



**TELANGANA TRIBAL WELFARE  
RESIDENTIAL DEGREE COLLEGE(GIRLS),  
KOTHAGUDEM**



**Bhadradri Kothagudem District, Telangana State – 507101**

(Affiliated by Kakatiya University, Warangal, Telangana)

Website: <https://ttwrdds.ac.in/.Kothagudem>

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**PROGRAMME OUTCOMES /  
PROGRAMME SPECIFIC  
OUTCOMES AND  
COURSE OUTCOMES**

**ACADEMIC YEAR : 2017-18**

***Bachelor of Science (B.Sc.):***

The Bachelor of Science requires the Three Years of Full time study consisting of six semesters. It translates in making a significant investment in one's professional career. In addition to the enhanced career prospects that can be gained by opting it a students also develop valuable personal skills and fulfill a crucial prerequisite to Master studies. It concentrates on providing opportunities for students to show outstanding performance at subject knowledge and understanding, intellectual skills related to the subject, transferable skills and attitudes through introduction of a wide range of topics, reasoning through unfamiliar problems, critical and analytical thinking, It provides the tools to investigate topics in depth, in order to find a systematic approach in analyzing and building up knowledge to reach a solution. The developments of teamwork and leadership abilities are imbibed to give importance to Safe Laboratory Practice.

- Students will have a broad foundation in the three major subjects of their choice with scientific reasoning, problem solving and analytical skills.
- The students are trained in a breadth and depth of experimental techniques using modern instrumentation which help them to take up higher education or jobs after the course.
- They develop the ability to effectively communicate scientific information in written and oral formats.
- They acquire the ability to work in teams and apply basic ethical principles.

### ***PROGRAM EDUCATIONAL OBJECTIVES (PEO)***

- PEO1: The Graduates are employable as software professionals in reputed industries
- PEO2: The Graduates analyze problems by applying the principles of computer science, mathematics and scientific investigations to design and implement industry accepted solutions using latest technologies
- PEO3: The Graduates work productively in supportive and leadership roles on multidisciplinary teams with effective communication and team work skills with high regard to legal and ethical responsibilities.
- PEO4: The Graduates embrace lifelong learning to meet ever changing developments in computer science and engineering

### ***PROGRAM OUTCOMES (PO)***

- PO1: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.
- PO2: Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO3: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.
- PO4: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO5: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities, with an understanding of the limitations.
- PO6: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- PO7: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO8: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10: Communicate effectively on complex engineering activities with the engineering community and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- PO11: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO12: Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. The

POs formulated for each programme by the institute must be consistent with the NBA's Graduate Attributes.. The POs must foster the attainment of thePEOs.

### **PROGRAM SPECIFIC OUTCOMES (PSO)**

- PSO1: The ability to understand, analyze and develop software solutions
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## **B.SC. BOTANY**

The qualification descriptors for a Bachelor's degree in Botany may include following:

- To demonstrate a systematic, extensive and coherent knowledge and understanding of academic fields of study as a whole and its applications and links to disciplinary areas of the study; including critical understanding of the established theories, principles and concepts of a number of advanced and emerging issues in the field of Botany.
- To demonstrate procedural knowledge that creates different types of professionals in the field of Botany i.e. research and development, teaching government and public services. Further application of knowledge can enhance productivity of several economically important product/botanicals. Knowledge of Botany is also necessary for the development and management of forests, parks, wastelands and sea wealth
- Develop skills and ability to use knowledge efficiently in areas related to specializations and current updates in the subject
- Demonstrate comprehensive knowledge about plants, current research, scholarly and professional literature of advanced learning areas of Botany
- Use knowledge understanding and skills for critical assessment of wide range of ideas and problems in the field of Botany
- Communicate the results of studies in the academic field of Botany using main concepts, constructs and techniques.
- Apply one's knowledge and understanding of Botany to new/unfamiliar contexts and to identify problems and solutions in daily life.

### **PAPER-I:**

#### **MICROBIOLOGY, ALGAE AND FUNGI:**

- Learn about the structure, pigmentation, food reserves and methods of reproduction of Algae
- Learn about the structure, pigmentation, food reserves and methods of reproduction of Fungi
- Know about the Economic importance of algae, Fungi and lichen
- Studied some plant diseases with special reference to the causative agents, symptoms, etiology and control measures.

### **SEMESTER-II:**

#### **PAPER-III: BRYOPHYTES, PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY:**

- Learn about the general characters and classification by K.R. Sporne, stellar evolution in Pteridophytes, heterospory and origin of seed habit.
- Know about the structure, life history and Economic importance of Gymnosperms.

### **SEMESTER-III:**

#### **PAPER-III: TAXONOMY AND MEDICINAL PLANTS**

- Learn the types of classifications- artificial, Natural and phylogenetic.
- Gain knowledge about Botanical Survey of India (BSI).
- Briefly studied on herbarium techniques.
- Learn the taxonomic evidences from molecular, numerical and chemicals.
- Briefly studied the economic products with special reference to the Botanical name, family, morphology of useful part and the uses
- Know about history and relevance of herbal drugs in Indian system of medicine
- Learn the macroscopic and microscopic characters, chemical constituents, adulterants, therapeutically and pharmaceutical uses of medicinal plants
- Understand the techniques for drug evaluation (Chemical, Physical and Biological), Phytochemical investigations, standardization and quality control of herbal drugs
- Know the technique of medicinal gardening - Cultivation practices, market and utilization of selected medicinal plants.

