VIDYABHARTI SANSTHA, WARDHA.
DR. R. G. BHOYAR ARTS, COMMERCE & SCIENCE COLLEGE
MOHANAPUR, TH-SELOO DIST-WARDHA 442104
(FORMERLY VIDYABHARTI COLLEGE)
Affiliated To Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.
NAAC Accredited with B+ Grade
College Index : (Sr.-699) (Jr.07.08.006)

PROGRAM OUTCOME FOR B. SC. BOTANY

Program Outcomes	**PO1:** Students know about different types of lower & higherplants their evolution in from algae to angiosperm &also their economic and ecological importance. **PO2:** Cell biology gives knowledge about cell organelles & their functions. **PO3:** Molecular biology gives knowledge about chemical properties of nucleic acid and their role in living systems. **PO4:** Genetics provides knowledge about laws of inheritance, various genetic interactions, chromosomal abrasions & multiple alleles. **PO5:** Structural changes in chromosomes. **PO6:** Student can describe morphological & reproductive characters of plant and also identified different plant families and classification. **PO7:** They know economic importance of various plant products & artificial methods of plant propagation. **PO8:** Various concepts in ecology and phytogeography. **PO9:** Use modern Botanical techniques and decent equipment. **PO10:** To inculcates the scientific temperament in the students and outside the scientific community.

PROGRAM SPECIFIC OUTCOMES FOR B. SC. BOTANY

Program Specific Outcomes	**PSO1:** Students acquire fundamental Botanical knowledge through theory and practical. **PSO2:** To explain basis plant of life, anatomy, reproduction and their survival in nature. **PSO3:** Help to understand role of living and fossil plants in our life. **PSO4:** Understand good laboratory practices and safety. **PSO5:** To create awareness about cultivation, conservation and sustainable utilization of biodiversity. **PSO6:** To know advance techniques in plant sciences like tissue culture, plant disease management, artificial gene transfer etc. **PSO7:** Students understand about the phytogeography of India, ethnobotanically important plants and their use.

Course Outcomes B. Sc. Botany

B. Sc. Semester-I

PAPER-I: **VIRUSES, PROKARYOTES, ALGAE & BIOFERTILIZERS**	**CO1:** Study of Microbes and algae to understand theirDiversity. **CO2:** Know the systematics, morphology and structure ofViruses, bacteria, Mycoplasma and algae. **CO3:** To know life cycle pattern of microbes and theireconomic importance. **CO4:** To know evolution of microbes and algae. **CO5:** To learn skill of preparation and use of biofertilizersfor sustainable development.
PAPER-II: **FUNGI, LICHEN, PLANT PATHOLOGY, BRYOPHYTA & MUSHROOM CULTIVATION**	**CO1:** Study of Fungi, Lichens, plant pathology and Bryophyta. **CO2:** To know the systematics, morphology and structure offungi, Lichens, plant pathogens, hosts and Bryophytes **CO3:** To know life cycle pattern of fungi, lichens, plantpathogens and bryophytes. **CO4:** To know economic importance of fungi, lichens and Bryophytes. **CO5:** To know evolution of fungi, lichens and Bryophytes. **CO6:** To learn skill of cultivation and importance of mushrooms for human consumption.
Lab Work:	• To get acquainted with ultrastructure of viruses and bacteria, to study staining method of bacteria • To study structure and reproduction of *Nostoc* • To study the structure and reproduction in Algae, like *Chara*, *Vaucheria*, *Ectocarpus* and *Batrachospermum* • To learn the method of identification and characterization of bacteria useful in biofertilizers • To learn staining method of fungi and bryophytes. • To get acquainted with different plant pathogens and lichens • To learn the technique of mushroom cultivation

B. Sc. Semester-II

PAPER-I: **PALAEOBOTANY, PTERIDOPHYTA, GYMNOSPERMS &SOIL ANALYSIS**	**CO1:** Study of Palaeobotany, geological time scale and morphology of angiosperms. **CO2:** To know life cycle pattern of Pteridophyta and Gymnosperms. **CO3:** To know the systematics, morphology and structure of Pteridophyta and Gymnosperms. **CO4:** To know economic importance of Pteridophyta and Gymnosperms. **CO5:** To know evolution of Pteridophyta and Gymnosperms. **CO6:** To learn the skill of soil analysis for cultivation of variety of plants.
PAPER-II: **MORPHOLOGY OF ANGIOSPERMS & FLORICULTURE** **Lab Work:**	**CO1:** To study the morphology of angiosperms with respectto evolution of plants. **CO2:** To the evolution of different floral organ for sexual reproduction in angiosperms. **CO3:** To know the variation among the reproductive organsof the angiosperms. **CO4:** To know the systematics, morphology and structure of angiosperms. **CO5:** To know the adaptive pollination and reproductivebiology of angiosperms. **CO6:** To learn the skill of floriculture and its tools and techniques. • Observation and study of types of fossils • Study of structure and reproduction pteridophytes like, Selaginella & Equisetum and gymnosperms like, Cycas& Pinus • To get acquainted with types, physical and chemical properties of soil • Study of morphology of angiosperms, • Study of identification and commercial aspects of cut flowers

