

## **UNDERGRADUATE PROGRAMME OUTCOMES (PO)**

After the completion of the Undergraduate Programme, the student will be able to accomplish the following outcomes:

**PO1. Critical Thinking:** Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

**PO2. Problem solving:** Understand and solve problems of relevance to society to meet the specified needs using the knowledge ,skills and attitudes acquired from humanities/sciences/mathematics/social sciences.

**PO3. Effective Citizenship:** Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

**PO4. Global Perspective:** Understand the economic, social and ecological connections that link the world's nations and people.

**PO5. Environment and Sustainability:** Understand the issues of environmental contexts and sustainable development.

### **Program Specific Outcomes (PSO)**

**PSO1:** Understand the nature and fundamental concepts in methodology of science, plant systematics, ecology, anatomy, cell biology, physiology, molecular biology, genetics, plant breeding, developmental biology, evolution, biotechnology and bioinformatics.

**PSO 2:** Understand the diversity, relationship among lower and higher groups of plants and their importance.

**PSO 3:** Understand applications of biology in horticulture, plant breeding, biotechnology, tissue culture, genetic engineering, bio informatics, biophysics and agribusiness.

**PSO 4:** Perform laboratory procedures as per standard protocols in the areas of physiology, anatomy, taxonomy, mycology, cell and molecular biology, biotechnology, bioinformatics, biophysics, biochemistry, ecology and plant pathology.

## Course Outcome (CO)

Course Name	Course Code	Course Outcome
<b>COMPLEMENTARY COURSE</b>		
Cryptogams, Gymnosperms and plant pathology	BO1CMT01	<ol style="list-style-type: none"> <li>1. Understand botany as an integral part of human life and development.</li> <li>2. Understand diversity of algae, fungi, bryophytes, Pteridophytes and gymnosperms.</li> <li>3. Understand reproduction, lifecycle and economic importance of cryptogams and gymnosperms</li> <li>4. Understand disease development, symptoms and control of plant diseases.</li> </ol>
Plant Physiology	BO2CM02	<ol style="list-style-type: none"> <li>1. Understand basic principles related to various physiological functions in plant life.</li> <li>2. Understand mechanism of synthesis and translocation of food in plants.</li> <li>3. Understand germination, dormancy, growth and development in plants.</li> <li>4. Familiarize with basic skills and techniques related to plant physiology.</li> </ol>
Angiosperm Taxonomy and Economic Botany	BO3CM03	<ol style="list-style-type: none"> <li>1. Understand Morphological features of Angiosperms.</li> <li>2. Understand Plant Classification systems.</li> <li>3. Understand techniques involved in Herbarium Preparation.</li> <li>4. Recognize members of selected Angiosperm families by identifying their diagnostic features.</li> <li>5. Evaluate medicinal importance of selected Angiosperms.</li> <li>6. Evaluate Economic importance of selected plants special reference to family, morphology and useful parts.</li> </ol>

Anatomy and Applied Botany	BO4CMT04	<ol style="list-style-type: none"> <li>1. Understand different plant tissue types</li> <li>2. Understand anatomical features of Monocots and Dicots</li> <li>3. Understand Ecological adaptations of Plants</li> <li>4. Understand normal and anomalous secondary thickening in Plants</li> <li>5. Understand the basic techniques in Plant breeding.</li> <li>6. Carry out artificial propagation methods in plants- Layering, Budding, Grafting</li> <li>7. Understand basics of tissue culture techniques</li> </ol>
<b>CORE COURSE</b>		
Methodology of Science and an Introduction to Botany	BO1CRT01	<ol style="list-style-type: none"> <li>1. Understand different methodologies and experimental designs in Science</li> <li>2. Understand the origin, evolution, diversity and classification of living world</li> <li>3. Develop basic practical skills in the field of Botany</li> </ol>
Microbiology, Mycology and Plant Pathology	BO2CRT02	<ol style="list-style-type: none"> <li>1. Understand the world of microbes, fungi and lichen</li> <li>2. Understand ecology, reproduction, economic importance of microbes, fungi and lichens</li> <li>3. Understand disease development, symptoms and control measures of plant diseases</li> </ol>
Phycology & Bryology	BO3CRT03	<ol style="list-style-type: none"> <li>1. Generalize diversity in habit, habitat &amp; organization of lower plant groups.</li> <li>2. Understand various classification systems in Phycology &amp; Bryology Compare &amp; contrast external morphology ,anatomy &amp; reproduction of Algae &amp; Bryophytes</li> <li>3. Relationship between Algae &amp; Bryophytes in evolutionary aspects</li> <li>4. Critical study on various ecological &amp; economic importance of Algae &amp; Bryophytes</li> </ol>
Pteridology, Gymnosperms and Paleobotany	BO4CRT04	<ol style="list-style-type: none"> <li>1. Understand common types of Pteridophytes and gymnosperms and their economic importance</li> <li>2. Understand the mechanism of fossil formation and types of fossils with examples</li> </ol>

