



Introduction

1. Course Information

Course Name	Problems in Biomedical Engineering
Institution	Georgia Tech
Course Number	BMED 2250
# credits	3
Meeting times	?
Is this a required course?	Yes
Pre-requisites	BMED 2210: Conservation Principles in BME
Target audience (e.g. 1st, 2nd year):	2 nd year
Textbook	None
Course Website (if it exists)	None

2. Course Description

In the space below, “paste” the description of the course. This can be the actual description listed in the syllabus from the course.

Biomedical engineering problems from industrial and clinical applications are addressed and solved in small groups using problem-based learning methodologies.

3. Course Learning Objectives

In the space below, “paste” the course learning objectives if explicitly stated.

Students who complete this course will be able to:

Outcome 1: Tackle a complex, real-world problem

- 1.1 Define the problem and identify the problem goals
- 1.2 Explore the problem statement to identify critical problem features
- 1.3 Develop provisional models and hypotheses that frame problem-solving
- 1.4 Plan an attack strategy, carry it out, and evaluate the results

Outcome 2: Conduct self-directed inquiry

- 2.1 Recognize inadequacies of existing knowledge, identify learning needs, set specific learning objective, and make a plan to address these objectives
- 2.2 Evaluate inquiry, assess reliability of sources, digest findings and communicate them effectively to self and others
- 2.3 Apply the newly acquired knowledge to the problem

Outcome 3: Demonstrate effective group skills

- 3.1 Help group develop team skills, and willingly forego personal goals for group goals
- 3.2 Complete tasks on time, and avoid contributing excessive or irrelevant information
- 3.3 Express disappointment or disagreement directly, give emotional support to others, demonstrate enthusiasm and involvement
- 3.4 Monitor group progress, facilitate interaction with other members, and assess group skills of self and others

Outcome 4: Build knowledge in disciplines relevant to BME

- 4.1 Digest finding and communicate them effectively to others
- 4.2 Identify deep principles for organizing knowledge
- 4.3 Construct an extensive knowledge base in all problem aspects
- 4.4 Ask probing questions to propel further analysis of problem

Outcome 5: Communicate solutions of problems

- 5.1 Generate effective written reports
- 5.2 Construct and present effective oral presentations

4. Fundamental Tools and Skills

In the space below, describe the fundamental tools and skills that are addressed in the class. For example, labview, arduino's, the design process etc.

- 1. Team formation, peer- and self-evaluation of team work
- 2. Conducting literature reviews

- 3. Biomedical engineering statistics, sensitivity, selectivity, power
- 4. Experimental design to evaluate medical devices
- 5. Mathematical modeling as a tool for building understanding of complex biomedical engineering problems

5. Exercises or Experiential Projects of Interest

Exercise/Project	Project Overview	Learning Activities and Assessments	Required Resources for Project Completion
1-3	Students must solve three complex, interdisciplinary problems	<p>Learning Activities</p> <ul style="list-style-type: none"> • Utilize proper research methods, while tracking all the research and progress your team makes towards an innovative solution • How to approach and ill-defined problem and arrive at a previously untouched solution • Team building, communication, and literature review skills • Getting to know a faculty member in a small team-setting <p>Assessment</p> <ul style="list-style-type: none"> • Team formally presents proposed solutions to other groups and facilitators • Teams submit a thoroughly written technical report 	Faculty member, literature, team members

6. Additional thoughts

If you have any other thoughts about this course, but have not been able to reflect it elsewhere in the document, please feel free to do so here.

