PG & RESEARCH DEPARTMENT OF BIOTECHNOLOGY
PROGRAMME OUTCOMES AND COURSE OUTCOMES OF UNDER GRADUATE
(2024 ONWARDS)

NAME OF THE PROGRAMME: BACHELOR OF BIOTECHNOLOGY– PROGRAMME OUTCOME	
PO1	**Disciplinary knowledge:** Capable of demonstrating comprehensiveknowledge and understanding of one or more disciplines that form a part of an undergraduate Programme of study
PO2	**Communication Skills:** Ability to express thoughts and ideas effectivelyin writing and orally; Communicate with others using appropriate media; confidently share one's views and express herself/himself; demonstrate the ability to listen carefully, read and write analytically, and present complex information in a clear and concise manner to different groups.
PO3	**Critical thinking:** Capability to apply analytic thought to a body of knowledge; analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development.
PO4	**Problem solving: Capacity** to extrapolate from what one has learned and apply their competencies to solve different kinds of non-familiar problems, ratherthan replicate curriculum content knowledge; and apply one's learning to real lifesituations.
PO5	**Analytical reasoning**: Ability to evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints.
PO6	**Research-related skills**: A sense of inquiry and capability for asking relevant/appropriate questions, problem arising, synthesising and articulating; Ability to recognise cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, establish hypotheses, predict cause-and-effect relationships; ability to plan, execute and report the results of an experiment or investigation
PO7	**Cooperation/Team work:** Ability to work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on the part of a group, and act together as a group or a team in the interests of a common cause and work efficiently as a member of a team
PO8	**Scientific reasoning**: Ability to analyse, interpret and draw conclusionsfrom quantitative/qualitative data; and critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective.
PO9	**Reflective thinking**: Critical sensibility to lived experiences, with selfawareness

	and reflexivity of both self and society.
PO10	**Information/digital literacy:** Capability to use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety ofrelevant information sources; and use appropriate software for analysis of data.
PO 11	**Self-directed learning**: Ability to work independently, identify appropriate resources required for a project, and manage a project through to completion.
PO 12	**Multicultural competence:** Possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to effectively engage in a multicultural society and interact respectfully with diverse groups.
PO 13	**Moral and ethical awareness/reasoning**: Ability toembrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work. Capable of demonstratingthe ability to identify ethical issues related to one‟s work, avoid unethical behaviour such as fabrication, falsification or misrepresentation of data or committing plagiarism, not adhering to intellectual property rights; appreciating environmental and sustainability issues; and adopting objective, unbiased and truthful actions in all aspects of work.
PO 14	**Leadership readiness/qualities:** Capability for mapping out the tasks of a team or an organization, and setting direction, formulating an inspiring vision, building a team who can help achieve the vision, motivating and inspiring team members to engage with that vision, and using management skills to guide people to the right destination, in a smooth and efficient way.
PO 15	**Lifelong learning:** Ability to acquire knowledge and skills, including „learning how to learn‟, that are necessary for participating in learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social and cultural objectives, and adapting to changing trades and demands of work place through knowledge/skill development/reskilling.

NAME OF THE PROGRAMME: BIOTECHNOLOGY – COURSE OUTCOMES	
SEMESTER I	
1. CELL AND MOLECULAR DEVELOPMENTAL BIOLOGY	1. Have an insight of the cell as the fundamental unit of life and to compare the structure of the Eukaryotic cell with the primitive prokaryotic cell. 2. Analyze the structure and obtain a strong foundation about the functional aspects of cell organelles and cell membrane. 3. Study the structure and functions of Nucleic acid and discuss the molecular mechanism of Replication, Transcription and Translation and post translational modifications of proteins. 4. Predict the response of cells to the intra and extracellular environment by studying about the intracellular signaling pathways. 5. Understand the principles and molecular mechanisms involved in cellular differentiation, morphogenesis, growth and Potency of the cell.
2. BIOLOGICAL CHEMISTRY	1. Comprehend the importance of Chemistry and Biochemistry through the concept of acids and bases, and chemical bonding. 2. Demonstrates the formation of different types of solutions, concentrations of solutions and preparation of buffer solutions 3. Recall the Structure, Classification, Chemistry and Properties of Carbohydrates and Explain Various Biochemical Cycles involved in Carbohydrate Metabolism. 4. Recall the Structure, Classification, Chemistry and Properties of Lipids, Nucleic acid and Explain Various Biochemical Cycles involved in Fatty acid and Nucleic acid Metabolism. 5. Understand the Structure, Classification, Chemistry and Properties of proteins amino acids and Identify and explain nutrients in foods and the specific functions in maintaining health.
3. CELL AND MOLECULAR DEVELOPMENTAL BIOLOGY - Practical	1.To Demonstrate the operation of Light Microscope& to identify different cells 2.To identify cell & Organelles 3. To understand cell division 4. To understand the cell division in germ cells 5.To understand staining procedure

