

0903 –DIPLOMA IN ELECTRONICS & COMMUNICATION
SEMESTER -6
090361 - MEDICAL ELECTRONICS

RATIONALE

A large number of electronic equipments are being used in hospitals for patient care and diagnosis or carry out advanced surgeries. This subject will enable the students to learn the basic principles of different instruments used in medical science.

DETAILED CONTENTS

1. Anatomy and physiology

- Elementary ideas of cell structure
- Heart and circulatory system.
- Central nervous system
- Muscle action
- Respiratory system
- Body temperature and reproduction system

2. Overview of Medical Electronics Equipments, classification, application and specifications of diagnostic, therapeutic and clinical laboratory equipment, method of operation of these instruments

3. Electrodes

Bioelectric signals, Bio electrodes, Electrode, Electrode tissue interface, contact impedance, Types of Electrodes, Electrodes used for ECG , EEG

4. Transducers

Typical signals from physiological parameters, pressure transducer, flow transducer, temperature transducer, pulse sensor, respiration sensor,

5. Bio Medical Recorders

Block diagram description and application of following instruments

- ECG Machine
- EEG Machine
- EMG Machine

6. Patient Monitoring Systems

- Heart rate measurement
- Pulse rate measurement
- Respiration rate measurement
- Blood pressure measurement
- Principle of defibrillator and pace mark
- Use of Microprocessor in patient monitoring.

7. Safety Aspects of Medical Instruments

- Gross current shock
- Micro current shock
- -Special design from safety consideration

- Safety standards.

RECOMMENDED BOOKS

1. Handbook of biomedical Instrumentation by RS Khandpur
2. Biomedical Instrumentation by Cromwell,
3. Modern Electronics Equipment by RS Khandpur, TMMH, New Delhi
4. Introduction to BioMedical Electronics by Edward J. Perkstein; Howard Bj, USA