

## rCOURSE CURRICULUM FRAMEWORK UNDER AUTONOMY

Program: B.Sc.

Department: Biotechnology

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

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

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

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

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

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

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

<b>Semester 6 - Applied Component</b>		
<b>Course code</b>	<b>Course Title</b>	<b>Credits</b>
<b>SBT6AC</b>	<b>Research Project</b>	<b>2.5</b>
<b>SBTP6AC</b>	<b>Practical Research Project</b>	<b>2.5</b>