



# GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Engineering

Level: PG

Branch: Bio Medical Engineering

Subject Code : ME03031011

Subject Name : Hospital Architecture & Equipment Management

w. e. f. Academic Year:	2024-25
Semester:	III
Category of the Course:	MOPEC
<b>Prerequisite:</b>	Knowledge of Medical Equipment, Basic Understanding of Healthcare Delivery and Basic Understanding of Healthcare Operations
<b>Rationale:</b>	The "Hospital Architecture & Equipment Management" subject is crucial for professionals involved in designing, building, and operating healthcare facilities, Purpose and Objectives of this subject are to understand Creating Functional and Efficient Healthcare Environments, Ensuring Patient Safety and Well-being, Managing Medical Equipment Effectively, Optimizing Resource Utilization and Adapting to Future Healthcare Needs.

### Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Recognize how operational problems and situations are handled and best regulatory practices are adhered	U/A
02	develop SoPs and participate in equipment maintenance and policy procedures	A/E
03	Understand and implement effective Transportation & Mitigation of Fire Hazards in Hospitals.	R/U/A
04	Understand Hospital advancement system and its technical advancement with challenges.	U/A
05	Understand principles of quality management.	R/U

\*Revised Bloom's Taxonomy (RBT)

### Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR		C	Theory		Tutorial / Practical	
			ESE (E)		PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	0	3	70	30	0	0	100



# GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Engineering

Level: PG

Branch: Bio Medical Engineering

Subject Code : ME03031011

Subject Name : Hospital Architecture & Equipment Management

## Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1	<b>REGULATORY REQUIREMENT AND HEALTH CARE CODES</b> FDA Regulation, Joint Commission Accreditation for Hospitals, National Fire Protection Association Standard, IRPQ, Function of Clinical Engineer, Role to be performed in Hospital, Manpower requirement for different types of hospitals, Professional Registration, Structure in Hospital.	7	18
2	<b>EQUIPMENT GENERAL AND TECHNICAL MAINTENANCE:</b> General Management of Medical Equipment – Types and Planned Maintenance, Management Manual; Biomedical Equipment and Maintenance Program - Technical Manual, Reporting Formats, Preventive Maintenance, Maintenance Budgeting and Forecasting, Contract Maintenance. Medical Equipment Trouble shooting – Flow charts and SoPs; Handling waste and Disposal	10	21
3	<b>Transportation in Hospitals:</b> Types of Medical Transportation, Development of Ambulance Service, Types and Classification of Ambulances, objective, Role and Functions of Ambulance Service, Utilization of Ambulances, Staffing Pattern, and Equipment of an Ambulance. Intramural Transportation: Wheelchair Transportation, Stretcher Medical Transportation, Lifts and Elevators, Material Transport, Pneumatic Transport System <b>Mitigation of Fire Hazards in Hospital:</b> Introduction, Potential Fire Hazards in Hospitals, Fire-Prone Area of Any Hospital, Basic Principles of Fire Safety in Hospital, The Important Safety Measures in Hospital to Mitigate Fire, Innovative Equipment for Firefighters	11	22
4	<b>Hospital Information system:</b> Role of database in HIS. Need for Networking in HIS. Overview of Networking, topologies and its configuration. Structuring medical records to carry out functions like admissions, discharges, treatment etc. Computerization in pharmacy & billing. Automated clinical laboratory systems & radiology information systems. <b>Technological Advancements and Challenges in the Management of Hospital Functions and Public Health:</b> Introduction, Management in Terms of Technology, Critical Challenges in Digital Health	10	21
5	<b>Principles and Implementation of Quality Management and Patient Safety Systems in Hospital:</b> Healthcare Quality Management: Journey, Components and Elements of Quality Management	7	18



# GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Engineering

Level: PG

Branch: Bio Medical Engineering

Subject Code : ME03031011

Subject Name : Hospital Architecture & Equipment Management

Program in Hospital, Common Quality Improvement Methods and Tools. <b>Barrier-Free Healthcare Design for Patients with Disabilities:</b> Introduction, Need for Barrier-Free Healthcare, Design Considerations in Barrier-Free Healthcare, National Guidelines and Laws Related to Disabled Persons			
<b>Total</b>	<b>45</b>	<b>100</b>	

## Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	U Level	A Level	N Level	E Level	C Level
15	30	30	10	10	05

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

## References/Suggested Learning Resources:

### (a) Books:

1. A Guide to Hospital Administration and Planning, Dinesh Bhatia, Prabhat Kumar Chaudhari Bhupinder Chaudhary, Sushman Sharma , Kunaal Dhingra, springer ISBN 978-981-19-6691-0 ISBN 978-981-19-6692-7 (eBook)
2. "Biomedical equipment management and maintenance program: Technical guidance document for in-house support and monitoring of public private partnerships", Ministry of Health and Family Welfare, Government of India, New Delhi.
3. "Medical Equipment Maintenance Manual", Ministry of Health and Family Welfare, Government of India, New Delhi.
4. Hospital and Health Services Administration Principles and Practices, Syed Amin Tabish, Oxford Press New Delhi
5. Hospitals, Facilities planning and Management, G D Kunders, Tata McGraw Hill Education Private Ltd, New Delhi.
6. Principles of Hospital Administration and Planning, BM Sakharkar, Jaypee Brothers Medical Publishers (P) Ltd, latest Edition

### (b) Open source software and website:

- [https://nhm.gov.in/New\\_Updates\\_2018/NHM\\_Components/Health\\_System\\_Strengthening/BEMMP/Biomedical\\_Equipment\\_Revised\\_Guidelines.pdf](https://nhm.gov.in/New_Updates_2018/NHM_Components/Health_System_Strengthening/BEMMP/Biomedical_Equipment_Revised_Guidelines.pdf)
- Biomedical Equipment Management & Maintenance Program :: National Health Mission

**Suggested Activities for Students:** Individual or in a group, students have to study government policy related to this subject.

\*\*\*\*\*