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.Voc. FPT II	Miss. Swati G. Swami	Food Processing And Technology	**Course Title:** Introduction to Cereal and Legume Processing. **Course Code:** U-ICL-422
2	B. Voc FPT III			**Course Title:** Food and beverage processing. **Course Code:** U-FBP-654
3	BSc BT I		Biotechnology	**Course Title:** Chemistry For Biologist. **Course code:** U- CBF- 190

1) Summary of Lesson Plan

Name of Teacher: Miss. Swati G. Swami

Class: B.Voc. II (Third Semester)

Sr. No.	Subject	Unit and Chapter to be covered	Date	No. of Lectures	Academic activities to be organizer	No. of Test / Assignment with topic and date
1	**Introduction to Cereal and Legume Processing**	**Unit 1** • Present status and future prospects of cereals and millets; • Morphology: physicochemical properties; chemical composition and nutritive value Rice • Paddy processing and rice milling: conventional milling, modern milling, milling operations, milling machines, milling efficiency, byproducts of rice milling. • Quality characteristics influencing final milled products. • Parboiling: rice bran stabilization and its methods; Aging of rice; • Enrichment – need, methods processed foods from rice – breakfast cereals, flakes, puffing, canning and instant rice. • Wheat: break system, purification system and reduction system; extraction rate and its effect on flour composition	06-July 2020 To 29Aug. 2020	03 2 3 2 2 2 2	Group Discussion Surprise test	1)Class test on unit I: **17 July 2020** 2)Class test on Unit II: **16 Aug. 2020**
		Unit II				

		• Quality characteristics of flour and their suitability for baking. • Barley: Malting and milling • Sorghum: milling, Malting, Pearling and industrial utilization • Millets: Importance of Millet, composition, processing of millets for food uses, major and minor millets Products.	30 Aug. 2020 to 27 Sept. 2020			
		Unit III: • Present status and future prospects of legumes and oilseeds; • Morphology of legumes and oilseeds; • Classification and types of legumes and oilseeds, • Antinutritional compounds in legumes and oilseeds; • Methods of removal of antinutritional compounds, • Milling of legumes: home scale, cottage scale and modern milling methods, milling quality, • Efficiency and factors affecting milling; • problems in dhal milling industry, Soaking and germination of pulses.	28 Sept. 2020 to 8 Oct. 2020			

Name of Teacher: Miss. Swati G. Swami **Class: B. Voc 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 I:** **Introduction to different food beverage** • Theory History, importance of beverages, status of beverage industry in India, • Need of particular beverage, Raw materials used for beverages, • Food additives used in different beverages, • Types of beverages, Packaged drinking water, juice-based beverages, Synthetic, still, carbonated, • low-calorie and dry beverages, isotonic and sports drinks, dairy based, • alcoholic beverages fruit beverages.	10 July 2020 To 30 Aug. 2020	4 2 2 2 3 2	Group Discussion Quiz Competition	Class Test on unit 1: **5 Aug. 2020**
		Unit II: • Definition, Types (ale, lager), manufacture and quality evaluation, • Role of yeast in alcoholic beverages,	31 Aug. 2020 to 10 Oct. 2020			

		• Technology of brewing process, equipment's used for brewing and distillation, • wine and related beverages, distilled spirits • Principle and method for production of mineral water, • Types of water, Quality standard (BIS) of water.				