B. Sc. Semester-III

PAPER-I: **ANGIOSPERM SYSTEMATICS, EMBROLOGY & INDOOR GARDENING**	**CO1:** To Study vegetative and floral characters of angiosperms. **CO2:** To know the preparation of floral formulae and floral diagrams of angiosperms. **CO3:** To know economic importance of angiospermsfamilies. **CO4:** To know the pattern of embryogenesis in various angiosperms plants. **CO5:** To learn the skill for development of indoor gardeningand its importance.

PAPER-II: **ANGIOSPERM ANATOMY & HORTICULTURE**	**CO1:** To gain knowledge of different plant tissue and tissue systems. **CO2:** To understand structure and type of cells and tissues in plants, type of vascular bundles and stellar systems. **CO3:** To know the simple and complex tissues and itsfunctions. **CO4:** To know the process of secondary growth and its rolein formation of wood and periderm **CO5:** To learn the skill for horticultural practices used.
Lab Work:	• To Study fossil angiosperms • To learn the anatomy of dicot and monocot • To study embryology of angiosperms • To get acquainted with the techniques used in landscaping and indoor gardening • To study various horticultural crops

B. Sc. Semester-IV

PAPPER-I: **CELL BIOLOGY, PLANT BREEDING, EVOLUTION & SEED TECHNOLOGY**	**CO1:** Gain knowledge about cell and its function. **CO2:** Learn the scope and importance of Cell and Molecular biology. **CO3:** To understand ultrastructure of cell wall, plasma membrane and cell organelles **CO4:** To understand the morphology and structure of chromosomes. **CO5:** To understand the different techniques used in plant breeding. **CO6:** To know the process of evolution of plants in universe **CO7:** To learn the skill used in seed technology
Lab Work:	• To study ultrastructure of cell organelles • To study cell division, mitosis and meiosis with use nuclear stain • To learn the different biostatistics methods • To study seed dormancy, viability and percentage of germination • To prove Mendel's laws of inheritance with the help of coloured beads • Study of interaction of genes through different genetics problems • To study sterilization for plant nursery and methods of propagation

B. Sc. Semester-V

PAPER-I: **PLANT PHYSIOLOGY, MINERAL NUTRITION& HYDROPONICS**	**CO1:** To know the scope and importance of plant physiology. **CO2:** To understand plant & water relation and mineralnutrition. **CO3:** Understand process of photosynthesis, C_3, C4, CAM pathways. **CO4:** Understand the process of respiration, nitrogen metabolism and plant movement **CO5:** To learn the technique of development of hydroponics.
PAPER-II: **PLANT ECOLOGY & ORGANIC FARMING** **Lab Work:**	**CO1:** To study concept of ecology and ecosystems. **CO2:** To understand climatic and edaphic factors. **CO3:** To know physiographic factors and interrelationsamong the living organisms. **CO4:** To understand the components of ecosystems,autecology, synecology and plant succession. **CO5:** To know the adaptations of plants. **CO6:** To learn the skill and importance of organic farmingfor healthy life. • To study the plant physiology experiments, like photosynthesis, respiration, permeability, RQ, photoperiodism, plant movements, etc. • To get acquainted with mineral nutrition andhydroponics • Study of different qualitative and quantitative methods used in plant ecology • To learn the techniques used in organic farming

B. Sc. Semester-VI

PAPER-I: **BIOCHEMISTRY BIOTECHNOLOGY& HERBAL TECHNOLOGY**	**CO1:** To study carbohydrates, lipids, amino acids and enzymology. **CO2:** To know the plant tissue culture techniques and applications. **CO3:** To understand tools and techniques used in genetic engineering. **CO4:** To know the artificial gene transfer techniques. **CO5:** To learn the skill used in formation of dye andcosmetics from plants. **CO6:** To know the basic concept of herbal technology.

PAPER-II: **PHYTOGEOGRAPHY, UTILIZATION OF PLANTS, TECHNIQUES & PHARMACOGNOSY**	**CO1:** To know the phytogeography of India and world **CO2:** To know the natural resources and various types of pollutions and its impact on living organism. **CO3:** To study the natural resources and its conservation strategies. **CO4:** To know the economic importance of plants and ethnobotany. **CO5:** To study microscopy, electrophoresis, centrifugation and chromatography. **CO6:** To learn the basics of pharmacognosy and skill forused of plants in pharmacognosy.
Lab Work:	• To study the biochemical experiments • To study the different instruments and equipment usedin biotechnology • To study the different techniques used in herbal technology • To learn types of pollution parameters. • To get acquainted with ethnobotany and economic botany with suitable examples • To study the techniques used in pharmacognosy