

**BMEN 2210 – Biomedical Circuits and Data Acquisition Best Practices
Fall 2019**

Instructor:

Dr. Vijay Vaidyanathan

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Office: NTDP K 220 D

Office Hours: Tuesday & Thursday 11 am to 12:30 pm or by appointment

Specific course information

- a. Course catalog description: Data acquisition and quantitative analysis of biomedical and physiological signals using LabVIEW; *A/D* conversion; basic transforms; power supply consideration for biomedical systems; filtering of biomedical signals; electrical circuits and analog representations of physiological systems.
- b. Prerequisites or co-requisites: Prerequisite(s): MATH1720
- c. Required

Specific goals for the course:

- d. Specific outcomes of instruction: Upon successful completion of this course, students will understand: Understand data acquisition process for biomedical signals. Develop knowledge in circuit analysis with RLC networks, op. amps., and regulators. Build circuits to properly filter and amplify biomedical signals. Use software to simulate and verify circuit designs for biomedical applications.
- e. ABET Outcome 6: an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

Brief list of topics to be covered:

- Data acquisition and quantitative analysis of biomedical and physiological signals
- *A/D* conversion; basic transforms
- Power supply consideration for biomedical systems
- Filtering of biomedical signals
- Electrical circuits and analog representations of physiological systems

Homework:

Homework assignments will be given using UNT's Blackboard Learn online program. Homework due dates are given with assignment. Homework is turned in class the day it is due. No late submission of homework will be accepted. All late homework will be marked as a zero.

Grade Evaluation:

Homework	10%
Exam 1	25%
Exam 2	25%
Laboratory Assignments	15%
Final Exam/ Project	25%

A – 90-100%

B – 80-89%

C – 70-79%

D – 60-69%

F - < 60%

Disability Policy:

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>.

Attendance:

Attendance is not required for lecture, but highly recommended due to the constant coverage of information in the course. The student is responsible for obtaining information from missed classes. Exams will require attendance in classroom. If lab or exam cannot be attended, student is required to give proper notice so that make up lab or exam can be scheduled accordingly.

Labs:

If lab cannot be attended, student is required to give notice so that a makeup lab can be given accordingly. If makeup lab is not completed in a timely manner (determined by TA), the TA can assign a late grade to the lab, or refuse submission.

Lab questions are to be turned in to the TA by the due date specified on each lab. Late submissions will not be accepted.

The TA is responsible for the lab, and any questions concerning lab are to be directed to the TA.

Exams:

Exams are given in class. A formula sheet will be given to students and calculators are allowed during the exam.

Final Project

The final project is a separate grade from the lab, but will be worked on during lab hours. Attendance in lab during the project is recommended so that all team members can communicate effectively and contribute to the project. The project description and template outline for the project report will be posted on Blackboard.