

Course outcomes

Semester	Outcomes
I-Biomolecules & Analytical techniques	CO 1: To gain knowledge on the structure and properties of bio molecules Information useful in clinical diagnosis CO 2: Acquire knowledge on bioenergetics and understanding life at molecular level. CO 3 &4: To gain knowledge on characterization of bio molecules using analytical techniques CO 5: To understand the interpretation of experimental results using statistical tools
II- Microbiology, Cell and Molecular Biology	CO 1: To understand basics of primitive forms of life i. e, Microorganisms. Microbiology -History and sterilization techniques. CO 2: Gain knowledge on classification and characterization of various clinically important microbes CO 3: Acquire knowledge on structure and function of highly evolved eukaryotic cell CO 4 & 5: To understand molecular mechanism of prokaryotic and eukaryotic cell
III- Biophysical techniques	CO 1: To Understand instrumentation, working principle and applications of various types of spectrophotometer CO 2: Aware of chromatographic separation techniques CO 3: Understanding Types of gels, arrangement, working principle and applications of various types of Electrophoresis techniques CO 4: knowledge on radioactivity and its clinical applications CO 5: Acquire understanding on Centrifugation separation techniques and basic statistical tools
IV- Immunology	CO 1: Understand the cells and organs of immune system CO 2: Comprehend the structures of antibodies CO 3: Gain knowledge on types of immunities CO 4: Get knowledge on hypersensitive reactions in the body and types and principles of vaccination

	CO 5: Aware of immunological techniques used in clinical diagnosis
V Paper V Molecular biology	CO 1: understand what is a gene and its structure CO 2: Understand how genes are getting copied CO 3: Understand how genetic information transcribed into RNA strand CO 4: How genes are regulated CO 5: Know the mechanism of protein synthesis
Paper VI r-DNA Technology	CO 1: Acquire knowledge on enzymes used in genetic engineering CO 2 & CO 3: Understand Construction of vectors for r-DNA CO 4: Know the methods of gene transfer in r-DNA technology CO 5: Know successful history of r-DNA technology achievements in the fields of agriculture and medicine
VI Elective Plant and animal biotechnology	CO 1: To know the setup of tissue culture laboratory and initiation of culture CO 2: Understand clonal propagation of plants and transgenic plant production CO 3: Understand In vitro animal cell culture laboratory requirements, media used, characteristics of cells in culture and maintenance of cell lines CO 4: Gain knowledge on commercially important therapeutic protein production IVF techniques in human and farm animals CO 5: Know the Intellectual property rights types, patenting rules and regulations, bioethics and biosafety measures

	<p>Cluster 802(1) Tissue Culture</p> <p>CO 1: Acquire knowledge on animal cell culture laboratory organization and techniques</p> <p>CO 2: Understand animal cell culture steps, types and hybridoma technology applications</p> <p>CO 3: Gain information on plant tissue culture laboratory requirements and basic setup</p> <p>CO 4: Acquire knowledge on clonal propagation and somatic hybrid formation</p> <p>CO 5: Understand applications of tissue culture in agriculture and animal husbandry</p> <p>Cluster 802(2) Industrial biotechnology</p> <p>CO 1: Gain knowledge on industrially important microorganisms screening, isolation and preservation techniques</p> <p>CO 2: Understand fermentation technology principles and types of fermenters</p> <p>CO 3: Acquire knowledge on commercial production of biofuels and alcoholic beverages</p> <p>CO 4: Got knowledge on mechanism of commercial production of therapeutic proteins and antibiotics</p> <p>CO 5: Understand Intellectual property rights principles and types, patenting rules and regulations, Good manufacturing practices guidelines and biosafety measures fermentative production of dairy and vitamins</p> <p>802(3) Environmental biotechnology</p> <p>CO 1: Understand concept of environment</p> <p>CO 2: Get knowledge on energy resources and factors affecting ecosystem</p> <p>CO 3: Aware environmental pollutants and their impact on ecosystem.</p> <p>CO 4: Get knowledge on conservation of ecosystem</p> <p>CO 5: Get informed bioremediation measures to protect our ecosystem</p>
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	<p>Cluster 803(1) Cell Biology</p> <p>CO 1: Acquire knowledge on basic unit of life is cell and its various theories</p> <p>CO 2: Get to know Structure of cell</p> <p>CO 3: Understand structure and functions of cell organelles</p> <p>CO 4: Understand the structure of chromosome</p> <p>CO 5: Get knowledge on cell growth and division</p> <p>803(2) Gene Biotechnology</p> <p>CO 1: Get information on conventional genetics i.e, Mendelian principles of genetics</p> <p>CO 2: Acquire knowledge on structure of gene</p> <p>CO 3: Understand Human Cytogenetics concepts</p> <p>CO 4: Understands mutations reasons and its types</p> <p>CO 5: Aware of DNA damage causes and repair mechanism in the living body</p> <p>803(3) Biostatistics and Bioinformatics</p> <p>CO 1: To introduce bioinformatics studies</p> <p>CO 2: To informed statistical tools basics</p> <p>CO 3: To acquire knowledge on construction of phylogenetics tree and software used for it</p> <p>CO 4:To understand the concept of genomics and proteomics and how to search biological databases using internet</p> <p>CO 5: To introduce how to interpret experimental results using some of statistical sampling test of significance methods</p>
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