



JAYOTI VIDYAPEETH WOMEN'S UNIVERSITY, JAIPUR

ESTABLISHED BY GOVERNMENT OF RAJASTHAN

UGC APPROVED | NAAC ACCREDITED

DEPARTMENT OF FOOD & BIOTECHNOLOGY
FACULTY OF EDUCATION & METHODOLOGY

Course Outcomes of Bachelor in Science (Bio Technology)

Course Code	Course Name	Course Outcomes
UF-BT-018	Fundamentals of Biotechnology	<ol style="list-style-type: none"> 1. Learn about basics and historical perspective of biotechnology. 2. Learn about basics perspective of introductory knowledge of advance technologies of biotechnology along with patenting and ethical issues.
UF-BT-019	Fundamentals of Biotechnology Lab	Learn basics of all all related streams of Biotechnological practical approaches such as DNA Isolation and its visualization, basics of Plant Tissue Culture, Molecular Biology and Microbiological techniques etc.
UF-BT-101	Introduction to food technology	<ol style="list-style-type: none"> 1 Understand the principles of food science, different areas of food science and the historical evolution of food processing. 2 Understand the basics of plant and animal foods, their types, structure and composition, nutritional value, changes taking place during storage and different processing methods used.
UF-BT-093	Fundamentals of Biological Chemistry	<ol style="list-style-type: none"> 1 Learn general account of the Origin of life, Concept of biomolecules and their reactions basics. 2 Learn conceptual knowledge which will be helpful to understanding advanced concepts of Food and Biotechnology.
UF-BT-105	Biomolecules	<ol style="list-style-type: none"> 1. Gain knowledge from this course will make student able to learn advance knowledge related to Food and Biotechnology. 2. Learn general account of the chemical nature of living cells including Carbohydrates, Lipids, Protein and Vitamins
UF-BT-104	Biomolecules Lab	Learn basics of all related streams of Biochemistry practical approaches such as qualitative analysis of all three biomolecules such as Carbohydrates, Proteins and Lipids etc.
UF-BT-102	Basics of	<ol style="list-style-type: none"> 1. Buildup concept wise knowledge to understand advanced

	Biosciences	courses of Food and Biotechnology. 2. Learn about diversity in biological systems.
UF-BT-103	Basics of Biosciences Lab	Learn basics of all related streams of basics of Biological system practical approaches such as isolation and identification of microorganism, Various Chromatography, studies of Plant system and Animal system etc.
UF-BT-020	Fundamentals of Chemistry	Students will able to identify various matters and equipment used in labs, perform some basic experiments.
UF-BT-103	Fundamentals of Biological Chemistry Lab	Learn basics of all qualitative practical approaches after the successful completion of this course. Student will be skilled in handling all qualitative practicals related to Carbohydrates, Lipids and protein with the principle knowledge.
SEC-005	Hands on Training Courses on Biochemical and Microbiological Analysis	Learn about Media/ Chemical preparation, handling of relative instruments and standard testing protocols to microbiology and biochemistry.
UF-BT-120	Fundamentals of microbiology	1. Learn about the basics of microbes; physiology of microbes and their role in agriculture. 2. Student will able to think and apply microbes with new innovative ideas for betterment in Food and Biotechnology.
UF-BT-123	Fundamentals of microbiology Lab	Learn basics of all microbial streams with practical approaches such as isolation and identification of microorganism from various sources such as extreme environmental conditions, growth curves, and antibiotic sensitivity.
UF-BT-318	Biophysics and instrumentation	1 Learn about the basic principle of microscopy, types of microscopic techniques, and application of microscopy. 2 Understand the basic concepts of centrifugation, types of centrifugation, basic principle of spectroscopy, different spectroscopic instruments and application of spectroscopic techniques.
UF-BT-319	Biophysics and instrumentation lab	Learn about the basic principle and handling of microscopy, basic concepts and handling of centrifugation, basic principle and handling of spectroscopy.
UF-BT-122	Fundamentals of Food Science & Technology	1. Understand scope of food processing in India and different areas of food processing. 2. Understand the processing of different food products like meat and meat products, Fruit and vegetable, milk and milk products and marine products.
UF-BT-121	Fundamentals of Food Science & Technology Lab	Student will be able to do practical related to this course such as Food preservation Techniques, Packaging types, Food processing techniques, Study of processing equipments, etc.
UF-BT-117	Cell biology	1. Understand the structures and basic components of prokaryotic and eukaryotic cells, including membranes, and organelles. 2. Understand cell division process, significance of mitosis

