

Vivekanand College, Kolhapur (Autonomous)

Department of Biotechnology (Entire)

Academic Year: 2019-2020

Annual Teaching Plan

Name of the teacher: Dr. D. S. Gaikwad.

Programme: B. Sc I Biotechnology (Entire) Semester: I

Subject: Biotechnology

Course Title: DSC-A Chemistry

Month – June-July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Basics Concepts in Chemistry Acids and Bases Analytical and Industrial Chemistry Reaction Kinetics	Explanation of important basic terms, Lowry–Bronsted, Solutions concept, types, Analytical processes(Qualitative and Quantities, 1st and 2nd order reactions,
10	3	13		
Month – July-Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Thermodynamics Structure and Bonding. Concept of Hybridization	Reversible and irreversible processes, internal energy, Types of bonds. hybridization with respect to BeCl_2 , BF_3 , SiCl_4 , Dipole moment
10	5	15		
Month –Aug- Sept			Module/Unit:	Sub-units planned
10	3	13	Hydrogen Bonding- Coordination Complexes	intra and intermolecular hydrogen bonding, comparison between, ionic and covalent compounds.

(Dr. D. S. Gaikwad)

Name and Signature of Teacher



Name and Signature of HOD

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VIVEKANAND COLLEGE, KOLHAPUR
(AUTONOMOUS)

Vivekanand College, Kolhapur (Autonomous)

Department of Biotechnology (Entire)

Academic Year: 2019-2020

Annual Teaching Plan

Name of the teacher: Dr. A. A. Patravale.

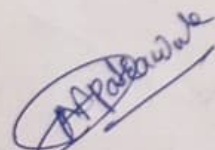
Programme: B. Sc I Biotechnology (Entire)

Semester: II

Subject: Biotechnology

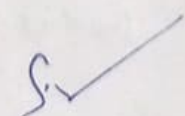
Course Title: DSC-B - Chemistry

Month – Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Fundamentals and Mechanistic Basis of Organic Reaction	Reaction mechanism- Definition, curved arrownotation, substrate , Reagents, Types of reagents, types of reactions Geometrical isomerism in alkenes
10	3	13		
Month – Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Stereochemistry Titrimetric Analysis and Gravimetric Analysis	tartaric acid E-Z and R-S nomenclatures. Numerical Problems Principle of volumetric analysis, titration, titrant, titrand, endpoint
10	2	12		
Month – Feb- March			Module/Unit: II	Sub-units planned
10	1	11	Chemistry of Natural Products	Types of titrations—acid base, redox, precipitation, complexometric, Titration curve Terpenoids- Isoprene rule, structure determinations of citral.


(Dr. A. A. Patravale)

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Department of Biotechnology (Entire)

Academic Year: 2019-2020

Annual Teaching Plan

Name of the teacher: Mr. S. G. Kulkarni.

Programme: B. Sc I Biotechnology (Entire)

Semester: I

Subject: Biotechnology

Course Title: DSC-A - Biochemistry

Month – June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Origin of life p^H, p_Ka value	Basic concept ,A.I. Oparin concept, definition,H-H Equation, Haemoglobin buffer system
10	2	12		
Month – Aug-Sept			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Nucleic acids Carbohydrates: Lipids:	Nucleosides, nucleotides, polynucleotide, DNA and its different forms with properties Classification, glyceraldehyde, simple aldoses&ketoses,
10	2	12		
Month – Oct- Nov			Module/Unit: II	Sub-units planned
Lectures	Practicals	Total	Physical properties,- Chemical properties-	Classification, Simple lipid, state,color, odour,melting point, lipoprotein - LDL, VLDL
10	2	12		

(Mr. S. G. Kulkarni)

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Academic Year: 2019-2020

Annual Teaching Plan

Name of the teacher: Mr. S. G. Kulkarni.

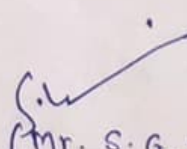
Programme: B. Sc I Biotechnology (Entire)

Semester: II


Subject: Biotechnology

Course Title: DSC-B - Biochemistry

Month- Dec- Jan			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Protein Chromatography	Amino acid classification (Depending upon R group), structure of amino acids, single letter codes of amino acids, Introduction, Theory, Principle
10	3	13		
Month – Jan-Feb			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chromatography Enzymes:	applications of Thin layer chromatography, paper chromatography, column chromatography, Introduction, IUB classification
10	3	13		
Month Feb- March			Module/Unit:	Sub-units planned
10	2	13	Co-enzymes:	Thiamine, riboflavin, niacin, pyridoxol phosphate


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Department of Biotechnology (Entire)

Academic Year: 2019-2020

Annual Teaching Plan

Name of the teacher: Dr. A. R. Kasarkar

Programme: B. Sc I Biotechnology (Entire)

