Instructor:
Dr. Vijay Vaidyanathan
vijay.vaidyanathan@unt.edu
(940) 565-3268
Office: B 131
Office Hours: MW: 10 AM-12 PM or by appointment

Class Schedule:
MW: 8 – 9:20 AM; Room: B 185

Lab Schedule:
Please refer to your schedule

Required Textbook:
Introduction to Biomedical Engineering, 4th edition, 2017
John Enderle and Joseph Bronzino

Additional Reference:
Charles E. Harris, Michael S. Pritchard, Michael J. Rabins

Course Description:
The course focuses on describing, explaining and predicting natural phenomena using a combination of two, 50-minute lectures and a 3 hour laboratory, every week. Students will learn about the origin and history of healthcare practices. Students will learn about human anatomy and physiology and thus be able to describe and explain natural phenomena that occur in the human body. They will also learn to describe naturally occurring action potentials in muscles and nerve cells, and predict the resulting bio-potentials such as electrocardiogram (ECG) and electromyogram (EMG), with reference to homeostasis or a disturbance to it. Students will learn about various systems in the body and how their working can be enhanced while improving the quality of life.

Prerequisite(s): None

Core Course Objectives:
1. Critical Thinking: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information - Provide an understanding of interactions among natural phenomena, such as the various systems in the human body, working with each other at cellular, tissue and organ level to maintain homeostasis.

2. Empirical & Quantitative Skills: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions - Familiarize the students with Biopac software for measurement of signals emanating from the body, thus gain an understanding of how ionic currents at the cellular level can be measured using electrodes that convert the ionic currents to electronic currents that can be measured in the physical world in the form of bio-potentials and thus translates to human experiences of well-being.

3. Communication Skills: to include effective development, interpretation and expression of ideas through written, oral, and visual communication – Familiarize the students with making a professional presentation of an idea developed by them; provide students with the experience of writing lab reports and a well-researched project report.

4. Teamwork: to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goals - Gain experience working in teams on a project involving data collection of EMG signals from the body and an oral presentation of idea/s developed as a group.

Homework and Quizzes:
Homework assignments will be given using UNT’s Blackboard Learn online program. In-class quizzes will cover reading material from the textbook and reference material.

Grade Evaluation:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework/Quizzes</td>
<td>10%</td>
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<tr>
<td>Exam 1</td>
<td>25%</td>
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<tr>
<td>Exam 2/Term Paper</td>
<td>25%</td>
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<tr>
<td>Laboratory Assignments</td>
<td>20%</td>
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<tr>
<td>Final Project</td>
<td>20%</td>
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</tbody>
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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.