G.E.Society's
J.S.S. Arts, Science and Commerce College, Gokak
(ACCREDITED AT 'A' WITH 3.10 CGPA IN 3rd CYCLE)
Website: www.jssgokak.in ☎ : 08332 – 225141 Email: jssgokak@gmail.com

Department of Botany
Syllabus and workload distribution for odd semester (I, III & V)
Academic year 2020-2021

Teaching Hours Distribution					
	BSC I/ II Sem	BSC III/ IV Sem	BSC V/VI Sem		Total Hrs
			P-I	P-II	
Dr. T. C. Gopal	30	24			54
R. M. Mahindrakar		4		50	54
H. S. Dasar			50		50
Anjana Chandergi	30	24			54

Practical Hours Distribution					
	BSC I/ II Sem	BSC III/ IV Sem	BSC V/VI Sem		Total Hrs
			P-I	P-II	
Dr. T. C. Gopal	8	8			16
R. M. Mahindrakar		4		16	16
H. S. Dasar			16		16
Anjana Chandergi	8	8			16

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First Semester B.Sc. (Botany)

Paper Code: BOTDSCT1.1 **Paper Title:** Biodiversity (Microbes, Algae, Fungi and Archegoniate)
Teaching Hours: 4 Hrs / Week **Marks:** Th-80+IA-20
Total hours: 60 **Credits: 3**

Topic	Hours	Topic covered by
Unit1: **Viruses** : Discovery, general structure, replication (general account), DNA virus (T-phage); Lyticand lysogenic cycle, RNA virus (TMV); Economic importance; **Bacteria:** Discovery, General characteristics and cell structure; Reproduction – vegetative, asexual and recombination (conjugation, transformation and transduction); Economic importance. **Viral Plant Diseases**: TMV. Vein clearing, Dwarfing, Yellowing and BBTV disease. **Bacterial Plant Disease**: Citrus canker, Bacterial blight and Crown gall disease.	**15 Hrs.**	**Dr. T. C. Gopal**
Unit2: **Algae**: General characteristics; Ecology and distribution; Range of thallus organization and reproduction; Classification of algae by smith; Morphology and life-cycles of the following: *Nostoc*, *Oedogonium*, *Vaucheria, Volvox, Ectocarpus & Batrachospermum*. Economic importance of algae. **Fungi**: Introduction- General characteristics, ecology and significance, range of thallus organization, cell wall composition , nutrition, reproduction and classification; True Fungi- General characteristics, ecology and significance, life cycle of *Rhizopus* (Zygomycota), *Penicillium* (Ascomycota), *cercospora (Deutoromycota), Puccinia, Agaricus* (Basidiomycota); **Fungal Diseases:** Late blight of potato, White rust of *Albugo candida*., Black rust of *Puccinia*,Powdery mildew and Early Blight of Tomato. **Symbiotic Associations-Lichens**: General account, reproduction and significance; Mycorrhiza: ectomycorrhiza and endomycorrhiza and their significance	**15 Hrs.**	**Dr. T. C. Gopal**
Unit 3: **Introduction to Archegoniate:** Unifying features of archegoniates, Transition to land habit,Alternation of generations. **Bryophytes:** General characteristics, adaptations to land habit, Classification, Range of thallus organization. Classification (up to family), morphology, anatomy and reproduction of *Riccia, Marchantia, Anthoceros* and *Funaria* (Developmental details not to be included). Ecology and economic importance of bryophytes with special mention of *Sphagnum*.	**15 Hrs.**	**Miss. Anjana Chandergi**
Unit 4: **Pteridophytes:** General characteristics, classification, Early land plants (*lepidodendron, Lepidocarpon, Calamites*). Classification (up family), morphology, anatomy and reproduction of *Selaginella*, *Equisetum* and *Pteris*. (Developmental details not to be included). Heterospory and seed habit, stelar evolution. Ecological and economical importance of Pteridophytes. **Gymnosperms:** General characteristics, classification. Classification (up to family), morphology,anatomy and reproduction of *Cycas, Gnetum* and *Pinus*. (Developmental details not to be included). Ecological and economical importance.	**15 Hrs.**	**Miss. Anjana Chandergi**

1. BOTANY (optional)

B.Sc. III Semester (w.e.f: 2018 – 19) and onwards.