Subject: Biotechnology

Semester: I

Course Title: DSC-A - Plant Science

Month- June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Plant Diversity Taxonomy of Angiosperms	Algae – General characters and economic importance Fungi – General characters and economic importance Gymnosperms – General characters and economic importance
10	04	14		
Month – July-Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Taxonomy of Angiosperms Sexual Reproduction in Angiosperms	Definition, Aims, objectives and functions nomenclature and its significance Structure of Typical Flower – Floral whorls and functions:- Calyx, corolla
10	04	14		
Month – Aug- Sept			Module/Unit: II	Sub-units planned
Lectures	Practicals	Total	Fruit Seed Plant Anatomy	Definition, formation, Types Dormancy of seed- Definition, Causes Tissues- Simple and complex
10	04	14		

Dr. A. R. Kasarkar

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Academic Year: 2019- 2020

Annual Teaching Plan

Name of the teacher: Dr. A. R. Kasarkar.


Programme: B. Sc I Biotechnology (Entire)

Semester: II

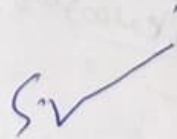
Subject: Biotechnology

Course Title: DSC-B - Animal Science

Month – June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Life concepts and characteristics of life	Understanding the diversity of life, 3 domain systems, Six kingdom system, General classification of animal kingdom
10	04	14		
Month – July- Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Host Parasite Relationship	Protozoan parasite- Plasmodium(Morphology, parasitic adaptations, Life cycle), Nematode parasite
10	04	14		
Month – Aug- Sept			Module/Unit: II	Sub-units planned
Lectures	Practicals	Total	Tissues Applied zoology	Blood (Plasma, Serum, Clotting), Bone, Cartilage. Histological Architecture Vermiculture, Apiculture, Sericulture
10	04	14		


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Annual Teaching Plan

Name of the teacher: Miss. Kumbhar.

Programme: B. Sc I Biotechnology (Entire)

Semester: I

Subject: Biotechnology

Course Title: DSC-A - Mathematics

Month- June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Complex Numbers	Operations on complex numbers, Complex conjugate, Modules and argument of complex number and simple
10	01	11		
Month – July-Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Matrices Differential equation	Definition and types of Matrices, Algebra of Matrices Definition of ordinary differential equation and degree, order of differential equation
10	01	11		
Month – Aug- sept			Module/Unit: II	Sub-units planned
Lectures	Practicals	Total	Partial differentiation	Introduction, Simple examples on evaluation of partial, derivatives, Composite function with examples
10	01	11		

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Annual Teaching Plan

Name of the teacher: Miss. Kumbhar.

Programme: B. Sc I Biotechnology (Entire)

Semester: II

Subject: Biotechnology

Course Title: DSC-B - Statistics

Month – Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Introduction to statistics and collection of data Graphical representation	Meaning of statistics, Scope of statistics in Biological and medical sciences Histogram , bar chart, line diagram, pie chart & ogive Curves Measures of central tendency
10	01	11		
Month – Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Correlation and Regression, probability & testing of Hypothesis	Concept of correlation between two variables and types of correlation, Method of obtaining correlation
10	02	12		
Month – Feb- March			Module/Unit: II	Sub-units planned
10	02	12	Limits of probability	Probability of complementary event, Additive law of probability. Simple illustrative examples. Definition of conditional probability

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Annual Teaching Plan

Name of the teacher: Mr. R. R. Mane.

Programme: B. Sc I Biotechnology (Entire)

Semester: I

Subject: Biotechnology

Course Title: DSC-A - Computer

Month – June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Computer basics	Block Dig.(I/O/Secondary storage), Applications, Generations, Types of computer functions, process management, multiprogramming, multitasking
10	02	12	Operating System	
Month – July- Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Office Operation	Microsoft Word-concept of toolbar, character Need of database, data models- Hierarcical, Network, Relational, Object Oriented, Main components
10	02	12	Database Management System	
Month – Aug- sept			Module/Unit: II	Sub-units planned
10	02	12	Basic of Bioinformatics	Internet, World wide web, Web browser, Search Engine (Google), Searching data from Search

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Name of the teacher: Mr. R. R. Mane.

Programme: B. Sc I Biotechnology (Entire)

Semester: II

Subject: Biotechnology

Course Title: DSC-B - Computer

Month – Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Introduction to Programming	Algorithm, Flowchart, Pseudocode Fundamentals of C, Character set, keywords, identifiers
10	03	13		
Month- Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Input/output Print	scanf(), getchar(), putchar(), gets(), puts(), enum, sizeof()operatorFormatting input/output
10	03	13		
Month – Feb- March			Module/Unit: II	Sub-units planned
10	01	11	Loop	continue & break statementArray-declaration, initialization of One dimensional & twodimensional array, character array, strlen

R.R.M.
(Mr. R. R. Mane)
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Annual Teaching Plan

Name of the teacher: Miss. P. D. Patil.