		and meiosis process
UF-BT-118	Cell biology Lab	Student will be able to do practical related to this course such as Food preservation Techniques, Packaging types, Food processing techniques.
SEC-006	Hands on Training Courses on-Fundamentals of Tools and Techniques	<ol style="list-style-type: none"> 1. Student will be skilled in this course for Instrumentation related to Biotechnology. 2. Student will learn about handling all essential Techniques related to Biotechnology.
UF-BT-046	Molecular Biology	This course will give student a brief knowledge about molecular biology, nucleic acid structure, prokaryotic and eukaryotic replication, control of replication and nucleosomes. Students will learn about transcription in prokaryotes and eukaryotes, promoters for transcription, RNA processing, translation, mechanism, genetic code, mutation and DNA repair mechanisms
UF-BT-047	Molecular Biology Lab	Student will be able to do practical related to this course such as isolate genomic DNA isolate RNA, determine the concentration of RNA etc. after successful completion of this course.
UF-BT-044	Metabolism and Bioenergetics	This course will give student a brief knowledge about molecular basis of life, structure and classification of proteins, classification of lipids, classification of carbohydrates. Students will learn about nucleic acid structure, enzyme classification, kinetics of enzymes, metabolism of carbohydrate, lipid and amino acid metabolisms and photosynthesis reaction.
UF-BT-045	Metabolism and Bioenergetics Lab	Student will be able to do practical related to this course such understand the principle and operation of Spectrophotometer after successful completion of this course.
UF-BT-320	Developmental biology	This course will give student a brief knowledge about developmental biology, gametogenesis in animals, Phases of Oogenesis and Structure of Ovary.
UF-BT-045	Developmental Biology Lab	Student will be able to do practical related to this course such as study of t.s of ovary & testis, types of stomata, cambial ring etc., after successful completion of this course.
UF-BT-322	Embryogenesis	Students will understand the basic concepts of embryology, embryology in flowering plant, Structure of Ovary and anther, Formation of egg, Development of male and female gametophyte. Students will also learn about Blastulation, Development of Blastula, types of blastula, Development of Gastrulation, characteristics of Gastrulation and Significance of Gastrulation
UF-BT-322	Embryogenesis Lab	Student will be able to do practical related to this course such as study of T.S. of anther, various types of ovules and draw the diagrams , male and female germ cells etc., after successful completion of this course.
UF-BT-040	Biostatistics Lab	Student will be able to do practical related to this course such

		as finding of Mean. After successful completion of this course.
UF-BT-038	Basic Enzymology Lab	Student will be able to do practical related to this course such as to examine the effect of pH on activity of alkaline phosphatase, Inhibition of enzyme activity, Determination of Ki values etc After successful completion of this course.
SEC-004	Hands on Training Courses- Plant Tissue Culture Techniques	Student will be skilled in this course for Techniques in Plant Tissue Culture. Student will learn about handling all essential Techniques related to Plant Tissue Culture.
UF-BT-037	: Basic Enzymology	This course will give student a brief knowledge about basic characters of enzymes, activation energy, enzyme classification and purification of enzyme. Students will learn about kinetics of enzyme, enzyme substrate complex, enzyme inhibition, reversible inhibition, non reversible mechanism of enzyme action and modification of enzymes..
UF-BT-039	Biostatistics	Students will learn about basic of biostatistics, classification of data, tabulation of data, correlation coefficient, regression, measures of dispersion and measures of central tendency. This course will give students knowledge about vital statistics, life tables, sampling techniques, hypothesis testing, large sample test, small sample test and analysis of variance.
UF-BT-062	Recombinant DNA technology	This course will give student a brief knowledge about recombinant DNA technology, basic steps of gene cloning, restriction enzymes, tools of RDT and vectors for gene cloning. Students will learn about methods of gene transfer, preparation of molecular probes, blotting methods, preparation of genomic library and DNA sequencing.
UF-BT-063	Recombinant DNA technology Lab	Student will be able to do practical related to this course such .To isolate plasmid DNA from Ecoli., Digestion, electroporation etc. after successful completion of this course.
UF-BT-060	Principles of Immunology	Students will be able to understand the basic concepts of immunology including introduction of immunology, molecular patterns of pathogen, types of immunity, components and processes of innate and acquired immunity, antigen and antibody interaction, antibody structure, MHC molecules, B Cell and T Cell activation, cytokines and vaccines.
UF-BT-061	Principles of Immunology Lab	Students will be able to understand the basic concepts of immunology including introduction of immunology, molecular patterns of pathogen, types of immunity, components and processes of innate and acquired immunity, antigen and antibody interaction, antibody structure, MHC molecules, B Cell and T Cell activation, cytokines and vaccines.
UF-BT-324	Food Biotechnology	Students will be able to understand the basic concepts of food biotechnology, role of microorganisms in food, types of

