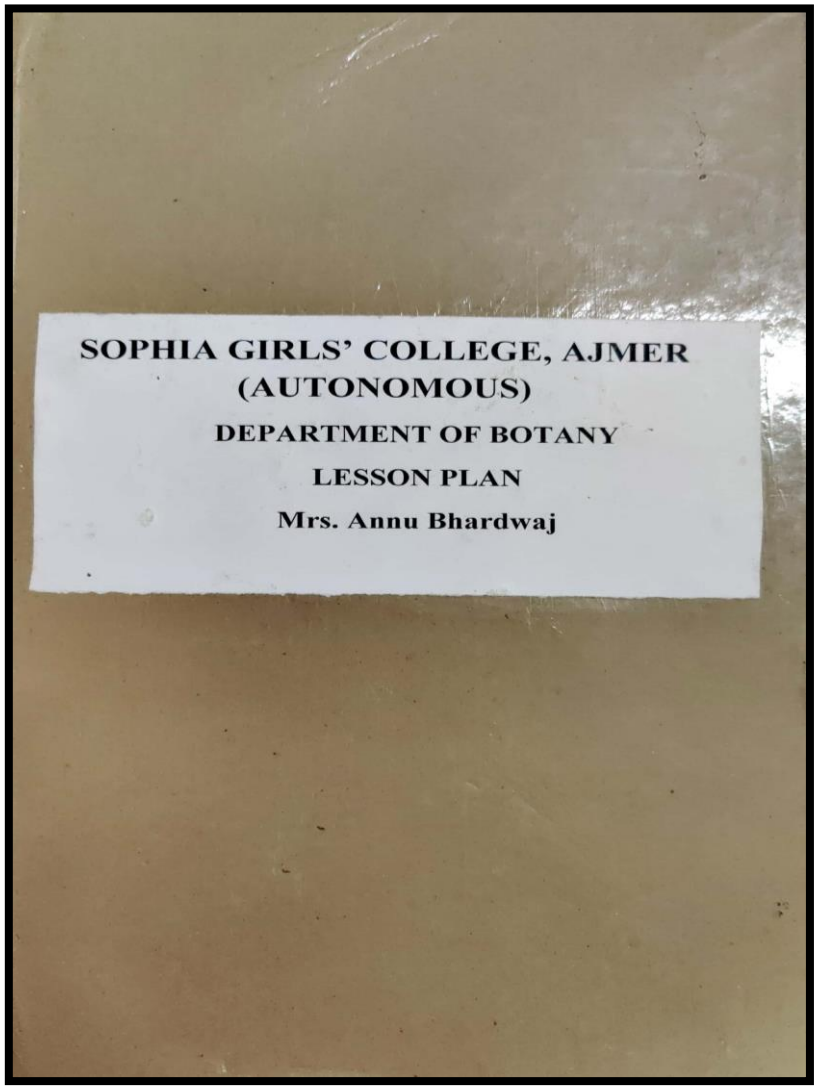
SOPHIA GIRLS' COLLEGE(AUTONOMOUS), AJMER



COURSE_PLAN_2020-21_MRS_ANNU_BHARDWAJ

SOPHIA GIRL'S COLLEGE, AJMER (*AUTONOMOUS*)

B.Sc. I (SEMESTER I)

ALGAE,FUNGI AND LICHENS (PAPER I) (BOT 101)

Max. Marks : 75 (50Ext; 25 Int) Min. Marks: 30(20 Ext;10 Int) Credit: 03

COURSE PLAN

SEM I Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
AUGUST - SEPTEMBER	**UNIT I** **Algae-** General characters, Thallus organisation, Pigments, Reserve food material	General characters of algae , types of thallus in algae , types of pigments and reserve food in algae	E- learning Power Point presentation	Categorize organisms as algae, fungi and lichens	*Knowledge Based* -What is other name for organisms having thallus like body ? - Show types of reserve food in different classes of algae in tabular form. *Understanding Based* -Summarize characters of different classes of algae and give examples Describe life cycles of any Rhodophyceae member with help of diagrams.	Knowledge--60 Understanding-30 Higher Order-10
	Classification (Fritsch), Economic importance, Algal bloom and Types of life cycle.	Classification of algae and general characters of all 11 classes. Positive and negative aspects of algae. Lifecycles types with examples	PPT, E-content (Videos)			
	A General account of lichens	General characters of lichens and three types of lichens and their morphology.	PPT, audio tutorials			

