Programme: B.Sc.

PO No.	Programme outcomes After completion of the B.Sc. degree programme, the graduate will be able to
PO-1	The candidates shall acquire current knowledge in Microbiology which would enable them to enrich themselves to be competitive in the Life science sector.
PO-2	Students would gain the ability to articulate and have cognitive thinking on the different aspects relevant to Microbiology.
PO-3	Students would be imparted with the ability to design and execute comprehensive techniques and become familiar with routine laboratory practices.
PO-4	Students shall attain scientific writing and communication skills to aid them in written, oral and visual presentation, including an original research proposal.
PO-5	Students shall acquire the ability to prepare them for careers in the industry, agriculture, and applied research, where the biological system is extensively employed.
PO-6	Students would apply technical skill sets in handling various laboratory instruments, and troubleshoot related problems.
PO-7	Students would acquire entrepreneurial skills and apply ethical principles to create novel bio-products enabling them to establish a startup industry.
PO-8	Students would function effectively as teams to plan tasks, execute them to achieve the set goal, and analyze risk and uncertainties involved in Environment, Health, and allied sectors.

PSO No.	Programme Specific outcomes After completion of these courses, the graduate would
PSO-1	To train the students as skilled scientific personnel with a cutting edge knowledge of Research ethics (public policy, biosafety, and intellectual property rights) involving microorganisms to contribute to application and advancement.
PSO-2	To develop substantial original research of social and environmental significance with quality sufficient for publication.
PSO-3	To enable the students to present their work through written, oral, and visual presentations, including an original research proposal.
PSO-4	To propose the technological know-how in domains of Microbiology for their applications in industry and research.
PSO-5	The students shall excel in various Microbiological aspects or to succeed in industry / technical profession through global, rigorous education.
PSO-6	The students shall be provided with a strong foundation in the fundamentals of core Microbiology and allied subjects required to troubleshoot routine problems caused by microbes and also to pursue higher studies.
PSO-7	The students would acquire good scientific and research breadth so as to comprehend, analyze, design, and create novel bioproducts and solutions for real-life problems.

PSO-8	The students shall be imparted with professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate Microbiological issues to broader social context.

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-1** **FUNDAMENTALS OF MICROBIOLOGY PAPER-I- USMBT01**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To gain insights on how the subject area developed over a period of time.	
CO-2	To identify and study the morphology of prokaryotic and eukaryotic cells and structure and function of various bacterial cell components.	
CO-3	To understand the principle of microbial taxonomy its types and methods of bacterial classification.	
CO-4	To describe common groups of virus, archaea and fungi in different ecosystems and for the function and occurrence of individual groups.	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-1** **MICROBIAL TECHNIQUES PAPER-II – USMBT02**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To impart knowledge on the working of different types of Microscopes and to relate the use of different microscopic techniques according different laboratory purpose.	
CO-2	To internalize the techniques used to observe microorganisms by different staining techniques.	
CO-3	To identify the different types of medium and techniques used for the growth and cultivation of microorganisms by maintaining microbial cultures. To illustrate the pure culture techniques and preservation of cultures. To understand nutritional requirements and physiological aspects of nutrient uptake in microbes.	
CO-4	To compare the core principles of sterilization and the different methods of sterilization.	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-1** **PRACTICALS CREDITS:2 Paper code – USMBP01**

CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To review and understand different Microbiological lab accessories	
CO-2	To experiment on preparing different reagents and media	
CO-3	To learn basic techniques of cultivating microbes under in vitro conditions.	
CO-4	To distinguish microbial characteristics from microbial colony morphologies	
CO-5	To differentiate microorganisms using various staining methods	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-II** **GENERAL BIOCHEMISTRY PAPER-I – USMBT04**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To provide the basics of Biochemistry, buffer systems and its applications , types of isomers and types of bonds.	
CO-2	To become skillful to describe the basic structure and functions of Amino acids and proteins.	
CO-3	To learn the structure and functions of carbohydrates and lipids.	
CO-4	To understand the molecular basis of Cell regulation by learning Nucleic acid structure and functions.	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-II** **APPLIED MICROBIOLOGY PAPER-II – USMBT05**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To illustrate the occurrence, abundance and distribution of microorganisms in air and their role to cause diseases. And the study of room sterilization techniques.	
CO-2	To identify the microbes responsible for water pollution. To analyze the indication of water pollution. And the different methods of chlorination.	
CO-3	To know the solid waste management system and different types of waste water treatments.	
CO-4	To inculcate knowledge on protective factors involved in milk production. To understand the methods of enhancing the quality of milk by different industrial techniques. To	

