DEPARTMENT OF BOTANY
PROGRAMME: M. SC.

Statements of Programme Specific Outcomes (PSOs)

By the end of this course, the students will be able to:

1. Learn about practical technique in lab for detail study of plant cell structure, reproduction, anatomy, breeding procedures for hybridization
2. To utilize the knowledge of mycology and plant pathology to satisfy the need of farmers
3. Procure the knowledge of importance of plant to human being and all organisms.
4. Prepare the students for many competitive exams like MPSC, UPSC NET SET GATE
5. Enable the students to be resourceful in identifying the plants.

Statements of Course Outcomes (COs)

MSc I Course: SEM-1 Core 1((1T1)

By the end of this course, the students will be able to:

1. Understand the structure, function of virtues and bacteria
2. Describe the life cycle, structure and functions of algae
3. Students will classify and describe the life, cycle, structure and function of fungi around them.
4. Comparative study of different fungi with special reference to diseases in crop plant and symptoms of fungal diseases.
5. Identify algae and fungi in their natural habitat on the basis of characters
6. Develop the cultures of algae and fungi.

MSc I Course: SEM-I paper II (1T2)

By the end of this course, the students will be able to:

1. Understand the structure and life cycle of different bryophytes
2. Identify the members of Hepatocopsida and Bryopsida
3. Study of evolutionary trends of Sphenopsida and filicopsida
4. Study of distribution and classification of rhyniopsida, psilopsida and Lycopsida
5. Identify bryophyte and pteridophyte material for specimens

MSc I Course: SEM-I paper III (1T3)

By the end of this course, the students will be able to:

1. Study the different types of fossils of extinct plants/ flora
2. Study the origin of gymnosperm by living fossil genera.
3. Study the evolutionary affinity between cordiattes, caytonicles and pentoxylales.
4. Study of living gymnosperm and fossil forms.
5. Identify fossil and living form of gymanosperm.

MSc I Course: SEM-I paper IV (1T4)

By the end of this course, the students will be able to:

1. Study Mendelian law including incomplete dominance, penetrance , expressivity in Drosophila

2. Explain the study of chromatin organization, karyotype analysis
3. Discuss the breeding behavior of duplicator, deficiency, inversion and translocator.
4. Detail study of spontaneous and indeed mutation of chromosomes on the basis of karyotype
5. Gain knowledge about actual mutations happens in plants.

MSc I Course: SEM-I Practical-I (1P1)

By the end of this course, the students will be able to:

1. Identify cyanobacteria and algae
2. Prepare and identify the fungal culture
3. Identify bryophytes and plant disease
4. Identify fungi and bryophytes

MSc I Course: SEM-I Practical-II (1P2)

By the end of this course, the students will be able to:

1. Identify pteridophyte and gymnosperm material
2. Study the anatomical preparation of pteridophyte and gymnosperm.
3. Describe the fossil specimens
4. Perform the experiments on cytology and genetics
5. Prepare the botanical excursion report.

MSc I Course: SEM-II paper I (2T1)

By the end of this course, the students will be able to:

1. Students will understand how the process of photosynthesis feed all organism and balancing Co_2 and O_2 ratio.
2. Explain the mechanism of growth hormones, auxin, gibberellins.
3. Classify enzymes and regulation of their activity
4. Compare the structure and function of carbohydrate lipid and protein metabolism

MSc I Course: SEM-II paper II (2T2)

By the end of this course, the students will be able to:

1. Understand photo morphogenesis and seedling development
2. Evaluate the root developments, flower development in plants
3. Study the reproduction in plants with the help of male female gametophyte
4. Study of microsporogenesis and megasporogenesis.
5. Understand pollen-pistil interacting and seed development.