Subject: BOTANY (optional)

Paper-: Diversity of Cryptogams (Algae, Fungi, Bryophytes, Pteridophytes, Gymnosperms). 52 Hrs

Topic	Hours	Topic covered by
Unit I: Algae. General characters, Pigmentation, Classification by Fritsch (up to class level). Distribution, thallus structure, reproduction and life cycle of Nostoc, Volvox, Oedogonium, Sargassum and Batrachospermum.Economic importance.	**10 Hrs.**	**Dr. T. C. Gopal**
Unit II: Fungi General characters, Classification (Alexopoulus's system). Distribution, Structure, Reproductionand life cycle of Albugo, Rhizopus, Penicillium and Puccinia. Economic importance of fungi. General account of lichens.	**08 Hrs**	**Dr. T. C. Gopal**
Unit III: Plant Pathology. General account of Bacteria and Viruses. Introduction and general symptoms of plant diseases. Symptoms, Pathogens and control measures of Late blight of potato, White rust of crucifers, Tikkadisease of ground nut.	**06 Hrs.**	**Dr. T. C. Gopal**
Unit IV: Bryophytes General characters, Classification (Smith). Structure, reproduction and schematic life cycle of Riccia,Anthoceros and Funaria. (Developmental details are not expected). Evolution of sporophytes.	**06 Hrs.**	**Miss. Anjana Chandergi**
Unit V: Ptredophytes. General characters and classification. Distribution, Structure (External and Internal) and Reproductionof Psilotum, Selaginella, Equisetum and Nephrolepis (Developmental details are not expected). Stelar evolution. Heterospory and seed habit	**10 Hrs.**	**Miss. Anjana Chandergi**
Unit VI: Gymnosperms: General characters and classification. Distribution, Structure (External and Internal) and Reproduction ofCycas, Pinus and Gnetum(Developmental details are not expected).	**08 Hrs**	**Miss. Anjana Chandergi**
Unit VII: Paleobotany: Geological time scale, fossilization-molds, Impression, Petrification and cast.Study of fossils - Calamitis, Lepidodendron, Lygenopteris.	**04 Hrs.**	**Asst. Prof. R. M. Mahindrakar**

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V Semester Paper-I:

Plant Breeding, Tissue Culture and Horticultural Practices. 50 Hrs

Topic	Hours	Topic covered by
Unit 1: Plant Breeding: History and objectives. Introduction, Selection (Pure line, Mass Selection), Hybridization- inter specific and inter generic. Mutational & Polyploidy breeding. Germ plasmand its maintenance. Pollen Bank, Quarantine method.	**10 Hrs.**	**Asst Prof. H. S. Dasar**
Unit 2: Plant Tissue Culture: Scope and Significance. Basic Aspects and Cellular totipotency (Shoottip, Embryo and Haploid culture techniques). Differentiation and morphogenesis.	**10 Hrs**	
Unit 3: Introduction to Horticulture, Nursery management and importance .Methods of propagation – vegetative – rhizome, bulb, corm and sucker (natural). Artificial- Cutting, layering, grafting and budding. Bonsai – methods and importance. Nursery management: Introduction, types of nurseries and cultural practices. Seed (propagule) collection, storage and treatment. Manures, fertilizers and pesticides. Methods of irrigation – drip, sprinkler and flood	**12 Hrs.**	
Unit 4: Green House Technology – Introduction, advantages and limitations. Types of Green Houses- Green House structure, principle Green house technology as applied to ornamental, vegetable and fruit plants.	**08 Hrs.**	
Unit 5: Harvest Technology and Weed Management: Harvest Technology**:** Flower and fruit plants management. Artificial ripening, maturity indices, methods of picking. Post-harvest technology and management of fruits: grading, processing, storage and packing. Weed Management: Introduction and significance. Invasive weeds – concept and causes of their dominance. Weed control – physical, chemical and biological methods.	**10 Hrs.**	

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V Semester Botany Paper – II

Paper-II: Ecology, Environmental Biology and Phytogeography 50 hrs

Topic	Hours	Topic covered by
Unit 1: Plant and environment: Atmosphere (gaseous composition), water (properties of water cycle), light (global radiation, photo synthetically active radiation), temperature, soil (development, soil profiles, physico-chemical properties), and biota. Morphological, anatomical and physiological responses of plants to water (hydrophytes, xerophytes and epiphytes), temperature (thermoperiodicity and vernalization), light (photoperiodism, heliophytes and sciophytes) and salinity.	**12 Hrs.**	**Asst Prof. R. M. Mahindrakar**
Unit 2: Population ecology and Ecosystems: Growth curves; ecotypes; ecads, Ecological succession-hydrach and xerarch. Structure of Ecosystems (Pond and Forest)**:** abiotic and biotic components; food chain, food web, ecological pyramids, energy flow.	**10 Hrs**	
Unit 3: Phytogeography: Botanical regions of world, Vegetation types of Karnataka and India.	**06 Hrs.**	
Unit 4: Conservation of Natural resources: Different types of natural resources and their conservation, Forest and Forest Management: Forest and its ecological significance, deforestation, forest management and social forestry. Natural depletion of vegetation endangered and threatened economic plants of India and red data book. Wild life management in India, Indian board of wild life, national park and sanctuary. Energy resources: conventional and non conventional sources of energy. Biodiversity: significance, types, depletion, conservation of biodiversity.	**12 Hrs.**	
Unit 5: Pollution: Introduction, causes, effects and control measures of Water pollution**,** Air pollution, Soil pollution, Acid rain, Global warming, and Ozone depletion. Sewage water and waste water types. Methods of effluent treatment of industrial waste water,sludge disposal and its care related to environment.	**10 Hrs.**	

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