4. CONCEPTS IN BIOTECHNOLOGY	1.To understand the scope of Biotechnology 2. To understand the diverse applications of Biotechnology 3. To understand the importance of biotechnology in daily life 4. To understand the basic principles of biotechnology 5. To understand the advanced application of Biotechnology
5. OFFICE FUNDAMENTALS	1.To become practically expertise in MS-WORD 2.To understand the advance functioning in WORD 3.To gain practical experience in MS-PowerPoint 4.To gain practical experience in MS-PowerPoint 5.To gain practical experience in MS-EXCEL

PG & RESEARCH DEPARTMENT OF BIOTECHNOLOGY
PROGRAMME OUTCOMES AND COURSE OUTCOMES OF POST GRADUATE (2024 ONWARDS)

NAME OF THE PROGRAMME: M.Sc BIOTECHNOLOGY– PROGRAMME OUTCOME	
PO1	**Problem Solving Skill** Apply knowledge of Management theories and Human Resource practices to solve business problems through research in Global context.
PO2	**Decision Making Skill** Foster analytical and critical thinking abilities for data-based decision making. Ethical Value Ability to incorporate quality, ethical and legal value-based perspectives to
PO3	**Ethical Value** Ability to incorporate quality, ethical and legal value-based perspectives to all organizational activities.
PO4	**Communication Skill** Ability to develop communication, managerial and interpersonal skills.
PO5	**Individual and Team Leadership Skill** Capability to lead themselves and the team to achieve organizational goals.
PO6	**Employability Skill** Inculcate contemporary business practices to enhance employability skills in the competitive environment.
PO7	**Entrepreneurial Skill** Equip with skills and competencies to become an entrepreneur.
PO8	**Contribution to Society** Succeed in career endeavors and contribute significantly to society.
PO9	**Multicultural competence** Possess knowledge of the values and beliefs of multiple cultures and a global perspective.
PO10	**Moral and ethical awareness/reasoning** Ability to embrace moral/ethical values in conducting one’s life.

NAME OF THE PROGRAMME: M.Sc BIOTECHNOLOGY – COURSE OUTCOMES	
SEMESTER I	
1.MOLECULAR CELL BIOLOGY	1.To understand the basics of cell organization 2. To understand the cell cycle and cell signalling 3.To learn the nucleus structure and organization 4.To understand the process of transcription 5.To know the mechanism on protein synthesis and transport
2.CELL & MOLECULAR BIOLOGY AND BIOCHEMISTRY PRACTICALS	1.To separate and identify cell organelles using separation techniques 2.To study stages of cell cycle 3. To quantify bio molecules using different methods 4. To separate bio molecules using chromatographic techniques 5. Use electrophoresis techniques to separate DNA and proteins
3.BIOCHEMISTRY	1.To understand the basics of Biochemistry 2. To understand the concepts of energy flow 3. To understand the basics of lipid biochemistry 4. To understand the functioning of nucleic acids and amino acids 5. To understand the transport system of a cell
4.CANCER BIOLOGY	1.To understand the molecular basis of cancer 2. To understand the signalling pathways associated with cancer 3. To understand the causes of cancer 4. To understand the different biomarkers in cancer diagnostics 5. To understand the novel approaches in cancer therapeutics
5.BIOINSTRUMENTATION	1.To understand the concepts of Chromatography and electrophoresis 2. To understand the principles of GC-MS 3. To understand the concepts and working principles of Microscopy 4.To understand the working mechanism Spectroscopy 5. To understand the basic principle of radio isotopic techniques
6.OFFICE FUNDAMENTALS	1.To understand the basics of MS-Word 2.To understand basic functions of MS-Word 3. To understand the basic functions of MS-Powerpoint 4. To comprehend basic functionalities of MS-Powerpoint 5. To understand and work with MS-Excel