

**Rajarshi Shahu Mahavidyalaya  
(Autonomous), Latur  
Department of Biotechnology  
Structured Work Plan for Teaching  
(Summer 2021-2022)**

**1. Details of Classes to be taught**

<b>Sr. No.</b>	<b>Class</b>	<b>Name of Asst. Prof.</b>	<b>Subject</b>	<b>Paper</b>
1.	B. Sc. BT I		Biotechnology	<b>Course Title:</b> Biophysics and Bioinstrumentation <b>Course Code:</b> U-BBI-287 <b>Course Title:</b> Lab Course VI <b>Course Code:</b> U-BBI-287
2.	B. VOC FPT I		Food Processing and Technology	<b>Course Title:</b> Food Quality and Analysis <b>Course Code:</b> U-FQA-310 <b>Course Title:</b> LAB - Food quality and analysis <b>Course Code:</b> U-LAC-311
3.	B. VOC FPT II			<b>Course Title:</b> Food Business Management <b>Course Code:</b> U-IIS-516
4.	B. VOC FPT II			<b>Course Title:</b> Quality Control and Regulations <b>Course Code:</b> U-QCR-519 <b>Course Title:</b> LAB-Quality Control and regulations <b>Course Code:</b> U-LAC-522



		<p><b>Unit II</b></p> <p><b>Chromatography</b></p> <ul style="list-style-type: none"> <li>• General Principle, Plane Chromatography: Paper/TLC,</li> <li>• Column Chromatography: Ion Exchange .</li> </ul> <p><b>Spectroscopy</b></p> <ul style="list-style-type: none"> <li>• Definition. Electromagnetic wave. Electromagnetic spectrum. Applications of each region of the electromagnetic spectrum for spectroscopy.</li> <li>• Excitation. Absorption. Emission. Rotational spectra. . Vibrational spectra.</li> <li>• Principle, construction and working of colorimeter, UV-Visible Spectrophotometer.</li> <li>• Application to biomolecules (Proteins, DNA, Hb, Chlorophyll).</li> </ul>	01		Quiz Competition	2) Class Test on unit II
			01			
			03			
			02			
			02			
			01			
		<p><b>Unit III</b></p> <p><b>Electrophoresis</b></p> <ul style="list-style-type: none"> <li>• General Principle, Electrophoretic Mobility.</li> <li>• Factors Affecting electrophoretic Mobility Example : Agarose Electrophoresis</li> </ul> <p><b>Radioactivity</b></p>	01			3) Quiz Competition
			02			
			02			

	<ul style="list-style-type: none"> <li>• Atomic Nucleus. Properties. Nuclear forces. Radioactive nucleus.</li> <li>• Types of Radioactive decay. Half life-physical and biological.</li> <li>• Handling and standardization of alpha and beta emitting isotopes.</li> <li>• Radiopharmaceuticals and their application. GM counter- Principle, construction and working .</li> </ul>	02			
	<p><b>Unit IV</b></p> <p><b>Bioinstruments</b></p> <ul style="list-style-type: none"> <li>• Principle , construction, working and applications for analysis of biomolecules of following instruments.</li> <li>• pH meter, Viscometer,</li> <li>• Centrifuge , different types of centrifuges.</li> </ul> <p><b>Thermoregulation</b></p> <ul style="list-style-type: none"> <li>• Thermometric properties and types of thermometers (clinical, thermocouple, bimetallic, platinum resistance, thermistor - thermometers).</li> <li>• Body temperature and its regulation.</li> </ul> <p><b>Microscopes</b></p> <p><b>Optics:</b></p> <ul style="list-style-type: none"> <li>• Properties of light: Reflection, refraction, dispersion, diffraction, Interference and Polarization.</li> </ul> <p><b>Concepts:</b></p> <ul style="list-style-type: none"> <li>• Resolving power. Chromatic and achromatic aberrations.</li> <li>• Construction and</li> </ul>	02			
		01			
		02			
		01			
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		working of following microscopes– Dissecting, Compound light and Darkfield. Phase contrast. Electron microscopes: Working of electron gun. Construction and working of SEM, TEM, STEM. Sample preparation.	03			
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Sr. No.	Subject	Practical's	Date	No. of Practical's
1	Biophysics and Bioinstrumentation	Safety measure – time	01/01/2022 To 16/04/2022	03
2		Temperature measurement: using thermocouple, RTD		03
3		Study of Lambert's & Beer's law		03
4		Absorption spectrum of protein		03
5		Paper/ TLC		03
6		Instrumentation – Colorimeter		03
7		pH meter		03
8		Microscopy – light		03
9		Agarose Electrophoresis		03
10		Problems based on Radioactivity		03

