

# GUJARAT TECHNOLOGICAL UNIVERSITY

## B.E Semester: 3 Biomedical Engineering

Subject Code 130301

Subject Name Life Science-1

Sr.No	Course contents
(A)	<p><b>ANATOMY</b></p> <ol style="list-style-type: none"><li>1. Elements of human anatomy: Terms related to Anatomy, Anatomical plane, Anatomical position</li><li>2. Cell and Tissues: Physical Structure of the Cell ,Types of tissue, its location, properties &amp; function</li><li>3. Skeletal muscle system: Structure &amp; formation of Bone, Young bone ,Adult bone, Types of the bone ,Blood supply to the bone ,applied anatomy of the bone, Joints &amp; its types, Applied anatomy of joints, Muscle &amp; its types, Muscle fasciculi, Applied anatomy of muscle.</li><li>4. Thorax &amp; Respiratory System: Thoracic cavity diaphragm, sternum, rib &amp; rib cage, vertebral column, Vertebra, structure of respiratory tract, pleura, and lungs.</li><li>5. Cardiovascular System: Structure of Heart, Heart valves, Arteries, Veins, blood supply of heart coronary circulation.</li></ol>
(B)	<p><b>PHYSIOLOGY</b></p> <ol style="list-style-type: none"><li>1. General physiology: Functional System of the cell &amp; its organelle, Homeostasis ,Endocytosis, Exocytosis</li><li>2. Membrane physiology, Nerve &amp; Muscle: Transport of Ions and Molecules through the cell membrane; Membrane Potentials and Action Potentials; Inhibition of Excitability, Recording Membrane potentials and Action potentials, skeletal muscle, Sarcomere, EMG, Neuron, neuromuscular transmission.</li><li>3. Body Fluid: Blood and its composition and function. Various Cells and their structures. Numbers Cell counting, Hemoglobin and its estimation, Anemia, Hemostatis, , Blood Group.</li><li>4. Respiratory system: Mechanism Of Respiration, Pulmonary Ventilation, Pulmonary Volumes and Capacities. Transport of Gases, Pulmonary function testing. Artificial Respiration, hypoxia</li><li>5. The Heart: Heart muscle, heart as a pump, Heart sound &amp; blood pressure, cardiac cycle, Cardiac output. Conduction system of the heart ,ECG, Arrhythmia,</li><li>6. Special Senses:<ol style="list-style-type: none"><li>a) Vision: structure of Eye, optic nerve, Mechanism of accommodation, Visual acuity, Ophthalmoscope, Colour vision, Perimetry.</li><li>b) Hearing: structure of ear, Tympanic membrane, cochlea, Hearing mechanics and abnormality, Deafness, Audiometry.</li><li>c) Nose: sense of smell</li><li>d) Tongue: sense of taste</li></ol></li></ol>

### Reference Books:

1. Anatomy and physiology in health and illness By- Ross and Wilson
2. Essential of medical physiology: By- Indu khurana
3. General Anatomy :By- B.D. Chaurasia