Programme: B. Sc I Biotechnology (Entire)

Semester: I

Subject: Biotechnology

Course Title: DSC-A - Bio techniques & Instrumentation

Month- June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Protein Purification: Centrifugation	Method of cell disruption (Blenders, grinding with abrasives, presses, enzymatic method, sonication) Basic principles, RCF
10	2	12		
Month – July- Augt			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Centrifugation Microscopy UV-Visible Spectroscopy	Preparative centrifugation General principles of microscopy- Image formation, magnification, numerical aperture
10	3	13		
Month – Augt- Sept			Module/Unit: II	Sub-units planned
10	3	13	Basic Laboratory Instruments:	Introduction, Principle and applications of electrophoresis- Supporting media

P. D. Patil

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Annual Teaching Plan

Name of the teacher: Miss. P. D. Patil.

Programme: B. Sc I Biotechnology (Entire)

Semester: II

Subject: Biotechnology

Course Title: DSC-B - Cell Biology

Month – Dec- Jan			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Cell Structure	Discovery of Cell, Cell theory - Definition, discovery, three assumptions of cell theory, exceptions, organismal theory, protoplasm theory
10	1	11		
Month – Jan- Feb			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Nucleus -	Introduction, morphology, occurrence, shape, size, number, position Ultra structure of nucleus- Nuclear membrane,
10	2	12		
Month – Feb- March			Module/Unit:	Sub-units planned
10	-	10	Cytoskeleton assembly	Introduction, Cytoskeleton elements, Microtubules- occurrence ,structure ,chemical

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Annual Teaching Plan

Name of the teacher: Miss. S. V. Sarnaik.

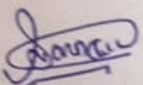
Programme: B. Sc I Biotechnology (Entire)

Semester: I


Subject: Biotechnology

Course Title: DSC-A- Microbiology

Month – June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Microbiology : Definition, History, Introduction to types of Microorganisms Morphology and cytology of Bacteria Viruses	Bacteria, Algae, Fungi, Protozoa and Viruses Morphology of Bacteria – i) Size, ii) Shape, iii) Arrangements Cytology of Bacteria –
10	1	11		
Month – July- Aust			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Bacterial taxonomy Microbial nutrition Concept of Sterilization	General principles of bacterial nomenclature.- a) Taxonomic ranks Nutritional requirements of microorganisms Definitions of: Sterilization, Disinfection, Antiseptic, Germicide
10	2	12		
Month – Aug- Sept			Module/Unit: II	Sub-units planned
10	1	11	Stains and staining procedures	Definition of dye and stain, Classification of stains – Acidic, Basic and Neutral, Principles, Procedure, Mechanism and application


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Programme: B. Sc I Biotechnology (Entire)

Semester: II

Subject: Biotechnology

Course Title: DSC-B - Microbiology

Month – Dec-Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Culture media and pure culture techniques	Common components of media and their functions Peptone Streak plate
10	3	13	Methods for isolation of pure culture	
Month – Jan-Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Microbial growth	Definition of growth, phases & growth curve - a) Continuous culture Sources of microorganisms in water - Sources of microorganism in air
10	3	13	Water Microbiology Air microbiology	
Month- Feb- March			Module/Unit: II	Sub-units planned
10	1	11	Medical microbiology	Definition, Host, parasite, Saprophytes, Commensals, Infection, Etiological agent, General principles of prevention and control of microbial diseases Disease

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Annual Teaching Plan

Name of the teacher: Mr. Mulla.

Programme: B. Sc I Biotechnology (Entire)

Semester: I

Subject: Biotechnology

Course Title: DSC-A - Physics

Month – June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Elasticity	Introduction, definitions of stress and strain in solids, types of strain and stress, Hooks law, definition of Young's modulus
10	01	11		
Month – July- Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Viscosity and Surface Tension	streamline and turbulent flows, concept of viscosity, coefficient of viscosity, effect of temperature and pressure on viscosity of liquids, concept of pressure energy
10	01	11		
Month- Aug- Sept			Module/Unit: II	Sub-units planned
Lectures	Practicals	Total	Sound waves:	mechanical and electromagnetic waves, transverse and longitudinal waves with characteristics, principle of superposition of waves (Statement only), phenomenon of beats
10	01	11		

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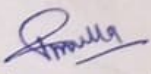
Programme: B. Sc I Biotechnology (Entire)

