



Shiv Chhatrapati Shikshan Sanstha's
Rajarshi Shahu Mahavidyalaya (Autonomous), Latur
Structured Work Plan for Teaching
(JUL – 2020 to MAR-2021)

Details of Classes to be taught

Sr. No.	Class	Name of Asst. Prof.	Subject	Paper
1	B.Sc.I	DR.K.D.SAVANT	Botany	Paper-II Cell and Molecular Biology
2	B.Sc.II			Paper-VI Economic Botany and Pharmacognosy
3	B.Sc.III			Paper-IX Plant Physiology and Metabolism
4	M.Sc-I			BO I.1: Instrumentation and Biostatistics

Summary of Lesson Plan

Name of Teacher: DR.K.D.SAVANT

Course; Paper-II Cell and Molecular Biology
 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	UNIT –I: CELL BIOLOGY (13 L)	1. Cell: Ultra structure of Prokaryotic cell and Eukaryotic cell. 2. Structure and functions of: Cell wall and Plasma membrane. 3. Structure and functions of cell organelles: Nucleus, Golgi apparatus,	10 -09-2020 to 05-10-2020	04 04	Student Induction Program	Screening Test

		Endoplasmic reticulum and Ribosome.		05		
02	UNIT –II: Chromosome (10 L)	1. Organization of Chromosome (Nucleosome Solenoid Model). 2. Morphology, structure and function of typical chromosome. 3. Types of chromosome. 5. Chromosomal Aberrations (structural and numerical).	07-10-20 to 18-11-20	02 02 02 04	ASSIGNMEN T	Activity Based Test 10-10-20 TO 17-10-20
03	UNIT –III:CELL DIVISION (11 L)	1. Cell cycle: Inter phase G ₁ - S - G ₂ -M phase and G ₀ phase 2. Phages and significance of Mitosis. 3. Phages and significance of Meiosis	19-11-20 TO 19-12-20	02 04 05	Preparation of posters	Internal Test 20-12-2020 To 30-12-2020
04	UNIT –IV: MOLECULAR BIOLOGY (12 L)	1. Structure of DNA (Watson and Crick model). 2. Replication of DNA. 3. Structure, function and types of RNA. 4. Protein synthesis	20-12-20 TO 22-01-20	03 02 03 04	Woollen Model Preparation Workshop	Activity Based Test 10-10-20 TO 17-10-20

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Summary of Lesson Plan

Name of Teacher: DR.K.D.SAVANT

Course: **VIEconomic Botany and Pharmacognosy**
 Class: B.Sc.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	Unit-I: Economic Botany -I (10 L):	Introduction, Botanical name, family, distinguishing characters (at least two), method of cultivation and economic importance of the following 1. Cereals (Wheat). 2. Pulses (Pigeon pea). 3. Fiber yielding plants (Cotton).	18-08-20 to 15-09-20	01 03 03 03		Unit Test – I 19.09.2020
02	Unit-II: Economic Botany-II (10 L):	Botanical name, family, distinguishing characters (at least two), method of cultivation and economic importance of the following 1. Oil yielding plants (Soybean) 2. Timber yielding plants (Neem) 3. Medicinal plants (Withania)	16-09-20 to 10-10-20	01 03 03 03	ASSIGNMENT	Activity Based Test 11-10-20 TO 12-10-20

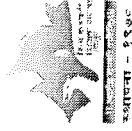
03	Unit-III: Introduction to Pharmacognosy (12L)	1. History, definition and scope of Pharmacognosy 2. Traditional and alternative systems of medicine 3. Classification of crude drugs. 4. Concept of active principle (Five examples)	11-10-20 TO 14-11-20	02 06 02 02	Preparation of charts	
04	Unit-IV: Ayurvedic Pharmacy (13L)	1. Introduction 2. Tridosha concept. 3. Indigenous systems of medicine (Ayurveda, Siddha, Unani). 4. Ayurvedic principles- Ras, Guna, Vipaka, Virya, Prabhava. 5. Ayurvedic formulations – Asava, Arishta, Kvatha, Churna, Ksharas, Leha, Vatika, Taila, Bhasma. 6. Drug adulteration.	15-11-20 TO 22-12-20	02 02 04 03 02	Medicinal Plant Product Exhibition	Internal Test 24-12-2020 To 30-12-20

