Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur
(Autonomous)
Department of Biotechnology
Structured Work Plan for Teaching
Academic Year 2020-21 (Term-I)

स्थापना - १९७०

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

		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 DNAvirus, 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

HoD
Head
Department of Biotechonlo
Rajarshi Shahu Mahavidyal
(Autonomous) Latur-413 5

Principal
Rajarshi Shahu Mahavidyalaya,Latur
(Autonomous)

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur
(Autonomous)
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

		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

Course Teacher

HoD
Head
Department of Biotechonlogy
Rajarshi Shahu Mahavidyala
(Autonomous) Latur-413 5[illegible]

Principal
PRINCIPAL
Rajarshi Shahu Mahavidyalaya,Latur
(Autonomous)

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur
(Autonomous)
Department of Food Processing & Technology

Structured Work Plan for Teaching
Academic Year 2020-21 (Term-I)

स्थापना - १९७०

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
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

		UNIT IV **Manufacturing Processes** Manfacturing and packaging processes of beverages (based on tea,coffee,cocoa,spices,plant extracts,herbs,nuts,Dairy based beverages.) And latest development,process variableand 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

Date: 06/07/2020

Course Teacher

HoD

Head
Department of Biotechonl
Rajarshi Shahu Mahavidya
(Autonomous) Latur-413

Principal

PRINCIPAL
Rajarshi Shahu Mahavidyalaya,Latur
(Autonomous)

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur
(Autonomous)
Department of Biotechnology
Structured Work Plan for Teaching
Academic Year 2020-21 (Term-I)

स्थापना - १९७०

1. Details of Classes to be taught

Sr. No.	Class	Name of Asstt. Prof.	Subject	Paper
1	**M.Sc. FY I Sem**	Ms. Shilpa R.Surwase	Biotechnology	**Course Title:** Bioinstrumentation and Biostatistics **Course Code:** P-BIB-137

2. Summary of Lesson Plan

Name of Teacher: Shilpa R.Surwase **Class : M.Sc. BT. I (First 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	**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 04 05	MCQ based assignment	Unit – I 24/01/21

		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: SDSPAGE, 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 nucleicacids: Agarose gel electrophoresis of DNA, DNA sequencing gels, Pulse field gel electrophoresis, electrophoresis of RNA, Capillary electrophoresis.	23-01-21 To 24-02-21	02 03 02 02 01 04 01 06 01 04		Unit – II 25/02/21

		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 dichorism 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

Course Teacher

HoD

Head
Department of Biotechonlogy
Rajarshi Shahu Mahavidyalaya
(Autonomous) Latur-413 53

Principal

PRINCIPAL
Rajarshi Shahu Mahavidyalaya,Latur
(Autonomous)

स्थापना - १९७०

Shiv Chhatrapati Shikshan Sanstha's
Rajarshi Shahu Mahavidyalaya, Latur
(Autonomous)
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 ofMolecular 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

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

	eukaryotes 4. Telomere maintenance: the role of telomerase in DNA replication, aging, and cancer		02		
	UNIT IV: DNA repair, recombination and gene expression 1. Introduction 2.Types of mutations and their phenotypic consequences 3. General classes of DNA damage 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 5. Double-strand break repair by removal of DNA damage -Homologous recombination -Nonhomologous end-joining	02-05-21 To 12-05-21	01 03 02 02 01 02	Classroom Group Discussion	Unit IV Assignment 10/05/21

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

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

Course Teacher

HoD
Head
Department of Biotechonlogy
Rajarshi Shahu Mahavidyalay
(Autonomous) Latur-413 53

Principal
PRINCIPAL
Rajarshi Shahu Mahavidyalaya, Latur
(Autonomous)

स्थापना - १९७०

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

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	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 becovered	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 andantimicrobial 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

		Unit II: Chemotherapeutics Agents Structure Mechanism of Action and Applications of Antibacterialdrug: 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

		Mechanism of action of Anticancer drugs, Drugs acting on CNS, Insulin, Blood factor VIII		03 02 02		
		UNIT III Discovery and Development History, drug targeting, Molecular Biology and Combinatorial drug discovery, Rational Drug designing.Stability of drugs Pharmacokinetics, Pharmacodynamics. Drug delivery systems, Liposomes.	22/03/21 To 17/04/21	02 02 02 01 02 02	Classroom Group Discussion	Unit III 10/04/21
		Unit IV Clinical Trials Phases of Clinicaltrials of drugs, Preclinical drug evaluation of itsbiological activity, potency and toxicity-Toxicity test in animals including acute, sub-acute and chronic toxicity, ED50 and LD50 determination, special toxicity test like teratogenecity and mutagenecity. Introduction to Indian, International Pharmacopoeia and global regulatory guidelines.	19/04/21 To 12/05/21		Classroom Group Discussion	Unit IV 04/05/21

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/streptomyciby 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

Date: 22/02/2021

Course Teacher

HoD
Head
Department of Biotechonlogy
Rajarshi Shahu Mahavidyalay
(Autonomous) Latur-413 5

Principal
PRINCIPAL
Rajarshi Shahu Mahavidyalaya, Latur
(Autonomous)