Semester: II

Subject: Biotechnology

Course Title: DSC- B - Physics

Month- Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Optics correlated with microscopy	Concept of interference and diffraction, Diffraction gratin (Description only), concept of polarization and plane polarized light
10	01	11		
Month- Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Bioelectricity	Introduction, electricity observed in living systems-examples, origin of bioelectricity, resting potential and action potential, Nernst equation
10	01	11		
Month- Feb March			Module/Unit: II	Sub-units planned
Lectures	Practicals	Total	Semiconductor Devices and Digital Electronics	Light Emitting Diode (LED), seven segment display, photodiode, optocoupler, spectral distribution of solar energy, solar cell construction,
10	01	11		


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Academic Year: 2019-2020

Annual Teaching Plan

Name of the teacher: Miss. V. N. More.

Programme: B. Sc II Biotechnology (Entire)

Semester: III

Subject: Biotechnology

Course Title: DSC 1345C- Genetics

Month – June- July			Module/Unit: I	Sub-units planned
Lectures	Practical	Total	Mendel's law of Inheritance Deviations of Mendel laws Interaction of gene-Linkage	Mendel's Experiment, Dominance and recessiveness, Principle of segregation Incomplete dominance, co- dominance Definition, coupling and repulsion hypothesis
10	02	12		
Month – July- Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practical	Total	Crossing over Structural and numerical changes in chromosomes. Mutation:	Mechanism and theory mitochondrial and plastid. Definition, Types (spontaneous and Induced)
10	03	13		
Month –Aug- Sept			Module/Unit: II	Sub-units planned
10	02	12	Plasmid- Genetic recombination in bacteria Genetics Disease:	Types, Structure, properties and applications Autosomal and Sex Linked

V.N. More

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Academic Year: 2019-2020

Annual Teaching Plan

Name of the teacher: Miss. V. N. More.

Programme: B. Sc II Biotechnology (Entire)

Semester: IV

Subject: Biotechnology

Course Title: DSC – 1345 D Immunology

Month – Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Introduction- Types of immunity Types of Defense Introduction to cells and organs of immune system	i) Innate (specific and non-specific) ii) Acquired (Active and Passive) first line of defense (barriers at the portal of entry, physical and chemical barriers)
10	02	12		
Month – Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Introduction to cells and organs of immune system Antigen and Antibody	Organs of immune system- primary and secondary lymphoid organs- structure and their role definition, nature, basic structure of immunoglobulin
10	03	13		
Month – Feb- March			Module/Unit: II	Sub-units planned
10	02	12	Immune response Antigen Antibody reactions Hypersensitivity	definition, nature, types of antigen, factors affecting antigenicity. primary and secondary immune response

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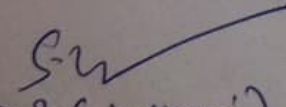
Programme: B. Sc II Biotechnology (Entire)

Semester: III

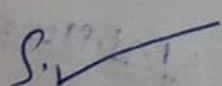
Subject: Biotechnology

Course Title: DSC 1346C- Biophysics and Enzymology

Month – June- July			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Atomic Absorption Spectroscopy X-ray Crystallography NMR-	Introduction, Principle, Instrumentation, Applications. Expression for interplaner distance, Bragg's Law,
10	01	11		
Month – July- Aug			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	IR spectroscopy ESR Spectroscopy Factors affecting enzyme activity	Introduction, vibration spectra (without proof), possible modes of vibrations of atoms Temperature, pH, substrate concentration, inhibitors, enzyme concentration Activators
10	02	12		
Month – Aug- Sep			Module/Unit:	Sub-units planned
10	01	11	Factors affecting catalytic activity efficiency of enzyme, Allosteric enzymes	Proximity orientation, Strain and Distortion, Covalent catalysis, Acid-base catalysis. Definition, properties


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Academic Year: 2019- 2020

Annual Teaching Plan

Name of the teacher: Miss. V. N. More.

Programme: B. Sc II Biotechnology (Entire)

Semester: IV

Subject: Biotechnology

Course Title: DSE 1346D- Advances in Cell Biology

Month- Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Secretary pathway and protein trafficking Cell signaling	Secretary pathway-ER associated ribosomal translation, co-translational vectoral transport of nascent polypeptide chain Introduction, general principles of cell signaling
10	02	12		
Month- Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Cell signaling Cell division cycle	Types of cell signaling- contact dependent signaling, autocrine, paracrine Introduction, definition, phases of cell cycle Cell cycle checkpoint
10	03	13		
Month – Feb-March			Module/Unit: II	Sub-units planned
Lectures	Practicals	Total	Cell division	Introduction and types of cell division-amitosis, mitosis and meiosis Role of spindle fibers in chromosome separation
10	02	12		

V.N. More
(Miss. V.N. More)
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DEPARTMENT OF BIOTECHNOLOGY (ENTIRE)
VIVEKANAND COLLEGE, KOLHAPUR
(AUTONOMOUS)

Vivekanand College, Kolhapur (Autonomous)

Department of Biotechnology (Entire)

Academic Year: 2019-2020

Annual Teaching Plan

Name of the teacher: Mr. S. G. Kulkarni.

