Course Syllabus: Introduction to Bioengineering
Course Term: Fall 2014
Course Number: BENG 101 (section 001)
Lecture Time: 5:55 to 7:10 pm
Lecture Location: Planetary Hall room 131

Course Coordinator and Faculty: Jennifer Sokol Adjunct Professor of Bioengineering
Office Hours: Online on Blackboard or schedule appointment
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Teaching Assistant: German Borda
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Office hours and location: Bioengineering Office Room 3800 Nguyen Engineering Building

Required software: MATLAB

Course vision and objectives:
This course will survey and familiarize students with the many facets of bioengineering. In particular, this course:
• discusses the breadth of activities and career paths in bioengineering
• explores biological systems with an emphasis on quantitative and engineering tools and concepts
• illustrates the impact of bioengineering on biological research, health care, and medicine, through devices, diagnostic tools, and methods.
• allows students to develop skills in using computational tools and engineering design to solve bioengineering problems.

The course will contribute to achieving the following student outcomes:
• By the time of graduation, students will:
  • have an understanding of professional responsibility. They will know that professional decisions need to be consistent with the safety, health and welfare of the public, they will be aware of issues of conflict of interest, and they will treat each other fairly, recognizing diversity and intellectual property.
  • communicate effectively both orally and in writing.
  • have the broad education necessary to understand the impact of engineering in a global, economic, environmental, and societal context, they are familiar with globalization, and they understand that the impact of their profession may be different in societies at different stages of economic development.
  • recognize the need to seek additional information when faced with an unfamiliar problem.
  • be familiar with contemporary and often contentious issues such as regulation, and the cost and quality of health care.

Course placement
No prerequisites. While this class may be open to all interested University students, it is a core class for the bioengineering major or associated majors.

Tentative Schedule: See attached sheet
Final Exam: December 11 4:30-7:15

Teaching Methods and Strategies
The class of lectures, workshops, and presentations is dependent on the availability of the guest lecturers, so some flexibility in the schedule should be expected. Instruction for this course is intended to meet the general education mission statement found in the University Catalog on the web at www.gmu.edu/departments/provost/gened/.

Evaluation Methods
• One midterm exam (30%)
• Final exam (30%)
• MATLAB assignments (20%)
• Final project (15%)
• Class Participation (5%)

Grading
A = 94-100
B+ = 87-89
B = 83-86
B- = 80-82
C+ = 76-79
C = 70-75
C- = 60-69
D = 50-69
F = 0-59

A: Excellent performance; sharp insight; articulate; superior writing ability; able to relate material to previous experience and learning; an example for others to follow.
B: Good performance; active listener and participant; articulates thoughts clearly; accomplishes more than minimum requirements; solid performance.
C: Satisfactory performance; accomplishes minimum requirements; communicates at generally acceptable level; satisfactory understanding of concepts at basic level.
D/F: Quality and quantity of work and participation is below average and unacceptable.

Assignments
For MATLAB assignments, work may be collaborative or individual. There will be MATLAB questions on the mid-term and final exam, so if you work collaboratively, make sure you understand how to do the coding. The lowest MATLAB assignment will be dropped from consideration when determining your final grade.
All MATLAB assignments are due in Blackboard by 11:59 PM on the day they are due.

Other homework will be given and will count toward your “attendance and participation” grade; missed in-class assignments and homework will not be made up. The assignments will be turned in via Blackboard only.

There will be a mid-term and final exam. The mid-term exam will contribute as 30% of your final grade. The final exam will contribute as 30% of your final grade. The final exam will not be cumulative and will only cover the 2nd half of the course, though MATLAB material builds on earlier material.
Extra Credit
Extra credit will only be considered after final grades are calculated based on attendance at bioengineering departmental seminars, participation at specified local events or meetings, or proof of acceptance to a summer enrichment program for aspiring biomedical or bioengineering students that are focused on biomedical science and/or engineering. Only those students whose final grade falls within 1% point of a grade transition (for example, 82, or a B-minus) will be considered eligible for extra credit only to help assist them to the next higher grade level (83 or B).
All extra credit opportunities must be performed before May 1. Each person must declare one of these extra credit opportunities in advance that will be considered after final grades are calculated.

Opportunities for extra credit (more opportunities may arise during the course):
• Acceptance to a summer research or enrichment program focused on research in bioengineering or biomedical sciences, including Aspiring Summer Scientist Internship Program (GMU) and Summer Research Fellowships at National Institutes of Health.
• Attendance at bioengineering seminars hosted by George Mason University, a nearby University bioengineering program or regional association.

The George Mason University's Academic Honor System (http://honorcode.gmu.edu/) applies to all work done for this course. If you have not done so (recently), read the Honor Code that is included in the University Catalog. The below link will take you to the GMU Honor System and Code:
http://www.gmu.edu/catalog/9798/honorcod.html#code

Statement of Expectations
This course has been designed to assist you to develop the knowledge and skills you will need to fully appreciate the field of bioengineering and its role in addressing critical health-related questions. Students are expected to read broadly, think critically and engage in lively discussions with our presenters and teaching faculty.
Class participation is a very important part of the learning process in this course, and contributions will be evaluated. A contribution should offer a relevant insight into the issue and move the discussion forward. Remember that just because a person “talks” in class it does not necessarily mean that she or he has made a “contribution”. The instructors can tell the difference between the two.

Electronics
During MATLAB workshops we will be using our computers to try some of the practice codes and to experiment with those codes. For all other classes, electronics should remain in your bags.