



**SHRI GOVINDRAOMUNGHATE COLLEGE ARTS AND SCIENCE COLLEGE  
KURKHEDA**

Dist- Gadchiroli-441209

**PROGRAMME: B. SC.**

**Programme Outcomes (POs) of B. Sc**

**(As per UGC Guidelines)**

- PO1. Disciplinary knowledge:** Students will possess a breadth and depth of disciplinary knowledge in the field of Science.
- PO2. Scientific Judgment, Critical Thinking & Research:** Students will be able to analyze information objectively and make a reasoned judgment by observation, understanding and evaluation of sources, such as data, facts and link research findings to innovation and entrepreneurship.
- PO3. Problem solving & Analytical Skills:** Students will be able to think logically, analyze situations and solve problems skillfully.
- PO4. Environment and sustainability:** Ability to understand the issues related to environmental contexts and sustainable development
- PO5. Effective Communication:** Students will be able to present ideas clearly and confidently with skills to convey with others. They will be able to evaluate primary literature, in oral and written form during seminar delivery and subsequently articulate the information.
- PO6. Digital Literacy:** Acquire ability to use ICT, demonstrate ability to access, evaluate, and use a variety of relevant information sources; and use appropriate software for analysis of data.
- PO7. Leadership & Team work:** Ability to work as a leader as well as in a team for group projects, field work and group activities and participate actively, in a healthy spirit
- PO8. Ethical & Moral values:** Students will bear the core characters of honesty, integrity and commitment and imbibe qualities of empathy for fellow human beings.
- PO9. Effective Citizenship and Social Interaction:** Students will develop tolerance and harmony towards cultural, regional, linguistic, communal, socioeconomic and other diversities and respect for national symbols of pride
- PO10 Technological Upliftment:** Students will learn how to handle equipment and machines used for practical purpose in this programme. This is useful for them to choose their future education and area of expertise as a career.

## Programme Specific Outcomes (PSOs) for Programmes in Life Sciences

### Programmes in Life Sciences:

1. B. Sc. with Chemistry, Botany, Zoology (CBZ)
2. B. Sc. with Chemistry, Botany, Microbiology (CBMb)
3. B. Sc. with Chemistry, Zoology, Geology (CZG)
4. B. Sc. with Chemistry, Geology, Physics (CGP)

### Programme Specific outcomes (PSO)

**PSO1. RECOLLECTION:** Students will be able to identify the major groups flora and fauna and be able to classify them within a phylogenetic framework. Students will be able to compare and contrast the characteristics, micromolecular structures of biomolecules at cellular and molecular level.

**PSO2. UNDERSTANDING:** Students will be able to associate the theoretical concepts with the practical observations and draw inferences for better comprehension

**PSO3. APPLICATION:** Students will be able to apply the domain knowledge and present their ideas in order to extrapolate science to everyday life. Students will be able to integrate classroom knowledge with field work to develop entrepreneurial skills like Apiculture, Diagnostics etc.

**PSO4. ANALYSIS:** Students will gain analytical skills and research ability. This will be facilitated by making observations, collecting data in laboratory and in the field. They will be trained to analyze these results, derive conclusions and report their findings.

**PSO5. EVALUATION:** Students will be equipped to judge, support or critique the scientific information like global warming, forest fires, vaccine drives, oil spills etc.

**PSO6. CREATION:** Students will be able to design, author and present scientific ideas as presentations, popular science articles, scientific write ups and graduate research projects.

**PSO7.** Students will be able to use instruments independently pertaining to their domain knowledge and understand the principles of instrumentation and their application.

