

Course code	Course Name	L-T-P-Credits	Year of Introduction
BM307	HOSPITAL ENGINEERING	3-0-0-3	2016

**Prerequisite : Nil**

**Course Objectives**

- To gain knowledge about the role of a biomedical engineer in hospitals and society at large.
- To familiarize the electrical power, air conditioning and refrigeration systems in hospitals.
- To get an insight into the set up of operation theatres and the working of different sterilization and cryogenic systems in hospitals.
- To familiarize the gas supply systems in hospitals.

**Syllabus**

Definitions of Bioengineering, Biomedical Engineering, Clinical engineering & Hospital engineering. Hospital architecture – roles & responsibilities of biomedical engineer - patient safety – hospital accreditation & certification protocols. Electrical power & protective systems in hospitals – other safety measures - air conditioning and refrigeration systems - sterilization - operation theatres, gas supply systems, dry & oil free air compressor.

**Expected Outcome**

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

- Understand the roles & responsibilities of a biomedical engineer
- Understand the areas of attention required from a biomedical engineer in clinical environment.

**Text Books:**

- C A Caceres ,Clinical Engineering, Academic Press, New York,1977

**Reference Books:**

1. S Ward, Aneasthetic Equipments, W. B. Saunders, London, 1985.
2. Anantha Narayanan , Basic Refrigeration and Air Conditioning, 2ndedition, TMH 1996 2002.
3. Kutz Myer, Standard Handbook of Biomedical Engineering, & Design, McGraw Hill,
4. B. N. Feinberg, CRC Handbook of Clinical Engineering, CRC Press, 1980.
5. Richard L. Miller, Earl S. Swensson Hospital and Healthcare Facility Design” W. W. Norton & Company; 2nd edition 2002
6. John Douglas McDonald “Electric Power Substations Engineering”–2003 CRC Press
7. Alexander Kusko, Emergency and Stand by Power Systems1989 -McGraw-Hill

**Course Plan**

Module	Contents	Hours	Sem. Exam Marks
<b>I</b>	Definition of Bio-Engineering, Biomedical Engineering, Clinical engineering & Hospital engineering	1	<b>15%</b>
	Modern Hospital Architecture – Various departmental Planning & Design (Radiology Dept, Nuclear Medicine, ICU, Central Sterilization and Operation Theaters) Space distribution in a hospital building.	2	
	Role & responsibilities: Setting up of Biomedical department in a Hospital (Requirements & facilities) - Procurement procedure - purchase & contract procedures (CMC and AMC), selection, testing and calibration, installation and training to medical staff – operating instructions. Repair & maintenance of medical	4	

