ALIGARH MUSLIM UNIVERSITY, ALIGARH

FACULTY OF ENGINEERING & TECHNOLOGY

SYLLABUS FOR

MASTER OF TECHNOLOGY (M.TECH.) – BIOMEDICAL ENGINEERING

English Grammar and Vocabulary, Quantitative Reasoning and Analytical Ability.

Python Programming: Data Types, Variables, Operators, Conditional Statements, Functions, File operation.

Statistical Methods, Measures of location (or central tendency) and dispersion, Probability Theory, Random Variables, Standards discrete probability distributions, Standard continuous probability distribution.
Rank, Eigen-values and Eigen vectors of a matrix, Differentiation, Integration, Partial differentiation, Differential Equation and its application, Fourier Series, Fourier Transform, Laplace Transform.

Cell, Muscular & Nervous System, Cardiac & Respiratory System, Digestive & Excretory System, Eye, Ear & Endocrine Glands, Skeletal System & Joints.

Diode, BJT, MOSFET and Operational Amplifiers : Characteristics and Applications, Network theorems.
Combinational & Sequential logic circuits, Counters and Registers. Transformers, Equivalent circuit, Calculation of losses and efficiency, induction motors.

Sensors, Bridges & Transducers and their applications. Biosensors: Laser in sensing and therapy; Biopotentials and their measuring techniques-ECG, EMG, EEG; Blood Pressure, Body Temperature.

Fundamental concepts and principles of Mechanics, General plane motion, Motion and system of rigid bodies, Principle of work and energy, Conservation of energy for rigid body and system of rigid bodies. Kinematics of muscles and joints-free-body diagrams and equilibrium, forces and stresses in joints, biomechanical analysis of joints.