		microorganisms in food, starter culture for various food and health benefits of fermented food.
UF-BT-325	Introduction to Bioinformatics	Students will learn about basic concept of bioinformatics, nucleotide database, DNA sequences, sequence alignment and phylogenetics. Students will also understand about sequence alignment, OR Finder, structure prediction, secondary structure prediction, molecular pattern recognition and hidden Markov model.
UF-BT-326	Introduction to Bioinformatics Lab	Student will be able to do practical related to this course such as to study about the different biological databases in variable formats and the sequence similarity in different molecules through BLAST etc., after successful completion of this course.
UF-BT-052	Environmental Biotechnology	Students will learn about basic concept of environment, environmental pollution, pollution, control, pollution monitoring, air pollution and water pollution. This course will give students knowledge about waste water treatment.
UF-BT-053	Environmental Biotechnology Lab	Student will be able to do practical related to this course such. Isolation and Characterization of Bacteria from Crude Petroleum Oil., BOD, DO of water sample etc After successful completion of this course.
UF-BT-057	Medical Biotechnology	Students will learn about basic concept of medical biotechnology, role of biotechnology in healthcare, tissue engineering and stem cell therapy. This course will give students knowledge about sign, symptoms, diagnosis, treatment and prevention of communicable and non-communicable diseases, disease diagnosis techniques, microbial culture techniques and monoclonal antibody production..
UF-BT-058	Medical Biotechnology Lab	Student will be able to do practical related to this course such. Determine the lethal effect of temperature on microorganisms, Antimicrobial activity, Polymerase Chain reaction, Widal test etc after successful completion of this course.
UF-BT-069	Enzyme technology	Students will be able to understand the basic concepts of Enzyme technology including introduction of enzyme and enzyme kinetics, enzyme inhibition and regulation, Enzyme immobilization techniques and their applications, free and immobilized enzymes, extraction and application of commercially important enzymes in medicine and industrial purposes.
UF-BT-070	Enzyme technology Lab	Student will be able to do practical related to this course such. To study physical and chemical method of Immobilization After successful completion of this course.
UF-BT-077	Plant biotechnology	Students will be able to understand the basic concepts of plant biotech with introduction of plant tissue culture, various types of tissue culture media in plants and techniques of plant tissue culture for preparation of disease free plants,