MSc I Course: SEM-II paper III (2T3)

By the end of this course, the students will be able to:

1. Describe cell wall, plasma membrane and plasmodesmata
2. Understand cell organelles Golgi complex, lysosomes, peroxysomes etc
3. Study the nucleus-ultra structure and function
4. Study the stress biology, biotic and abiotic stress

5. Correlate the theoretical description of cell components with microscopic ultra structures.

MSc I Course: SEM-II paper IV (2T4)

By the end of this course, the students will be able to:

1. Study of floral symmetry of dicot and monocot flowers.
2. Discuss about the principles of taxonomy and major system of plant classification.
3. Understand anatomy, embryology, palynology and photochemistry.
4. Discuss the principles of biosystematics numerical taxonomy.
5. Collect the ethno botanical museum specimens.

MSc I Course: SEM-II Practical- I (2P1)

By the end of this course, the students will be able to:

1. Perform the experiments on photosynthesis, respiration and growth of plants
2. Identify amount of metabolic-protein, amino acids, fat, carbohydrate, present in plants
3. Classify different kind of cytohistological zonation of shoot and root meristem
4. Understand the process of micro and megasporogenesis
5. Understand physiological effects of temperature, humidity, CO_2 level on plants.

MSc I Course: SEM-II Practical-II (2P2)

By the end of this course, the students will be able to:

1. Study the salivary gland chromosome of chiranomas larva
2. Isolate DNA and prepare cot curve
3. Study the different families of dicot
4. Prepare cardiogram of different species of Ficus
5. Collect the different types of inflorescence and fruits
6. Collect the museum specimens of morphology of plants

MSc II Course: SEM-III paper I (3T1)

By the end of this course, the students will be able to:

1. Understand the concept of community and vegetable development and succession
2. Organize the ecosystem and mechanism of biogeochemical cycle
3. Students will differentiate hydrophytes, mesophytes, and xerophytes and discussing the concept of ecosystem stability.
4. Know about IUCN, red data book, sanctuaries, national park
5. Study of topography of an area and sampling of plant community by quadrate method.
6. Study of composition of wetlands and mangroves.

MSc II Course: SEM-III paper II (3T2)

By the end of this course, the students will be able to:

1. Study of taxonomic classification- croquets (1968)
2. Study of systematic position of Alismatidae, commeliadae, Asteraceae and

Lemnaceae

3. Explain the fossil angiosperm and global Biodiversity
4. Study of socio-economic importance of diversity of plants
5. Collect the herbarium specimens
6. Collect the morphological specimens- cones, flowers, fruits and seeds etc.

MSc II Course: SEM-III paper III (3T3)

3T3 -Core Elective I : (Palaeobotany –I)

At the end of this course, the students will be able to:

1) Understand the science of petrology.
2) Understand geological time scale and type of fossil preservation its age determination and technique to study them.
3) Details of early land plant.
4) Understand the concept of plant of Devonian, Carboniferous and its concept.
5) Know the origin and evolutionary consideration of Sphenopsida, Filicopsida and Ferns.

3T3 & 4T3 -Core Elective I & II : (Algae-I & II)

At the end of this course, the students will be able to:

1) Describe the lifecycle structure and functions of algae.
2) Comparative study of different algae with special reference to evolution.
3) Identify algae in their natural habitat.
4) Develop the culture of algae.
5) Able to know the importance of algae.

3T3 & 4T3 -Core Elective I & II : (Palynology-I & II)

At the end of this course, the students will be able to:

1) Gained the knowledge of reproductive parts of plant and embryological aspects. In addition students has learned palynotaxonomy, palynophysiology, pollination biology, pollen biotechnology, melissopalynology / bee biology with its applications in conservation of bee flora, exploration of pollen/ nectar sources of honey bees, enhancing honey production and various economic and medicinal uses of honey and bee pollen palaeopalynology particularly its role in coal and oil exploration , aerobiology & allergy, forensic palynology with stating role of this subject in solving criminal problems.
2) Learn the wonderful science of pollen and its importance to people, scientists, and academicians in biology, biotechnology agriculture, pharmacy, law and medical sciences through basic and applied aspects of the subject.