	determine the process of advanced dairy product preservation. To gain insight on the problems involved in dairy industry and utilizing current trends to overcome problems.	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-II** **PRACTICALS CREDITS:2 Paper code – USMBP02**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To perform quantitative identification of carbohydrate.	
CO-2	To perform quantitative identification of proteins.	
CO-3	To perform separation of carbohydrates by paper chromatography.	
CO-4	To perform Separation of amino acids by paper chromatography.	
CO-5	To understand the methods of enhancing the quality of milk by different industrial techniques.	
CO-6	To understand the quality of water	
CO-7	To know the biological and chemical oxygen demand	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-III** **MICROBIAL PHYSIOLOGY AND METABOLISM PAPER-I – USMBT05**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To make the students to understand the fundamentals of bacterial physiology like growth, growth curve and study different methods of growth measurements.	
CO-2	Understanding of properties of enzyme along with concept of enzymes-substrate kinetics, enzyme classification and its importance in biological reactions.	
CO-3	To analyze the role of different metabolic pathways involved in the nutrient metabolism.	
CO-4	To grasp the aspect of anaerobic respiration in the microbial metabolism.	
CO-5	To decipher the concept of various biosynthetic pathways involved in microbial metabolism.	

COURSE TITLE	COURSE OUTCOMES SEMESTER-III FOOD, SOIL MICROBIOLOGY AND MICROBIAL ECOLOGY PAPER-II – USMBT06	
CODE		
CO No.	Course Outcomes	PSOs Addressed
CO-1	To make the students to understand the fundamentals of food microbiology. To classify the microorganisms involved in food industry, food spoilage and food preservation techniques.	
CO-2	To summarize the various biogeochemical cycle with microbes and their application as biofertilizers.	
CO-3	To illustrate isolation of different types of nitrogen fixing Bacteria, their associations, and their role as biofertilizers and biopesticides.	
CO-4	To know the suitable biotechnological methods for managing Environmental problems. And to apply the engineered bioremediation process	

COURSE TITLE	COURSE OUTCOMES SEMESTER-III PRACTICALS CREDITS:2 Paper code – USMBP03	
CODE		
CO No.	Course Outcomes	PSOs Addressed
CO-1	To demonstrate enzymes activity: Catalase, Lecithinase (lipase), Amylase, Caseinase (protease), Urease, Gelatinase	
CO-2	To isolate *Rhizobium* from root nodules and *Azotobacter* from soil	
CO-3	To demonstrate Synergism, antibiosis and Syntrophism.	
CO-4	To isolate and study of Rhizospheric microflora.	
CO-5	To demonstrate Ammonification, Nitrification, Nitrate reduction.	
CO-6	To perform Microbiological examination of food by SPC, YMPC.	
CO-7	To demonstrate cellulose degradation.	
CO-8	To study Phosphate solubilization by mycorhizae.	
CO-9	To produce amylase enzyme and its assay	
CO-10	To prepared Rhizobium Biofertilizer.	
CO-11	To study bacterial growth curve.	