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Summary of Lesson Plan

Name of Teacher: DR.K.D.SAVANT

Course; **IX Plant Physiology and Metabolism**
 Class :B.Sc. 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	UNIT-I: PLANT WATER RELATIONS (14 L)	1. Importance of water in plant life, 2. Different bio-physico-chemical phenomenon-Permeability and its importance. Definition of diffusion, osmosis (exosmosis, endosmosis) plasmolysis, imbibition. 3. Absorption of water- Introduction, mechanism of water absorption (active and passive Theories) 4 . Ascent of sap- Definition, mechanism of root pressure theory, capillary theory, imbibition and transpiration pull theories. 5. Transpiration- Definition, types, structure of stomata, mechanism of opening and closing of stomata (starch-sugar theory and	14-07-20 to 14-08-20	01 03 02 04 04	NPTEL Registrations	Unit Test – I (Online mode) 15-08-2020

		K ⁺ pump theory)						
02	UNIT-II: PLANT GROWTH AND DEVELOPMENT (10 L)	I. Vegetative Growth: 1.Seed dormancy :Seed dormancy- Introduction, methods of breaking seed dormancy, factors affecting seed dormancy 2. Seed germination :: Seed germination- types, factors affecting seed germination. 3. Plant growth hormones: Auxins, gibberellins, cytokinins, abscisic acid, Ethylene (only practical applications). II. Reproductive Growth: Physiology of flowering: Photoperiodism (long day plants, short day plants, day neutral plants)	15-09-20 to 16-10-20	02 02 04 02	Seminars from students Assignments Guest Lecture	Activity Based Test 25-09-20 TO 30-09-20		
03	UNIT-III: PHOTOSYNTHESIS AND PHOTORESPIRATION (13 L):	I. Introduction , ultra structure of chloroplast, biogenesis of chloroplast, photosynthetic pigments, concepts of two Photo systems. II. Mechanism of photosynthesis: 1.Light phase - Hill reaction, Cyclic and Non cyclic photophosphorylation. 2.Dark phase - Calvin cycle (C3 pathway), Hatch and Slack cycle (C4 pathway) and Crassulacean acid metabolism (CAM), significance of photosynthesis; III. Photorespiration: Introduction, Glycolate metabolism (C2 cycle) significance.	17-10-20 TO 22-11-20	02 02 02 05 02	Preparation of charts	Unit Test-II Test 18-09-2019		

04	UNIT-IV: RESPIRATION (10 L):	I. Introduction, ultra structure of mitochondria, respiratory quotient and its significance; II. Types of respiration: 1. Aerobic respiration- Glycolysis, Krebs's cycle, Electron Transport System (oxidative phosphorylation), ATP structure and function. 2. Anaerobic respiration- Fermentation (alcoholic and lactic acid) significance of respiration.	23-11-20 TO 22-12-20	02 06 02	Assignments	Internal Test 24-12-20 30-12-20
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Summary of Lesson Plan

Name of Teacher: DR.K.D.SAVANT

BO I.1: Instrumentation and Biostatistics
 Class :M.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	Credit: I Microscopy -I (18)	1. Microscopy : Introduction, Principle and working of the light microscope, Compound microscope, Stereo microscope, Phase contrast microscope, Fluorescence microscope. 2. TEM, SEM, (image processing method and staining technique) Electron confocal microscopy & Flow cytometry 3. Spectroscopic Techniques: UV/visible and IR spectrophotometry, 4. NMR, Atomic absorption & mass spectrometry, MALDI TOF.	01-01-21 to 20-01-21	06 04 04 04	Student Induction Program	Screening Test
		1. Separation Techniques: Centrifugation: Ba				

