

## **Freshman Orientation ~ Biomedical Engineering**

Biomedical engineering applies the tools of engineering and basic science to problems in medicine and life science research. As of this definition implies, the field is very broad borrowing quantitative tools from many disciplines and applying them to a broad range of the biological applications. A partial list of some of the major areas of concerns to Biomedical engineers includes: Biomaterials; Biomechanics; Molecular engineering; Tissue engineering; Neural engineering; Medical devices; Prosthetic devices. As the field matures, this list of major areas will only will continue to grow.

This lecture emphasizes only one area, Medical instrumentation, and only one application within that area, non-invasive measurement of blood pressure. One of the major challenges in medical instrumentation is to gather diagnostically useful information without risk or discomfort to the patient: to make the diagnostic measurements non-invasively.

This lecture explores the techniques used to non-invasively measure one of the most important, and most frequently measured cardiovascular parameters, blood pressure. The lecture includes a hands-on demonstration of an automated system for measuring blood pressure, and it explores the techniques and instrumentation required to obtain this important useful physiological data.