CO-12	To study effect of PH , temperature on enzyme activity	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-IV** **INDUSTRIAL MICROBIOLOGY** **PAPER-I – USMBT07**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To discuss on the working principles of different types of Fermentors.	
CO-2	To illustrate on the commonly used raw materials for the fermentation process, strain improvement strategies of industrially important microbes.	
CO-3	To analyze the downstream processing.	
CO-4	To gain knowledge of various industrial products such as amino acid and organic acid etc. .	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-IV** **MICROBIAL GENETICS AND MOLECULAR BIOLOGY** **PAPER-II – USMBT08**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To elaborate on the Gene Regulation and gene action , central dogma of gene action and Operon model.	
CO-2	To analyze different types of mutation and its regulation. To describe the process of DNA replication.	
CO-3	To understand the mechanism of DNA Transcription and Translation.	
CO-4	The studied related to genetic exchange in prokaryotes including mechanisms of transformation, transduction, conjugation and plasmid biology are very significant.	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-IV** **PRACTICALS** **CREDITS:2 Paper code – USMBP04**	
CODE		
CO No.	**Course Outcomes**	**PSOs**

		Addressed
CO-1	To perform Primary screening of antibiotic producers, amylase producers, and organic acid producers.	
CO-2	To prepared fermented food – Idli.	
CO-3	To demonstrate Production of Penicillin by Fermentation and its Bioassay.	
CO-4	To demonstrate Wine by Fermentation and its estimation by Titration.	
CO-5	To demonstrate Ethanol by Fermentation and its estimation by Titration.	
CO-6	To demonstrate Citric acid by Surface/submerged fermentation and its estimation by titration.	
CO-7	To detect Auxotrophic mutants.	
CO-8	To perform Replica Plate method.	
CO-9	To isolate bacterial DNA, Plasmid DNA and Agarose Gel Electrophoresis	
CO10	To perform Digestion of DNA using Restriction Endonucleases and Agarose Gel Electrophoresis	
CO11	To detect UV mutagenesis	
CO-12	To demonstrate Transformation and Conjugation	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-V DISCIPLINE ELECTIVE COURSE (DSE) (ANY TWO)** **MEDICAL MICROBIOLOGY** **DSE-1**	
CODE	**USMBT-09**	
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To make the students to understand the fundamental knowledge of Medical Microbiology and host- parasite relationship.	
CO-2	To understand the disease transmission and control.	
CO-3	To describe the microbial mechanism of pathogenicity	
CO-4	To gain knowledge of various microbial diseases of human being.	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-V (PAPER I & II)** **PRACTICALS** **COURSE CODE: USMBP-05: MEDICAL MICROBIOLOGY (PRACTICAL)**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	Able to diagnose i) *E.coli* ii) *S. aureus* iii) *P. vulgaris* iv) *S. typhi* in lab	
CO-2	To study normal flora of skin and oral cavity.	
CO-3	To detect Malarial parasite from blood sample.	

CO-4	To detect Chikungunia and Dengue fever (demonstration only)	
CO-5	To determine Minimum Inhibitory Concentration (MIC) of Antibiotics.	
CO-6	To estimate Blood sugar by GOD-POD method	
CO-7	To estimate Blood cholesterol.	
CO-8	Able to perform Liver function test - SGOT and SGPT and Kidney function test- Creatinine , Urea	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-V DISCIPLINE ELECTIVE COURSE (DSE) (ANY TWO)** **BIOINSTRUMENTATION** **DSE-2 Course Code- USMBT-10**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	Able to understand the principles of spectroscopy.	
CO-2	Analyze the application of chromatography techniques for biomolecules separation process.	
CO-3	To illustrate methodology of electrophoresis and blotting techniques to evaluate the DNA and protein.	
CO-4	To elaborate on the principles of centrifugation and radioactivity.	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-V** **PRACTICALS** **COURSE CODE: USMBP-06 : BIOINSTRUMENTATION (PRACTICAL)**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To perform Paper chromatography of Amino acids/Sugars.	
CO-2	To perform TLC of lipid/amino acids.	
CO-3	To demonstrate separation of components by paper electrophoresis	
CO-4	To demonstrate column packing in any form of column chromatography.	
CO-5	Able to separate protein mixtures by any form of chromatography.	
CO-6	Able to separate protein by SDS-PAGE (Sodium dodecyl sulfate -Polyacrylamide gel electrophoresis)	
CO-7	Able to separate components of a given mixture using a laboratory scale centrifuge.	
CO-8	Able to perform Blotting of DNA by Southern Blotting technique.	