Name of Teacher: Miss. Swati G. Swami **Class: B. Sc 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	**Chemistry For Biologist**	**Unit I:** • Chemical bonding- various theories (Valence bond theory and Valence Shell Electron Pair Repulsion (VSEPR) theory), • Type of Chemical bonds, • Acids & Bases, • Buffer solutions, solubility products, • Ways of expressing concentrations of solution- (Molarity,	14 Oct. 2020 To 12 Dec. 2020	3 2 2 3 3	Group Discussion Surprise Test Seminar	1)Daily Assignments on Google classroom 2)Class test on Unit I: 18 Dec. 2020

		Normality, Molality, Formality), • Colligative properties- Lowering of vapour pressure, Osmosis and osmotic pressure, Elevation in boiling point, Depression in freezing point.		3		3)Class test on Unit I and II: 28 Jan. 2021
		Unit II: • Basics in organic chemistry- Tetracovalency of Carbon, Hybridization, Substrates & Reagents, • Bond fission, • Types of Reagents, Reactive intermediates- Carbocation, Carbanion, Free radicals, • Types of organic reactions- Substitution, Addition, Elimination, Rearrangement reactions, • Oxidation reactions of carbohydrates, • Osazone formation reaction, Ruff degradation, KilianiFischer synthesis.	16-12-2020 to 13-1-2021	3 2 2 2 2 2		
		Unit III: • Reaction Kinetics: Rate constant, Order of reaction & Molecularity of reactions, • Activation Energy, Zero, First & Second order kinetics, • Catalysis & enzyme catalysis for elementary reactions.	15-01-2021 to 6-02-2021	2 2 2		

		• Thermodynamics: Recapulation of definition & terms involved in thermodynamics, • Laws of thermodynamics, Hess law, Heat of formations, • Free energy, work function & Kirchhoff's equations.		2 2 2		
		Unit IV: • Isomerism and its types- Optical & Geometrical isomerism, • Representation of molecules Fischer Projection formulae, • Sawhorse Projection, Newman & Flying & Wedge model. • Definition of spectroscopy, Electromagnetic spectrum & its characterization (frequency, wavelength, Wave number), • Principle & applications of various spectroscopic techniques.	10-02-2021 to 20-02-2021	3 2 3 2 2		

Course Teacher

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Principal

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Department of Biotechnology

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

स्थापना - १९७०

1. Details of Classes to be taught

Sr. No.	Class	Name of Asstt. Prof.	Subject	Paper
1	BSc BT I	Miss. Swati G. Swami	Biotechnology	**Course Title:** Fundamentals of Biological Chemistry **Course Code:** U-FUB-289 **Course Title:** Lab Course VII **Course Code:** U-LAC-193
2	M. Sc I			**Course Title:** Bioinstrumentation and Biostatistics **Course Code:** P-LAC-141 **Course Title:** Animal biotechnology **Course Code:** P-LAC-238
3	B. Voc FPT II		Food Processing And Technology	**Course Title:** Introductory Biotechnology (General Education) **Course code:**

1) Summary of Lesson Plan

Name of Teacher: Miss. Swati G. Swami **Class: B. Sc BT (Second Semester)**

Sr. No.	Subject	Unit and Chapter to be covered	No. of Lectures	Date	Academic activities to be organizer	No. of Test / Assignment
1	**Fundamentals of Biological Chemistry**	**Unit 1** • Structure of atom, Molecules, weak interaction stabilizing biomolecules, • Henderson- Hasselbach equation pH, pK, buffers, and thermodynamics principles. • Carbohydrates: Introduction, biological importance. Definition, Classification, Monosaccharides other than glucose, • glyocosidic bond, disaccharides, polysaccharides [starch, glycogen],	2 2 3 3	10 March to 27 March 2021	Group Discussion Surprise test	1)Class test on unit I: 2)Class test on Unit II: 3)Quiz competition.
		Unit II • Lipids: Introduction, Classes, Fatty acids [Physical properties. Chemical properties, • Saponification value, acid value, iodine number, rancidity]. Glycerolipid, Sphingolipid. • Nucleic acids: Nucleosides, nucleotides, Polynucleotide, • DNA and its different forms [A, B, C, D, E and Z], RNA and its types. Forces stabilizing nucleic acid structure.	2 3 2 3	30 March 2021 To 17 April 2021	Quiz compitition	

