

BMEN 5810-002: Topics in Biomedical Engineering - Biopolymers and Flexible Bioelectronics

Spring 2020

Instructor: Dr. Melanie Ecker

Office: K240C

Office Hours: TuTh 1:00-2:00 PM or by appointment

Email: melanie.ecker@unt.edu

Textbook: None

Course Description: The first half of the course will introduce biopolymers and covers polymers such as polysaccharides, polypeptides, and polynucleotides.

The second half of the course will talk about flexible bioelectronic devices. Topics covered include wearable electronics, pacemaker, and neural interfaces. The working principle of stimulating and recording bioelectronic devices will be discussed in various examples.

Reference: Class notes and research articles

Prerequisites: Graduate classification

Course Objectives:

1. To provide an understanding of various biopolymers
2. To provide an understanding of flexible bioelectronics
3. To understand the interaction of bioelectronic devices with the living system.

Attendance and Academic Performance:

1) Regular and punctual class attendance is expected. Attendance is taken during every class meeting and begins on the first day of the semester.

Excused absences do not lower your overall grade in this class. Excused absences are those that are both valid and verifiable, i.e. illness, bereavement, and school-related activities. I will ask for verification and I expect that you will be responsible for getting any notes/materials that you missed.

Two unexcused absences are permitted, no questions asked (although I encourage you to be here for every class meeting). Each class missed after that will reduce your final grade. If a special problem should arise, please see me. If an emergency occurs and you cannot notify me in class, leave a message.

2) Students are expected to read materials assigned thoroughly and search related literatures using PubMed, Web of Science, or Google Scholar.

3) Students are expected to answer questions and discuss the topics related to the course materials in the classroom.

4) There will be short quizzes, minute papers and background knowledge probes without prior notification throughout the semester. These activities will be done using a clicker app called Socrative. This portal can be accessed through mobile devices or laptops. For mobile devices the app called “Socrative student” is recommended. Accessible through the web: <https://b.socrative.com/login/student/> Internet connection is required. There is no need to create an account, you just need the code for the classroom, which is: BMEN5810.

5) Two assignments will be written homework. One of them consists of a written research paper discussion with guided questions. The purpose of this assignment is to learn how to critically read a research paper. Not all publications follow the same standards and the authors don't follow always good research practices. The papers to be discussed will be given by the instructor.

6) One assignment will be an oral research paper discussion similar to a journal club. The purpose of this assignment is again to learn how to critically read a research paper, but also to learn how to effectively communicate scholarly content. The papers to be discussed will be given by the instructor. The presentation is expected to be 15 minutes.

7) Oral presentations of Special Topics will be throughout the semester. Presentations are expected to be 20 minutes and to cover a topic relevant to the course. The purpose of this assignment is to practice scholarly communication. Students may pick their own topics but must discuss it with the instructor.

Grade Evaluation:

Attendance	10%
Class Participation	10%
Homework	25%
Presentations	25%
Quizzes	30%

Grade Policy:

A	90-100%
B	80-89%
C	70-79%
D	60-69%
E	< 60%

Additional Comments:

- Students are encouraged to discuss class material and homework in order to better understand concepts. However, all the homework you submit must be of your own. Direct copying of a solution (from a friend or a book) will be considered as plagiarism and a violation of the University Honor Code.
- Homework assignments are to be turned via canvas on the due date. Late submission will be accepted, but there will be a penalty of 20% per day of delay.
- All students are responsible for announcements made in a lecture on the student access website or via the class email list.
- It is the responsibility of students with certified disabilities to provide the instructor with appropriate documentation from the Dean of Students Office (see <http://www.unt.edu/oda>).

Withdraws: Note that students wishing to drop the course must take appropriate action (Details can be found in the following link: <http://essc.unt.edu/registrar/schedule/withdraw.html>). It is your responsibility to make sure all of the requisite paperwork is submitted. Ceasing attendance does not automatically drop you from the course.

Americans with Disabilities Act: The University of North Texas does not discriminate on the basis of an individual's disability and complies with Section 504 and Public Law 101-336 (Americans with Disabilities Act) in its admissions, accessibility, treatment, and employment of individuals in its programs and activities. A copy of the College of Engineering ADA Compliance Document is available in the Dean's Office.

All reasonable accommodation will be made to facilitate special needs. If special accommodations are required, the student must first meet with the staff of the Office of Disability Accommodation (ODA), Union Suite 322, (940) 565-4323. After meeting with that office, please contact me to discuss what accommodations will be necessary. For more information, see <http://www.unt.edu/oda>.

It is the responsibility of the student to inform the instructor of any disabling condition that will require modifications by the 12th class day.