<td>laboratory reports</td>
<td>10%</td>
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<tr>
<td>homework</td>
<td>10%</td>
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<td>project</td>
<td>10%</td>
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<td>Presentations</td>
<td>10%</td>
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<td>final exam</td>
<td>25%</td>
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<td><strong>Total</strong></td>
<td>100%</td>
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Final Exam is scheduled for 1:00 to 3:30 p.m. on Monday, May 7, 2018.

I use a straight grading system. The breaks are, 90% (A), 80% (B), 70% (C), 60% (D), and below failing.

Homework is due by 5:00 p.m. on the due date. Homework must be given to me in class or placed in my mailbox. My mailbox is located in ABEN 100. Late homework will be discounted 10% if I receive it before I have graded the assignments and 30% if I receive it after I have graded the assignments.

Quizzes may be given anytime. They may be announced or unannounced. They are worth about 10 pts each. Quizzes will be used to test the understanding of concepts and to encourage students to keep up with the material. **If a quiz is missed, it cannot be made up.** Generally, I drop the lowest quiz from the grades. If a quiz is missed, that is the one dropped.
Extenuating circumstances may be considered at the instructor's discretion. If you expect to miss a class due to items such as interviews, professional trips, etc., please inform me by e-mail before the event. If you are caught in sudden events such as illnesses, family emergencies, etc. please inform me as soon as possible.

Anyone in the class who has a diagnosed disability or other special need should inform the instructor as soon as possible. The counseling center should also be notified so the counseling center can work with the instructor and student to best accommodate the situation.

ACADEMIC HONESTY:

Students with disabilities needing special consideration are requested to alert me at the first class.

All work in this course must be completed in a manner consistent with NDSU University Senate Policy, Section 355: Code of Academic Responsibility and Conduct available at http://www.ndsu.nodak.edu/policy/335.htm and the Honor System of the College of Engineering and Architecture (CEA) available at http://www.ndsu.nodak.edu/ndsu/cea/. You are expected to read and abide by both policies, which are incorporated herein by reference. A signature sheet indicating your agreement to abide by the CEA Honor Pledge will be distributed in class. The CEA Honor Code states the following about violations: “If, from the evidence presented, the [Honor] Commission determines that a violation has taken place, it will recommend disciplinary action. Disciplinary action may include, but is not limited to, failure or a grade reduction in the course; failure or grade reduction on the examination, quiz, paper or project in question; or a recommendation for suspension or expulsion.”

CAFSNR Syllabus Attachment – Spring 2018 (since we are administered through CAFSNR).

Academic Honesty: All students taking any course in the College of Agriculture, Food Systems, and Natural Resources are under the Honor System (http://www.ag.ndsu.edu/academics/honor-system-1). The Honor System is a system that is governed by the students and operates on the premise that most students are honest and work best when their honesty, and the honesty of others, is not in question. It functions to prevent cheating as well as penalize those who are dishonest. It is the responsibility of the students to report any violations of the honor pledge to the instructor, honor commission or the Dean of the College of Agriculture, Food Systems, and Natural Resources. The academic community is operated on the basis of honesty, integrity, and fair play. NDSU Policy 335: Code of Academic Responsibility and Conduct applies to cases in which cheating, plagiarism, or other academic misconduct have occurred in an instructional context. Students found guilty of academic misconduct are subject to penalties, up to and possibly including suspension and/or expulsion. Student academic misconduct records are maintained by the Office of Registration and Records. Informational resources about academic honesty for students and instructional staff members can be found at www.ndsu.edu/academic honesty.
**Students with special requirements:** Any students with disabilities or other special needs, who need special accommodations in this course are invited to share these concerns or requests with the instructor as soon as possible. The instructor may ask for verification and that, plus other assistance, can be requested from Disability Services in NDSU Library Suite 17 (231-8463). http://www.ndsu.edu/disabilitieservices/.

**Veterans and military personnel:** Veterans or military personnel with special circumstances or who are activated are encouraged to notify the instructor as early as possible.

**Important Dates**
- January 15 Martin Luther King Jr. Holiday (no class, offices closed)
- January 18 Last day to add classes via Campus Connection
- January 18 Last day for no-record drop of classes @ 100% refund
- January 18 Last day to withdraw to 0 credits @ 100% refund
- January 23 Financial Aid applied to Student Accounts
- January 29 Last day to submit request to audit, pass/fail
- February 2 Undergraduate Spring graduation application due
- February 16 Graduate Student Spring Intent to Graduate forms due
- February 19 Presidents’ Day Holiday (no classes, offices closed)
- March 2 Grades of Incomplete convert to F
- March 12-16 Spring Break (no classes)
- March 22 Last day to withdraw to 0 credits
- March 26 Summer/Fall registration begins
- March 30 Holiday (no classes, offices closed)
- April 2 Holiday (no classes)
- April 6 Last day to drop classes with record (W)
- April 6 Last day to withdraw to 0 credits
- April 17 Spring commencement participation deadline
- April 30-May 4 Dead Week
- May 7-11 Final Examinations
- May 12 Commencement
- May 15 Spring grade access begins online

**Lectures:**

My plans are to start a major revision of the course.

**Laboratory exercises:**

Include several guest speakers and hopefully some tours as well as laboratory activities and computer based applications.

**Some information concerning ABET:**
ABET is the Accreditation Board for Engineering and Technology. ABET is a specialized accreditation agency meaning it certifies specific programs at a college or university as compared to institutional accreditation agencies that examine an entire college or university. Each accredited department must be reviewed by a site visit at least once every six years. The method of accreditation has changed with the ABET 2000 initiative. Every department has a set of evaluation criteria it has developed and submits to ABET. These criteria form the evaluation basis for the department by the ABET reviewers.

Educational Objective 1: Provide students with technical knowledge, design, and problem solving skills that are foundational to their engineering careers by ensuring that graduates have ability 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. Identify, formulate, and solve engineering problems.
e. Use techniques, skills, and modern engineering tools necessary for engineering practice.

Educational Objective 2: Provide learning and practice experiences that build student interpersonal and collaborative skills and the capacity for productive careers by ensuring that graduates have:

d. An ability to function on multi-disciplinary teams.
f. An understanding of professional and ethical responsibility.
g. An ability to communicate effectively.
h. The broad education necessary to understand the impact of engineering solutions in the global and societal context.
i. A recognition of the need for and an ability to engage in lifelong learning.
j. A knowledge of contemporary issues.

Educational Objective 3: Provide students with specialized (discipline-specific) knowledge, educational depth, and breadth to meet the challenges of changing careers and opportunities in agricultural and closely related biological industries by ensuring that graduates have competencies in one or more of the following areas:

l(i) Apply engineering skills to agricultural systems.
l(ii) Apply engineering skills to biomaterials systems.
l(iii) Apply engineering skills to environmental systems.

Criterion 4. Professional component from the 2003-2004 Criteria for Accrediting Engineering Programs also states the following:

Students must be prepared for engineering practice through the curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work.
and incorporating engineering standards and realistic constraints that include most of the following considerations: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.