		3. Understanding contributions of Indian paleontologists
Anatomy, reproductive botany & Microtechnique	BO5CRT05	<ol style="list-style-type: none"> <li>1. Understanding the anatomy and reproduction of angiosperms.</li> <li>2. Understand the structure and functions of cell, cell inclusions &amp; tissues</li> <li>3. Analyzing structural adaptation in plants growing in different environment.</li> <li>4. Understand the morphology &amp; development of reproductive parts &amp; reproduction in angiosperms.</li> <li>5. Understand the techniques of preservation of plant specimens, sectioning &amp; mounting.</li> </ol>
Environment Science and Human Rights	BO5CRT06	<ol style="list-style-type: none"> <li>1. Aware students with significance of Environmental Science and Human rights.</li> <li>2. Understand structure and function of Ecosystems and interactions of populations in Ecosystem.</li> <li>3. Generalize Pollution types in environment, their impact and control measures.</li> <li>4. Focus and distinguish Environmental Laws and Environment protection efforts.</li> <li>5. Understand Biodiversity and their Conservation</li> </ol>
Plant Physiology and Biochemistry	BO5CRT07	<ol style="list-style-type: none"> <li>1. Understand basic principles related to various physiological functions in plant life.</li> <li>2. Understand the recent trends in the field of plant physiology.</li> <li>3. Understand structure, functions and importance of biomolecules.</li> <li>4. Understand germination, dormancy, growth, development and role of hormones in plants.</li> <li>5. Familiarize with basic skills and techniques related to plant physiology and biochemistry.</li> <li>6. Apply physiological aspects in other fields like agriculture, nursery management and forestry</li> </ol>
Research Methodology, Biophysics and Biostatistics	BO5CRT08	<ol style="list-style-type: none"> <li>1. Understand the methodologies in research.</li> <li>2. Apply the methodology in writing research report.</li> <li>3. Understand the techniques and tools used in research.</li> <li>4. Understand the computer skills required in research.</li> </ol>

		<p>5. Understand the principles and applications of biophysical instruments.</p> <p>6. Apply the numerical skills in research data preparation</p>
Agribased Microenterprises	BO5OPT01	<p>1. Understand the business opportunities in Agribusiness.</p> <p>2. Understand the basic principles of sustainable agriculture.</p> <p>3. Understand and apply the concept of organic farming.</p> <p>4. Understand and apply the concept of organic farming.</p> <p>5. Apply the principles of agriculture in nursery management.</p> <p>6. Apply the principles in mushroom cultivation.</p> <p>7. Apply the principles of agriculture in garden designing.</p>
Genetics, Plant Breeding & Horticulture	BO6CRT09	<p>1. Explain principles of Heredity &amp; pattern of Inheritance.</p> <p>2. Understand the inheritance pattern of nuclear &amp; Extra nuclear genes.</p> <p>3. Describe the procedure of crop improvement methods.</p> <p>4. Explain horticultural practices and its applications in human welfare.</p> <p>5. Develop skills in gardening techniques among students</p>
Cell & Molecular Biology	BO6CRT10	<p>1. Understand the ultra structure &amp; functioning of cell in sub microscopic &amp; cellular level.</p> <p>2. Understand the concept of continuity &amp; complexity of life activities.</p> <p>3. Understand DNA as basics of heredity &amp; variation.</p> <p>4. Understand cytological aspects of growth &amp; development.</p> <p>5. Solve basic molecular biology problems.</p>
Angiosperm Morphology, Taxonomy And Economic Botany	BO6CRT11	<p>Understand the aim, objectives, significance and applications of plant taxonomy.</p> <p>2. Understand plant morphological terminologies</p>

		<p>and identify morphological peculiarities.</p> <p>3. Understand different systems of angiosperm classification and nomenclature.</p> <p>4. Understand angiosperm diversity and identify their diagnostic features and economic importance.</p> <p>5. Evaluate economic importance of selected angiosperms.</p> <p>6. Acquaint with the basic techniques of herbarium preparation, systematic identification of angiosperms.</p>
Biotechnology and Bioinformatics (Bo6crt12)	BO6CRT12	<p>1. Understand the principles of biotechnology, developments in biotechnology and applications of biotechnology.</p> <p>2. Equip the students to carryout plant tissue culture.</p> <p>3. Understand the different biological data base.</p> <p>4. Equip the students to access and analyze the various data bases</p>
Agribusiness	BO6PET01	<p>1. Understand agribased business oppurtunites.</p> <p>2. Apply the knowledge of agriculture to develop agribased entrepreneurship.</p> <p>3. Understand the basic concepts of sustainable development in agribusiness.</p> <p>4. Understand and apply the principles of organic farming.</p> <p>5. Understand the opportunities and scope of ecotourism.</p> <p>6. Apply different processing techniques in agricultural products.</p>