## COURSE OUTCOME (COs) FOR SUBJECT: BOTANY

<b>COURSE TITLE</b>	<b>COURSE OUTCOMES SEMESTER- I Paper- I : Plant Diversity (Theory)</b>	
<b>Code Number</b>	<b>Course Outcome</b>	<b>PSOs Addressed</b>
CO-1	Explain the diversity & importance among the Microorganisms.	PSO-I, PSO-6, PSO-8
CO-2	Differentiate the Characteristics features of Algal Divisions.	PSO-I, PSO-6, PSO-8
CO-3	Understand the world of Algae & Fungi.	PSO-I, PSO-6, PSO-8
CO-4	Describe the methods of cultivation of economically important fresh water Algae.	PSO-I, PSO-6, PSO-8
CO-5	Differentiate the Characteristics features of Fungal Divisions.	PSO-I, PSO-6, PSO-8
CO-6	Describe the Range of Thallus, Reproduction & Life cycle in Fungi.	PSO-I, PSO-6, PSO-8
CO-7	Describe the Identification, methods of cultivation of economically important Fungi.	PSO-I, PSO-6, PSO-8
CO-8	Explain the morphology & Economic importance of Lichens.	PSO-I, PSO-6, PSO-8
CO-9	Discuss about local Plant diseases caused by variety of Microbial Pathogens.	PSO-I, PSO-6, PSO-8
CO-10	Developing the Employability skills in the field of Microbiology, Phycology, Mycology & Plant pathology.	PSO-I, PSO-6, PSO-8

<b>COARSE TITLE</b>	<b>COURSE OUTCOMES SEMESTER- I Paper- II: Plant Diversity (Theory)</b>	
<b>Code Number</b>	<b>Course Outcome</b>	<b>PSOs Addressed</b>
CO-1	Explain the classification, structure, reproduction & Life cycle of the main classes of Bryophytes.	PSO-I, PSO-6, PSO-8
CO-2	Discuss about Economically important Bryophytes.	PSO-I, PSO-6, PSO-8
CO-3	Classify the Pteridophytes by their characteristic features	PSO-I, PSO-6, PSO-8
CO-4	Describe the stellar evolution, types of fossils, geological time scale	PSO-I, PSO-6, PSO-8
CO-5	List the economic importance of Pteridophytes	PSO-I, PSO-6, PSO-8
CO-6	Discuss the salient features of Gymnosperm	PSO-I, PSO-6, PSO-8
CO-7	Illustrate the reproductive characters of important genus of Gymnosperm	PSO-I, PSO-6, PSO-8
CO-8	Explain the significance of important genus of fossil Gymnosperm	PSO-I, PSO-6, PSO-8
CO-9	Develop the Employability skills by learning the life cycle patterns of Bryophytes, Pteridophytes and Gymnosperms.	PSO-I, PSO-6, PSO-8

<b>COURSE TITLE</b>	<b>COURSE OUTCOMES</b> <b>Plant Diversity</b> <b>( PRACTICAL)</b>	
<b>CO Number</b>	<b>Course Outcome</b>	<b>PSOs Addressed</b>
CO-1	Identify important Algal forms by their morphological and anatomical features	PSO-I, PSO-6
CO-2	Describe the morphology and reproduction of the various genera of Fungi.	PSO-I, PSO-6
CO-3	Illustrate the structure and reproduction in Lichens	PSO-I, PSO-6
CO-4	Observe and identify the morphological structure of Bryophytes	PSO-I, PSO-6
CO-5	Identify the permanent slides of Bryophytes	PSO-I, PSO-6
CO-6	Describe the morphology, anatomy and reproductive structures of Pteridophytes	PSO-I, PSO-6
CO-7	Examine the germination of spores in ferns	PSO-I, PSO-6
CO-8	Illustrate the morphological and anatomical structures of Gymnosperms	PSO-I, PSO-6
CO-9	Develop the practical skills by observing the morphological, anatomical and reproductive structures of different plant groups.	PSO-I, PSO-6, PSO-8

Coarse Title	<b>COURSE OUTCOMES</b> <b>SEMESTER- II</b> <b>Paper-I Morphology &amp; Anatomy of Angiosperms</b> <b>(Theory)</b>	
<b>CO Number</b>	<b>Coarse Outcome</b>	<b>PSOs Addressed</b>
CO-1	Understand the vegetative morphology of most evolved plants, i. e. Angiosperms.	PSO-I, PSO-3, PSO-6
CO-2	Understand the Reproductive system in Angiosperms.	PSO-I, PSO-3, PSO-6
CO-3	Understand the variability & insight the Fruit	PSO-I, PSO-3, PSO-6
CO-4	Imparting the insight into the internal structure of Angiosperms.	PSO-I, PSO-3, PSO-6
CO-5	Understand the Internal Tissue system.	PSO-I, , PSO-3, PSO-6
CO-6	Illustrate & Understand the Anomalous secondary growth in Angiosperms.	PSO-I, , PSO-3, PSO-6

