BMED 3110 Quantitative Engineering Physiology Laboratory I (Required)

Catalog Description: BMED 3110 Quant Engr Physio Lab I (1-3-2)
Prerequisite(s): BMED 3400 and BMED 3100 (w/ concurrency) and [BMED 2400 (w/ concurrency) OR CEE/ISYE 3770 (w/ concurrency)]
A hands-on lab providing an active learning team environment to reinforce selected engineering principles of physiology, emphasizing a quantitative model-oriented approach to physiological systems.

Textbook: None

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Topics Covered:

1. Introduction to planning and working with hardware
2. Gross anatomy and biosignal analysis of the heart
3. Smooth muscle noisy signal analysis
4. Standards used in mechanical testing
5. Frog muscle models
6. Completing an open-ended team-based project

Course outcomes:

Students who complete this course will be able to:

Outcome 1: Read, understand, and apply knowledge gained from scientific literature (Student Outcomes i and j)

Outcome 2: Design and conduct experiments involving biomedical systems (Student Outcomes b, d, g, and k)

- 2.1 Design and conduct experiments involving biomedical sensors
- 2.2 Quantitatively measure, statistically analyze, and interpret experimental data from living systems
- 2.3 Work with a team to design, execute, and report the results of an experimental design project

Outcome 3: Address challenges associated with the interaction between living systems and nonliving materials and systems when designing and conducting experiments (Student Outcomes b and k)

Correlation between course outcomes and student outcomes:

BMED 3110											
	Biomedical Engineering Student Outcomes										
Course outcomes	a	b	c	d	e	f	g	h	i	j	k
1									X	X	
2.1		X									X
2.2		X									
2.3		X		X			X				
3		X									X

The Wallace H. Coulter Department of Biomedical Engineering Student Outcomes:

a. an ability to apply knowledge of mathematics, science, and engineering;
b. an ability to design and conduct experiments, as well as to analyze and interpret data;
c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, societal, political, ethical, health and safety, manufacturability, and sustainability;
d. an ability to function on multidisciplinary teams;
e. an ability to identify, formulate, and solve engineering problems;
f. an understanding of professional and ethical responsibility;
g. an ability to communicate effectively;
h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
i. a recognition of the need for, and an ability to engage in lifelong learning;
j. a knowledge of contemporary issues;
k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice;