



Shiv Chhatrapati Shikshan Sanstha's
Rajarshi Shahu Mahavidyalaya, Latur
(Autonomous)
Department of Biotechnology
Structured Work Plan for Teaching
Academic Year 2020-21 (Term-I)

1. Details of Classes to be taught

| Sr. No. | Class | Name of Asstt. Prof. | Subject | Paper |
|---------|---------------------|----------------------|---------------|-------------------------------------------------------------------------------------------------------------------------|
| 1 | B.Sc. BT SY III Sem | Ms.Shilpa R.Surwase | Biotechnology | Course Title: Immunology and Virology Course Code : U-IMV-399 Course Title: Lab Course X Course Code:U-LAC-403 |

2. Summary of Lesson Plan

Name of Teacher: Shilpa R.Surwase

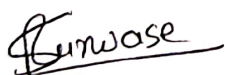
Class: B.Sc. BT. II (Third Semester)

| Sr. No. | Subject | Unit and Chapter to be covered | Date | No. of Lectures | Academic activities to be organized | No. of Test / Assignment with topic and date |
|---------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------|
| 1 | Immunology and Virology | UNIT I Overview of Immunology 1. Historical perspective 2. Innate and Adaptive Immune response. 3. Hematopoiesis, 4. Cells of Immune system and their biological role. 5. Humoral and cell mediated Immunity. 6. The Primary and secondary lymphoid organs. | 06-07-20 To 10-08-20 | 01 05 02 02 02 01 03 | Classroom Group Discussion | Assignment 28/07/20 Assignment 01/08/20 Unit - I MCQ exam 15/08/20 |

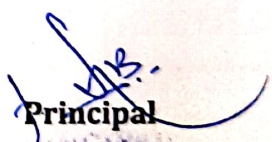
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| | UNIT II Basics of Immunology 1. Antigen: Antigens- General properties, types, 2. Factors that influence antigenicity, 3. Epitopes, Paratopes, Haptens, adjuvant and its types. 4. Antibody: General Structure of antibody molecule, 5. Antibodies- variation in structure of antibody and their biological significance. 6. Antibody Antigen interactions: Strength of Antigen-Antibody Interactions, Ka and Kd with its importance, Affinity and avidity 7. Immunological reactions: Precipitation and Agglutination reactions, ELISA. | 11-08-20 To 11-09-20 | 01 02 02 02 02 03 04 | | Unit – II Assignment 21/08/20 |
| | UNIT III Introduction to viruses 1. Viruses and their importance. 2. Discovery of viruses. 3. Structure of virus: viral nucleic acid, nucleocapsid, envelope. 4. Variation in structure of viruses. 5. Viroids and Prions. 6. Nomenclature and Classification of viruses | 12-09-20 To 25-09-20 | 01 01 03 01 01 04 | | Unit – III Assignment 27/09/20 |
| | UNIT IV 1. Structure of animal virus(HIV) 2. Structure of plant virus (TMV). 3. Life cycle and replication of DNA virus, 4. RNA virus-Retrovirus, 5. Bacteriophages (lytic and lysogenic) 5. Vaccines 6. Antiviral drugs. | 28-09-20 To 19-11-20 | 03 02 02 02 02 02 02 | | Unit IV Assignment 21/11/20 |

| Sr. No. | Subject | Practicals | Date | No. of Practicals |
|---------|--------------------------------|-----------------------------------------------------------|-------------------------------------------------|-------------------|
| 1 | Immunology and Virology | Agglutination reaction. | 22/02/21 To 31/05/21 Batch A,B,C,D | 04 |
| 2 | | Immunoprecipitation. | | 04 |
| 3 | | Immunodiffusion. | | 04 |
| 4 | | Blood film preparation and identification of cells. | | 04 |
| 5 | | Differential leucocyte count | | 04 |
| 6 | | Microscopic observation of lymphoid organs. | | 04 |
| 7 | | Widal, VDRL | | 04 |
| 8 | | Demonstration of ELISA. | | 04 |
| 9 | | Isolation of Bacteriophages from sewage. | | 04 |
| 10 | | Titration of phage, Isolation of plant virus. | | 04 |
| 11 | | Demonstration of one step growth curve of Bacteriophages. | | 04 |
| 12 | | Cultivation of virus in embryonated eggs. | | 04 |

Date: 21/02/2021


Course Teacher


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Shiv Chhatrapati Shikshan Sanstha's
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Department of Food Processing & Technology
Structured Work Plan for Teaching
Academic Year 2020-21 (Term-I)

1. Details of Classes to be taught

| Sr. No. | Class | Name of Asstt. Prof. | Subject | Paper |
|---------|----------------------|----------------------|---------------|-------------------------------------------------------------------------------------------|
| 1. | B. Voc SY III Sem | Ms.Shilpa R.Surwase | Biotechnology | Course Title: Fundamentals of Food and Nutrition Course Code : U-FFN-424 |

2. Summary of Lesson Plan

Name of Teacher: Shilpa R.Surwase

Class: B.Voc. FPT. II (Third Semester)

| Sr. No. | Subject | Unit and Chapter to be covered | Date | No. of Lectures | Academic activities to be organized | No. of Test / Assignment with topic and date |
|---------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------|-------------------------------------|----------------------------------------------|
| 1 | Fundamentals of Food and Nutrition | UNIT I Introduction to nutrition Definition of nutrition ,Nutrients, RDA-Classification of nutrients(Macro,Micro) | 06-07-20 To 10-08-20 | 16 | Assignment | Unit – I 12/08/20 |
| | | UNIT II Macronutrients(Carbohydrates,proteins,Fats) Classification,sources-functions,RDA-Deficiency,excess | 11-08-20 To 11-09-20 | 14 | | Unit – II 15/09/20 |

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| | | Unit III Micronutrients(Vitamins,Minerals) Classification,Functions,RDA Deficiency,excess | 12/10/20 To 04/11/20 | 18 | Classroom Group Discussion | Unit III 26/10/20 |
| | | Unit IV Water-composition,sources,classification,functions,RDA Deficiency,excess | 05/11/20 To 26/11/20 | 12 | Classroom Group Discussion | Unit IV 10/12/20 |

Date: 06/07/2020

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 Academic Year 2020-21 (Term-I)

1. Details of Classes to be taught

| Sr. No. | Class | Name of Asstt. Prof. | Subject | Paper |
|---------|-----------------|----------------------|---------------|-----------------------------------------------------------------------|
| 1. | B. Voc TY V Sem | Ms.Shilpa R.Surwase | Biotechnology | Course Title: Food and Beverage Processing Course Code : U-FBT-654 |

2. Summary of Lesson Plan

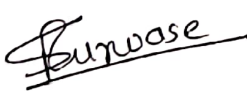
Name of Teacher: Shilpa R.Surwase


Class : B.Voc. FPT. III (Fifth Semester)


| Sr. No. | Subject | Unit and Chapter to be covered | Date | No. of Lectures | Academic activities to be organized | No. of Test / Assignment with topic and date |
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| 1 | Food and Beverage Processing | UNIT III Non-Alcoholic Beverages(TEA,Coffee) Definition,type,Chemical composition of tea and coffee and their quality assessment.Types of coffee(Vaccum coffee,drip coffee,iced coffee,Expresso coffee,instant coffee) and tes(black tea,green tea,oolong tea). Decaffeination of coffee Types of decaffeination:Roselius method,swiss water process,direct and indirect method,triglyceride method,carbon dioxide method Introduction to different fruit juices Raw materials used in fruit beverages and their processing | 06-07-20 To 10-08-20 | 01 05 02 02 02 01 03 | Classroom Group Discussion | Unit III 11/08/20 |

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| | | UNIT IV Manufacturing Processes Manufacturing and packaging processes of beverages (based on tea, coffee, cocoa, spices, plant extracts, herbs, nuts, Dairy based beverages.) And latest development, process variable and their control. Primary processing machinery Machinery and equipments for non alcoholic beverages. Principle and working of equipment used e.g., juice extractor, pulper, fermenter, vinegar generator, crown corking machine, bottle filling machine, soda water machine, basket press, filter press, maintenance of machines safety | 11-08-20 To 11-09-20 | 01 02 02 02 02 03 04 | Classroom Group Discussion | Unit IV 12/09/20 |
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Date: 06/07/2020


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| Sr. No. | Subject | Unit and Chapter to be covered | Date | No. of Lectures | Academic activities to be organized | No. of Test / Assignment with topic and date |
|---------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------------------|-------------------------------------|----------------------------------------------|
| 1 | Bioinstrumentation and Biostatistics | UNIT I: Microscopy: Light microscope, Fluorescence microscope Phase contrast microscope, Electron microscope, confocal microscopy. Centrifugation: Principle of centrifugation, Small bench top centrifuges, large capacity refrigerated centrifuges, High speed refrigerated centrifuges, preparative and analytical ultra centrifuge. Electrochemical techniques: Principles of electrochemical techniques, redox reactions, the pH electrode, ion-sensitive and gas-sensitive electrodes, The Clark oxygen electrode, Biosensors. | 23-12-20 To 22-01-21 | 04 05 | MCQ based assignment | Unit – I 24/01/21 |

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| | <p>UNIT II: Chromatographic techniques: Principles of chromatography, Types of Chromatography: Paper chromatography, Thin layer Chromatography, size exclusion, Ion exchange, Affinity chromatography, High performance liquid chromatography (HPLC), Gas liquid chromatography (GLC), Reverse Phase Chromatography, Mass Spectrometry, GC-MS and LC-MS. Electrophoresis: General principles, Electrophoresis of proteins: SDS-PAGE, Native gels, Gradient gel, Isoelectric focusing, 2-D gel electrophoresis (2-D PAGE), cellulose acetate electrophoresis, continuous flow electrophoresis; Detection, estimation and recovery of proteins, Electrophoresis of nucleic acids: Agarose gel electrophoresis of DNA, DNA sequencing gels, Pulse field gel electrophoresis, electrophoresis of RNA, Capillary electrophoresis.</p> | 23-01-21 To 24-02-21 | 02 03 02 02 01 04 01 06 01 04 | | Unit - II 25/02/21 |
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| | UNIT III: Spectroscopic techniques: Properties of electromagnetic radiation, interaction with matter. Gamma ray spectroscopy, X-ray spectroscopy, UV and Visible spectroscopy, Infrared and Raman spectroscopy, Electron spin resonance spectroscopy, Nuclear magnetic resonance spectroscopy, Circular dichroism spectroscopy, Atomic spectroscopy. Lasers, Spectrofluorimetry, Luminometry, turbidometry and nephelometry. | 25-02-21 To 15-03-21 | 04 02 01 02 02 03 | | Unit -III 18/03/21 |
| | UNIT IV: Radio isotope techniques: The nature of radioactivity, detection and measurement of radioactivity: Detection based on gas ionization- Geiger Muller counter-principles and applications. Detection based on excitation- Liquid Scintillation counter-principle and applications. Supply, storage and purity of radiolabelled compounds, specific activity, inherent advantages and restrictions of radiotracer experiments, safety aspects, applications- of radio isotopes in biological sciences. Flow cytometry, ELISA, Immunoblotting | 17-03-21 To 30-03-21 | 01 04 02 02 03 | | Unit-IV 28/03/21 |

Date: 23/12/2020


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Department of Biotechnology
Structured Work Plan for Teaching
Academic Year 2020-21 (Term-II)**

1. Details of Classes to be taught

| Sr. No. | Class | Name of Asstt. Prof. | Subject | Paper |
|---------|-------------------|----------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | B.Sc.BT SY IV Sem | Ms. Shilpa R.Surwase | Biotechnology | Course Title: Fundamentals of Molecular Biology Course Code : U-FMB-500 Course Title: Lab Course XVI Course Code: U-LAC-504 |

2. Summary of Lesson Plan

Name of Teacher: Shilpa R.Surwase

Class: B.Sc. BT. II (Fourth Semester)

| Sr. No. | Subject | Unit and Chapter to be covered | Date | No. of Lectures | Academic activities to be organized | No. of Test / Assignment with topic and date |
|---------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------------------------------------|-------------------------------------|------------------------------------------------------|
| 1 | Fundamentals of Molecular Biology | UNIT I: The beginnings of molecular biology Introduction Historical perspective The structure of DNA- Primary structure: the components of nucleic acids, Secondary structure of DNA, Tertiary structure of DNA Genome organization: from nucleotides to chromatin 1. Introduction 2. Eukaryotic genome 3. Bacterial genome The versatility of RNA 1. Introduction 2. Secondary structure of RNA 3. Tertiary structure of | 22/02/21 To 15/03/21 | 01 02 02 01 02 02 01 01 02 | Classroom Group Discussion | Assignment 27/02/21 Assignment 06/03/21 |

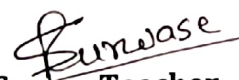
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| | <p>RNA</p> <p>Roles -RNA is involved in a wide range of cellular processes</p> <p>Unique function: The discovery of RNA catalysis and Ribozymes catalyze a variety Of chemical reactions</p> | | | | <p>Unit – I MCQ exam</p> <p>20/03/21</p> |
| | <p>UNIT II: From gene to protein</p> <p>1.Introduction</p> <p>2.The central dogma</p> <p>3.The genetic code</p> <p>Protein structure, Protein function</p> <p>Prokaryotic Transcription and Translation</p> <p>Eukaryotic Transcription and Translation</p> <p>Post Transcriptional and Post Translational Modifications in Eukaryotes</p> | <p>16-03-21 To 10-04-21</p> | <p>02</p> <p>02</p> <p>02</p> <p>03</p> <p>03</p> <p>04</p> | <p>Classroom Group Discussion</p> | <p>Assignment</p> <p>05/04/21</p> |
| | <p>UNIT III: DNA replication and Telomere maintenance</p> <p>1. Introduction</p> <p>2. DNA polymerases are the enzymes that catalyze DNA synthesis</p> <p>Historical Perspective</p> <p>3. Semidiscontinuous DNA replication- In prokaryotes and</p> | <p>12-04-21 To 30-04-21</p> | <p>02</p> <p>02</p> <p>01</p> <p>05</p> | <p>Classroom Group Discussion</p> | <p>Unit – III Assignment</p> <p>27/04/21</p> |


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| eukaryotes | | 02 | | |
| 4. Telomere maintenance: the role of telomerase in DNA replication, aging, and cancer | | | | |
| UNIT IV: DNA repair, recombination and gene expression | | | | |
| 1. Introduction | 02-05-21 To 12-05-21 | 01 | Classroom Group Discussion | Unit IV Assignment 10/05/21 |
| 2.Types of mutations and their phenotypic consequences | | 03 | | |
| 3. General classes of DNA damage | | 02 | | |
| 4. Repair of single Base excision repair -Mismatch repair - Nucleotide excision repair Disease - Hereditary nonpolyposis colorectal cancer: a defect in mismatch repair Base changes and structural distortions by removal of DNA damage | | 02 | | |
| 5. Double-strand break repair by removal of DNA damage -Homologous recombination -Nonhomologous end- joining | | 01 | | |
| | | 02 | | |

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| | | Disease - Xerodermapigmentosum and related disorders: defects in nucleotide excision repair | | 01 | | |
| | | Disease - Hereditary breast cancer syndromes: mutations in BRCA1 and BRCA2 | | 02 | | |
| | | 6. SOS repair | | 04 | | |
| | | 7. Prokaryotic gene expression and regulation -Operon concept-Lac operon, Tryptophan operon, Arabinose operon | | 02 | | |
| | | 8. Eukaryotic gene expression and regulation (in brief) | | | | |

| Sr. No. | Subject | Practicals | Date | No. of Practicals |
|---------|------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------|
| 1 | Fundamentals of Molecular Biology | Isolation of DNA from Bacterial cells. | 22/02/21 To 31/05/21 Batch A,B,C,D | 04 |
| 2 | | Isolation of DNA from Animal and plant cells | | 04 |
| 3 | | Quantification of DNA by using Diphenylamine (DPA) method. | | 04 |
| 4 | | Agarose gel electrophoresis | | 04 |
| 5 | | Spectroscopic determination of nucleic acid purity and concentration | | 04 |
| 6 | | Isolation of total RNA from yeast cells and plant tissues. | | 04 |
| 7 | | To estimate RNA quantitatively using orcinol reagent. | | 04 |
| 8 | | To Prepare a survival curve for the given bacterial culture using germicidal ultraviolet Radiation as a mutagen. | | 04 |
| 9 | | To carry out ammonium sulphate precipitation of amylase enzyme present in the crude Protein extract. | | 04 |
| 10 | | To carry out dialysis for desalting ammonium sulphate precipitated enzyme. | | 04 |

Date: 22/02/2021


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Academic Year 2020-21 (Term-II)**

1. Details of Classes to be taught

| Sr. No. | Class | Name of Asstt.Prof. | Subject | Paper |
|---------|-------------------|----------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | M.Sc.BT SY IV Sem | Ms. Shilpa R.Surwase | Biotechnology | Course Title: Advanced Pharmaceutical Biotechnology Course Code: P-PHB-433 Course Title: Lab Course XIII Course Code: P-LAC-436 |

2. Summary of Lesson Plan

Name of Teacher: Shilpa R.Surwase

Class : M.Sc BT II (Fourth Semester)

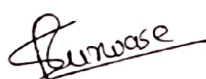
| Sr. No. | Subject | Unit and Chapter to be covered | Date | No. of Lectures | Academic activities to be organized | No. of Test / Assignment with topic and date |
|---------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------|-------------------------------------|----------------------------------------------|
| 1 | Advanced Pharmaceutical Biotechnology | UNIT -I Chemotherapy Antimicrobial Drug. Mechanism of action of antimicrobial agents. Microbial Resistance to Antibiotics and antimicrobial agents (Types and Mechanism). Types of Antibiotics: Classification of antibiotics with example. General characteristics of an Secondary Metabolites: Types and Medicinal Applications | 22-02-21 To 05-03-21 | 02 03 03 05 03 | Classroom Group Discussion | Unit - I 04/03/21 |


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| | Unit II: Chemotherapeutics Agents Structure Mechanism of Action and Applications of Antibacterial drug: Sulfonamides, Quinolones. Antiviral drug: Amantadine, Azidothymidine. Antifungal drug: Nystatin, Griseofulvin. | 06-03-21 To 20-03-21 | 01 02 02 02 | Classroom Group Discussion | Unit - II 15/03/21 |
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| | <p>Mechanism of action of Anticancer drugs,</p> <p>Drugs acting on CNS,</p> <p>Insulin, Blood factor</p> <p>VIII</p> | | <p>03</p> <p>02</p> <p>02</p> | | |
| | <p>UNIT III</p> <p>Discovery and Development History, drug targeting, Molecular Biology and Combinatorial drug discovery,</p> <p>Rational Drug designing.Stability of drugs</p> <p>Pharmacokinetics, Pharmacodynamics.</p> <p>Drug delivery systems, Liposomes.</p> | <p>22/03/21</p> <p>To</p> <p>17/04/21</p> | <p>02</p> <p>02</p> <p>02</p> <p>01</p> <p>02</p> <p>02</p> | <p>Classroom Group Discussion</p> | <p>Unit III</p> <p>10/04/21</p> |
| | <p>Unit IV</p> <p>Clinical Trials Phases of Clinicaltrials of drugs,</p> <p>Preclinical drug evaluation of itsbiological activity, potency and toxicity-Toxicity test in animals including acute, sub-acute and chronic toxicity,</p> <p>ED50 and LD50 determination,</p> <p>special toxicity test like teratogenicity and mutagenicity. Introduction to Indian, International Pharmacopoeia and global regulatory guidelines.</p> | <p>19/04/21</p> <p>To</p> <p>12/05/21</p> | | <p>Classroom Group Discussion</p> | <p>Unit IV</p> <p>04/05/21</p> |

| Sr. No. | Subject | Practicals | Date | No. of Practicals |
|---------|---------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------|-------------------|
| 1 | Advanced Pharmaceutical Biotechnology | Estimation of penicillin/streptomycin by biological assay. | 22/02/21 To 31/05/21 Batch A & B | 02 |
| 2 | | Estimation of penicillin/streptomycin by chemical assay. | | 02 |
| 3 | | Assay of antimicrobial activity of Penicillin, Chloramphenicol, streptomycin. | | 02 |
| 4 | | Determination of Minimum Inhibitory Concentration (MIC) of Antibiotic | | 02 |
| 5 | | Determination of shelf life of antibiotics (Expired drugs) | | 02 |
| 6 | | Sterility testing of commercial pharmaceuticals. | | 02 |
| 7 | | Study of microbial spoilage of pharmaceuticals. | | 02 |
| 8 | | Sterility testing of injectable as per IP. | | 02 |
| 9 | | Effect of chemical disinfectant on growth of bacteria | | 02 |
| 10 | | Study of Pharmacopeia and global regulatory guidelines in pharma industry | | 02 |

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