

**RAJEEV GANDHI GOVT. P.G. COLEGE AMBIKAPUR (C.G.)
DEPARTMENT OF BOTANY**

B.Sc. Botany

Programme Name	Sem.	Course Name And Code	Description	GE	HV	Env. & Sust. Dev.	PE	Any Other Issue	Link
B.Sc. Botany	I	Bacteria Viruses Fungi, Lichen and Algae (UD3BOT101)	1. Microbial Biotechnology: Through the topic we try to explain the role of microbe and biotechnology in field of crop productivity. We also focus the ethics and values involved in technology.		√	√	√		
			2. Microbial disease: Through the topic we explain the different disease, with the help of symptoms along with their management.			√	√	√ (Health issue)	
			3. Economic Importance of Microbes: We teach the students about the gender wise employment opportunities in microbial Industry. We also focus the role of women in mushroom cultivation.	√				√	
			4. BGA in Nitrogen Economy of Soil: We make the student to understand soil reclamation process through BGA.			√			

	II	Bryophytes, Pteridophytes, Gymnosperm and Palaeobotany (UD3BOT201)	<u>1. Characters and classification of Brvophytes, Pteridophytes and Gymnosperms:</u> We try to explain the diversity present in our environment along with the need to preserve and promote them.			√			
			<u>2. Economic Importance of Gymnosperms, Pteridophytes and Brvophytes:</u> We try to explain the diverse branches of botany to work with. We also focus the role of men and women's in different field of Botany.	√				√	(Un-employment issue)
			<u>3. Geological time scale and fossils:</u> We make the student to understand the evolutionary tendencies and ethical value need to be taken care while dealing with environments.		√	√	√		
	III	Plant Taxonomy, Economic Botany Plant Anatomy and Embryology (UD3BOT301)	<u>1. Taxonomical Herbarium and Garden:</u> Through the topic we explain the role of botanical garden and herbarium in science and society.			√		√	(Social issue)
			<u>2. Economic Botany:</u> We try to explain the importance of crop produce. We equally focus on the role of men and women in crop cultivation.	√		√			

			3. Crop productivity and Parthenocarpv: we explain the essence and role of man values while focusing the improved crop productivity to achieve food security.	√		√		√	(Food security)		
IV	Ecology and Plant Physiology (UD3BOT401)	1. Ecology and Environment: Through the topic we explain the factor of ecology and urgent need to restore and presence them.				√	√				
		2. Population and community: We explain the character of population and population interaction.	√	√	√			√	(Social issues)		
		3. Biogeochemical cycle and Plant water relation: Through the topic we explain the role of minerals and water in ecosystem. We also focus on to the disease involved with mineral and water and management.				√			√	(Health issue)	
		4. Photosynthesis and Plant Hormone: We explain the role of hormones needs to achieve the healthy growth of plants. We also focus on the different aspect of positive and negative hormones.								√	(Health issue)

	V	Analytical technology, Plant pathology, Experimental embryology, Elementary Biostatistics, Environmental pollution and conservation (UD3BOT501)	1. Instrumentation: We teach the students about the application of different biological instruments. We primarily focus on the precautions and values need to be taken care of while dealing with the instruments.		√			√ (Risk issue)	
			2. Plant Pathology: We discuss with the students about different plant disease and their control.			√		√ (Health issue)	
			3. Biodiversity and Pollution: Through the topic we try to explain the pros and cons of Biodiversity as well as problems created by the Pollutants. We primarily focus on the role of society in biodiversity enrichment and in tackling the problem of pollution e.g., SHG.	√	√	√		√ (Social issue)	
			4. Biostatistics: We try to explain the role of bio-stats in research. We primarily focus on the ethics and values need to be taken care of while using stats in data calculation.		√		√		
			5. Environment conservation: we focus on the urgent need of environment restoration as well as different role of male and female in environment restoration.	√	√	√	√	√ (Social issue)	

