
BMEN 1208 Course Syllabus – The University of Texas at Dallas

Course Information

Course Number: 1208.001, 1208.003

Course Title: Introduction to Bioengineering II (2 Credits)

Term: Fall 2016

Course meetings:

Section	Day	Time	Room	Instructor
.001	Wednesday	10:00 am – 12:45 pm	ML1 1.114	Meyer
.003	Wednesday	10:00 am – 12:45 pm	ML1 1.110	Meyer

Professor Contact Information

Instructor: Clark Meyer, PhD

Email: cam140130@utdallas.edu

Office location: BSB 13.562

Office phone number: 972-883-4175

Instructor Office hours: By appointment and 2-4 pm Wednesdays in BSB (check-in at guard desk in lobby)

TA Contact Information

Teaching Assistant: Vidya Jayaraman

Email: vxj141530@utdallas.edu

Office Hour Location: ML1 1.122

Instructor Office hours: By appointment and Thursdays 4-7 pm in ML1 1.122.

Additional office hours can be scheduled by request with significant notice. Classroom space in ML1 is also available outside of course hours for self-directed use of equipment.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

(Including required prior knowledge or skills)

Prerequisite: ECS 1200 (Introduction to Engineering) or BMEN1200 (Introduction to Bioengineering I)

Pre-requisites or co-requisites: PHYS 2325/2125 (Mechanics and Heat) and MATH 2419 or MATH 2414

Expected prior skills:

Basic study and problem solving skills

Communication skills and teamwork

Ability to read and follow instructions

Basic Microsoft Office skills (Excel and Word)

Course Description

BMEN 1208 - Introduction to Biomedical Engineering (2 semester hours)

Project-based instruction. The purpose of this course is to give students a general understanding of the broad range of applications specific to the biomedical engineering profession. Course exercises include team-oriented competitions, lectures by various external biomedical engineering experts, and introductory materials associated with the discipline. Perform a competitive team design project. (2-1) Y

Student Course Learning Objectives/Outcomes

Student outcomes followed by ABET classification include:

- 1) Apply various tools used by biomedical engineers (e.g. SolidWorks, Matlab, and microcontrollers). – (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- 2) Create an electromechanical device to meet specific design criteria. – (c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and manufacturability, and sustainability.
- 3) Develop an ability to find technical information. – (i) A recognition of the need for, and ability to engage in life-long learning.
- 4) Learn and apply fundamentals of various subfields of biomedical engineering to identify, formulate, and solve problems in a broad range of biomedical engineering subfields. - (e) An ability to identify, formulate, and solve engineering problems.

These objectives will be achieved through individual and group work. Investment of time outside of class, both individually and as teams, will be required.

Required Textbooks and Materials

No textbook required.

Readings will be available on course's e-learning website.

Arduino Uno R3 – will be provided in class – replacements available online

Clicker – see instructor if you need one (**unless you have lost a departmentally assigned clicker, you do not need to purchase one**). Be certain clicker is registered on e-learning.

Suggested Optional Course Materials

(Recommended if you do not have easy access to campus computer lab)

Personal copy of SolidWorks Student Edition – academic, 12 month license ~\$140

MATLAB student version - <http://www.utdallas.edu/oit/howto/matlab/>

Arduino software (free download)

Assignments & Academic Calendar*(Topics, Reading Assignments, Due Dates, Exam Dates)*

Course dates	Main Topics	Sub-area of bioengineering
Week 1 – August 24	Intro to: course, biomedical engineering, design process, semester project; Matlab (1) - Introduction	
Week 2 – August 31	Finding information and documenting information; soft skills (1); SolidWorks (1) – Interface and parts	Medical Device Regulation
Week 3 – September 7	3D Printing; SolidWorks (2) - Complex parts and simple assemblies	Biomechanics
Week 4 – September 14	Basic Electronics and Circuits (equipment and components)	Robotics
Week 5 – September 21	Microcontrollers (1) – basics and setup	Bioinstrumentation
Week 6 – September 28	Microcontrollers (2) – driving motors	Biosensors
Week 7 – October 5	SolidWorks (3) – Gears and assemblies	Tissue Engineering
Week 8 – October 12	Soft skills (2); Matlab (2) – rational design	Neuroengineering
Week 9 – October 19	Preliminary feedback, mid-term review, design time	
Week 10 – October 26	Exam 1 and Project Design Review	Clinical Trials
Week 11 – November 2	Class time to work on project;	Signal Processing
Week 12 – November 9	Microcontrollers (3) - supplemental	
Week 13 – November 16	Solidworks (4): Technical drawings; Final report writing	Tissue Engineering
Fall Break and Thanksgiving		
Week 14 – November 30	Class time to work on designs and reports	Systems biology and engineering
Week 15 – December 7	Final presentation and project performance evaluation; Report due end of week	
Finals Week – December 14	Final Exam	

Grading Policy

(Including percentages for assignments, grade scale, etc.)

Assessment Type	Number	Total portion of grade
Participation		10%
Homework assignments		30%
Quizzes	3	10%
Tests (Exam 1 10%, Final 15%)	2	25%
Team project (preliminary design review, presentation, final report)	3 parts	25%

10% Participation

Due to the practical and hands-on nature of the course, your attendance and participation are required. Absences may be excused only for university approved reasons. Please contact your instructor in advance or as soon as possible after an emergency to arrange to make up material.

Clicker polls will be a part of most classes and will be used to provide feedback to the instructor. For clicker polls, there will be no penalty if you forget your clicker up to 2 times. For each additional occurrence, you will lose 2% points off your grade, up to 10%.

25% Homework

Some homework assignments are individual, some are paired, and some are team. Homework is essential for developing understanding and for retaining the material.

10% Quizzes

Written quizzes will be given periodically to assess progress and comprehension of material.

25% Tests (2)

Comprehensive, cumulative tests will be given on week 8 and during Finals period. The midterm test will count for 10% and the final will count for 15%. The final will include practical, hands-on portions.

30% Team Project

In week 8, the instructor will meet with each team to assess their preliminary design. A presentation and project performance evaluation will be done week 15. A written report for each team is due at the end of week 15. Individual scores may be adjusted based on team member assessments and instructor discretion.

Grade	Points	Grade	Points	Grade	Points	Grade	Points
A+	97-100	B+	87-89.9	C+	77-79.9	D+	67-69.9
A	93-96.9	B	83-86.9	C	73-76.9	D	63-66.9
A-	90-92.9	B-	80-82.9	C-	70-72.9	D-	60-62.9
						F	<60

Note: Grading policy subject to change.

Course & Instructor Policies

(make-up exams, extra credit, late work, special assignments, class attendance, classroom citizenship, etc.)

You may discuss background issues and general solution strategies with others, but the work you submit must be the work of just you and those you were to work with. All participants should be named on the assignment; non-participants should not be listed.

Make-up tests and quizzes are only accepted in cases of excused absence. Contact instructor in advance of absence or as soon as possible in cases of special circumstances.

Extra credit can be earned by including successful additional features on the project. See the project assignment description for details.

Late work will be accepted with 20% penalty per day late. Homework is typically due via e-learning before class starts.

Classroom citizenship – students are expected to stay focused on the task at hand during class time. Talking on cell phones is not permitted. Using cell phones in any form during quizzes or tests is not permitted.

Class attendance is expected and is essential for success in this course.

As noted in the UT Dallas policies and procedures, use your UTD email account to contact the instructor and check this account daily for possible updates/course changes.

Academic integrity is essential for long-term success. Students are expected to do their own work. **Discussion is permitted on some assignments, but copying files is never acceptable.**

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.