DEPARMENT OF BOTANY, UNIVERSITY OF LUCKNOW
SYLLABUS OF
POST GRADUATE ELECTIVE COURSE
in
BOTANY
Semester – I

Paper – I **Plant Resources – I (36 Hours)** **3.00 Credits (each unit 0.75 credits)**

Unit – I **Virus, Bacteria and Fungi (9 Hours)** **Hours**

- General Characteristics of Virus, Bacteria and Fungi 1.5
- Microbial fermentation products 1
- Antibiotics 1
- Vaccines 1
- Biofertilizers 1
- Biological control of plant diseases 2
- Uses of Lichens 1.5

Unit – II **Algae and Bryophytes (9 Hours)**

- General characteristics and distribution of Algae 1.5
- Utilization of Algal resources: as food, as biofertilizer, as medicine, as pollution indicator, as on monuments. 3
- General characteristics and distribution of Bryophytes 1.5
- Utilization of Bryophytes in : horticulture, household, medicine, Industrial, ecological indicators & in pollution monitoring. 3

Unit – III **Pteridophytes and Gymnosperms (9 Hours)**

- General characteristics and distribution of Pteridophytes 1.5
- Significance of Pteridophytes: as food (starch, salt), as fiber, as weed, as horticultural plants & ritual items, as biofertilizer & as medicine. 3
- General characteristics and distribution of Gymnosperm 1.5
- Significance of Gymnosperms as food, fibre and houseplants. 3

Unit – IV **Angiosperms (9 Hours)**

- General characteristics of resource and their utilization: cereals & their domestication, pulses, vegetables, fruits (common name, vernacular names & plant part). 2
- Timber, rubber, gums, resin & dyes. 2
- Fibers, paper making industry 2
- Oils 1
- Spices, Condiments, Fumaitories 1
- Ornamentals 1

Note: Common name & Vernacular names of plants should be informed .

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Semester – II

Paper – II **Plant Resources-II (36 Hours)** **3.00 Credits (each unit 0.75 credits)**

Unit – I **Medicinal Plant (9 Hours)**	**Hours**
▪ Plants in Homeopathy (plant parts and uses)	2
▪ Plants in Ayurveda (plant parts and uses)	2
▪ Plants in Allopathy (plant parts and active principals, uses)	3
▪ Ethnomedicine	2

Unit – II **Ethnobotany (9 Hours)**	
▪ Emerging trends in Ethnobotany	2
▪ Ethnic Tribes of India	2
▪ Plant Resources of ethnic tribes	3
▪ Sacred groves their distribution & significance	2

Unit – III **Floriculture: (9 Hours)**	
▪ Commercial floriculture: scope & importance in India.	3
▪ Techniques of producing ornamental plants like Rose, Marigold, Chrysanthemum , Orchid, Gladiolus etc.	3
▪ Post harvest technology of cut flowers, dehydration techniques for drying of flowers.	3

Unit – IV **Organic Farming (9 Hours)**	
▪ Introduction & concept	1
▪ Vermicomposting, green manuring	1.5
▪ Recycling of organic residues	1.5
▪ Biofertilizers and use of biocontrol agents	2
▪ Biopesticides, pheromones	1
▪ Organic food and human health	2

Note: Common name & Vernacular names of plants should be informed

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Semester – III

Paper – III Plant Resources – III (36 Hours) **3.00 Credits (each unit 0.75 credits)**

Unit – I	**Useful Plant Practices - I (9 Hours)**	**Hours**
	▪ Basic principles and practices	2
	▪ Vegetative propagation, Gutti, layering, grafting	2
	▪ Micropropagation & its Industry	2
	▪ Seed propagation & its limitation , quarantine	2
	▪ Economic importance, nutritive value of horticultural crops	1

Unit – II	**Useful Plant Practices - II (9 Hours)**	
	▪ Mushroom cultivation	1
	▪ Bonsai	1
	▪ Indoor and house plants	2
	▪ Plants in the Kitchen garden and plantation	1
	▪ Agroforestry: definition,objectives, potential distinction between agro and social forestry	3
	▪ Agroforestry system, tree crop species for agroforestry	1

Unit – III	**Gardening & Landscaping (9 Hours)**	
	▪ Principles of landscape, landscape design for specific areas	2
	▪ Plant material for landscaping, symbols and tools	2
	▪ Special type of gardens (bog garden, sunken garden, rock garden & terrace garden)	3
	▪ Orchards: importance, objectives, merits and demerits	2

Unit – IV	**Plantation Crops (9 Hours)**	
	▪ Scope and Importance	1
	▪ Export, import potential, uses & Industrial importance	1
	▪ Planting systems and methods	2
	▪ Post harvest handling & processing	1
	▪ Packaging & marketing of some vegetable crops and cash crops (Coffee, Tea, Sugar, Banana)	3
	▪ Pre and post harvesting factors affecting quality	1

Note: Common name & Vernacular names of plants should be informed

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Semester – IV

Paper – IV Biotechnological and Environmental uses of Plants (36 Hours) 3.00 Credits (each unit 0.75 credits)

Unit – I Biotechnology - I (9 Hours) **Hours**

- Genetically modified organisms (GMOs: Prokaryotic and Eukaryotic) 2
- GMOs for abiotic stress tolerance. 1
- GMOs for crop protection. 1
- GMOs for improved crop yield and nutrition. 1
- Genetically modified (GM) food: Pros and cons. 1
- Micropropagation in improving food quality, protecting plants. 2
- Micropropagation in maintenance of germplasm 1

Unit – II Biotechnology - II (9 Hours)

- Conservational biotechnology in everyday use (bread, cheese, curd etc.) 1
- Biotechnological applications of microbes (fermentation, vaccines, antibiotics, interferon). 2
- Bioremediation (microbial) 1
- Bioethical considerations regarding GMOs. 1.5
- Intellectual Property Rights and Plant Biotechnology. 1.5

Unit – III Environment -I (9 Hours)

- General aspects of Pollution 1
- Environmental policy 1
- Pollution implications of climate change and its monitoring 2
- Non polluting energy system 1
- Biogas and Power generation from solid waste 1
- Microbes in metal extraction, mineral leaching, mining & petroleum 2
- Phytoremediation 1

Unit – IV Environment -II (9 Hours)

- Biodiversity Conservation and its strategies 2
- Microbes in Poultry, Sea food and Dairy products 1
- Forest resource management & Afforestation 1
- Social and Urban forestry 1
- Conservation of rare and endangered Plants 1
- Conservation of rare and endangered animal species 1
- Botanical gardens 1
- National Parks and wildlife sanctuaries. 1

Note: Common name & Vernacular names of plants should be informed