**Name of the Teacher: Miss. Karuna S. Komatwar**

**Signature:**

Name of Teacher: Miss. Karuna S. Komatwar

Class: B. VOC FPT (Second Semester)

Sr. No.	Subject	Unit and Chapter to be covered	No. of Lectures	Date	Academic activities to be organized	No. of Test / Assignment
1	Food Quality and Analysis	<b>Unit I</b> <ul style="list-style-type: none"> <li>• Food Hazards of Physical and Chemical Origin Definition</li> <li>• Types of hazards, biological, chemical (naturally occurring, environmental and intentionally added)</li> <li>• Physical hazards</li> <li>• Impact on health</li> <li>• Factors affecting Food Safety. Importance of Safe Foods</li> </ul>	03 03 03 03	17/ 01/2022 To 10/02/2022	Group Discussion  Surprise test	1)Class test on unit I:
		<b>Unit II</b> <ul style="list-style-type: none"> <li>• Analysis of Food Sampling &amp; analysis of Foods,</li> <li>• Sampling – Objectives, Guidelines, Methods,</li> <li>• Chemical Analysis: Moisture, Fat,</li> <li>• Protein, Crude fibre;</li> <li>• Microbial: DMC,</li> <li>• Coliform determination</li> </ul>	03 03 03 02 02 02		Quiz Competition	2)Class Test on Unit II

		<b>Unit III</b> <ul style="list-style-type: none"> <li>• Food Hazards of Biological Origin Introduction, 02</li> <li>• Indicator Organisms, 02</li> <li>• Food borne pathogens: bacteria, 02</li> <li>• Food borne pathogens: viruses, 02</li> <li>• Food borne pathogens: eukaryotes, 03</li> <li>• Seafood and Shell fish poisoning, 02</li> <li>• Mycotoxins 02</li> </ul>				3) Quiz Competition
		<b>Unit IV</b> <ul style="list-style-type: none"> <li>• Hygiene and Sanitation in Food Service Establishments Introduction, 03</li> <li>• Sources of contamination, 02</li> <li>• Control methods using physical and chemical agents, 03</li> <li>• Waste Disposal, Pest and Rodent Control, 03</li> <li>• Personnel Hygiene, 02</li> <li>• Food Safety Measures 02</li> </ul>				

Sr. No.	Subject	Practical's	Date	No. of Practicals
1	Food Quality and Analysis	Determination of Moisture content of	17/01/2022 To 16/04/2022	01
2		Determination of Ash content of food		01
3		Determination of fat content of food		01
4		Determination of Protein content of food		01
5		Determination of Carbohydrate content of food		01
6		Detection of adulteration in food products viz. Milk, ghee, honey, spices.		01
7		Detection of adulteration in pulses, oils, sweets.		
8		Cut-out analysis of canned food		
9		Test of sensory evaluation		
10		Study on HACCP		
11		Hazard analysis of packed food		
12		Determination of Coliform from water		
13		Efficacy of food grade disinfectant		
14		Efficacy study of hand sanitizers		
15		Determination of Coliform from food samples		
16		Determine Standard Plate Count of food samples		

**Name of the Teacher: Miss. Karuna S. Komatwar**

**Signature:**



Name of Teacher: Miss. Karuna S. Komatwar

Class: B. VOC FPT (Fourth Semester)

Sr. No.	Subject	Unit and Chapter to be covered	No. of Lectures	Date	Academic activities to be organized	No. of Test / Assignment
1	Food Business Management	<b>Unit I</b> <ul style="list-style-type: none"> <li>Business Management: introduction, theories and functions,</li> <li>Food industry management,</li> <li>Marketing management and human resource development,</li> <li>Personal management.</li> <li>Sectors in food industry and scale of operations in India.</li> </ul>	02 02 02 02 02	17/ 01/2022 To 10/02/2022	Group Discussion  Surprise test	1)Class test on unit I:
		<b>Unit II</b> <ul style="list-style-type: none"> <li>Human Resource Management: Study the basics about HR and related policies and capacity mapping approaches for better management.</li> <li>Consumer behaviour towards food consumption,</li> <li>Consumer Surveys by various Institutes and Agencies,</li> <li>Various journals on consumer behaviour and market research,</li> </ul>	03 03 03		Quiz Competition	2)Class Test on Unit II