MSc II Course: SEM III paper IV (3T4)

By the end of this course, the students will be able to:

1. Introduce to Aesthetic botany in syllabus to study phytogeography and forest types in India
2. Understand the technique of grafting, budding, industrial gardening, terrace gardening etc.
3. Develop nurseries and other management for cultivation of flowers
4. Design landscape in commercial, residential bungalows
5. Develop the technique to set up playhouses and ornamental succulents.

MSc II Course: SEM-III Practical-I (3P1)

By the end of this course, the students will be able to:

1. Study of frequency, abundance and density by quadrate method
2. Study of statistical problems based o biometry
3. Identify morphological and floral characters of different plants
4. Use of generic key and species key for plant
5. Collect the herbarium specimens for herbarium record in the department for UG and PG students.

MSc II Course: SEM-III Practical-II (3P2)

By the end of this course, the students will be able to:

1. Identify the Algae from the culture.
2. Identify the macronutrient content of algae.
3. Estimation of chlorophyll, carbohydrates, amino acids.
4. Develop the skills for drawing camera Lucida diagrams of algae.

M. Sc. Sem-III Palaeobotany Practical (3P2)

At the end of this course, the students will be able to:

1. Understand the stratigraphical and geological maps of India.
2. Different techniques of fossil study.
3. Plant fossils of Pteridophytes, Gymnosperms and Angiosperms.
4. Field visit gives the knowledge of types of preservation.

MSc II Course: SEM-IV paper I (4T1)

Course Outcomes: By the end of this course, the students will be able to:

1. Students will understand and compare the process of protein synthesis in prokaryotes and eukaryotes.
2. Students will perceive structure and functions of sub cellular components.
3. Understand the mechanism of gene mapping and genetic recombination.
4. Students will draw cell cycle-mitosis and meiosis.
5. Understand signal transduction, sensor, regulator system in bacteria and plants.

MSc II Course: SEM-IV paper II (4T2)

Course Outcomes: By the end of this course, the students will be able to:

1. Understand the application of DNA recombination technology in genetic engineering
2. Discuss about polymerase chain reaction and DNA fingerprinting
3. Describe detail of tissue culture technique and its application
4. Study bioinformatics, data base sequences DNA nomenclature and taxonomy database
5. Study methods of plant breeding technique
6. Study the technique of hybridization.

M. Sc. Sem-IV Palaeobotany Paper- XV (4T3)

At the end of this course, the students will be able to:

1. Understand the origin of Progymnospermopsida.

2. Heterospory and evolution of seed habit.
3. Phylogeny and diversification in primilini gymnosperm.
4. Understand the age formation and floristic composition of Deccan intertraps.
5. Importance of Paleo-palynology and Indian Gondwana.

MSc II Course: SEM-IV paper IV Centric Plant Resources (4T4)

Course Outcomes: By the end of this course, the students will be able to:

1. Study Fiber, gum, resin, timber, spice and condiments plants.
2. Study of medicinal plants anatomy and evaluation of herbal drugs
3. Study of structure of alkaloids, terpenoids, steroids, glycoside etc.
4. Study of preparation of dyes, paper, tea, coffee and coca etc.
5. Study of rubber industry and its product
6. Identify the medicinal plants and collect them during the botanical tour.

MSc I Course: SEM-IV Practical-I (4P1)

Course Outcomes: By the end of this course, the students will be able to:

1. Students will understand the technique of SDS-PAGE and ELISA.
2. Perform the experiment on restriction digestion of DNA
3. Study of media for plants tissue culture
4. Study of oil, rubber, medicinal plants, dyes etc.
5. Identify medicinal and economical plants.
6. Students will understand the concept of conjugation in bacteria.
7. Students will prepare gene maps on the basis of cross over data.

MSc I Course: SEM-IV Practical-II Project (4 PROJ 1)

Course Outcomes: By the end of this course, the students will be able to:

1. Learn different techniques of research used in anlaysis.
2. Perpare ppt presentation.
3. Improve presentation skill and teaching communication skill.