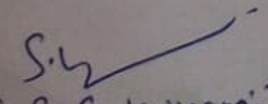
Programme: B. Sc II Biotechnology (Entire)

Semester: III


Subject: Biotechnology

Course Title: DSC 1347C - Metabolic Pathways

Month- June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Metabolism Carbohydrates Metabolism	Introduction to metabolism, anabolism & catabolism, catabolism & its three stages, Reactions and energetics of Glycolysis, Gluconeogenesis
10	01	11		
Month – July- Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Carbohydrates Metabolism Lipid Metabolism	Shuttle system- Malate Aspartate shuttle system Phosphate shuttle system. Cori Cycle Biosynthesis of fatty acid with respect to Palmitic acid
10	02	12		
Month – Aug- Sept			Module/Unit: II	Sub-units planned
10	01	11	Respiration:- Anaerobic Respiration	Aerobic:-Flow of electrons in ETC, Redox potential components of ETC, Alcoholic and Lactic acid fermentation


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Vivekanand College, Kolhapur (Autonomous)

Department of Biotechnology (Entire)

Academic Year: 2019- 2020

Annual Teaching Plan

Name of the teacher: Mr. S. G. Kulkarni.

Programme: B. Sc II Biotechnology (Entire)

Semester: IV

Subject: Biotechnology

Course Title: DSC 1347D -Plant Biochemistry

Month – Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Plant Water Relation	Absorption of water- Mechanism, Theories Ultra structure of chloroplast, Photosynthetic pigments, red drop and Emerson's enhancement
10	01	11	Photosynthesis:	
Month – Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Photosynthesis: Nitrogen Metabolism	CAM, photorespiration
10	01	11		Role of nitrogen in plants, source of nitrogen, nitrogen fixation- symbiotic & Non-symbiotic
Month – Feb- March			Module/Unit: II	Sub-units planned
10	-	10	Introduction to Plant Hormones Secondary metabolite Concept	Biosynthesis of plant hormones- Auxin, Cytokinin, Gibberellin Classification and its biological application

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Vivekanand College, Kolhapur (Autonomous)

Department of Biotechnology (Entire)

Academic Year:

Annual Teaching Plan

Name of the teacher: Miss. R. Musale.

Programme: B. Sc II Biotechnology (Entire)

Semester: III

Subject: Biotechnology

Course Title: DSC 1348C – Ecology

Month – June-July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Ecosystem Productivity Food chain Ecological pyramids Energy flow in ecosystem	Concept, structure, function. Kinds of productivity. types of food chain, food web concept of energy, unit of energy
10	01	11		
Month – July- Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Biogeochemical cycle Concept - Habitat and Niche Population Ecology	Carbon cycle, Nitrogen cycle, Sulphur cycle, Phosphorus cycle Introduction, population characteristics, Natality Mortality, survivor ship curves
10	02	12		
Month – Aug- Sept			Module/Unit: II	Sub-units planned
Lectures	Practicals	Total	Population growth Evolution Hardy-Weinberg law and Equation	Exponential and logistic, r and k strategists Evidences of evolution and Adaptive radiation
10	02	12		

R. Musale

(Miss. R. Musale)

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Department of Biotechnology (Entire)

Academic Year: 2019-2020

Annual Teaching Plan

Name of the teacher: Miss. R. Musale.

Programme: B. Sc II Biotechnology (Entire)

Semester: IV

Subject: Biotechnology

Course Title: DSC 1348D Environmental Biotechnology

Month – Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Water Pollution Air Pollution Soil Pollution	Definition, Sources and Types-Physical, Chemical and Biological London and LA Smogs (Mechanisms of Formation Sources, Role of pesticide in soil pollution, control
10	01	11		
Month- Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Environmental Toxicology Environmental Impact Assessment Bio Fuel production	classification and concept, Pesticide Toxicity – Classification Introduction, History, Process, salient features and Importance Production of Bio ethanol
10	02	12		
Month- Feb- March			Module/Unit: II	Sub-units planned
Lectures	Practicals	Total	Bioremediation Techniques	Definition, Principle, <i>In situ</i> and <i>Ex situ</i> Bioremediation, Bioremediation of waste waters (MSW, BSW and ISW), Activated Sludge Process, Lagoons
10	02	12		

R. Musale

(Miss. R. Musale)

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J. W.

