

**GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE,  
RAJNANDGAON**



**TEACHING PLAN**

**2022-2023**

**DEPARTMENT OF BOTANY**

# Teaching plan

B.Sc. I<sup>st</sup> year

Date \_\_\_\_\_  
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2022-23

## Fungi

September To October

General account of habit & Habitate, structure, cellular composition, nutrition, & Reproduction in fungi.

Mycorrhizism & Parasexuality outlines of classification of fungi. Economic importance of fungi. Life cycles of Saprolegnia, Albugo, Aspergillus, Periza, Agaricus, Ustilago, Puccinia, Alternaria, & Oospora, VAM fungi.

## Bryophyta

Nov. To December

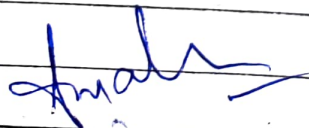
General characteristics, affinities, range of thallus organization, general classification and economic & ecological importance, systematic position, occurrence, morphology, Anatomy & Reproductive structure. In Riccia, Marchantia, Pellia, Anthoceros, Funaria vegetative reproduction in Bryophytes. Evolution of Sporophytes.

## Pteridophyte - classification,

Jan. To Feb

General characteristics, affinities, anatomy & Reproduction, systematic position. Psilotum, Lycopodium, Selaginella, Equisetum, Marsilea.

Heterospory & seed habit, Stellar system in Pteridophytes.



विभागाध्यक्ष,

(वनस्पति शास्त्र)

राजनांदवन (स. व.)

राजनांदवन (स. व.)



Dr. Kiran Jain

B.Sc II<sup>nd</sup> year

Date \_\_\_\_\_  
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Sept. To October

Plant Anatomy - (Paper I Unit - 4)

Root & shoot apical meristems, Theories of root & shoot apex organization, Permanent Tissues Anatomy of Root & shoot, & leaf of dicot & monocot.  
Secondary growth in Root & stem.

Anatomical anomalies in the primary structure of stem.

Nyctanthus, Boerhaavia, Casuarina,

Anomalous sec. growth in Aracaeae, Bignonia, Leptadenia

October to December

(Unit - 5) Embryology: flower as reproductive organ, Anther, microsporogenesis, Types of ovules. Megasporogenesis. Development of male & female gametophyte, Pollination Mechanisms self incompatibility, fertilization. Endosperm, Embryo, Polyembryony, Apomixis and Parthenocarpy.

Paper II

January to Feb.

Unit - 3

Plant water relation: Diffusion, Permeability, Osmosis, Imbibition, Plasmolysis, Osmotic Potential & water potential Types of soil water, water holding capacity, wilting, Absorption of water, Theories of ascent of sap, mineral nutrition and Absorption deficiency symptoms Transpiration, stomatal movement, Significance of transpiration factors affecting Transpiration Guttation.

Dr. K. M. Jain

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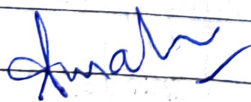


# Biology & Diversity of viruses, Bacteria Algae & fungi


Mycology - General characteristics of fungi,  
Substrate relationship in fungi, cell ultra  
structure, unicellular & multicellular organization,  
cell wall composition, nutrition, Reproduction  
Heterothallism Heterokaryosis, Parasexuality  
& recent trends in classification, General  
account of Lichens.

Nov to Dec.

Phylogeny & General account of:-  
Plasmodiophora, Allomyces, Synchytrium  
Saprolegnia, Mucor, Perenospora, Albugo,  
Pilobolus, Enteromopthera, Taphrina,  
Chaetomium, Protomyces, Erysiphe  
Penicillium, Neurospora, Claviceps.  
Phyllactinia, Xylaria, Morchella, Melampsora.  
Puccinia, Ustilago, Tilletia, Uromyces  
Lycoperdon, Geaster, Alternaria  
Cercospora, Coleotrichum, Trichothecium  
Monellia, Helminthosporium  
Fusarium & Mycorrhizal fungi as  
Biocontrol agents.



उत्तरांचल शास्त्र  
राजकीय दिग्विजय महाविद्यालय,  
सहायगढ़गंज (उ.प्र.)

  
Dr Kiran Jain

Sept to Oct  
Kiran

### Unit-1.

**Translocation of water and solutes and membrane transport:** - Plant water relations, Mechanism of water transport through xylem, Root-microbe interactions in facilitating nutrient uptake, Comparison of xylem and phloem transport, Phloem loading and unloading, Passive and active solute transport, Membrane transport system.

### Unit-2.

Nov to Dec  
Kiran

**Photochemistry and photosynthesis:** - General concept and historical background, Evolution of photosynthetic apparatus, Photosynthetic pigments and light harvesting complexes, Photo-oxidation of water, Mechanism of electron and proton transport.

**Carbon assimilation:** - The Calvin cycle, Photorespiration and its significance, C<sub>4</sub> cycle, the CAM pathway, Physiological and ecological consideration.

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### Unit-3.

**Sensory photobiology:** - History of discovery of phytochromes, cryptochromes and their photochemical and biochemical properties, Photo-physiology of light induced responses, Cellular localization, Molecular mechanism of action of photomorphogenetic receptors.

### Unit-4.

**Respiration:** - Overview of plant respiration, Glycolysis, TCA cycle, Electron transport and ATP synthesis, Pentose phosphate pathway, Glyoxylate cycle, Alternative oxidase system

**Stress physiology:** - Plant responses to biotic and abiotic stress, Mechanism of biotic and abiotic stress tolerance, HR and SAR, Water deficit and drought resistance, Salinity stress, Metal toxicity, Freezing and Heat stress, Oxidative stress. High temp. stress, low temp. stress

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सत्यमेव जयते  
जय श्री गणेशाय  
महाविद्यालय (उ.प.)

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Prof. S.K.Jadhav  
S.O.S. in Biotechnology

Dr.B.M.Lal  
Govt.DB Girls College

Dr.Vimal Kanungo  
Govt. NS College