	VI	Molecular Biology, Biotechnology and Biochemistry (UD3BOT601)	<u>1. Cell organelles, chromosome and gene interaction:</u> Through the topic we try to explain the role of different cell organelle and gene interaction in deciding the phenology and gender of individual.	√		√		√	(Health issue)	
			<u>2. NA and Recombinant technology:</u> Here we explain the role of NA in recombinant technology and phenology of population. We primarily focus on the scope and opportunities of recombinant technology.		√		√	√	(Social issue)	
			<u>3. Enzymes and Protein:</u> We teach the students about structure of protein. We also focus on the need of protein as well as different deficiency disease.	√				√	(Health issue)	

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B.Sc. Botany (NEP)

Programme Name	Sem.	Course Name/Code	Description	GE	HV	Env. & Sust. Dev.	PE	Any Other Issue	Link
B.Sc. Botany NEP	I	Microbial Diversity and Thallophyta	<u>1. Microbial Biotechnology:</u> Through the topic we try to explain the role of microbe and biotechnology in field of crop productivity. We also focus on the ethics		√	√	√		

		BOTC-01	And values involved in technology.						
			2. Microbial disease: Through the topic we explain the different disease, with symptoms and their management.			√		√	
			3. Economic Importance of Microbes: Here we teach the gender wise employment opportunities in microbial Industry. We also focus the role of women in mushroom cultivation.	√				√	
			4. Biological Indicators: Through the topic we try to explain the Lichen as a biological indicators primarily focusing on air pollution.			√			
B.Sc. Botany (NEP)	I	Flowering Plants BOTG-01	1. Plants and their parts: Through the topics we try to explain the parts of plants & its modification. We also try to explain about the parts of flowers and role of plants reproduction.		√	√			
			2. Plant Physiology: Through the topic we try to explain mechanism of photosynthesis and respiration.		√	√			
			3. Ecological adaptation: Here we explain the different types of adaptation in plants including hydrophytes, Xerophytes and Halophytes.		√	√			

B.Sc. Botany (NEP)	II	Embryophyta BOTC-02	<u>1. Characters and classification of Bryophyta, Pteridophyta and Gymnosperm:</u> We try to explain the diversity present in our environment and need to presence and promote them.			√			
			<u>2. Economic Importance of Gymnosperms, Pteridophytes and Bryophytes:</u> We explain the diverse field of botany need to work with. We also focus on the role of men and women's in different branch of Botany.	√				√ (Empo yment)	
			<u>3. Geological time scale and fossils:</u> We make the student to understand the evolutionary tendencies and ethical value needs to be taken care of while dealing with environments.		√	√	√		
B.Sc. Botany NEP	II	Economic botany BOTG-02	<u>1. Economic Botany:</u> We try to explain the importance of Crop produce. We equally focus on the role of men & women in Crop cultivation.	√		√			
			<u>2. Ethnobotany:</u> We try to explain the need of Documentation and Conservation of traditional knowledge as well as application of different medicinal plants. We also highlight some traditional medicine which is still in use.	√	√	√			

B.Sc. Botany (NEP)	III	Plant taxonomy & Embryology BOTC-03	<u>1. Taxonomical Herbarium and Garden:</u> Through the topic we explain the role of botanical garden and herbarium in science and society.			√		√ (social Issue)	
			<u>2. Classification & Economic importance of families:</u> We teach the different types of classification by highlighting special characters as well as economic importance of families.		√	√			
			<u>3. Crop productivity and Parthenocarpy:</u> We explain the essence and role of human value while focusing to improve the crop productivity to achieve food security.	√		√	√	√ (Food security)	
B.Sc. Botany NEP	III	Fundamentals of Plant Pathology (DSEC) BOTE-03	<u>1. Plant Pathology:</u> We discuss with the students about different plant disease, their, host & pathogen, symptoms and control management.			√		√ (Health Issue)	
			<u>2. Symptoms & management of disease of crops:</u> Through the topics we try to explain about the different types of field crop diseases & management.			√		√ (Health Issue)	
B.Sc. Botany (NEP)	IV	Plant Physiology BOTC-04	<u>1. Plant Water relation:</u> Through the topic we deal with the relation between plant & water primarily focusing on absorption of water and water transport.			√			