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Department of Biotechnology (Entire)

Academic Year: 2019-2020

Annual Teaching Plan

Name of the teacher: Mr. A. L. Upadhye.

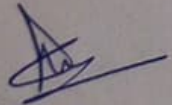
Programme: B. Sc II Biotechnology (Entire)

Semester: III

Subject: Biotechnology

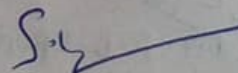
Course Title: DSC 1349C - Molecular Biology- I

Month – June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Experimental Evidences for DNA as a genetic material Properties and Function of DNA	Griffith's Exp., Avery, Macleod, McCarty Exp., Blender Exp., RNA As a genetic material Gierer and Schram expt. Tm, Cot Curve, Purity of DNA,
10	01	11		
Month – July- Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Organization of genome Nucleic Acid biosynthesis DNA Replication	Viral (Lambda, T4), Bacteria (<i>E. coli</i>), Eukaryote, Typical Structure of chromosome De novo synthesis of Purine and Pyrimidine ring
10	02	12		
Month – Aug- Sept			Module/Unit: II	Sub-units planned
10	02	12	DNA Replication DNA Repair	Semi conservative model of replication DNA repair- Direct repair, Excision repair


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Academic Year: 2019- 2020

Annual Teaching Plan

Name of the teacher: Mr. A. L. Upadhye.

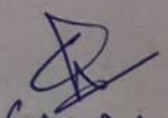
Programme: B. Sc II Biotechnology (Entire)

Semester: IV

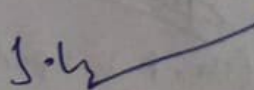
Subject: Biotechnology

Course Title: DSC 1349D – Molecular Biology-II

Month – Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Transcription in prokaryote and Eukaryote	Mechanism of transcription-Enzyme involved, initiation, elongation and termination Properties of genetic code. Assignment of codons
10	01	11	Genetic Code	
Month – Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Genetic Code Translation in prokaryote and Eukaryote	Wobble Hypothesis, Variation in genetic code Structure and role of ribosome in translation, Amino acid
10	02	12		
Month – Feb- March			Module/Unit: II	Sub-units planned
10	02	12	Regulation of gene expression in prokaryote and eukaryote Regulation of gene expression at transcriptional and translation level.	Regulation of gene expression, in Prokaryotes. a) Lac operon b) Tryptophan operon c) Arabinose operon.


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Department of Biotechnology (Entire)

Academic Year: 2019- 2020

Annual Teaching Plan

Name of the teacher: Miss. P. D. Patil.

Programme: B. Sc II Biotechnology (Entire)

Semester: III

Subject: Biotechnology

Course Title: DSC 1350C - Plant Tissue Culture

Month – June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Introduction to plant tissue culture Infrastructure & Organization Of Plant Tissue Culture Laboratory- General and aseptic laboratory	Definition, History, Cellular totipotency, techniques in plant tissue culture. different work areas, equipments and instruments
10	01	11		
Month – July- Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Culture Medium Callus Culture Techniques Somatic Embryogenesis Organogenesis Anther & Pollen Culture Technique	Composition of basal M.S. medium Introduction, principle, protocol, morphology Introduction, principle, protocol, applications
10	02	12		
Month – Aug-Sept			Module/Unit: II	Sub-units planned
10	02	12	Micropropagation Different Pathways of Micropropagation Plant Protoplast Culture	Introduction, stages of Micropropagation, factors affecting, advantages and applications.

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(Miss. P. D. Patil)
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Academic Year: 2019- 2020

Annual Teaching Plan

Name of the teacher: Miss. P. D. Patil.

Programme: B. Sc II Biotechnology (Entire)

Semester: IV

Subject: Biotechnology

Course Title: DSC 1350D Animal Tissue Culture

Month – Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	History and Introduction of Animal Cell culture	History of animal cell culture, Characteristics of animal cell inculture, substrate for cell growth, Natural media, synthetic media (serum containing media, serum free media, balanced salt
10	01	11	Requirements of Animal cell culture	
			Culture media	
			Laboratory design and layout	
Month- Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Characterization of cultured cells	Characteristics of cultured cells, cell adhesion, cell proliferation, cell differentiation
10	02	12	Measurement of growth parameters of cultured cells	
			Basic technique of mammalian cell culture	Morphology of cells, species of origin of cells, Identification of tissue of origin
Month – Feb- March			Module/Unit: II	Sub-units planned
10	02	12	Scale up of Animal cell culture	Scale up in suspension-stirrer culture, continuous flow culture, Airlift fermenter culture, Sources of contamination, types of microbial contamination
			Contamination	
			Applications of cell culture	
			Stem Cell technology	

(P. D. Patil)

(Miss. P. D. Patil)

Name and Signature of Teacher



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Vivekanand College, Kolhapur (Autonomous)

Department of Biotechnology (Entire)

Academic Year: 2019- 2020

Annual Teaching Plan

Name of the teacher: Mr. A. L. Upadhye.

