

Module Synopses

Semester One

1. Anatomy and Physiology (AP)

This module introduces the basic structure and function of the human body. The gross anatomy and physiological processes of major organs is taught in order to enable students to correlate structure with function. This module will cover the functional aspects and the various vivo signals generated from skeletal & muscular, cardiovascular, nervous, respiratory and urinary systems. Heat generation in human body system also covered.

2. Introduction to Biomedical Engineering (IBE)

This module introduces the students an overall view of the Biomedical Engineering discipline. It covers basic concepts of biomedical engineering and their connection with the spectrum of human activity. Various physiology system and related medical technologies will be introduced. Classical and current trends related to physiological models, biomechanics, biomaterials are discussed. Students also learn the types of medical device classes and the various safety standards.

Semester Two

3. Biomedical Instrumentation (BI)

Electronic and mechanical aspects in design and operation of medical tools and equipment are discussed here. The emphasis will be on study of electronic parts of most common tools such as EEG, ECG and EMG machines. The application and fundamentals about equipment in different clinical units will be also briefed. The students will learn the fundamentals of flow measurement, control and monitoring in conjunction with blood and cardiovascular system.

4. Biomedical Equipment & Engineering Practices (BEEP)

The objective of this module is to familiarize the students with medical tools and equipment frequently used in different medical and rehabilitation engineering departments. The equipment used in Operating Room, Intensive Care Unit, Radiotherapy, Cardiology, Neurology sections, clinical laboratory, physiotherapy department, rehabilitation department will be covered. In this module the students will learn the nature of biological information measured by this equipment. A brief explanation of circuits, mechanical and biochemical parameters involved in the measurements will be explained. Students will learn about the common medical equipment characteristics, the nature of data measured and the general concept of designing equipment and equipment maintenance practices will be discussed.

5. Project (PROJ)

Enables each student to apply his knowledge to solve practical problems or research on a current and emerging related topic. Students will be given an opportunity to plan and design a project on related biomedical engineering application. The project can be one proposed by staff

member or a sponsored project (approved by the course coordinator) from their work place. Students may also select to do a detail study and submit a dissertation on a current or emerging topic approved by the course coordinator.