			2. Photosynthesis and Respiration: Through the topics we explain the photosynthesis & Respiration mechanism in plants with the help of different cycle. We also focus on the importance of Photosynthesis & Respiration for plants, animals and environment.		√	√			
B.Sc. Botany (NEP)	IV	Plant Anatomy and Biochemistry BOTE-04	1. Plant anatomy and secondary growth: Through the topic we explain the different types of tissue in plant systems with the help of anatomy of root stem and leaves. We also focus on the anomalous secondary growth in plants.			√			
			2. Enzymes and protein: Here we focus on the structure of protein. We also focus on the need of protein and different deficiency disease	√			√	√	(Health Issue)
B.Sc. Botany NEP	V	Cell and Molecular Biology BOTC-05	1. Cell organelles and Cell Multiplication: Through the topic we explain the role of different cell organelle, cell cycle and its regulation. We also explain the cell cycle and cell division.	√		√			
			2. Chromosome and gene regulation: Through the topic we explain the gene interaction in deciding the phenology and gender of individual. We also explain about the gene & its regulation.	√		√		√	(Health Issue)

B.Sc. Botany NEP	V	Biotechnology and plant tissue culture BOTE-05	1. Plant tissue culture and its techniques: Through the topic we explain about the plant tissue culture techniques and its application for human welfare and environmental		√	√			
			2. Biotechnology: Here we teach our students about the transgenic plants with reference to virus and pest resistance. We also focus to ecological risk assessment of genetically modified crop.		√	√	√		
B.Sc. Botany (NEP)	V	Forestry BOTG-05	1. Forest & its managements: Through the topic we explain the detail of forestry. We also focus the objective of the forestry course in terms of education and management in the forest development.		√	√			
			2. Forest based industries and its conservation: We teach our students about the different types of industries primarily based on forest. We also focus on the role of men & women in forestry based industries.	√	√	√			
B.Sc. Botany NEP	VI	Ecology BOTC-06	1. Ecology and Environment: Through the topic we explain the factor of ecology and urgent need to restore preserve them.		√	√			

			<u>2. Biodiversity & it's Conservation:</u> We explain the pollution, poor water quality, chemical & waste contamination, climate change & other causes of ecosystem degradation all contribute to biodiversity loss and can harmful for human health.		√	√		√ (Health Issue)	
B.Sc. Botany NEP	VI	Aquatic & Marine Botany BOTE-06	<u>1. Macro and Micro algae:</u> Through the topic we tried to explain marine micro & macro algae and its importance for food, science and ecological indicators (water quality indicators). We also focused production of algae in lab by plant tissue culture techniques.		√	√			
			<u>2. Mangroves and Aquatic vascular plants:</u> Through the topic we tried to explain mangrove forest and importance for the ecosystem. We also focused different type of aquatic vascular plant like that Lotus, Water-lily etc. with the role of men & women in different field of opportunity.	√	√	√			
B.Sc. Botany (NEP)	VI	Nursery and Gardening BOTC-06	<u>1. Introduction to nursery and gardening:</u> Through the topic we tried to explain preparation of nursery and garden, their types and object and scope of nursery and gardening. We also focused the role of men and	√		√	√		

			women in the field of nursery and gardening.							
			2. Management of nursery and garden: We explain the topic management of nursery and garden like that seasonal activities, watering, weeding, nutrient and routine operation in a nursery and garden.		√	√	√			
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M.Sc. Botany										
Programme Name	Sem.	Course Name/Code	Description	GE	HV	Env. & Sust. Dev.	PE	Any Other Issue	Link	
M.Sc. Botany	I	Cell and Molecular Biology (PD3-701) Paper - I	1. Introduction to modern tools and techniques of cell biology: We explained the use modern tools of molecular biology techniques for the biomedical fields and these techniques are used also in research fields.		√		√	√ (Technical Issue)		

