Course Code: EE-814

Title: Cardiac signal processing

Credit hours: (3-0)

1.   **Objectives**. The aim of this course is to learn about different techniques related to the acquisition, extraction of the various features and classification. Processing of signals corresponding to cardiac function during different phases, arterial pressures and fluid perfusion through soft tissues of left ventricular myocardium heart muscle will also be studied. It will serve to prepare the students to undertake research and development of techniques and devices related to cardiac signal processing and analysis.

2.   **Text Books**. Advances in Cardiac Signal Processing, Rajendra Acharya U

3.   **Course Outline**

Topics	Periods
The Electrocardiogram	4
Analysis of Electrocardiograms	4
Prediction of Cardiac Signals Using Linear and Nonlinear Techniques	4
Visualization of Cardiac Health Using Electrocardiograms	4
Heart Rate Variability	4
Data Fusion of Multimodal Cardiovascular Signals	4
Classification of Cardiac Patient States Using Artificial Neural Networks	4
The Application of Autoregressive Modeling in Cardiac Arrhythmia Classification	4
Classification of Cardiac Abnormalities Using Heart Rate Signals	4
Storage and Transmission of Cardiac Data with Medical Images	4
Assessment of Cardiac Function in Filling & Systolic Ejection Phases	4
Arterial Wave Propagation and Reflection at a Bifurcation Site	2
Total	46

4. **Course Outcomes**. By the end of the course it is expected that students have explored the wonderful powers of cardiac signal processing. Merger of three great fields of electrical, computer and biomedical engineering in this will open new avenues of research and development for the students. The students will have enough tools and skills to dive into this area, explore and contribute to the service of humanity based on their own strengths.

5. **Recommended Reading**.   Advances in Cardiac Signal Processing, Rajendra Acharya U