

**Rajarshi Shahu Mahavidyalaya, Latur**

**(Autonomous)**

## Structured Work Plan for Teaching

(Sept. 2021 to Dec. 2022)

### Details of Classes to be taught

Sr. No.	Class	Name of Assit. Prof.	Subject	Paper
1	B.Sc.I	D.R.Awad	Botany	Biodiversity of Cryptogams and Gymnosperms

## Summary of Lesson Plan

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: BACTERIA AND VIRUSES (10 L)	<b>BACTERIA:</b> 1. General characters. 2. Size, Shape and Ultra structure. 3. Asexual reproduction (By binary fission). 4. Sexual reproduction (By conjugation). 5. Economic importance. <b>VIRUSES:</b> 1. General characters. 2. Classification based on host. 3. Ultra structure of TMV. 4. Economic importance.	23/09/21 To 22/10/21	05  05		
2	UNIT – II: FUNGI (12 L)	1. General characters and. 2. Classification (Alexopoulos and Mims, 1979). 3. Systematic position, occurrence, structure, reproduction, and graphic life cycle of <i>Erysiphe</i> . 4. Economic importance.	23/10/21 To 27/11/21	08  04		Activity Based Test-1

		5. Mycorrhiza (General characters). 6. General characters of lichens. 7. Types of Lichens. 8. Economic importance of Lichens.				
3	UNIT – III: ALGAE AND BRYOPHYTES (10 L	<b>ALGAE:</b> 1. General characters. 2. Classification (F.E.Fritsch, 1935). 3. Systematic position, occurrence, thallus structure, reproduction and graphic life cycle of <i>Chara</i> . <b>BRYOPHYTES:</b> 1. General characters. 2. Classification (N.S.Parihar). 3. Systematic position, occurrence, thallus structure (external and internal), reproduction, and graphic life cycle of <i>Funaria</i> .	02/12/21 To 23/12/21	05		
4	UNIT – IV: PTERIDOPHYTES AND GYMNOSPERMS (13 periods)	<b>PTERIDOPHYTES:</b> 1. General characters. 2. Classification (N.S.Parihar) 3. Systematic position, occurrence, thallus structure (external and internal), reproduction, and graphic life cycle with alternation of generation of <i>Nephrolepis</i> (fern). <b>GYMNOSPERMS:</b> 1. General characters. 2. Classification (Arnold, 1948). 3. Morphology of vegetative and reproductive structures (Developmental stages are not expected), and life cycle of <i>Cycas</i>	24/12/21 To 15/01/22	06		Activity Based Test-II

Teacher

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## (Autonomous) Structured Work Plan for Teaching (2021-22)

Details of Classes to be taught

Sr. No.	Class	Name of Assit. Prof.	Subject	Paper
1	M.Sc.I	D.R.Awad	Botany	B.O 1.2 Diversity of Microbes and Cryptogams

Summary of Lesson Plan

Name of Teacher: D.R.Awad

Class: M.Sc.II (Third Semester)

### M. Sc-I

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
01	Credit-I: Viruses, Bacteria and Mycoplasma (15L)	<b>1. Viruses:</b> General characters, Ultra structure of plant viruses (TMV), Transmission of plant viruses and Economic importance of viruses. <b>2. Bacteria:</b> General characters, Ultra Structure, Nutrition (Autotrophic, Heterotrophic and Symbiotic), Reproduction (Binary fission, Transformation and Transduction), Economic Importance of Bacteria. <b>3. Mycoplasma:</b> General characters, Ultra structure, Economic importance of Mycoplasma.	23-09-21 To 20-10-21	05  07  03		
02	Credit-II: Fungi- (15L)	<b>1.</b> General characters of Fungi. <b>2.</b> Biodiversity and Taxonomy of the Phyla Zygomycota ( <i>Rhizopus</i> ), Ascomycota ( <i>Aspergillus</i> ), Basidiomycota ( <i>Polyporus</i> ), Oomycota ( <i>Saprolegnia</i> ), Dueteromycota ( <i>Alternaria</i> )	22-10-21 To 27-11-21	03  10		Activity Based Test-I