COURSE TITLE	COURSE OUTCOMES SEMESTER-V DISCIPLINE ELECTIVE COURSE (DSE) (ANY TWO) VIROLOGY DSE-3 Course Code- USMBT-11	
CODE		
CO No.	Course Outcomes	PSOs Addressed
CO-1	To describe the discovery, general properties, structure , cultivation , isolation and purification of Viruses.	
CO-2	To gain knowledge on viral taxonomy, mode of viral transmission, bacteriophage and virus replication.	
CO-3	To demonstrate the oncogenic virus and application of virology	
CO-4	To make the students to understand the fundamental knowledge of prevention and control of viral diseases.	

COURSE TITLE	COURSE OUTCOMES SEMESTER-V PRACTICALS COURSE CODE: USMBP-07 : VIROLOGY (PRACTICAL)	
CODE		
CO No.	Course Outcomes	PSOs Addressed
CO-1	Able to Study of the structure of important animal viruses (rhabdo, influenza, paramyxo hepatitis B and retroviruses) using electron micrographs.	
CO-2	To isolate and propagate animal viruses by chick embryo technique.	
CO-3	Able to Study of cytopathic effects of viruses using photographs.	
CO-4	To Perform local lesion technique for assaying plant viruses.	
CO-5	Able to Study of the structure of important plant viruses (caulimo, Gemini, tobacco ring spot, cucumber mosaic and alpha-alpha mosaic viruses) using electron micrographs	
CO-6	Able to Study of the structure of important bacterial viruses (ϕX 174, T4, λ) using electron micrograph.	
CO-7	To Isolate and enumerate of bacteriophage (PFU) from water/sewage sample using double agar layer technique.	

COURSE TITLE	COURSE OUTCOMES SEMESTER-V DISCIPLINE ELECTIVE COURSE (DSE) (ANY TWO) PHARMACEUTICAL MICROBIOLOGY DSE-4 Course Code- USMBT-12	
CODE		
CO No.	Course Outcomes	PSOs Addressed
CO-1	To make the students to understand the fundamental knowledge of pharmaceutical microbiology, classification of pharmaceutical agents, and screening test for phytoconstituents.	
CO-2	To gain knowledge on drug development.	
CO-3	To describe the gene therapy and vaccines.	
CO-4	To elaborate the role of probiotics and neutrachemicals.	

COURSE TITLE	COURSE OUTCOMES SEMESTER-V PRACTICALS COURSE CODE: USMBP-08 : PHARMACEUTICAL MICROBIOLOGY (PRACTICAL)	
CODE		
CO No.	Course Outcomes	PSOs Addressed
CO-1	Able to prepare medicinal plant extracts.	
CO-2	To perform Sterility testing of vaccines and injections.	
CO-3	To demonstrate Antibacterial activity of antibiotic preparations.	
CO-4	To perform Antifungal tests.	
CO-5	To estimate of thiamine, riboflavin, ascorbic acid content of multivitamin formulations.chromatography.	
CO-6	To perform Phenol co-efficient test.	
CO-7	To demonstrate Proteolytic digestion of antibodies.	
CO-8	Able to Analyse of digested fragments.	

COURSE TITLE	COURSE OUTCOMES SEMESTER-V Microbial Diagnosis in Health Clinics Skill Enhancement Courses (SEC) (Any One) Course Code-USMBSEC-01	
CODE		
CO No.	Course Outcomes	PSOs Addressed
CO-1	To gain knowledge on how to diagnose disease and sample collection, Common diseases and their causative agents.	
CO-2	To cultivate microorganisms in lab on various media.	
CO-3	To study various serological test in laboratory.	
CO-4	To make student able to study the action of antibiotics, various Methods of antibiotic sensitivity and resistance detection.	

COURSE TITLE	COURSE OUTCOMES SEMESTER-V PRACTICAL for Skill Enhancement Courses – SEC 01	
CODE		
CO No.	Course Outcomes	PSOs Addressed
CO-1	To detect of malaria parasite from given blood sample	
CO-2	To perform rapid disease diagnosis test and kits for HIV	
CO-3	To determine of MIC of the given antibiotic against the clinical isolates	
CO-4	To Visit Pathological lab. / Blood bank.	

COURSE TITLE	COURSE OUTCOMES SEMESTER-V Fermented Food and Microbial Quality Control in Food Skill Enhancement Courses (SEC) (Any One) Course Code –USMBSEC-02	
CODE		
CO No.	Course Outcomes	PSOs Addressed
CO-1	To gain knowledge on fermented food and probiotic food.	
CO-2	To study different types of fermented food.	
CO-3	To study the microbial analysis of food	
CO-4	To make student able to study the different microbial standards.	

COURSE TITLE	COURSE OUTCOMES SEMESTER-V PRACTICAL for Skill Enhancement Courses– SEC 02	
CODE		
CO No.	Course Outcomes	PSOs Addressed
CO-1	To prepared fermented food- Pickle/Dahi/Idli at laboratory scale (any one).	
CO-2	To perform MPN (Most Probable Number) for determination of colliforms in food materials.	
CO-3	To perform MBRT for detection of quality of milk.	
CO-4	To perform rapid detection method of microbiological quality at milk collection centers.	
CO-5	To Visit food industry.	

COURSE TITLE	COURSE OUTCOMES SEMESTER-VI

	DISCIPLINE ELECTIVE COURSE (DSE) (ANY TWO) **Recombinant DNA Technology** **DSE-1 Course Code : USMBT-13**	
CODE	**USMBT-09**	
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To understand the importance of different tools of genetic engineering such as DNA cutting enzymes, DNA modifying enzymes and various cloning vectors.	
CO-2	To analyze the different gene transfer techniques.	
CO-3	To explain techniques in rDNA and to construct genomic libraries.	
CO-4	To produce transgenic products and commercial products.	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-VI (PAPER I & II)** **Course Code: USMBP-09** :**Recombinant DNA Technology (PRACTICAL)**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To isolate plasmid DNA	
CO-2	To isolate genomic DNA from bacterial cell and separation of isolated genomic DNA by agarose gel electrophoresis	
CO-3	To digest DNA using restriction enzyme and analysis by agarose gel electrophoresis	
CO-4	To ligate digested DNA fragment	
CO-5	To demonstrate DNA amplification by PCR	
CO-6	To perform Gene cloning- cloning of GFP gene	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-VI DISCIPLINE ELECTIVE COURSE (DSE) (ANY TWO)** **IMMUNOLOGY** **DSE-2 Course Code- USMBT-14**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To describe the historical developments of Immunology and basic structure and function of immune system.	
CO-2	To illustrate the various types immunity/ resistance of host	
CO-3	To illustrate the various types of antigen and antibodies present in the immune system & antigen-antibody reactions.	
CO-4	To describe the classification and mechanism of hypersensitivity, immunological tolerance, mechanism and causes of autoimmunity, autoimmune disorders	

COURSE	**COURSE OUTCOMES**

TITLE	SEMESTER-VI Course Code: USMBP-10 : Immunology (PRACTICAL)	
CODE		
CO No.	Course Outcomes	PSOs Addressed
CO-1	To detect Blood group and Rh factor	
CO-2	Able to count Total Leucocyte and Differential Leucocyte and Hemoglobin % in Blood.	
CO-3	To detect Typhoid and Paratyphoid fever by slide/tube agglutination test (WIDAL)	
CO-4	To detect Syphilis by TRUST antigen test.	
CO-5	To detect Pregnancy in women by strip method	
CO-6	To demonstrate HBsAg by Hepacard test	
CO-7	To estimate Antigen by Single Radial Immune Diffusion (RIA).	
CO-8	To detect AIDS by ELISA test.	
CO-9	To perform Test for Rheumatoid Arthritis (RA)	

COURSE TITLE	COURSE OUTCOMES SEMESTER-VI DISCIPLINE ELECTIVE COURSE (DSE) (ANY TWO) Bioinformatics DSE-3 Course Code: USMBT-15	
CODE		
CO No.	Course Outcomes	PSOs Addressed
CO-1	To understand the major biological database in bioinformatics and computer.	
CO-2	To know the sequence alignments, phylogeny and phylogenetic trees.	
CO-3	To understand genome organization and analysis.	
CO-4	To understand the protein identification and characterization.	