Coarse Title	<b>COURSE OUTCOMES</b> <b>SEMESTER- II</b> <b>Paper-II Taxonomy &amp; Diversity of Angiosperms</b> <b>(Theory)</b>	
<b>CO Number</b>	<b>Course Outcome</b>	<b>PSOs Addressed</b>
CO-1	Understand the world of fossil Angiosperms.	PSO-I, PSO-4
CO-2	Familiar with different classification systems of Angiosperms.	PSO-I, PSO-4
CO-3	Understand the scientific literature to study plant material.	PSO-I, PSO-4
CO-4	Understand the techniques that How to preserve	PSO-I, PSO-4

CO-5	Understand the keys to identify the families of Angiosperms.	PSO-I, , PSO-4
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Coarse Title	<b>COURSE OUTCOMES</b> <b>SEMESTER- II</b> <b>Morphology, Anatomy, Taxonomy &amp; Diversity of Angiosperms.</b> <b>(PRACTICAL)</b>	
<b>CO Number</b>	<b>Course Outcome</b>	<b>PSOs Addressed</b>
CO-1	Describe the taxonomical literature to describe plant specimens	PSO-I, PSO-4, PSO-6
CO-2	Observe & Identify characteristics features of Angiospermic families..	PSO-I, PSO-4, PSO-6
CO-3	Identify the plants present locally.	PSO-I, PSO-4, PSO-6
CO-4	Understand the vast variation found in vegetative morphology of plants.	PSO-I, PSO-4, PSO-6
CO-5	Understand & Illustrate the internal structure of Plant parts.	PSO-I, PSO-3, PSO-4, PSO-6
CO-6	Identify the fossil Gymnosperms from specimens	PSO-I, PSO-4, PSO-6
CO-7	Observe variation among reproductive parts in plants.	PSO-I, PSO-4, PSO-6
CO-8	Illustrate the anatomical structures of Angiosperms at tissue level	PSO-I, PSO-3, PSO-4, PSO-6
CO-9	Identify normal & anomalous secondary growth in Angiosperms..	PSO-1 PSO-3, PSO-4,

<b>COURSE TITLE</b>	<b>COURSE OUTCOMES</b> <b>SEMESTER- III</b> <b>Paper-I: Reproductive Biology of Angiosperms, Plant Growth and Development</b> <b>(Theory)</b>	
<b>CO Number</b>	<b>Course Outcome</b>	<b>PSOs Addressed</b>
CO-1	Understand the development of reproductive parts of Angiosperms.	PSO-I, PSO-6
CO-2	Get detailed understanding about Fruit & Seed development.	PSO-I, PSO-6
CO-3	Understand the Role of plant hormones in regulation of plant growth..	PSO-I, PSO-6
CO-4	Understand the movements in plants.	PSO-I, PSO-6
CO-5	Describe the development & growth in plants in respect to Flowering.	PSO-I, , PSO-6

<b>COURSE TITLE</b>	<b>COURSE OUTCOMES</b> <b>SEMESTER- III</b> <b>Paper-II: Plant Biochemistry and Physiology</b> <b>(Theory)</b>	
<b>CO Number</b>	<b>Course Outcome</b>	<b>PSOs Addressed</b>
CO-1	Make students familiar with structure & Function of various macromolecules in plants..	PSO-I, PSO-6
CO-2	Understand the role of various elements in plant	PSO-I, PSO-6

	functioning..	
CO-3	Realize with basic physiological processes taken place in plants..	PSO-I, PSO-6
CO-4	Understand the mechanism of anabolic & catabolic processes in plants.	PSO-I, PSO-6

<b>COURSE TITLE</b>	<b>COURSE OUTCOMES</b> <b>SEMESTER- III</b> <b>Reproductive Biology of Angiosperms, Plant Growth and Development</b> <b>Plant Biochemistry &amp; Physiology</b> <b>(PRACTICAL)</b>	
<b>CO Number</b>	<b>Coarse Outcome</b>	<b>PSOs Addressed</b>
CO-1	Describe the developmental stages in reproductive parts.	PSO-I, PSO-6
CO-2	Observe the role of various plant harmones in plant growth.	PSO-I, PSO-6
CO-3	Understand the effect of various minerals on plant growth.	PSO-I, PSO-6
CO-4	Observe the fundamental physiological processes in plants.	PSO-I, PSO-6
CO-5	Understand the role of Macromolecules .	PSO-I, PSO-6