2	Credit-II: Separation Techniques (16)	principles of centrifugation, types, care and safety aspects of centrifuges, preparative and analytical centrifugation. 2. Chromatographic Techniques: Principles, paper, thin layer (TLC) Column, HPTLC, HPLC, GC, Gel filtration, Affinity and ion exchange. 3. Electrophoretic Techniques: General principles Support media, Electrophoresis of proteins and nucleic acids, Capillary, Microchip electrophoresis. 4. Culture Techniques: Principles, types (bacterial, fungal, algal, plant) media preparation, Sterilization, Inoculation	21-01-21 to 10-02-21	03 06 04 03	Assignments	
3	Credit-III: Computers in Biology (15L)	1. Computers in Biology: Modern computers, its use in Biological science, Internet. 2. Biochemistry Laboratory: Laboratory discipline, safety and care, experimental report. Slunit, pH and Buffers. 3. Microtomy: Principle of tissue fixation, formicotomy, types of microtome, serial sectioning and staining. 4. Radioactive Techniques Isotopes and their half-life and biological half-life, Specific activity of radioisotopes, making radioisotope solutions, detection and measurement of radioactivity – radiation counters, Liquid scintillation counters, Autoradiography, Biosafety aspects.	11-02-21 to 10-03-21	02 04 03 06	Gust Lecture, Short Excursion	Unit Test-I 14-09-2018
		1. Statistical Methods:				

4	Credit IV: Biostatistics (15L)	Measures of central tendency and dispersal; probability distributions (Binomial, Poisson and normal); Sampling distribution; Difference between para metric and non-parametric statistics; Confidence interval; Errors; Level of significance. 2 Regression and Correlation; t-test; Analysis of variance; χ^2 test.	11-03-21 to 31-03-21	03 05 04 03	Quiz Contest	Internal Test
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Summary of Lesson Plan

Name of Teacher: DR.K.D.SAVANT

Course: **XI Biochemistry and Bioinformatics**

Class :B.Sc.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 and date
1	UNIT -I: BASIC BIOCHEMISTRY (12 L):	1.Introduction of different organic constituents of the cell; 2.Introduction and Biological functions of : i. Carbohydrates ii. Lipids iii. Proteins iv. Nucleic acids 3. Importance of essential oils, resins, tannins, alkaloids, organic acids, gums and mucilage.	09 Dec 19 to 31 Dec 19	02 02 02 02 02 02	NPTEL REGIST. OF RELATED TOPIC	Unit Test – I 30.12.2019
02	UNIT -II: MINERAL NUTRITION (11L)	1. Essential elements: Major elements (macro nutrients), trace elements (micro nutrients), 2. Physiological role of essential elements (functions and deficiency symptoms). phytosederophores 3. Mineral salt absorption: Introduction,	1 st JAN 2020	02 03	Listening Lectures SOLVING	Unit – II Chapter 1 & 2: Activity based Test

	mechanism of passive absorption (ion exchange theory), activeabsorption 4. Translocation of organic solutes:Introduction,direction of translocation, mechanism of translocation (Munch hypothesis,protoplasmic streaming theory)	to 28JAN 2020	03 03	ONLINE ASSIGNMENT	27.1.2020 Assignment
03	UNIT – III:ENZYMOLOG Y (11 L): 1. Introduction, nomenclature and classification (IUB). 2. Properties of enzymes. 3. Mechanism of mode of enzyme action 4. Factors affecting enzyme activity 5. Concept of holoenzyme, apoenzyme, co-enzymes and co-factors. 6. Abzyme 7. Ribozyme	29-01- 2020 to 27-02-2020	02 02 01 01 02 02 01	Listening Lectures SOLVING ONLINE ASSIGNMENT	Internal Test 27.02.2020 to 5-3-2020
04	UNIT – IV BIOINFORMATI CS(12L): 1. Introduction 2. History 3. Biological Databases i. protein databases ii. Nucleic acid databases 4.Bioinformatics applications	6 MAR 2020 to 31MAR 2020	02 02 02 02 04	Quiz Competition	Unit – IV Assignment

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Details of Classes to be taught

Sr. No.	Class	Name of Asst. Prof.	Subject	Paper
1	B.Sc.III	DR.K.D.SAVANT	Botany	XI Biochemistry and Bioinformatics
2	M.Sc.II			BO 4.1: Cytogenetics and Plant Breeding