		production of secondary metabolites, construction of mapping, physical methods of gene transfer for the production of transgenic plants and Application of plant tissue culture.
UF-BT-078	Plant biotechnology Lab	Student will be able to do practical related to this course such. Preparation of different types of tissue culture medium, In Vitro Multiplication, Root initiation, Anther culture etc after successful completion of this course.
UF-BT-327	Animal Biotechnology	This course will give student a brief knowledge about animal biotechnology, animal cell culture, types of media in animal cell culture, stem cell, cytotoxicity and viability test. Students will also learn about diagnosis, therapy and variation of disease in animals, transgenic animals' microinjection method, types of transgenic animals and importance of animal biotechnology.
UF-BT-328	: Animal Biotechnology Lab	Student will be able to do practical related to this course such as preparation of Dulbecco's BSS, Hank's BSS , determination of the optimum pH of trypsin etc, after successful completion of this course.
UF-BT-329	Bio-Entrepreneurship	Students will be able to understand the role of state government in promoting entrepreneurship, various incentives, grants. Export Oriented Units, Creating Entrepreneurial Venture and Business Planning Process. Students will also learn about Environmental Analysis, Business Idea, Problems and Prospects, importance of Positioning a company, Case studies of Successful Entrepreneurial Ventures in Biotechnology, Capital Funding marketing and group discussion on negotiaton.
UF-BT-330	Genetics	This course will give student a brief knowledge about genetics, chromosomes, cell divisin, Mendelian principles and principle of independent assortment. Students will also learn about qualitative and quantitative traits, Penetrance & Expressivity Nature, gene interaction, Linkage and Crossing over, Control of Development and genetic material Organisation.
UF-BT-331	Genetics Lab	Student will be able to do practical related to this course such as preparation of slide of polytene chromosome from Chironomous larva, study meiosis in grasshopper testis, study of barr bodies, different phases of mitosis & Meiosis through slides etc, after successful completion of this course.
UF-BT-071	Fermentation Technology	Students will be able to understand the basic concepts of fermentation technology. Students will learn about introduction of fermentation, Introduction of microbial process, alcoholic fermentation, microbial food products, production of fermented food like citric acid, gluconic acid, production of amino acids, organic acids and antibiotics from microorganisms by fermentation
UF-BT-062	Applied	Students will be able to understand the basic concepts of

	Recombinant DNA technology	recombinant DNA technology including transgenic animals, methods of production of transgenic animals and animal cloning.
UF-BT-063	Applied Recombinant DNA technology Lab	Student will be able to do practical related to this course such as FISH, RAPD, RFLP, microprojectile etc after successful completion of this course.
UF-BT-004	Research Methodology	Students will be able to understand the basic concepts of research methodology including meaning and objectives of research, types of research, various research criterial, research problem, research design, measurement and scaling techniques in research, various scaling techniques in research, and methods of data collection in research and report writing of research.
UF-BT-332	Microbial Technology	This course deals with characteristics, properties and biological significance of the biomolecules of life. In depth knowledge of the energetic and regulation of different metabolic processes in microorganisms.
UF-BT-333	Microbial Technology Lab	Student will be able to do practical related to this course such as Purification of the given bacterial sample by serial dilution method, Perform Gram's staining in given bacterial sample, Isolation of industrially important microorganisms, Study the bacterial growth curve with complete phases etc., after successful completion of this course.
UF-BT-334	Biosafety, Ethics and IPR	This paper develops concepts a holistic and comprehensive regulatory approach to ensure biosafety would be based on the precautionary principle, covering the entire range of activities from research and development of GMOs to their commercialization, and post-release monitoring.
UF-BT-335	Down Stream Processing	This course develops concepts of management and controls on the microbial processes in industrial settings. Ability the principles of physiological understanding in improvement of industrial processes.
UF-BT-336	Down Stream Processing Lab	Student will be able to do practical related to this course such as determination of the ability of Microorganisms to degrade and ferment carbohydrates with the production of acid or acid and gas, testing the presence of enzyme responsible for fat hydrolysis in given bacterial culture etc.,
UF-BT-337	Behavioral Science	This course will give student a brief knowledge about introduction of animal behavior, Animal Behaviour and Environment, .Characteristics for instincts.Sign or key stimulus or Releasers, Behaviour genetics and Evolution of behavior. Students will also learn about Sociobiology, Altruis, Aggressive behavior, Strategies in animals, Feeding Strategies in animals, Communication Patterns, Types of communication, Identification of individuals and Role of animal behavior in Biodiversity conservation
UF-BT-338	Agriculture Biotechnology	This course develops the concepts of understanding & manipulating the genetic make up of agricultural products to

		increase its productivity & efficiency. Courses based on this subject cover the study of optimum crop yield, increased nutrition & taste of produces, reducing use of chemicals in agriculture, etc
UF-BT-314	Molecular Therapeutics Lab	Student will be able to do practical related to this course such. Isolation of total RNA from various sources and gel electrophoresis, Design of primers and PCR etc After successful completion of this course.
UF-BT-313	Molecular Therapeutics	Students will be able to understand the basic concepts of molecular therapeutics. Students will learn about gene therapy, gene delivery, gene transfer technology, gene delivery, stem cell therapy. Students will also learn about recombinant therapy and application of recombinant technology, gene silencing technology