

Course	Discipline Specific Core
Semester	II
Paper Number	MBTCR2032T & MBTCR2032P
Paper Title	MAMMALIAN PHYSIOLOGY
No. of Credits	6
Theory/Composite	Composite
No. of periods assigned	4 Theory + 4 Practical
Course description/objective	<p>The course aims to</p> <ol style="list-style-type: none"> 1. impart a comprehensive overview of the principles and basic concepts of mammalian physiology, especially human physiology. 2. provide an advanced understanding of skeleton-muscle physiology and digestive system functioning. 3. give an overview of renal physiology and electrolyte homeostasis and endocrine function. 4. provide a comprehensive idea about circulatory and respiratory biology and functioning of the heart. 5. provide a comprehensive idea about nervous coordination, nerve impulses and the central and peripheral nervous systems. 6. familiarize students with laboratory techniques and equipment used in the acquisition of physiological data.
Syllabus	<p>Theory Module A: (25 marks)</p> <p>UNIT I: Circulation: Composition of blood, Plasma proteins & their role, blood cells, Haemopoiesis, Mechanism of coagulation of blood, Blood pressure, Lymph. Mechanism of working of heart: Cardiac output, cardiac cycle, Origin & conduction of heart beat.</p> <p>UNIT II: Respiration: Respiration: Exchange of gases, Transport of O₂ and CO₂, Oxygen dissociation curve, Chloride shift.</p> <p>UNIT III: Nervous coordination: Mechanism of generation & propagation of nerve impulse, structure of synapse, synaptic conduction, saltatory conduction, Neurotransmitters, The Central, Autonomic and Peripheral Nervous Systems.</p> <p>No. of Classes: 2 Classes per week</p> <p>Module B: (25 marks)</p> <p>UNIT IV: Digestion: Phases of nutrition, Mechanism of digestion and absorption of macromolecules (carbohydrates, proteins, lipids). Functional composition of bile, saliva, pancreatic, gastric and intestinal juice.</p> <p>UNIT V: Muscle physiology and osmoregulation: Skeleto-muscular physiology: Structure of cardiac, smooth and skeletal muscle, threshold stimulus, All or None rule, single muscle twitch, isotonic and isometric contraction, basic mechanism of muscle contraction (physical, chemical & electrical events) and joint movements. Excretion: Modes of excretion, Ultrastructure of nephron, Mechanism of urine formation.</p> <p>UNIT VI: Endocrine coordination: Hormones and receptors,</p>

	<p>Mechanism of action of hormones (protein and steroid hormones), Endocrine glands: Hypothalamus, pituitary, pineal, thymus, thyroid, parathyroid, adrenal, endocrine pancreas, hypo & hyper-secretions.</p> <p>No. of Classes: 2 Classes per week</p> <p>Practical</p> <ol style="list-style-type: none"> 1. Determination of blood groups 2. Counting of mammalian RBCs 3. Finding the coagulation time of blood 4. Determination of TLC and DLC 5. Demonstration of action of an enzyme 6. Determination of Haemoglobin 7. Qualitative tests for physiologically important substances.
Readings	<ol style="list-style-type: none"> 1. J.E. Hall. Guyton and Hall Textbook of Medical Physiology. 2. B.M. Koeppen, B.A. Stanton. Berne and Levy Physiology. 3. G.J Tortora, S. Grabowski. Principles of Anatomy & Physiology. 4. R.K. Murray, D.K. Granner, V.W. Rodwell. Harper's Illustrated Biochemistry. 5. K. C. Ghose, B. Manna. Practical Zoology. 6. R.J. Amirano, G.J. Tortora. Anatomy and Physiology: A Lab Manual.
Evaluation	<p>Theory: Continuous Internal Assessment: 10 marks End-Semester Theory Examination: 50 marks</p> <p>Practical: Continuous Internal Assessment: 32 marks End-Semester Examination: 8 marks</p>
Paper Structure for End Sem Theory	<p>Module A (25 marks) Compulsory objective questions: 1x 5 = 5 marks Any two from three subjective questions with subparts: 10 x 2 = 20 marks (No sub-part will be less than 1 mark or more than 5 marks)</p> <p>Module B (25 marks) Compulsory objective questions- 10 marks Subjective three questions, 5 marks each, i.e. 5 x 3= 15 marks</p>