		Unit III: • Amino acids: Structure and / classification. • Properties of amino acids, Acid base behaviour/ /colour reactions/Zwitterions. • Protein structure: Classification, Conformation of proteins (primary, secondary, super secondary, quaternary domains) • Peptide bond. Biological function of protein.	3 4 4 4	21 April 2021 To 12 May 2021		
		Unit IV: • Enzymes: Basic concept, • active site, energy of activation. • Lock and key hypothesis, induced fit hypothesis. • Co-enzymes: Niacin, Folic acid, Cynocobalamine.	2 3 2 3	13 May 2021 To 31 May 2021		

Sr. No.	Subject	Practical's	Date	No. of Practical's
1	Chemistry for Biologist	Safety Measures in Laboratory, care of Glassware, Handling of Instruments	15 March to 25 May 2021	04
2		Preparation of Standard Solutions, Molar, Normal Percent, Buffer Preparations		04
3		Determination of pKa of weak acid(Acetic acid / Amino acid) by pH metry		04

4		Preparation of Standard Solution of K2Cr2O7 and standardization of given FeSO4 solution.		04
5		Determine the Strength and Normality of an acid.		04
6		Steam Distillation		04
7		Column Chromatography		04
1	Fundamentals of Biological Chemistry	Qualitative test for carbohydrates		04
2		Estimation of reducing sugars by Benedict's Method		04
3		Estimation of Amino acids		04
4		Sugar estimation by DNSA, Anthrone Method		04
5		DNA estimation by DPA Method		04
6		Protein estimation		04

Name of Teacher: Miss. Swati G. Swami **Class: M. Sc BT (first & Second Semester)**

Sr. No.	Subject	Practical's	Date	No. of Practical's
1	Bioinstrumentation and Biostatistics	TLC, Paper Chromatography	01 March to 25 May 2021	02
2		Practical based on centrifugation		02
3		Practical based on spectroscopy		02
4		Separation of proteins/ pigments using column/ Affinity chromatography.		02
5		Study of Lambert and beer's law		02
6		Problems based on Spectroscopy		02
7		Problems based on biostatistics.		02
1	Animal biotechnology	Packing and sterilization of glass and plastic wares for cell culture.		02
2		Preparation of reagents and media for cell culture.		02
3		Primary culture technique for chicken embryo fibroblast.		02
4		Secondary culture of chicken embryo fibroblast.		02
5		Cultivation of continuous cell lines		02
6		Quantification of cells by trepan blue exclusion dye.		02

Name of Teacher: Miss. Swati G. Swami **Class: B. Voc III (Sixth 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
1	**Introductory Biotechnology (General Education)**	**Unit I: Introduction to Biotechnology** • Definition, History, • Scope of biotechnology, • food biotechnology, • introduction to recombinant DNA technology, • tools and techniques, application with examples.	23 Feb to 23 March 2021	2 2 2 2 2	Group Discussion Quiz Competition	Class Test on unit 1:
		Unit II: Studying life • Whittaker's five kingdom system of classification, • Classification of plants and animals with a suitable example, • prokaryotic cell –bacteria, eukaryotic cell-plant cell and animal cell, • a brief idea about Levels of organisation in plants and animal, • Origin of life.	25 March 2021 To 13 April 2021	3 3 4 3 2		
		Unit III: basics of plant science • Biophysical Process: • Diffusion, Osmosis, Facilitated Diffusion, • Surface Tension, Cohesion, Adhesion, Osmotic Pressure,	15 April 2021 To 11 May April 2021	3 2 3 3		

		• Brief introduction to Plant nutrition, Photosynthesis • Reproduction in Plant: • Structure of Flower A • Sexual reproduction in plant		2 2 2		
		Unit IV: Life processes in animals • Animal Nutrition, • Transport in humans- Circulatory system, • structure and functions, Respiration, • Types, Excretion in animals, • Co-ordination and response, • Sexual reproduction in humans.	12 May 2021 To 31 May 2021	3 3 3 3 3 3		

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