<b>COURSE TITLE</b>	<b>COURSE OUTCOMES</b> <b>SEMESTER- IV</b> <b>Paper-I: Cell Biology, Genetics and Biotechnology</b> <b>(Theory)</b>	
<b>CO Number</b>	<b>Course Outcome</b>	<b>PSOs Addressed</b>
CO-1	Understand the basic tools & techniques in plant Biotechnology.	PSO-I, PSO-3
CO-2	Understand the application of Biotechnology in Agriculture & conservation of endangered plants.	PSO-I, PSO-3, PSO-7
CO-3	Realize the modern world of Biotechnology.	PSO-I, PSO-3
CO-4	Understand the basic concept of cell at microscopic & molecular level.	PSO-I, PSO-3
CO-5	Understand the basic concepts of Genetics at gene, genome level.	PSO-I

<b>COURSE TITLE</b>	<b>COURSE OUTCOMES</b> <b>SEMESTER-IV</b> <b>Paper II: Plant Ecology</b> <b>(Theory)</b>	
<b>CO Number</b>	<b>Course Outcome</b>	<b>PSOs Addressed</b>
CO-1	Understand the interaction of Biotic & Abiotic world.	PSO-I, PSO-5
CO-2	Realize the students to understand the structure and function of the ecosystems.	PSO-I, PSO-5
CO-3	Enable the students to understand various kinds of	PSO-I

	ecosystem and their control measures.	
CO-4	Understand the ecology at individual & community level.	PSO-I, PSO- 5

Coarse Title	<b>COURSE OUTCOMES</b> <b>SEMESTER- IV</b> <b>Cell Biology, Genetics and Biotechnology Plant Ecology</b> <b>(PRACTICAL)</b>	
<b>CO Number</b>	<b>Coarse Outcome</b>	<b>PSOs Addressed</b>
CO-1	Enable to basic concepts & techniques of Biotechnology.	PSO-I, PSO-3
CO-2	Equip the students to carry out Biotechnology operations.	PSO-I, PSO-3
CO-3	Familiar with internal structure of cell & its components..	PSO-I
CO-4	Realize the environmental adaptation in plants.	PSO-I, PSO-5
CO-5	Realize & Understand community charecterstics .	PSO-I, PSO-5

<b>COURSE TITLE</b>	<b>COURSE OUTCOMES</b> <b>SEMESTER- V</b> <b>Paper I: Molecular Biology</b> <b>(Theory)</b>	
<b>CO Number</b>	<b>Course Outcome</b>	<b>PSOs Addressed</b>
CO-1	Enable to basic concepts & techniques of Biotechnology.	PSO-I, PSO-3
CO-2	Equip the students to carry out Biotechnology operations.	PSO-I, PSO-3
CO-3	Familiar with internal structure of cell & its components..	PSO-I
CO-4	Realize the environmental adaptation in plants.	PSO-I, PSO-5
CO-5	Realize & Understand community charecterstics .	PSO-I, PSO-5

<b>COURSE TITLE</b>	<b>COURSE OUTCOMES</b> <b>SEMESTER- V</b> <b>Paper II: Molecular Biology-</b> <b>( Theory )</b>	
<b>CO Number</b>	<b>Course Outcome</b>	<b>PSOs Addressed</b>
CO-1	Understand the world of DNA as hereditary & genetic material.	PSO-I, PSO-3
CO-2	Realize the basic cellular processes .	PSO-I, PSO-3
CO-3	Enable the students to understand molecular central dogma.	PSO-I
CO-4	Understand the processes at gene level.	PSO-I, PSO- 3
CO-5	Understand how DNA packaged in cell.	PSO-I