COURSE TITLE	COURSE OUTCOMES SEMESTER-VI Course Code: USMBP-11 :Bioinformatics (PRACTICALS)	
CODE		
CO No.	Course Outcomes	PSOs Addressed
CO-1	To introduce different operating systems - UNIX, LINUX and Windows	
CO-2	To introduce to bioinformatics databases (any three): NCBI/PDB/DDBJ, Uniprot, PDB	
CO-3	Able to Study Sequence retrieval using BLAST	
CO-4	Able to Study Sequence alignment & phylogenetic analysis using clustalW & phylip	
CO-5	Able to pick out a given gene from genomes using Genscan or other softwares (promoter region Identification, repeat in genome, ORF prediction). Gene finding tools (Glimmer, GENSCAN), Primer designing, Genscan/Genetool	

CO-6	Able to Study Protein structure prediction: primary structure analysis, secondary structure prediction using psipred, homology modeling using Swiss model. Molecular visualization using jmol, Protein structure model evaluation (PROCHECK)	
CO-7	Able to predict different features of a functional gene	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-VI DISCIPLINE ELECTIVE COURSE (DSE) (ANY TWO)** **Microbes in Sustainable Agriculture and Development** **DSE-4 Course Code : USMBT-16**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To make the students to understand the fundamental knowledge of soil microbiology.	
CO-2	To gain knowledge on microbial activity in soil and green house gases.	
CO-3	To describe the biofertilization, phytostimulation, and bioinsecticides.	
CO-4	To make the students to understand the fundamental knowledge of secondary agriculture biotechnology.	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-VI** **Course Code: USMBP-12** :**Microbes in Sustainable Agriculture and Development (PRACTICALS)**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To Study soil profile.	
CO-2	To Study microflora of different types of soils.	
CO-3	To demonstrate *Rhizobium* as soil inoculants characteristics and field application.	
CO-4	To demonstrate *Azotobacter* as soil inoculants characteristics and field application.	
CO-5	Able to Design and functioning of a biogas plant.	
CO-6	To isolate cellulose degrading organisms.	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-VI** **Biofertilizers and Biopesticides** **Skill Enhancement Courses (SEC) (Any One)** **Course Code USMBSEC-03**

CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To study the microbes used as biofertilizers for various crops and their advantages over chemical fertilizers.	
CO-2	To isolate, characterize non symbiotic nitrogen fixers.	
CO-3	To study various phosphate solubalizers.	
CO-4	To study general account of microbes used as bioinsecticides.	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-VI** **PRACTICAL for Skill Enhancement Courses– SEC 03**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To collect soil sample for isolation of agriculturally important micro-organism	
CO-2	To identify and characterize microorganisms used for Biofertilizer production	
CO-3	To check efficacy of developed inoculants by using Pot experiment and its comparison with nalready available commercial Biofertilizers	
CO-4	To Visit Biofertilizers Production Unit/ Industry	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-V** **Mushroom and Spirulina Cultivation** **Skill Enhancement Courses (SEC) (Any One)** **Course Code- USMBSEC-04**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To gain knowledge on various kind of mushrooms in different countries.	
CO-2	To study economics of mushroom cultivation and precaution.	
CO-3	To study the SPC production	
CO-4	To make student able to study the different microbial standards.	

COURSE TITLE	**COURSE OUTCOMES** **SEMESTER-VI** **PRACTICALS for Skill Enhancement Courses– SEC 04**	
CODE		
CO No.	**Course Outcomes**	**PSOs Addressed**
CO-1	To prepared Spawn of mushroom	
CO-2	To perform Lab scale cultivation of button mushroom.	
CO-3	To check disease in mushroom	

CO-4	To prepared mushroom powder	
CO-5	To study the morphology of Spirulina	
CO-6	Lab Scale production of Spirulina	
CO-7	Visit to mushroom cultivation plant.	
CO-8	Visit to Spirulina cultivation plant.	