



Senior Design (BE 4355)

SPRING SEMESTER 2016

ERB RM 280

Tuesday/Thursday 11:00 am-12:20 pm

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Class Lectures: Blackboard: elearn.uta.edu

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Office hours: Appointments via email

Course Goal and Objectives

Second of two courses in design of biomedical systems and processes. Major design project in biomedical engineering, incorporating engineering standards and realistic design constraints. This course prepares students through a major design experience incorporating engineering principles and realistic constraints that include most of the following considerations: economic, environmental, sustainability, manufacturability, ethical, health and safety, and social consideration.

Prerequisites

BE 4355 or Instructor's permission

Specific outcomes of instruction

After completing this course, the students will be able to:

- Identify design need, solutions, resources, constraints and alternatives
- Apply engineering design process to develop innovative and practical solutions to medical problems
- Apply appropriate engineering analysis to predict design performance and generate alternative solutions to an engineering problem
- Practice project management skills by working effectively and productively in teams by establishing goals, dividing workload and communicate professionally and effectively
- Analyze, interpret and present data and conclusions through effective written reports and oral presentations
- Understand the ethical considerations applicable to their design

Recommended Text:

No textbook required. Lectures will be uploaded on Blackboard.

Grading*

The course will contain:

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|---|-------|
| ✓ <u>Design Notebook & reports/assignments</u> | → 30% |
| ✓ <u>Final Report</u> | → 35% |
| ✓ <u>Presentation</u> | → 35% |

The scores will be averaged and a letter grade will be assigned where A > 90%, B > 80%, C > 70%, D > 60%, F < 60%.



If you miss an exam (if applicable), a grade of zero will be given. There is no provision for taking a make-up exam in this course unless documentation for a University-approved excuse (see Catalog) is received within one week of the exam date. Note: UTA policy will not allow distribution of grade over the phone call or email. There will be no extra credit work to make up the grade and no mercy points will be given.

Attendance and Drop Policy:

Classes missed will not be graded. If you are dropped from this class for non-payment of tuition, you may secure an Enrollment Loan through the Bursars Office. You may not continue to attend class until your Enrollment Loan has been applied to outstanding tuition fees.

Professionalism

- You are expected to be courteous to everyone, (this includes your instructor and the teaching assistant). Talking, laughing or anything else that can be construed as disruptive will result in you being asked to exit the class and/or losing points.
- In-class discussions are encouraged within the limits of mutual respect and courtesy.
- Electronic devices like computers, tablets, smartphones, may not be used unless permitted by the instructor. (If you are found using these in class, you will be asked to leave and/or marked absent for that class and/or lose points).
- Prompt submission of assignments and regular attendance in class.
- Academic dishonesty will not be condoned. (Please see section on “academic integrity” below).

Academic Integrity

Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

Project

Students will continue working in groups that were established in BE 4355 with a mentor.

Design Notebook

Students are required to maintain a numbered notebook to record their ideas, hypotheses, analyses methods etc. Every interaction that the group has with their mentors must be recorded here. Students must also record your group meetings in this book. Please bring this book to class. The following are guidelines for maintaining a design notebook:

- Date and number every page
- Never tear out a page.
- Do not leave blank pages between used pages. Draw a slash through any blank pages.
- Include all data, description, sketches, calculations, notes etc.,
- Page 1 must be used as the index page.
- Record everything in real time i.e. do not copy from loose pieces of paper or any other notes.



- Write in ink.
- Cross out anything that has to be erased. Do not use white-out.
- Computer generated charts, etc., can be pasted in.
- Document team meetings by recording the date, who attended, discussions, assigned tasks.
- REMEMBER to list your tasks/goals for the next meeting with instructors and what has been accomplished so far.

Design notebook grading criteria: 1/3 for professionalism (neatness, clarity of odd numbered pages only) and 2/3 for completeness, content and accuracy.

Electronic Communication:

UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Student Feedback Survey

At the end of each term, students enrolled in classes categorized as "lecture," "seminar," or "laboratory" shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

Emergency Exit Procedures

Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, (please locate the nearest exits on the first day of class). When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Americans with Disabilities Act

The University of Texas at Arlington is committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 93112 -- The Rehabilitation Act of 1973 as amended. With the passage of new federal legislation entitled Americans With Disabilities Act - (ADA), pursuant to section 504 of The Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens. As a faculty member, I am required by law to provide "reasonable accommodation" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with **informing faculty at the beginning of the semester and in providing authorized documentation through designated administrative channels.**

Title IX

The University of Texas at Arlington is committed to upholding U.S. Federal Law "Title IX" such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit www.uta.edu/titleIX.

Student Support Services Available

The University of Texas at Arlington supports a variety of student success programs to help you connect with the University and achieve academic success. These programs include learning assistance,



developmental education, advising and mentoring, admission and transition, and federally funded programs. Students requiring assistance academically, personally, or socially should contact the Office of Student Success Programs at 817-272-6107 for more information and appropriate referrals

Disclaimer: This on-line syllabus is provided for student convenience and is based on the most recent information available. There is no guarantee that the information is 100% accurate or that there will be conformation to the daily schedule. If you have special concerns about course information, you are advised to contact the instructor.

Lecture/Topic Schedule

1. Introduction
2. Sustainability in product design
3. Project commercialization & Startups
4. Oral and Written Communication Skills
5. Progress report guidance
6. Resume writing

“As the instructors for this course, we reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. – George Alexandrakis & Ashwin Nair.”

Emergency Phone Numbers: In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911.