		<ul style="list-style-type: none"> <li>• Internet based data search.</li> </ul>	03			
		<b>Unit III</b> <ul style="list-style-type: none"> <li>• International trade: basics, classical theory, theory of absolute advantage,</li> <li>• Theory of comparative modern theory, free trade</li> <li>• Protection, methods of protection, quotas, bounties, exchange control,</li> <li>• Devaluation, commercial treaties, terms of trade, balance of payments,</li> <li>• Foreign exchange, mechanics of foreign exchange,</li> <li>• GATT, WTO, role of WTO.</li> <li>• International trade in agriculture.</li> <li>• World trade agreements related with food business, export trends and prospects of food products in India.</li> </ul>	02			3)Quiz Competition
			02			
			03			
			02			
			02			
			02			
			03			

		<p><b>Unit IV</b></p> <ul style="list-style-type: none"> <li>• World consumption of Food: patterns and types of food consumption across the globe.</li> <li>• Ethnic food habits of different regions.</li> <li>• Govt. Institutions related to international ad trade;</li> <li>• APEDA, Tea board, spice board,</li> <li>• Wine board, MoFPI etc.</li> <li>• Management of export import organization, registration, documentation, export import logistics, case studies.</li> </ul>	03			
			03			
			03			
			03			
			02			
			03			

Name of Teacher: Miss. Karuna S. Komatwar

Class: B. VOC FPT (Fourth Semester)

Sr. No.	Subject	Unit and Chapter to be covered	No. of Lectures	Date	Academic activities to be organized	No. of Test / Assignment		
1	Quality Control and Regulations	<b>Unit I</b> <ul style="list-style-type: none"> <li>• Introduction to Quality Control in the food industry.</li> <li>• General concepts of quality and quality control.</li> <li>• Major quality control functions</li> <li>• Sampling of Food - Sample Selection and Sampling Plans –</li> <li>• Preparation and storage of Laboratory Samples –</li> <li>• Sampling Methods</li> </ul>	03	17/ 01/2022 To 10/02/2022	Group Discussion	1)Class test on unit I:		
		<b>Unit II</b> <ul style="list-style-type: none"> <li>• Standard Tests for Quality Assessment – Physical Tests</li> <li>• Chemical tests, Microbiological tests</li> <li>• Instrumental analysis of food.</li> <li>• Viscosity analysis.</li> <li>• Consistency analysis.</li> <li>• Texture analysis, Color analysis</li> </ul>	03		03	03	02	02

		<b>Unit III</b> <ul style="list-style-type: none"> <li>• Mandatory food laws; The food safety and standards Act 2006,</li> <li>• Establishment of the authority, composition of authoring functions of chief executive officer, scientific part,</li> <li>• General principles to be followed in Revised August 2016 37 administration of act,</li> <li>• General provisions as to articles of food,</li> <li>• Special responsibility as to safety of food,</li> <li>• Analysis of food offences of penalties.</li> </ul>	03				3) Quiz Competition
		<b>Unit IV</b> <ul style="list-style-type: none"> <li>• Principles and steps of HACCP Plan,</li> <li>• Hazard Identification,</li> <li>• Risk assessment Risk communication with communication agencies and Hazard analysis,</li> <li>• CCP Decision Tree,</li> <li>• HACCP Plan.</li> </ul>	03				
			03				
			03				
			03				
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			02				

<b>Sr. No.</b>	<b>Subject</b>	<b>Practical's</b>	<b>Date</b>	<b>No. of Practical's</b>
1	Quality Control and Regulation	Determination of Moisture content of food	01/01/2022 To 16/04/2022	03
2		Determination of Fat content of food		03
3		Determination of protein content of food		03
4		Determination of crude fiber content of food		03
5		Determination of ash content of food		03
6		Determination of Total Plate Count		03
7		Determination of Yeast and Mould Count		
8		To conduct Hazard Analysis & Risk Assessment of identified hazards		
9		Determination of CCP through CCP Decision Tree		
10		Visit to quality control laboratory		

**Name of the Teacher:**

**Signature:**