### **SEMESTER-IV:**

#### **PAPER-IV: PLANT ANATOMY, EMBRYOLOGY AND PALYNOLOGY**

Learning outcomes on completion of this course, the students will be able to:

- Develop an understanding of concepts and fundamentals of plant anatomy
- Examine the internal anatomy of plant systems and organs
- Develop critical understanding on the evolution of concept of organization of shoot and root apex.
- Analyze the composition of different parts of plants and their relationships
- Evaluate the adaptive and protective systems of plants
- Learn about double fertilization and their significance
- Know about the Structure and development of dicot and monocot embryos.

#### **PAPER V: CELL BIOLOGY AND GENETICS**

On completion of the course, students are able to understand

- The eukaryotic cell cycle and mitotic and meiotic cell division
- Structure and organization of cell membrane
- Process of membrane transport and membrane models
- Mendelian and Neo-mendelian genetics
- To study the phenomenon of dominance, laws of segregation, independent assortment of genes.
- To understand the different types of genetic interaction, incomplete dominance, codominance, inter allelic genetic interactions, multiple alleles and quantitative inheritance etc.

#### **PAPER V (A): ECOLOGY AND BIODIVERSITY**

- Learn the Approaches to the study of Ecology (Autecology, Synecology and Genecology)
- Understand the population & Community Ecology - concept of metapopulation
- Know about the Principles of Toxicology and types of Toxins, sources, metabolism and Biological monitoring (Studied various statistical methods of analysis)

#### **PAPER -VI: PLANT PHYSIOLOGY**

- Know about the requirement of mineral nutrition for plant growth
- Understand the process of Photosynthesis, Respiration and Nitrogen metabolism
- Learn about Sensory photobiology

- Know about the Plant Growth hormones (Auxins, Gibberellins, Cytokinins, Ethylene)
- Understand the biosynthesis of terpenes, phenols and nitrogenous compounds
- Understand the concepts in biophysics

***PAPER -VI (A): PLANT TISSUE CULTURE AND BIOTECHNOLOGY***

- Understand the basic knowledge about tissue culture tools, medium, sterilization and techniques of tissue culture.
- Learn about the production of Synthetic seeds & significance
- Study about the role of tissue culture in crop improvement.
- Learn the micro and Megasporeogenesis
- Know about the morphogenesis and organogenesis in plants
- Learn the specific and non-specific methods of gene transfer
- Recombinant DNA technology
- Applications of Biotechnology in Plant, Animal and Human welfare
- Biotechnology and IPR, Biosafety, Bio piracy, Bioterrorism and Bioethics.

# ACADEMIC YEAR : 2019-20

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## **Department of Botany**

### **Programme Outcomes:**

1. The scope of plant diversity with respect to environmental relationships.
2. Study of plant classification to understand the taxonomy.
3. The utilization of plants for human beings in terms of its economic importance.
4. Take projects, study case to understand plant biodiversity.
5. Student learns practical work as per the syllabus prescribed by SPPU, field studies for optimizing proficiency the subject.
6. Use of IT tools, communication skills in scientific knowledge<sup>1</sup> for specific needs.
7. Career planning.

### **Programme Specific Outcomes:**

1. Understanding phylogenetic relationships of plants.
2. Identification of plants becomes easier.
3. Students will apply statistical method to interpret their data collected from various fields
4. Students will be able to explain plant development at molecular level, development of plant, plant anatomy, photosynthesis and life cycle of plants.
5. Students will be able to develop practical skill in experimental techniques.



**Course Outcomes:**

S. No.	Semester	Course	Credits	Course Outcomes
1	I	Microbial Diversity of Lower Plants	5	Understanding the microbial organisms in nature and their diversity with Lower Plants
2	II	Bryophytes, Pteridophytes, Gymnosperms and Paleobotany	5	Understanding the nature and life cycle of non flowering plants.
3	III	Taxonomy of Angiosperms and Medicinal Botany	5	Identification and taxonomical study Angiospermic plants and Medicinal values of important plants
4	IV	Plant Anatomy, Embryology and Palynology	5	Study of internal structure of plant parts.
5	V Paper - V	Cell Biology and Genetics	4	Study of biological activities in Cell and Cell Organelles and Genetics
6	V Paper - VI	Ecology and Biodiversity	4	Understanding the ecological problems and remedies for biodiversity
7	VI Paper - VII	Plant Physiology	4	Study of physiological reactions in plants and plant organisms.
8	VI Paper - VII	Seed Technology	4	Understanding the structure, process, storage and transport of Seeds

## **Course out comes**

### **DEPARTMENT OF BOTANY**

<b>S.NO</b>	<b>Academic year</b>	<b>Sem-I</b>	<b>Sem-II</b>	<b>Sem-III</b>	<b>Sem-IV</b>	<b>Sem-V</b>	<b>Sem-VI</b>	<b>Average</b>
1	2018-19	8.18	8.67	8.59	8.67	–	–	8.52
2	2019-20	8.14	8.45	8.57	.8.50	8.84	8.17	8.44
3	2020-21	7.79	7.66	7.65	8.85	8.5	8.75	8.19
4	2021-22	8.3	7.97	8.4	8.58	8.36	8.58	8.36
5	2022-23	7.69	7.39	8.48	8.52	8.56	8.18	8.13
6	2023-24	12.91	8.07	8.48	8.35	8.80	6.95	8.92