BME357 Advanced Biomedical Instrumentation

Level: 3

Credit Units: 5 Credit Units

Language: ENGLISH

Presentation Pattern: EVERY JAN

Synopsis:

This course covers aspects of the concepts of biomedical engineering design used in the design of biomedical instruments. Topics include fit-for-purpose, meeting regulatory requirements and design specifications.

Topics:

- Generation and Acquisition of Electrocardiogram
- Analysis of Electrocardiograms
- Detection of Cardiac Health Using Artificial Neural Networks
- Cardiac Health Analysis Using Linear and Non-linear Methods
- Ultrasound Imaging
- Magnetic Resonance Imaging
- Defibrillator and Pacemakers

Learning Outcome:

- Illustrate the generation and acquisition of electrocardiogram (ECG)
- Analyze the ECG in time domain, frequency domain and by non-linear method
- Design data mining techniques for the analysis of cardiac arrhythmia
- Evaluate how the ECG changes in different disease subjects
- Examine how the MRI and Ultrasound can be used to image the heart and other vascular system
- Evaluate the different types of defibrillators and pacemakers
- Apply the concept of spectral estimation using MATLAB
- Demonstrate the required skills in Biomedical instrumentation, signal processing and data mining techniques

Assessment Strategies:

Continuous Assessment Component	**Weightage (%)**
QUIZ	15
QUIZ	15
Sub-Total	**30**

Examinable Component	**Weightage (%)**
Written Exam	70
Sub-Total	**70**

Weightage Total	**100**