Summary of Lesson Plan

Name of Teacher: DR.K.D.SAVANT

Course: **XI Biochemistry and Bioinformatics**

Class :B.Sc.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 and date
1	UNIT -I: BASIC BIOCHEMISTRY (12 L):	1.Introduction of different organic constituents of the cell; 2.Introduction and Biological functions of : i. Carbohydrates ii. Lipids iii. Proteins iv. Nucleic acids 3. Importance of essential oils, resins, tannins, alkaloids, organic acids, gums and mucilage.	01-03-2021 To 30-03-2021	02 02 02 02 02 02	Exhibition of Woollen Model	Unit Test – I 30.03.2021
		1. Essential elements: Major elements				

02	UNIT -II: MINERAL NUTRITION (11L)	(macro nutrients), trace elements (micro nutrients), 2. Physiological role of essential elements (functions and deficiency symptoms). 3. Mineral salt absorption: Introduction, mechanism of passive absorption (ion exchange theory), active absorption 4. Translocation of organic solutes: Introduction, direction of translocation, mechanism of translocation (Munch hypothesis, protoplasmic streaming theory)	1 st JAN 2020 to 28 JAN 2020	01 05 02 04	01 05 02 04	GUEST LECTURE SOLVING ONLINE ASSIGNMENT	Activity based Test 27.1.2020 Assignment
03	UNIT – III: ENZYMOLOGY (11 L):	1. Introduction, nomenclature and classification (IUB). 2. Properties of enzymes. 3. Mechanism of mode of enzyme action 4. Factors affecting enzyme activity 5. Concept of holoenzyme, apoenzyme, co-enzymes and co-factors. 6. Abzyme 7. Ribozyme	29-01-2020 to 27-02-2020	02 02 01 01 02 02 01	02 02 01 01 02 02 01	Listening Lectures SOLVING ONLINE ASSIGNMENT	Internal Test 27.02.2020 to 5-3-2020
04	UNIT – IV BIOINFORMATICS (12L):	1. Introduction 2. History 3. Biological Databases i. protein databases ii. Nucleic acid databases 4. Bioinformatics applications	6 MAR 2020 to 31 MAR 2020	02 02 02 02 04	02 02 02 02 04	Quiz Competition	Unit – IV Assignment

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BO 4.1: Cytogenetics and Plant Breeding

Name of Teacher: DR.K.D.SAVANT

Class : M.Sc.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	Credit: I Cytogenetics-I (18)	1. Cell division: Mitosis and Meiosis. 2. Concept of Gene: 3. Mendelian Principles 4. Extensions of Mendelian Principles: 5. Extra chromosomal inheritance: 6. Quantitative genetics-	04 Dec 18 to 05 Jan 2019	03 03 04 04 02 02	Woolen Models	Credit I: Cytogenetics-I Assignment 01 Jan 2019
2	Credit II: Cytogenetics-II (16)	Credit II: Cytogenetics-II (15L) 1. Microbial genetics: Mapping of bacterial genome by interrupted mating. 2. Mutation: 3. Linkage and mapping in eukaryotes: 4. Karyotypes and genetic disorders. 5. Structural alterations of chromosomes:	06 Jan To 04 Feb 2019	03 03 02 02 03	Online Lectures For students	Activity based test

		6. Numerical alterations of chromosomes:		03		
3	Credit III: Plant Breeding-I (14L)	1. Plant Breeding- Objectives, Plant Genetic resources and their conservation: 2. Breeding methods in self pollinated crops: 3. Breeding methods in Cross pollinated. 4. Breeding methods in clonally propagated crops:	05 Feb To 03 Mar	05 04 03 02	Short Excursion	MCQ Test 04-03-2018
4	Credit IV: Plant Breeding-II (15L)	1. Hybridization methods in plants. 2. Heterosis breeding. 3. Mutation breeding: 4. Role of polyploidy in plant breeding. 5. Breeding for biotic and abiotic stress resist 6. Release of new variety, seed production and maintenance.	04 Mar To 30 Mar	02 02 03 02 03 03	Quiz Contest	

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