Programme: B. Sc III Biotechnology (Entire)

Semester: V

Subject: Biotechnology

Course Title: DSE-1355-E-Basics in Genetic Engineering

Month – June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Enzymes in r-DNA technology Cloning Vectors Bacteriophage vectors	Introduction and Scope, Enzymes and its applications, Restriction enzymes- types , Cloning & expression λ phage vector
10	02	12		
Month- July- Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Plant vector Nucleic Acid Hybridization	Ti plasmid, Ri plasmid, shuttle vector- e.g. pJBD 219 Probe Preparation, Methods of labeling probes. Radio labeling – Nick translation, End labeling
10	02	12		
Month- Aug- Sept			Module/Unit: II	Sub-units planned
Lectures	Practicals	Total	DNA Sequencing and blotting technique	Probe Preparation, Methods of labeling probes. Radio labeling – Nick translation, End labeling
10	01	11		

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Department of Biotechnology (Entire)

Academic Year: 2019- 2020

Annual Teaching Plan

Name of the teacher: Mr. A. L. Upadhye.


Programme: B. Sc III Biotechnology (Entire)

Semester: VI

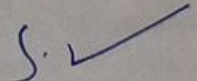
Subject: Biotechnology

Course Title: DSE-1355-F-Advances in Genetic Engineering

Month – Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Isolation of Gene PCR and its application	Isolation desired gene from DNA, Isolation of specific gene with PCR, cDNA and genomic library Primer designing
10	02	12		
Month- Jan-Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Bar-coding Cloning methodologies Screening of recombinants	Principle and Application Somatostatin, Insertion of foreign DNA into host cells, Agrobacterium mediated gene transfer Direct selection, Insertional inactivation
10	02	12		
Month – Feb- March			Module/Unit: II	Sub-units planned
10	01	11	Application of r-DNA technology	Production of transgenic-knockout mice, In medicines –Insulin and Somatostatin, Introduction to Gene Silencing


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(AUTONOMOUS)

Vivekanand College, Kolhapur (Autonomous)

Department of Biotechnology (Entire)

Academic Year: 2019- 2020

Annual Teaching Plan

Name of the teacher: Miss. S. V. Sarnaik.

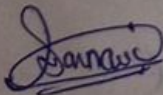
Programme: B. Sc III Biotechnology (Entire)

Semester: V

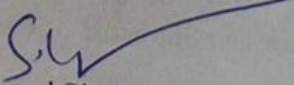
Subject: Biotechnology

Course Title: DSE-1356-E-Industrial Biotechnology

Month – Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Introduction to Industrial Biotechnology Microbial Screening, Scale up and strain improvement	Concept and range of fermentation technology, Types of fermentations (Batch, continuous, dual, multiple) Primary and secondary screening, Primary screening of antibiotics
10	02	12		
Month – Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Microbial Screening, Scale up and strain improvement Fermentation Media	, Strain improvement-concept and methods - mutation, genetic recombination , Criteria for typical fermentation medium
10	02	12		
Month – Feb- March			Module/Unit: II	Sub-units planned
Lectures	Practicals	Total	Downstream Process and Product Recovery	Downstream Processes in fermentation and bioprocess technology Solid and liquid separation, Flocculation and Flotation
10	02	12		


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Department of Biotechnology (Entire)

Academic Year: 2019-2020

Annual Teaching Plan

Name of the teacher: Miss. S. V. Sarnaik.

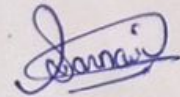
Programme: B. Sc III Biotechnology (Entire)

Semester: VI


Subject: Biotechnology

Course Title: DSE-1356-F-Food and Microbial Biotechnology

Month – Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Microbial Production of Industrial product	Edible mushroom, Single Cell Protein- Spirulina, Yeast Citric acid, Vitamins (B ₁₂), Amino acids- Lysine,
10	02	12	Organic products	
Month – Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Fermented Foods and Beverages	Sauerkraut, Beverages – Beer, Wine (Red table and white table), Champagne Types of spoilage- Physical, Chemical and Biological (auto and microbial), Preservation methods- High and Low temperatures
10	02	12	Food Spoilage, preservation & toxicity	
Month – Feb- March			Module/Unit: II	Sub-units planned
10	02	12	Impact of GM food on Human health	Risk analysis and regulations , food safety, sustainability


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Vivekanand College, Kolhapur (Autonomous)

Department of Biotechnology (Entire)

Academic Year: 2019- 2020

Annual Teaching Plan

Name of the teacher: Miss. P. D. Patil.