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<b>COURSE TITLE</b>	<b>COURSE OUTCOMES</b> <b>SEMESTER- V</b> <b>Molecular Biology</b> <b>(PRACTICAL)</b>	
<b>CO Number</b>	<b>Course Outcome</b>	<b>PSOs Addressed</b>
CO-1	Familiar with structure & Function of DNA.	PSO-I, PSO- 3
CO-2	Understand basic processes of central dogma of molecular Biology..	PSO-I, PSO-3
CO-3	Familiar with various enzymes involved in protein synthesis .	PSO-I, PSO-3
CO-4	Get acquainted with techniques of Bacterial culture.	PSO-I, PSO-3
CO-5	Familiar with Family of RNA & its Role .	PSO-I, PSO-3

<b>COURSE TITLE</b>	<b>COURSE OUTCOMES</b> <b>SEMESTER- VI</b> <b>Paper I: Plant Diversity &amp; Conservation I &amp; II</b> <b>(Theory)</b>	
<b>CO Number</b>	<b>Coarse Outcome</b>	<b>PSOs Addressed</b>
CO-1	Students aware about importance of concept of Biodiversity at its different levels.	PSO-I, PSO- 7
CO-2	Understand Biodiversity study at Terrestrial ecosystem and its importance	PSO-I, PSO-7
CO-3	Importance of Biodiversity study at Aquatic and Desert ecosystem and its effect on sustainability	PSO-I, PSO-7
CO-4	Understance the extend of use of natural resources	PSO-I, PSO-7
CO-5	Enable students with importance of Biodiversity.	PSO-I, PSO-7
CO-6	Realize with variety of Ecosystems in World & its importance to nature.	PSO-I, PSO-7

<b>COURSE TITLE</b>	<b>COURSE OUTCOMES</b> <b>SEMESTER- VI</b> <b>Paper II :Plant Diversity &amp; Conservation I &amp; II</b> <b>(Theory)</b>	
<b>CO Number</b>	<b>Course Outcome</b>	<b>PSOs Addressed</b>
CO-1	Make the students aware about various environmental conservation laws in India.	PSO-I, PSO- 7
CO-2	Understand different methods of conservation of wildlife.	PSO-I, PSO-7
CO-3	Familiar with wildlife protected areas in India .	PSO-I, PSO-7
CO-4	Get acquainted with application of Biotechnology in conservation of plants .	PSO-I, PSO-7
CO-5	Enable students with importance of Biodiversity .	PSO-I, PSO-7
CO-6	Realize with variety of Ecosystems in World & its importance to nature.	PSO-I, PSO-7



Coarse Title	<b>COURSE OUTCOMES</b> <b>SEMESTER- VI</b> <b>Plant Diversity &amp; Conservation I &amp; II</b> <b>(PRACTICAL)</b>	
CO Number	Coarse Outcome	PSOs Addressed
CO-1	Get understanding of protected areas as National parks, Wildlife sanctuaries, Biosphere reserve.	PSO-I, PSO- 7
CO-2	Realize the importance of all organisms in ecosystem.	PSO-I, PSO-7
CO-3	Demarcate with wildlife protected areas in India .	PSO-I, PSO-7
CO-4	Familiar with basic tools & techniques used in plant tissue culture .	PSO-I, PSO-7
CO-5	Familiar with structure & function of Ecosystem in world .	PSO-I, PSO-7
CO-6	Enable students to know the importance of conservation of nature & its resources.	PSO-I, PSO-7

**Course Outcome for**  
**SKILL ENHANCEMENT COURSE**

COURSE TITLE	<b>COURSE OUTCOMES</b> <b>SEMESTER- V</b> <b>Mushroom Culture Technology</b>	
CO Number	Course Outcome	PSOs Addressed
CO-1	Get acquainted with techniques of Edible Mushroom culture.	PSO-I, PSO- 3
CO-2	Understand basic framework, needs & processes for cultivation of edible mushroom.	PSO-I, PSO-3
CO-3	Get skilled for entrepreneurship in cultivation & marketing.	PSO-I, PSO-3

COURSE TITLE	<b>COURSE OUTCOMES</b> <b>SEMESTER- VI</b> <b>Ethnobotany</b>	
CO Number	Course Outcome	PSOs Addressed
CO-1	Understand different communities of aboriginal peoples in India & Gadchiroli Districts..	PSO-I, PSO- 3
CO- 2	Understand utilization of plants by native peoples for different purposes.	
CO-3	Skilled to carry out ethnobotanical survey in community & Forest.	PSO-I, PSO-3

