

BBE 2003 Computer Applications in Bioproducts and Biosystems Engineering (3 cr)
2017 Fall
Syllabus

Course Description: This course provides applications of computational methods for solving practical problems in Bioproducts and Biosystems Engineering. The types of problems to be solved will involve computational methods including linear/nonlinear equation solvers, numerical differentiation/integration, engineering model fitting, and numerical solution of ordinary and partial differential equations. Computer software/language used in the course will include Excel by Microsoft Office, MATLAB by MathWorks, and R by RStudio.

Prerequisites (Math 1271 or Math 1371, Math 1272 or Math 1372, Concurrent registration in [{Math 2243 or 2373} OR {Math 2263 or 2274}])

Class Schedule and Locations

Lectures and Labs: M, W 12:55 pm – 04:50 pm, McNeal Hall 33, St. Paul

Instructors

Dr. Ce Yang, ceyang@umn.edu

Dr. Peter Huang, huang159@umn.edu

Office Hours and Locations

Office hours will be during the lectures and labs. We may be available to meet at other times.

You are welcome to contact us by email to make an appointment. The hour before class or lab is not a good time to meet because we commonly use this time for last minute prep.

Grading System:

Class attendance	10%
Quiz	10%
Assignments	50%
Projects	30%

Software:

Microsoft Excel is accessible on all computers and laptops if microsoft office is installed.

Matlab can be downloaded and installed by three ways:

1. Here's the instructions link for using Apps To Go on a personal device. <https://it.umn.edu/self-help-guide/appstogo-use-umn-apps-your-personal>
2. BBE students currently in CFANS can access necessary software here <https://www.cfans.umn.edu/academics/undergrad-resources/software>
3. All the CSE students should be able to get Matlab through this page:

https://wwws.cs.umn.edu/download_software/matlab

Textbooks:

Joseph Manzo, Lehigh University, How to Use Microsoft® Excel® The Careers in Practice Series, Open-access online

textbook: <http://open.umn.edu/opentextbooks/BookDetail.aspx?bookId=70>

Allen Downey, Physical Modeling in MATLAB, Open-access online

textbook: <http://open.umn.edu/opentextbooks/BookDetail.aspx?bookId=82>

Joseph Adler, R in a Nutshell, 2nd Edition - A Desktop Quick Reference, UMN library online access.

Course Objectives

- Introduce the software Microsoft Excel and its application in solving mathematical and statistical problems.
- Introduce the software Matlab and its application in solving equations.
- Introduce the statistic principles and case studies in applications of statistics software R on solving questions in the field of Bioproducts and Biosystems Engineering.

Course Policies

Attendance is mandatory to all the lab sessions and it will account for 10% of the final grade. Absence of the class will be only accepted with valid excuse such as a medical report signed by your doctor. Students will be requested to sign an attendance sheet before the class and one can only sign for him/herself. Signing for others will be considered as a serious violation to the class policy and may cause a direct report to the university office of student misconduct. Unexcused absences will reduce the credit given toward the 10%, and there is a threshold of two (2) unexcused absences. For three (3) or more absences the student will forfeit the attendance credit in proportion to the number of absences.

Assignments, accounting for 50% of the final grade, will be given at each lab on Wednesdays. Overdue assignments will not be accepted unless prior approval for late submission is given. Copying assignments from others will be considered as a serious violation to the class policy and may cause a direct report to the university office of student misconduct.

Your letter grade will be calculated based on the following:

A [97-100) = 4.0	B+ [87-89) = 3.3	C+ [77-79) = 2.3	D+ [67-69) = 1.3
A [93-96) = 4.0	B [83-86) = 3.0	C [73-76) = 2.0	D [65-66) = 1.0
A- [90-92) = 3.7	B- [80-82) = 2.7	C- [70-72) = 1.7	E/F [below 65) = 0.0

Having problems?

If you miss class, get behind in class, have a hard time with the material, or are having problems that are not allowing you to do your best work for this class, we expect you to come in and see one of us. When we meet we can discuss your situation and negotiate a way for you to make up the work or prove your capabilities. If you need assistance of any sort, please let us know.

Student Mental Health and Stress Management

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. University of Minnesota services are available to assist you with addressing these and other concerns you may be experiencing. You can learn more about the broad range of confidential mental health services available on campus via: <http://www.mentalhealth.umn.edu/>.

Statement on Academic Honesty

The following statement is from the CSE Student Guide;

"The College of Science and Engineering expects the highest standards of honesty and integrity in the academic performance of its students. Any act of scholastic dishonesty is regarded as a serious offense, which may result in expulsion. The Institute of Technology defines scholastic dishonesty as submission of false records of academic achievement; cheating on assignments or examinations; plagiarizing; altering, forging or misusing an academic record; taking, acquiring, or using test materials without faculty permission; acting alone or in cooperation with another to obtain dishonestly grades, honors, awards, or professional endorsement. Aiding and abetting an act of scholastic dishonesty is also considered a serious offense".

This statement will be held to in BBE 2003 as the definition for academic honesty. If at any time you have a question about what might constitute an academically dishonest act, please feel free to contact the instructors.

Students with Disabilities

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. Disability Services (DS) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact DS at 612-626-1333 to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with DS and have a current letter requesting reasonable accommodations, you are encouraged to contact me early in the semester to review how the accommodations will be applied in the course. All contacts will remain confidential.

Sexual harassment

Sexual harassment includes unwelcome sexual advances and requests for sexual favors, etc. University policies prohibit sexual harassment. For more information about the policy and reporting sexual harassment see <http://policy.umn.edu/hr/sexualharassment>

Diversity and collegiality

Students in this course come from widely diverse ethnic and cultural backgrounds. You are expected to communicate respectfully inside and outside of class. Students who violate the University Student Conduct Code will be referred to the Office of Student Conduct and Academic Integrity. For more information please see <http://oscai.umn.edu/know-code/scc-simplified>

Course Structure (tentative):

Two weeks of introduction to Excel

Five weeks of Matlab

Five weeks of R