

PBM8J001 HOSPITAL ENGINEERING AND MANAGEMENT

Objectives : To make the students aware of the role and responsibilities of biomedical engineer in hospitals, especially in the management of medical equipments, management of electrical supply, maintenance of electrical safety, etc.

Module I (13 hours)

Hospital various departmental Planning & Design(Radiology Dept, Nuclear Medicine, ICU, Central Sterilisation and OTs). BME services in hospitals - Role & responsibilities. Setting up of BME dept in a Hospital (Requirements & facilities). Introduction to safety measures: Electrical, Fire, Gas, Radiation and surveillance systems. Hospital Accreditation Protocols - ISO standards, NABH, AERB and JCI certification. Insurance Procedures for Medical Equipments.

Module II (13 hours)

Biomedical equipment Procurement procedure - purchase & contract procedures (CMC and AMC), selection testing and calibration and installation, Training to medical staffs - operating instructions. Management of medical equipments, Planned preventive maintenance system, preventive maintenance & repair

Module III (13 hours)

Hospital electrical supply & power systems - Hospital electrical systems, general power & lighting systems, Hospital wiring systems. Electrical safety, isolated power supply, line isolation monitor, IPS in patient care areas, concept of Micro and Macro shock, Earthing schemes, Generator sets, UPS & voltage stabilizers. Causes of failures of electrical supply & ways to minimize them. SYLLABUS - B.Tech. Biomedical Engineering - 2014. Teaching scheme Credits

Module IV (13 hours)

Basics of Air conditioning and refrigeration. Air changes filtering & sterility – Concept of Clean Room with Air Handling Unit (AHU). Hospital gas supply systems-centralized supply of air, oxygen, nitrous oxide & vacuum. Theatre lighting. Operating Tables. Requirements of inter departmental computerization. DBMS in hospital, Computerized medical record evaluation, Database approach to laboratory computerization, Case study on a hospital DBMS, Concept of DICOM. Safe management of wastes from health-care activities.

Text Books :

1. B.M.Sakharkar, Principles of Hospital administration & planning, Medical Publisher (?) Ltd, New Delhi, 1998.
2. J.G. Webster & Albert M.Cook, Clinical engineering principles & practices, Prentice Hall, 1979.
3. Barry. N. Feinberg, Applied clinical engineering, Prentice hall, 1986.
4. J. D. Bronzinot Handbook of Biomedical Engineering Vol. I & II, C RC Press, 2000.
5. Yadin David, et al; Clinical Engineering (Principles and Applications in Engineering), CRC Press, 2003.