Programme: B. Sc III Biotechnology (Entire)

Semester: V

Subject: Biotechnology Course Title: DSE-1357-E-Application of Biotechnology in Agriculture

Month – June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Methods for crop Improvement Somatic hybridization	Introduction and Acclimatization, Breeding for self and cross pollinated plants and vegetative reproducing plants protoplast, fusion technique
10	02	12		
Month – July-Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Germplasm Conservation Transgenic Plants Biofertilizer	<i>In-situ</i> conservation Herbicide resistant – Glyphosate resistance, Phosphinothricin resistance Mass production and field application – <i>Rhizobium</i> , <i>Azotobacter</i> , <i>Azospirillum</i> , <i>Acetobacter</i>
10	02	12		
Month – Aug-Sept			Module/Unit:II	Sub-units planned
Lectures	Practicals	Total	Biopesticide	Definition, production and applications of Bacterial, fungal, viral and Plant origin Biopesticides
10	02	12		

P. D. Patil

(Miss. P. D. Patil)

Name and Signature of Teacher



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Vivekanand College, Kolhapur (Autonomous)

Department of Biotechnology (Entire)

Academic Year: 2019- 2020

Annual Teaching Plan

Name of the teacher: Miss. P. D. Patil.

Programme: B. Sc III Biotechnology (Entire)

Semester: VI

Subject: Biotechnology

Course Title: DSE-1353-F- Application of Biotechnology in Health

Month – Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Stem cells and Transgenic Technology Vaccines- Principle and Practices	Characteristics of stem cells , Concept of stem cell progenitors Concept and types of vaccine, Subunit vaccines- Hepatitis B vaccine, Foot and Mouth disease Vaccine
10	02	12		
Month – Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Vaccines- Principle and Practices Monoclonal Antibodies Gene Therapy	AIDS Vaccine, DNA Vaccines, Edible Vaccines, Recombinant vaccines- Cholera Vaccine Introduction, Hybridoma Technology <i>in vivo</i> gene therapy
10	02	12		
Month – Feb - March			Module/Unit: II	Sub-units planned
10	02	12	Public health	Introduction, DNA sample preparation, Methods of Diagnosis – Nucleic acid hybridization (Radioactive and Non radio detection). Detection of infectious disease

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(Miss. P. D. Patil)

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Vivekanand College, Kolhapur (Autonomous)

Department of Biotechnology (Entire)

Academic Year: 2019-2020

Annual Teaching Plan

Name of the teacher: Miss. R. Musale

Programme: B. Sc III Biotechnology (Entire)

Semester: V

Subject: Biotechnology Course Title: DSE-1358-E-Developmental Biology (Plant and Animal)

Month – June- July			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Plant development Meristem organization Plant Embrology Gamatogenesis	Major phases of plant development, Vegetative development, Plant meristem, Organization of shoot, Development of male and female gamatophyte
10	-	10		
Month – July- Aug			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Embryogenesis Apomixis Polyembryony Animal embryology	Introduction, definition, Types and significance, Genetic control, Types of egg and sperms in animal, Types
10	-	10		
Month – Aug- Sept			Module/Unit: II	Sub-units planned
Lectures	Practicals	Total	Gamatogenesis Differentiation and regeneration	Types of cleavages, Embryonic induction, Foetal membranes, Cell lineages and differentiation definition.
10	-	10		

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(Miss. R. Musale)

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Department of Biotechnology (Entire)

Academic Year: 2019-2020

Annual Teaching Plan

Name of the teacher: Miss. R. Musale.

Programme: B. Sc III Biotechnology (Entire)

Semester: VI

Subject: Biotechnology

Course Title: DSE-1354-F- Bioinformatics

Month – Dec- Jan			Module/Unit: I	Sub-units planned
Lectures	Practicals	Total	Introduction to Bioinformatics Introduction to Genomics	Multidisciplinary approach of bioinformatics, Computers in Biology and Medicine Introduction, Databases, Data, Nucleic acid sequence database, Gene Bank, EMBL s
10	02	12		
Month – Jan- Feb			Module/Unit: I and II	Sub-units planned
Lectures	Practicals	Total	Literature Database: Pub Med and Pub Med central Sequence Alignment and Phylogenetic analysis Phylogenetic analysis tools	Primary Protein sequences databases, Secondary sequences Databases, Structural Pair wise sequence alignment, Multiple sequence alignment, Local and Global sequence alignment
10	02	12		
Month – Feb- March			Module/Unit: II	Sub-units planned
10	00	10	Structure-based drug designing Ligand-based drug designing	Introduction; Structure-based drug designing approaches, Target Identification and Validation; Ligand-based drug

R. Musale
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