rCOURSE CURRICULUM FRAMEWORK UNDER AUTONOMY

Program: B.Sc.
Department: Biotechnology

Semester 1		
Course code	**Course Title**	**Credits**
SBT101	**Introduction to Biotechnology** Scope and Introduction to Biotechnology Applications of Biotechnology Introduction to Fermentation Technology	**2**
SBT102	**Genetics** Fundamentals of Genetics Structure and Organization of Eukaryotic Genetic Material Microbial Genetics	**2**
SBT103	**Biodiversity and Experimental models** Plant and Animal Biodiversity Microbial Biodiversity Experimental Models	**2**
SBT104	**Techniques in Biological Sciences** Sterilization Techniques Microbial Cell Culture Techniques Microscopy and Staining Techniques	**2**
SBT105	**Fundamentals In Chemistry I** Periodic Table and Periodicity of elements Nomenclature of Organic compounds Chemical Bonding	**2**
SBT106	**Fundamentals In Chemistry II** Thermodynamics Stereochemistry Water and Buffers	**2**
SBTP101	**Practical of SBT101 and SBT102**	**2**
SBTP102	**Practical of SBT103 and SBT104**	**2**
SBTP103	**Practical of SBT105 and SBT106**	**2**

Semester 2		
Course code	**Course Title**	**Credits**
SBT201	**Immunology, Cell Biology and Histology** Basic Immunology Ultrastructure of Prokaryotic and Eukaryotic Cells Mammalian Histology	**2**
SBT202	**Molecular Biology and Genetics** Nucleotides and Nucleic acids - Blueprint of Life DNA Replication Population Genetics	**2**
SBT203	**Enzymology, Vitamins and Plant Physiology** Basic Enzymology Vitamins and coenzymes Photosynthetic systems	**2**
SBT204	**Cell Culture and Biostatistics** Plant Tissue Culture Animal Cell Culture Basic Biostatistics	**2**
SBT205	**Bioorganic Chemistry -I** Biomolecules: Carbohydrates Biomolecules: Lipids Biomolecules: Amino acids and Proteins	**2**
SBT206	**Physical and Analytical Chemistry** Chemical Kinetics Oxidation and Reduction reactions Basics of Analytical Chemistry	**2**
SBTP201	**Practical of SBT201 and SBT202**	**2**
SBTP202	**Practical of SBT203 and SBT204**	**2**
SBTP203	**Practical of SBT205 and SBT206**	**2**

Semester 3		
Course code	**Course Title**	**Credits**
SBT301	**Cell Biology and Immunology** Cell Membrane Cells and organs Immune system Techniques in Immunology	**3**
SBT302	**Molecular Biology** Transcription Translation Mutation and DNA Repair	**3**
SBT303	**Food and Fermentation Technology** Food Technology I Food Technology II Fermentation Technology	**3**
SBT304	**Environmental Biotechnology** Water Biotechnology Industrial Waste Management Current Trends in Environmental Biotechnology	**3**
SBT305	**Bioorganic Chemistry II** Biomolecules: Carbohydrates Catabolism Biomolecules: Lipids Catabolism Biomolecules: Enzyme Kinetics	**3**
SBT306	**Methods in Analytical Chemistry** Spectroscopy Electrophoresis Centrifugation	**3**
SBT307	**Scientific Research Methodology** An Introduction to Research Scientific Research Methodology Scientific Research Report Writing	**3**
SBTP301	**Practical of SBT301, SBT302 and SBT303**	**2.5**
SBTP302	**Practical of SBT304, SBT305 and SBT306**	**2.5**

Semester 4		
Course code	**Course Title**	**Credits**
SBT401	**Molecular Immunology and Cytoskeleton** Complement, MHC and APC Lymphocyte Receptors Cytoskeleton	**3**
SBT402	**Gene Regulation and Cloning Tools** Regulation of Gene Expression Enzymes in Gene cloning Cloning Vectors	**3**
SBT403	**Medical Microbiology** Overview of Medical Microbiology Infectious Agents – I Infectious Agents – II	**3**
SBT404	**Eukaryotic Genetics and Biostatistics** Genetics-I Genetics-II Advanced Biostatistics	**3**
SBT405	**Applied Chemistry I** Amino acid Reactions Nanochemistry Applications of Nanochemistry	**3**
SBT406	**Applied Chemistry II** Tracer Techniques Polymer Chemistry Green Chemistry	**3**
SBT407	**Entrepreneurship and Intellectual Property Right** Entrepreneurship Entrepreneurship Development and Quality IPR	**3**
SBTP401	**Practical of SBT401, SBT402 and SBT403**	**2.5**
SBTP402	**Practical of SBT404, SBT405 and SBT406**	**2.5**

Semester 5		
Course code	**Course Title**	**Credits**
SBT501	**Advanced Immunology and Cell Biology** Immune Effector Mechanisms Immune Response in Health and Disease – I Cell Signalling – I Cell Signalling – II	**4**
SBT502	**Mammalian Physiology** Developmental Biology-I Human Endocrine System – I Neuroscience – I Stem Cell Biology	**4**
SBT503	**Biochemistry, Bioinformatics and Advanced Bioanalytical Techniques – I** Carbohydrate Biosynthesis Bioinformatics – I Advanced Analytical Techniques – I Advanced Analytical Techniques – II	**4**
SBT504	**Applied Biotechnology** Techniques in Genetic Engineering – I Concepts in Animal Cell Culture Industrial Biotechnology - I (Upstream processing) Transgenic Plants and Animals	**4**
SBTP501	**Practical of SBT501 and SBT502**	**4**
SBTP502	**Practical of SBT503 and SBT504**	**4**

Semester 5 - Applied Component		
Course code	**Course Title**	**Credits**
SBT5AC	**Nutrition and Dietetics** Basic Concepts in Human Nutrition Energy, Food Groups and Balanced Diet Modern Concepts in Nutrition and Health Management Nutrition in Health, Fitness and Wellness	**2.5**
SBTP5AC	**Practical in Nutrition and Dietetics**	**2.5**

Semester 6		
Course code	**Course Title**	**Credits**
SBT601	**Medical Immunology and Antimicrobial Drugs** Cell Mediated Immune Response Hypersensitivity Tolerance and Autoimmunity, Transplantation Immunology Antimicrobial Drugs	**4**
SBT602	**Mammalian Physiology II** Developmental Biology II Human Endocrine System II Neurobiology II Pharmacology and Pharmacotherapeutics	**4**
SBT603	**Biochemistry, Bioinformatics and Bioanalytical Techniques II** Biosynthesis of Lipids Bioinformatics II Genomics and Proteomics Advanced Analytical Techniques III	**4**
SBT604	**Applied Biotechnology II** Molecular Diagnostics Advanced Concepts in Plant Tissue Culture Downstream Processing Biosafety and Bioethics	**4**
SBTP601	**Practical of SBT601 and SBT602**	**4**
SBTP602	**Practical of SBT603 and SBT604**	**4**

Semester 6 - Applied Component		
Course code	**Course Title**	**Credits**
SBT6AC	**Research Project**	**2.5**
SBTP6AC	**Practical Research Project**	**2.5**