BMPE4002 HOSPITAL ENGINEERING AND MANAGEMENT (3-0-0)

Course Objectives

The course aims to:

1. Provide an understanding of hospital organizational structure, governance mechanisms, and administrative responsibilities.
2. Familiarize students with classification of hospitals and principles involved in hospital planning, design, and infrastructure development.
3. Develop knowledge of functional requirements, layout, and engineering services of major hospital departments.
4. Introduce the concepts and practices of clinical engineering and management of medical technology in healthcare systems.
5. Enable students to understand strategic technology planning, equipment acquisition, and deployment in hospitals.

Module I:(06 hours)

Organization of the Hospital : Organizational Structure, Governance, Duties & Responsibilities of Governing Board, Management Structure, Duties, responsibilities & functions of CEO, CEO & his management team.

Module II:(10 hours)

Classification of Hospitals – Primary Health Care Centre, General Hospital, Specialty Hospital, Teaching & Research Hospital- Their Role and Functions. Planning the Hospital Building- General principles, General Features, Building Contracts &Contract Documents, Furnishing & Equipping the Hospital. The Design team & its role – The Architect, Engineers & Hospital Administers

Module III:(11 hours)

Overview, Location, Design & Organization of the Following Departments: Emergency Services, Clinical Laboratories, Diagnostic Radiology, Surgical Department (OT), Intensive Care Units(ICU), Central Sterilization & Supply Department (CSSD).

Overview, Design, Location & Organization of the following Engineering services: Electrical Engineering, Civil Engineering, Maintenance Engineering, Air–Conditioning system, Centralized Medical Gas System, Information Technology (IT), and Telecommunication Engineering.

Module IV:(10 hours)

Clinical Engineering: Definition of Clinical Engineering, Evolution of Clinical Engineering, Hospital Organization & role of Clinical Engineering, Clinical Engineering programs, Major Functions of Clinical Engineering department. Management & Assessment of Medical Technology: The Heath Care Delivery System, Strategic Technology planning, Technology Assessment,
Equipment Acquisition & Deployment.

Course Outcomes (COs)

After successful completion of the course, students will be able to:

CO-1: Define and describe the organizational structure, governance framework, and management roles within a hospital system.

CO-2: Explain the classification, functions, and planning principles of various types of hospitals and healthcare facilities.

CO-3: Apply principles of hospital layout, infrastructure planning, and engineering services in designing functional healthcare facilities.

CO-4: Analyze the organization and operational requirements of key hospital departments and clinical engineering services.

CO-5: Evaluate strategies for medical technology management, including technology assessment, equipment acquisition, and deployment within healthcare delivery systems.

Books:

1. Hospital: Planning, Design & Management – G.D. Kunders, S.Gopinath, A, Katakam-Tata McGraw Hill -1998.
2. Biomedical Engineering Hand Book 3rd Edition (Medical Devices & Systems) – Joseph D. Bronzino-CRC- Tylor & Francis-2006.