

SYLLABUS :-

Introduction to Human Anatomy, Physiology, Pathology and Medical Technology. Introduction to Cellular-sub-cellular structure and function, extra cellular matrix, tissues, organs and systems from an integrated viewpoint. Introduction to genetics- proteomics & metabolomics & bio-regulatory pathways- feedbacks-biorhythms. Physiology of Membrane transport, RMP, neuromuscular transmission and muscle contraction (including Skeletal, cardiac and smooth muscle characteristics). Integumentary system: Basic structure & function, circulation and interrelation with other systems. Musculoskeletal system: Basic structure & function, circulation and interrelation with other systems. Blood, Lymphatics and other body-fluids: Basic structure & function, circulation and interrelation with other systems. Cardiovascular system: Basic structure & function, own circulation and interrelation with other systems, Cardiac cycle, heart sounds and electrical activity of heart with basic ECG interpretation. Respiratory system: Basic structure & function, own circulation and interrelation with other systems. Nervous system: Basic overview of structures and functions of neuron, Basic structure & function, own circulation and interrelation with other systems. ANS, Motor and Sensory system), central regulation of visceral function, sensation, sleep and EEG, hunger, thirst, Control of posture and movement, Joint mechanics and Gait Analysis. Special senses (vision, hearing, equilibrium, smell, taste), own circulation and interrelation with other systems. Endocrine system: Basic structure & function, own circulation and interrelation with other systems. Gastrointestinal system: Basic structure & function, own circulation and interrelation with other systems. Reproductive system: Basic structure & function, own circulation and interrelation with other systems (Basics of Reproductive physiology, sex differentiation, menstruations, pregnancy and lactation. Hypothalamic-pituitary axis, calcium metabolism and its regulation). Renal system: Basic structure & function, own circulation and interrelation with other systems (Nephron hemodynamics, clearance and regional transport, basics of acid-base disturbance). Bio-implants: Different implants and their interfaces as well as interaction with human systems. Introduction to necessity medical imaging and image analysis: A journey towards integrated quantitative analysis of temporal and spatial features of human system in normal and diseased conditions. Human development biology: Basics- organogenesis & system development. Fostering Dialogue amongst Medical sciences, Engineering sciences and Basic sciences: In terms of language, Terminology, History, Psychology, Logic, Interfaces, Social role and Application.