		3. Economic importance of Fungi.		03		
03	Credit-III: Algae. (15L)	1. Thallus organization 2. Cell structure, Reproduction, Pigments, Reserve food, Flagella. 3. Salient Features of Chlorophyta ( <i>Volvox</i> ), Bacillariophyta ( <i>Pillularia</i> ), Pheophyta ( <i>Sargasum</i> ) and Rhodophyta ( <i>Batrachospermum</i> ). 4. Economic importance of Algae.	02-12-21 To 28-12-21	03 03 07	Students seminars	
04	Credit- IV: Bryophytes (12L)	1. Introduction and Origin of Bryophytes. 2. Distribution, Habit, Morphology, Reproduction, Phylogeny, and Inter-relationship of the orders Marchentiales ( <i>Riccia</i> ), Anthocerotales ( <i>Antheceiros</i> ), Jungermanniales ( <i>Porella</i> ), Sphagnum ( <i>Sphagnum</i> ). 3. Economic importance of Bryophytes. 4. Bryophytes as indicators of pollution.	29-12-21 To 15-01-21	02 08  02 02		Activity Based Test-II

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## (Autonomous) Structured Work Plan for Teaching (2021- 22)

Details of Classes to be taught

Sr. No.	Class	Name of Assit. Prof.	Subject	Paper
01	M.Sc.II	D.R.Awad	Botany	BO 4.2: Plant Biotechnology & Genetic Engineering

Summary of Lesson Plan

Name of Teacher: D.R.Awad

Class: M.Sc.II (Third Semester)

### M. Sc.-II

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
01	Credit I: Plant tissue culture: (15L)	<ol style="list-style-type: none"> <li>History of plant tissue culture.</li> <li>Laboratory condition requirement.</li> <li>Tools and techniques for tissue culture.</li> <li>Culture media and their constituents</li> <li>Types of culture ( Anther, callus, Micropropagation) and application of tissue culture.</li> <li>Somaclonal variation and its significance.</li> <li>Protoplast culture and somatic hybridization.</li> <li>Cryopreservation.</li> </ol>	16-12-21 To 14-01-22	02  02 02 04 02 02 02	Students seminars	Collection of information of scientist working in plant tissue culture
02	Credit II: Recombinant DNA technology and gene cloning	<ol style="list-style-type: none"> <li>Introduction to recombinant DNA technology</li> <li>Enzymes used in recombinant DNA technology.</li> <li>Recombinant technology and gene cloning.</li> <li>Use of vectors in cloning- Plasmids, cosmids,</li> </ol>	19-01-22 To 11-02-22	02	Visit to Biotech Lab Activity Based	Activity Based Test-I



	(15L)	BACs and YACs. 5. DNA Sequencing methods (Maxam Gillbert, Sangers, Pyrosequencing and Next generation sequencing).				
03	Credit III: Gene libraries and Screening of recombinants (15L)	1. Genomic and cDNA libraries – choice of vectors and construction. 2. RNA Interference mechanism, synthesis and its application. Virus Induced Gene Silencing(VIGS). 3. Concept of genomics and proteomics. 4. Concept of Human genome Project	16-02-22 To 22-03-22	04 04 03 04	Guest Lecture	Activity Based Test-II
04	Credit IV: Genetic transformation of plant (15L)	1. Agrobacterium: Ti and Ri plasmids, transfer of DNA into host by Agrobacterium, mechanism of integration of DNA into plant genomes, vectors for chloroplast transformation, vectors for marker-free selection 2. Transformation technique -Agrobacterium-mediated transformation, Factors affecting on Agrobacterium-mediated transformation. 3. Molecular markers and their applications.	23-03-22 To 15-04-22	05 06 04	Group Discussion	Project Submission

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## (Autonomous) Structured Work Plan for Teaching (Feb to May 2022)

Details of Classes to be taught

Sr. No.	Class	Name of Assit. Prof.	Subject	Paper
01	M.Sc.I	D.R.Awad	Botany	B.O 2.1 Diversity of Pteridophytes, Gymnosperms and Fossil Plants.