			<p><u>2. Cell organelles, chromosome and cell multiplication:</u> Through the topic we explain the role of different organelles, cell cycle its regulation and cell division.</p>	√		√		√	(Health Issue)	
			<p><u>3. Gene structure, regulation and expression in eukaryotes:</u> In this chapter we explain gene structure which contains genetic information and its regulation of eukaryotes and prokaryotes organism.</p>		√					
M.Sc. Botany	I	Algae (PD3-702) Paper - II	<p><u>1. Diversity and distribution of the algae:</u> Through the topic we explain about the distribution of algae along with thallus structure. We also focused the economic important of algae such as food, fodder etc.</p>			√				
			<p><u>2. Algal Biotechnology:</u> Through the topic we tried to explain marine micro & macro algae, algal biofuels, Production of bioethanol, biological hydrogen, global warming etc.</p>			√	√			
			<p><u>3. Industrial Phycology:</u> Through the topic we deliver the knowledge of red algae involved in production of polysaccharides like agar, Bioactive compounds etc.</p>		√	√				

M.Sc. Botany	I	Physiology and Biochemistry (PD3-703) Paper - III	1. Biomolecule and enzyme: We try to explain the role of biological function of carbohydrates lipids and vitamins. We also focus to the different disease and their symptoms caused by the deficiency of mineral nutrients.				√	√ (Health Issue)	
			2. Plant water relation: Through this topic we try to explain the role of mineral and water in physiological performance of plant.			√		√ (Health Issue)	
			3. Photosynthesis: Through this topic we tried explain the importance of photosynthesis are that its plays a role in the carbon cycle, provide oxygen and food to humans and animals.		√	√		√ (Health Issue)	
			4. Respiration: Through the topic we do explain the essentiality of respiration in maintaining growth and performance.		√	√		√ (Health Issue)	
M.Sc. Botany	I	Environmental Science (PD3-706) Paper - V	1. Environment: Through the topic we explain the environmental issues simultaneously build solutions to solve them. We focus the urgency to restore and preserve them.			√			

			2. Application of GIS: We try to explain that GIS is software that aids professionals to acquire, manage, analyze and visually represent large amount of geospatial data.		√		√		
M.Sc. Botany	II	Genetics (PD3-801) Paper - I	1. Mendelian and non-Mendelian inheritance: Through the topic we teach chromosome theory of inheritance, gene interactions and organelle inheritance.		√			√	(Health Issue)
			2. Recombination in eukaryotes: We teach the students about recombination process by various methods.					√	(Health Issue)
			3. Mutation: We tried to explain its basic concepts their causes of mutation, evolution, cancer etc.					√	(Health Issue)
M.Sc. Botany	II	Advances in Archegoniate (PD3-802) Paper - II	1. Bryophytes and Pteridophytes: We try to explain the diversity present in our environment that makes the world more beautiful. We focus the urgency to preserve and promote the biodiversity.			√			

M.Sc. Botany	II	Gymnosperm (PD3-803) Paper - III	1. Gymnosperm: We try to explain the diversity present in our environment as well as we also deliver the skill to propagate the conifers using plant tissue culture techniques. We explain advances in synthetic seed & technology of conifers.			√			
M.Sc. Botany	II	Research Methodology (PD3-804) Paper - IV	1. Concept of research, steps of research and tools of research: We explain the concepts of research, types of research methods, and various advance type of tools that we can use in our research field.				√	√	
			2. Method of research: We explain the various types of research methodology involved in research.				√	√	
			3. Treatment of data and research writing report: We explain about data treatment that refers to the process of analyzing and manipulating data to extract meaningful conclusion.		√		√		
			4. Computer fundamental, computer system and parts of computer system: Through the topic we explain the basic application of computer, operating system along with the office software package system.		√		√		