OCTOBER-DECEMBER	**UNIT II** **Important features and life history of:** Cyanophyceae- *Nostoc, Oscillatoria*	Characteristics of classes of algae and thallus structure and mode of reproduction in different genus of algae	PPT cum Lecture, assignments,	Appreciate the diversity of life forms	*Higher Order Thinking Skills Based* Compare life cycle Aspergillus and Mucor with special reference of asexual mode of reproduction. -Illustrate hetrothallism and parasexuality concept in fungi	
	Chlorophyceae- *Volvox, Oedogonium*	Thallus organisation and life history of some members of chlorophyceae	Diagrams, PPT cum lecture method			
	Xanthophyceae- *Vaucheria* Phaeophyceae- *Ectocarpus* Rhodophyceae- *Polysiphonia*	Thallus organisation and life history of members of Xanthophyceae, Phaeophyceae and Rhodophyceae	Diagrams, PPT cum lecture method			
JANUARY-FEBRUARY	**UNIT III** **Fungi-** General characters, Classification (Alexopolous & Mims, 1979), Economic importance, Heterothallism, Parasexuality	Characteristics of Fungi, Classification ,Positive and negative uses of fungi and general terms related with fungi	Diagrams, PPT cum lecture method, assignments,	Understand phylogenetic relationship, ecology and economic importance of algae, fungi and lichens		
FEBRUARY-MARCH	**Important features and life history of** Mastigomycotina- *Phytophthora* Zygomycotina- *Mucor*Ascomycotina- *Eurotium, Peziza* Basidiomycotina- *Puccinia, Agaricus*	Important features and life cycle of genera of different classes of fungi	Diagrams, PPT cum lecture method, videos, group discussion			

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COURSE_PLAN_2020-21_MRS_ANNU_BHARDWAJ

B.Sc. II (SEMESTER III)

TAXONOMY OF ANGIOSPERMS (PAPER II) (BOT-302)

Max. Marks : 75 (50Ext; 25 Int) Min. Marks: 30(20 Ext;10 Int) Credit: 03

COURSE PLAN

SEM III Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
JULY/AUGUST	UNIT I **Angiosperm taxonomy:** Brief history, Aims and fundamental concepts (alpha taxonomy, omega taxonomy, holotaxonomy), Taxonomic literature, Herbarium technique, Important herbaria and Botanical gardens of India	Definition of taxonomy, fundamental rules and types of taxonomy,Taxonomic tools, Herbaria and botanical garden of india	PPT cum lecture method , Group discussion, Online Quiz	Understand the basic aspects of plant taxonomy and botanical nomenclature	*Knowledge Based* -Define Plant Nomenclature. -Difference between Simple and compound leaf. *Understanding Based* Illustrate concept of principle of priority and rule anad principle of ICBN. -Campare of Floral diagram of Fabaceae family with Acanthaceae Family .	Knowledge--50 Understanding-35 Higher Order-15
	Botanical nomenclature: Principal and rules, Salient features of International Code of Botanical Nomenclature, Taxonomic ranks, Type concept, Principle of priority.	Definition of Nomenclature, rules of ICBN ,Typhification method, POR concept	PPT cum lecture method			
	Major contribution of cytology, Phytochemistry and Taximetrics to taxonomy	Role of plant taxonomy in cytology ,phytochemistry ,Numerical taxonomy				

