Engineering in Medicine:
Mission Statement: This class was designed to teach students about acute care medicine and to encourage innovation that will help patients.

1) The class will include familiarization with medical jargon and the fundamentals of acute illness. The student will get a glimpse of the inner workings of Intensive Care Units (ICU) based on over 30 years of my personal experiences in ICU. Classes will present a body system, with aspects of its structure and normal function. Typical modes of failure i.e. disease, will be described and illustrated with examples using actual de-identified cases.

2) Some classes will deal with issues in entrepreneurship in the spirit of aiding engineers (such as yourself) to innovate medical devices.

3) There will be about 6 expert guest lectures, usually a physician, sometimes not, all who use a particular technology that is used in clinical medicine.

4) There will be one formal class trip to the WISER simulation center where the clinical students at UPMC train for emergency situations. There will be one informal (on your own) field trip to the Pittsburgh Life Sciences Greenhouse which provides support to local innovators.

5) Grading will come from online quizzes on medical vocabulary and a final write up and slide presentation on a new or promising medical technology of your choosing. You will mostly be graded on the clarity and quality of your communication, with allowance for students that have English as a second language (ESL). In the past students have enjoyed finding an interesting technology, doing the write up and the presentation. Students with ESL have actually done some of the best work so this does not appear to be a handicap.

6) Good writing and presentation skills are crucial for success in this class and life in general. These are essential for grant applications and for the presentation of ideas to stakeholders (investors, your boss, etc.). The class includes a presentation from the Global Communication Center (GCC), on good writing and slide presentation practices. Your work will be reviewed by your fellow students and myself. This will sharpen your skills at writing and presenting and also at reviewing others work.

Example class syllabus: (Subject to change).
Introduction
Human airway access
Cardiac arrest
MI, CHF, arrhythmias
Sepsis
Guest lecture #1: Global Communications Center
Shock
Renal failure
Respiratory failure
Brain failure and stroke etc.
Guest lecture #2: TBD
Liver disease and transplant
Diabetes, DKA, HONK, adrenal insufficiency
Physical deconditioning, starvation, PTSD in the ICU
Microdialysis – primer
Guest lecture #3: TBD
GI bleeding, TIPPS, ERCP – minimally invasive
Small Business Innovation Research (SBIR)
Guest Lecture #4: TBD
Guest lecture #5: TBD
Potential game chargers via bio basic research
IT in the ICU
Field trip to WISER (Oakland 230 Mckee Place)
Hospital acquired infections and antibiotics
Guest lecture #6: TBD
Final Presentations
Final Presentations