**13EC41E1 BIO – MEDICAL INSTRUMENTATION**

Credits: 4  
Hours /week: 4 Hrs Sessional Marks: 40  
Univ.Exam.Duration: 3Hrs Univ.Examination.Marks: 60

**UNIT – I**

**Electro – Physiology**: Review of physiology and anatomy resting potential, action potential Propagation of action potential, bio electric potential, cardiovascular dynamics, electrode theory Bipolar and unipolar electrodes, surface electrodes, physiology transducers, system approach to biological system.

**UNIT – II**

**Bio-electric potential and cardio vascular measurements**: EMG – Evoked potential response, EEG – foetal monitor ECG – Phonocardiography, vactor cardiography B.P. – Blood flow – ardiac output, plethysmography, impedance cardiology, cardiac arrhythmias, pacemakers defibrillators

**UNIT – III**

**Respiratory and pulmonary measurements and rehabilation**: Physiology of respiratory system rate measurements, oximeter, hearing aids, functional neuromuscular simulation, physiotherapy, diatheropy, nerve simulator.

**UNIT – IV**

**Patient Monitoring Systems:** Intensive cardiac care unit, bedside and central monitoring systems Patient monitoring through bio-telemetry, implanted transmitters, Telemetering multiple information, sources of electrical hazards and safety techniques.

**UNIT – V**

**Recent Trends:** Medical imaging Laser applications, Ultrasound scanner Echo cardiograph, CT scan, MR/NMR. Cine angiograms, Colour Doppler systems, Holter monitoring. Endoscopy.

TEXT BOOKS:

1. Seslie Cromwell, Red J. Weibell and esich A. Plefitter – Bio medical Instrumentation and Measurements.

2 R.S. Kandpur, Hand Book of Bio-medical Instrumentation, Tata Mc. Graw Hill, 1987.

3. M.Arumugam, Bio –medical Instrumentation, Anuradha Agencies Publisher, Vidayal Karuppu – 612 606, Kumbakansm R.M.S., 1992.

REFERENCE BOOKS:

1. L.A. Geddes and L.E. Baker – Principles of Applied Bio medical Instrumentation, John Wiley, 1989.

2. Reichard Aston, Principles of Bio-medical Instrumentation and Measurements, Mervill Publishing Company, 1990.

3.B.Jaconson and J.G.Webster, Medical and Clinical Engineers, Prentice Hall, 1979.