Summary of Lesson Plan

Name of Teacher: D.R.Awad

Class: M.Sc.I (Second Semester)

### M. Sc.-I

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 Pteridophytes-I (15L)	1. Introduction and characteristic features. Diversity of Pteridophytes in India and their migration to land. Affinities of Pteridophyte with Bryophyte and Algae. 2. Recent systems of classification of Pteridophytes. 3. Comparative morphology, reproduction and phylogeny of following orders with reference to the forms mentioned against each: Psilotales ( <i>Tmesipteris</i> ), Lycopodiales ( <i>Lycopodium</i> ), Filicales ( <i>Adiantum</i> ), Equisetales ( <i>Equisetum</i> ), Salviniaceae ( <i>Salvinia</i> )	02/02/21 To 24/02/21	05  02  08	Poster Presentations	
2	Credit: II Pteridophytes-II	1. Apogamy and Apospory. 2. Telome concept.		02 02	Seminars	Activity Based Test-1

	(15L)	3.Stelar evolution. 4.Soral evolution. 5.Gamatophyte evolution. 6.Heterospory and seed habit. 7.Economic importance of Pteridophytes	25/02/21 To 18/03/21	02 02 02 02 03		
3	Credit: III Gymnosperms (15L)	1.Characteristic features of Gymnosperms. 2.Recent system of classification (S.P. Bhatnagar and Alok Moitra). 3.Study of morphology and reproduction Cycadales ( <i>Zamia</i> ), Coniferales ( <i>Pinus</i> ), Gnetales ( <i>Gnetum</i> ), Ephedrales ( <i>Ephedra</i> ). 4.Gymnosperms as prospective ancestor of Angiosperms. 5.Economic importance of gymnosperms	19/03/21 To 20/04/21	02 01 08  02  02		
4	Credit: IV Paleobotany (15L)	1.Introduction ,Evolution time scale 2.Principles of Paleobotany: Petrification, Impression and Compression. 3.Indian fossil flora –Glossopteris flora, Rajmahal hill flora and Deccan Intertrappean flora. 4.Paleopalynological techniques- Coal maceration and Lignite maceration 5.Study of morphology and evolutionary trends of: ➤ Bennettitales ➤ Cycadales ➤ Coniferales 6.Economic importance	21/04/21 To 10/05/21	02 02  03  02  05  01	Group Discussion	Activity Based Test-II

  
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## (Autonomous) Structured Work Plan for Teaching (Feb to May 2022)

Details of Classes to be taught

Sr. No.	Class	Name of Assit. Prof.	Subject	Paper
01	B.Sc.I	D.R.Awad	Botany	<b>Paper-III:</b> Histology Anatomy and Embryology of Angiosperms

Summary of Lesson Plan

Name of Teacher: D.R.Awad

Class: B.Sc.I (Second Semester)

### B. Sc.-I

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: Histology Plant Tissues (12 L)	A. Meristematic tissues and their classification based on position B. Permanent Tissues I Simple Tissues: 1. Parenchyma 2. Collenchyma 3. Sclerenchyma II Complex Tissues 1. Xylem 2. Phloem III Secretory Tissues 1. Laticiferous Tissues Ex. Latex cells 2. Glandular Tissues a. External glands	02/02/21 To 23/02/21	02  03  04  03	Guest Lecture	Activity Based Test-I

		Ex. Digestive glands b. Internal glands Ex. Oil glands				
2	Unit – ii: Anatomy (12 periods)	1. Anatomy of dicot Stem (Sunflower). 2. Anatomy of monocot Stem (Maize). 3. Secondary growth in dicot stem. 4. Leaf anatomy of dicotyledons 3(Sunflower) and monocotyledons (Maize). 5. Anomalous secondary growth in <i>Dracaena</i> stem.	28/02/21 To 23/03/21	02 02 02 04 02	Group Discussion	Surprise Test
3	Unit –iii: Embryology – I (11 periods)	1 Structure of a Microsporangium(T.S.of anther). 2. Structure of a Microspore. 3. Development of male gametophyte (Microgametogenesis). 4. Structure of a Megasporangium. 5. Anatropous ovule 6. Types of ovule. 7. Development of female gametophyte (Monosporic).	28/03/21 To 13/04/21	01  01 02  01 02 02 02	Woolen Model	
4	Unit – iv: Embryology – II (10 L)	1. Fertilization. 2. Post fertilization changes. 3. Endosperm and its types. 4. Development of dicot embryo (Crucifer type). 5. Structure of Dicot seed. 6. Structure of Monocot seed	18/04/21 To 30/04/21	01 02 02 03 01		Activity Based Test-I

  
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