M.Sc. Botany	II	Fungi (PD3-806) Paper - V	1. Fungi: Through the topic we try to explain the ultrastructure, nutrition, reproduction and economic importance of fungi.			√			
M.Sc. Botany	III	Developmental Biology (PD3-901) Paper - I	1. Plant part, its growth and developments: We try to explain metamorphosis, growth and differentiation of stem cells and tissues.			√			
M.Sc. Botany	III	Systematics Evolution and Taxonomy (PD3-902) Paper - II	1. System of angiospermic classification: We deliver the concept of classification as well as nomenclature and classification of various angiospermic plants.			√			
			2. The species concepts and taxonomic evidence: We tried to explain taxonomic hierarchy, species, genus, family and we also can explain taxonomic evidence.			√			
			3. Taxonomic tools: in this section we teach the students about certain principle of certain taxonomic tools from the field of taxonomy that are very beneficial in identifying and classifying plant organisms.			√	√		

M.Sc. Botany	III	Principles of ecology (PD3-903) Paper - III	1. Ecology: We explain the relationship among different living organism, including humans with physical environment.		√	√			
			2. Vegetation organization: Here we explain about the community structure as well as the distribution and abundance of species.			√			
			3. Biological conservation and management: We explain the need and significant steps needs to be taken to conserve our biodiversity with the process of ex situ and in situ conservation.		√	√			
			4. Concept of phytogeography: Through the topic we explain the hotspot region of India and we also focus to the local plant diversity and its socio-economic importance.		√	√	√		
M.Sc. Botany	III	Pathogens and pests of crop plants (PD3-905) Paper - V	1. General characteristics of including viruses: Through the topic we explain the different disease symptoms and their management.					√ (Health Issue)	
			2. Host parasite relationship: Through the topic we explain that the host parasite relationship is completely dependent on the interaction between two species.			√			

			3. Effect of environment: Through the topic we teach the disease forecasting method, source of infection and recurrence of disease.			√			
M.Sc. Botany	IV	Plant tissue culture and industrial applications (PD3-1001) Paper - I	1. Plant cell and tissue culture: We try to explain tissue culture techniques involved in floricultural, agricultural and pharmaceutical crops.		√	√			
			2. Somatic hybridization: Through the topic we led the students to understand the various types of hybridization method. We also try to explain the germplasm conservation approach.			√			
			3. Application of plant tissue culture: We try to explain the need and steps involved in plant tissue culture techniques particularly used in production of artificial seed, hybrids, cryopreservation and germplasm storage.		√	√			
M.Sc. Botany	IV	Biotechnology genetic engineering and resource	1. Biotechnology: Through this topic we try to explain the application and opportunities of biotechnology. We explain the requirements and steps involved in biotechnology via practical approach.		√	√	√		

		utilization (PD3-1002) Paper - II	2. Genetic engineering: Through this topic we try to explain the different uses of genetic engineering in the field of medicine, research industry and genetically modified plant that are useful for the mankind.		√		√		
			3. Crop improvement: We try to explain the different technique we can use in crop fields to improve crop varieties with various methods.		√	√	√		
M.Sc. Botany	IV	Plant pathology disease of plants (PD3-1003) Paper - III	1. Plant disease: Through the topic we explain the different disease caused by microbes like virus, bacteria, fungi and mycoplasma along with their managements.			√			
			2. Disease control and management: We teach the students about different approach for disease control and disease management.			√		√	(Health Issue)
M.Sc. Botany	IV	Embryology & reproductive biology of flowering plants (PD3-1005) Paper - V	1. Flower development: Through the topic we make the student to understand about different reproductive phenomenon activity	√		√			
			2. Plant pollinator interaction: Through the topic we teach the student about the role of diversity in evolution and completion of cycle. We also focus to the need to save the plant diversity.		√	√		√	(Ethical Issue)