

SYLLABUS :-

Science of Living Systems Unit 1: Cellular Biology (10 Lectures) Ultra structure of bacteria, plants and animal cells; cell division, cell cycle and apoptosis; ATP synthesis and Glycolysis; Respiration and photosynthesis. Unit 2: Chemical Biology (10 Lectures) Proteins: structure and sequencing; Enzymes: mechanism, kinetics and inhibition; DNA: structure and sequence, replication, recombination; RNA synthesis; Genetic code and protein biosynthesis; Recombinant DNA technology. Unit 3: Bio-Thermo-Fluidics and Transport Processes (8 Lectures) Noncovalent interactions and free energy changes in biological processes; Fundamentals of momentum, heat and mass transport as applied to biological systems; Human body as a thermodynamic system; Blood Rheology, Fluid mechanical aspects of some diseases and organs; Bio-Micro devices. Unit 4: Impact of Biology on Society and Mankind (2 Lectures) Crop management, Disease control, Biological Hazards and safety; Unsolved Problems in Biology. Suggested Books: Lehninger Principles of Biochemistry, Nelson and Cox, Biochemistry by Berg, Tymoczko and Stryer Biochemistry by Voet and Voet Molecular Cell Biology by Lodish et al Molecular Biology of Genes by Watson et al. Gene IX by Benjamin Lewin Biothermal-Fluid Sciences Principles and Applications, by W-J Yang