					Higher Order Thinking Skills Based	
SEPTEMBER	UNIT II **Classification of Angiosperms:** Salient features of systems proposed by Bentham & Hooker, Engler&Prantl	Classificationused for angiospermic plants given by B&H and E&P Difference and merit and demerits of B&H and E&P system of classification.	PPT Cum Lecture, Assignment, Group discussion	Compare various plant families and classify plants on the basis of their characters	-Discuss about the merits and demerits of Bentham and Hooker system of classification. - Elaborate taxonomicfeatures of Poaceae family and campare it with Liliaceae family.	
OCTOBER	**Diversity of flowering plants as illustrated by members of families:** Ranunculaceae, Cruciferae,	Terminology used to describe angiospermic plants, Description of Ranunculaceae, Cruciferae with help of vegetative characters and their floral diagrams and floral formula	Videos, PPT cum lecture method,			
	Diversity of flowering plants as illustrated by members of families:, Malvaceae, Rutaceae, Fabaceae, Apiaceae, and Compositae	Terminology used to describe angiospermic plants, Description of Malvaceae, Rutaceae, Fabaceae, Apiaceae, and Compositae with help of vegetative characters and their floral diagrams and floral formula	PPT cum lecture method Diagrams, Student presentation			

NOVEMBER	UNIT III **Diversity of flowering plants as illustrated by members of families:** Acanthaceae, Apocyanaceae,	Description of Acanthaceae, Apocyanaceae, with help of vegetative characters and their floral diagrams and floral formula ,	PPT cum lecture method Diagrams, Assignment	Appreciate the diversity of flowering plants		
	Diversity of flowering plants as illustrated by members of families: Asclepiadaceae, Solanaceae, Labiatae,	Description of, Asclepiadaceae, Solanaceae, Labiatae,with help of vegetative characters and their floral diagrams and floral formula	PPT cum lecture method Diagrams, Assignment, online quiz			
DECEMBER	**Diversity of flowering plants as illustrated by members of families:**Euphorbiaceae, Liliaceae and Poaceae. Covid 19: Role of plants in developing immunity (Ginger, Turmeric, Clove, Giloy)	Description of, Description of Acanthaceae, Apocyanaceae, with help of vegetative characters and their floral diagrams and floral formula with help of vegetative characters and their floral diagrams and floral formula . Chemical Composition of mentioned medicinal plants for treatment of Covid 19.	PPT cum lecture method Diagrams, Online Videos Class test (Google form)			

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B.Sc. III (SEMESTER V)

DEVELOPMENT AND UTILIZATION OF PLANTS (PAPER II) (BOT-502)

Max. Marks : 75 (50Ext; 25 Int) Min. Marks: 30(20 Ext;10 Int) Credit: 03

COURSE PLAN

SEM V Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
JULY	UNIT I **Growth and development:** Definitions, Phases of growth and development, Growth kinetics	Definition of Growth and Developmet ,Phases and kinetics of growth ,.	PPT cum lecture method. Online videos	Understand the process of growth and development and the phenomena of flowering	*Knowledge Based* -Compare term growth with development. -Infer kinetics of growth with diagrams. *Understanding Based* Illustrate concept of HIR and Vernalization and Explain its physiological role on plant growth. *Higher Order Thinking Skills Based* -Discuss about Bioassay and physiological role	Knowledge--40 Understanding-40 Higher Order-20
	Photoperiodism: Florigen concept. Vernalization	Flowering Harmone and Vernalization	PPT cum lecture method, Diagrams			
	Photomorphogenesis: Phytochrome- discovery, Physiological role, Mechanism of action, HIR (High Irradiance Response)	Phytochrome and its physiological effects,HIR	Diagrams, PPT cum lecture method			
AUGUST	UNIT II **Plant hormones:** Discovery. Structure, Bioassay, Physiological role and Application of; Auxin, Gibberellin,	Definition of Plant harmones. History ,Structure, Bioassay and physiological rloe of Auxin and	PPT cum lecture method, Online Quiz , Online Videos, Presentation by	Assess the role of various plant hormones in regulating vital functions in		

