

# V. S. M. COLLEGE (A): RAMACHANDRAPURAM

## COURSE OUTCOMES

### M.Sc. BOTANY

#### CRYPTOGAMS AND GYMNOSPERMS

- CO1:** Students know about the biodiversity and also learn about the classification of different pre - forms of Algae and Bryophytes in environment.
- CO2:** students will know about economic importance of cryptogams
- CO3:** students will know about features of Bryophyta list taxonomic features of Bryopsida know when they see member of Bryopsida
- CO4:** Explain taxonomic features of Pteridophyta Student understand the pteridophytes and Gymnosperms

#### MICROBIOLOGY

- CO1:** Students will acquire the knowledge on the historical aspects and development of microbiology.
- CO2:** Students will Know General bacteriology and microbial techniques for isolation of pure cultures of bacteria, fungi
- CO3:** Students will Know various Culture media and their applications and also understand various sterilization.
- CO4:** Students learn the techniques and methods of Mushroom cultivation

#### CELL BIOLOGY

- CO1:** Students gain knowledge about various cell organelles of plant body and their biological activities such as photosynthesis , respiration transpiration.
- CO2:** Students will learn handling of various molecular biology instruments and microscopic techniques.
- CO3:** Student will gain the knowledge on history and formation of macro molecules.
- CO4:** After completion of this course students will find employability in molecular biology labs

#### CYTOGENETICS

- CO1:** Students understand cellcycle and its regulation. Students can have knowledge about Flow cytometry.
- CO2:** student will understand the chromosome structure ,number and organization in various species along with structural numerical aberrations.
- CO3:** **Student** can able to do the cytochemical techniques like ideogram construction, slide & smear preparation
- CO4:** **Student** can able to take up chromosomal identification, karyotypic analysis ,chromosome banding etc.

## **GENETICS**

**CO1:** Students gain knowledge on gene and allelic interaction and pleiotropism.

**CO2:** Students could clearly distinguish nuclear and cytoplasmic inheritance.

**CO3:** **Student** can have knowledge about mutagenesis and DNA damage repair.

**CO4:** students understand the concepts of sex linked maternal inheritance& Fine structure of gene.

## **MOLECULAR BIOLOGY**

**CO1:** This course possesses origin and organization of macromolecules like DNA and RNA students gain the knowledge of inheritance.

**CO2:** Students will have better understanding regarding mechanism of protein synthesis (transcription, translation)

**CO3:** They can possess knowledge on molecular biological techniques.

**CO4:** Students know about structure and organization of carbohydrates, proteins and nucleic acids.

## **PLANT DEVELOPMENT AND EMBRYOLOGY**

**CO1:** Students will be able to understand the internal characters or structure of leaves, stem roots, and various tissues and tissue systems.

**CO2:** To gain more practical knowledge by observing primary and anomalous secondary growth with the help of section cutting

**CO3:** To understand the knowledge of inviter pollen germination, fertilization methods. To know about the compatibility (fertile ) and incompatibility ( sterile)

**CO4:** Gain their knowledge of producing seedless fruits. (Parthenocarpy). More practical knowledge to learn seed viability tests

## **PLANT PATHOLOGY**

**CO1:** Students will know about concept of diseases, causal agents of plant diseases, Identification methods and management of crop diseases.

**CO2:** Students will learn various laboratory method of detection of plant pathogens.

**CO3:** They will analyze symptoms, etiology , diseases cycle and management of major diseases of field crops.

**CO4:** **Students** will also learn microbiological techniques.

## **PAPER - 1 TAXONOMY OF ANGIOSPERMS AND PLANT RESOURCE UTILIZATION:**

**CO1:** students know about the History of plant classification; Concept of species, genus and family nomenclature.

**CO2:** students gain knowledge about Artificial, natural, Phylogenetic, phenetic, cladistic, and APG systems Takhtajan system of classifications

**CO3:** Modern Trend in Plant Taxonomy; anatomy,embryology, palynology .Numerical Taxonomy, Chemotaxonomy, Cytotaxonomy, and phylogeny, comparative studies of the following families: Ranales, Rosales , Centrospermae, Tubiflorae, Amentiferae , Helobiales , Liliflorae , Glumiflorae..

**CO4:** origin evolution and botany uses of Rice, Sugarcane, Maize, Red gram, Black gram, Cotton, Sunhemp ,Catheranthus, Withania, Cymbopogan, Groundnut, Castor, Brassica.

**PAPER - 2 IN VITRO PLANT BIOLOGY:**

**CO1:** students will know about leaf growth Differentiation and epidermis.

**CO2:** By this they differentiate primary , secondary xylem and phloems

**CO3:** students know about clearly on Male and female gametophytes and pollination

**CO4:** They will be familiar with fertilization and endosperm development.

**PAPER-3 ECOLOGY AND PHYTOGEOGRAPHY:**

**CO1:** Understand core concepts of biotic and abiotic classify the soils on the basis of physical, chemical and biological components.

**CO2:** Analysis the population density

**CO3:** known of biodiversity status in India and world centres for domesticated plants.

**CO4:** students will gain the knowledge on exsitu and insitu conservation.

**PAPER- 4 PLANT PHYSIOLOGY:**

**CO1:** students understand the Plant-soil-water relationship,transpiration and its significance, mechanisms of transpiration, ascent of sap, Mineral nutrition and mineral salt absorption.

**CO2:** knowing photoperiodism and vernalization; seed dormancy-types and causes, methods of overcoming dormancy.

**CO3:** students gain knowledge about Growth and development: physiological role and mechanism of action (Auxins, cytokinins, GA, ABA, ethylene)

**CO4:** students understand senescence and aging; stress physiology-concept of biotic, abiotic and xenobiotic stresses.

**PAPER- 1 GENETIC ENGINEERING OF PLANTS AND MICROBES:**

**CO1** Knowing the rDNA technology and Nomenclature, Mechanism of action Methodology of rDNA molecule synthesis.

**CO2** students know about the blotting techniques and PCR.

**CO3** Students know about the molecular markers.

**CO4** students understand the transgenic plants and flavr-savr tomatoes, golden rice.

**PAPER- 2 EVOLUTION AND PLANT BREEDING::**

**CO1** students understand about the origin of evolution.

**CO2** knowing about different mechanisms.speciation.

**CO3** students will gain the knowledge about molecular evolution,plant breeding methods.

**CO4** students understand the BioStatistical Methods.

**PAPER-3 ENVIRONMENTAL BIOLOGY AND BIODIVERSITY:**

**CO1** students know about the ozone layer,ozone hole and its consequences.

**CO2** students understand about the laterization,podosolization and pollution types.

**CO3** students gain the knowledge about world centers of primary diversity,hotspots,speciation.

**CO4** students understand the conservation strategies,SD goals.

**PAPER-4 PLANT METABOLISM::**

**CO1** On completion of this course, the students will be able to: Differentiate anabolic and catabolic pathways of metabolism

**CO2** Recognize the importance of Carbon assimilation in photorespiration

**CO3** Explain the ATP-Synthesis

**CO4** Interpret the Biological nitrogen fixation in metabolism

**PROJECT:**

**CO1:** Get knowledge of the subject to make scientific queries and enhance the comprehension potential.

**CO2:** study incessantly by self to cope with growing competition for higher studies and employment.

**CO3:** It will used for critical thinking, Effective communication, social interaction, Ethics, ENVIRONMENT and sustainability, self directed and lifelong Learning.