		Gibberellin.	Students	plants	of Auxin and compare it with ABA. -Explain Morphogical structure of five medicinal plants and write its chemical comp and its economic value?	
	Plant hormones: Discovery, Structure, Bioassay, Physiological role and Application of; Cytokinin, Abscisic acid and Ethylene	Defination of Plant harmones, History ,Structure, Bioassay and physiological rloe of Cytokinin, Abscisic acid and Ethylene				
SEPTEMBER-OCTOBER	UNIT III **Utilization of Plants: Food Plants:** Rice, Wheat, Maize, Sugarcane **Fibers:** Cotton and Jute	Defination of Economic botany, Family ,Scientific ,part used ,Morphological ,Cultivation and uses of Food plants and fibre plants	PPT cum lecture method, Online test (Google form)	Appraise and prioritize the utility of plant species		
NOVEMBER	**Vegetable oils:** Groundnut, Mustard and Coconut **Spices:** General account (Black pepper, Cloves, Cinnamon, Cardamom, Turmeric, Coriander)	Family ,Scientific ,part used ,Morphological ,Cultivation and uses of vegetable oils and spices and condiments.	PPT cum lecture method, Assignment, Group Discussion .			
DECEMBER	**Medicinal Plants:** General account (Atropa, Serpentine, Brahmi, Ashwagandha **Beverages:** Tea and Coffee RubberRole of plants in developing immunity against covid	Family ,Scientific ,part used ,Morphological ,Cultivation ,chemical composition and uses of medicinal plants , beverages and rubber.	PPT cum lecture method, Presentation by students, Online Videos			

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B.Sc. I (SEMESTER II)

BRYOHYTES AND PTERIDOPHYTES (PAPER II) (BOT 201)

Max. Marks : 75 (50Ext; 25 Int) Min. Marks: 30(20 Ext;10 Int) Credit: 03

COURSE PLAN

SEM II Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
APRIL	UNIT I **Bryophytes-** General characters, Classification, Economic and Ecological importance.	General characters of bryophytes, Important characters of different classes of bryophytes ,economic importance of bryophytes	PPT cum lecture method, Assignment, Online videos.	Assess the role of bryophytes as pioneers in plant communities	*Knowledge Based* -Which stage is dominant in Bryophytes? -Discuss about the characteristics of different classes of Bryophytes. *Understanding Based* -Illustrate thallus organisation of different division of Bryophytes with help of diagrams and examples. -Infer about the stellar system in	Knowledge--60 Understanding-30 Higher Order-10
MAY	**Hepaticopsida-** *Marchantia* **Anthocerotopsida-** *Anthoceros*	General characteristics of Hepaticopsida and Anthocerotopsida ,Thallus organisation ,Asexual and sexual reproduction of *Marchantia, Anthoceros*	PPT cum lecture method, Diagrams, Group Discussion			
	Bryopsida- *Funaria*	General characteristics of Bryopsida ,Thallus organisation ,Asexual and sexual rep. of *Funaria*	PPT cum lecture method, Online test (Google form)			

MAY	UNIT II **Pteridophytes-** General characters, Classification, Stelar system.	General characters of Pteridophytes , classification and general characters of different classes of pteridophytes ,Types of stelar system in Pteridophytes	PPT cum lecture method, Presentation by Students, Online Quiz, Online videos	Categorize major groups of pteridophytes	pteridophytes with help of diagrams and examples. *Higher Order Thinking Skills Based* -Explain homosporous pteridophyte prothallus with that of homosporous Pteridophytes. -Compare Sexual mode of reproduction of *Selaginella* with *Equisetum.* with help of diagrams.	
JUNE	**Important characteristics of:** Psilophyta, Lycophyta, Sphenophyta.	Recall characteristics of Psilophyta , Lycophyta, Sphenophyta and explain with help of examples.	PPT cum lecture method			
	Important characteristics of: Pterophyta.	Recall characteristics of Pterophyta explain with help of examples.	PPT cum lecture method			
JUNE-JULY	UNIT III **Structure and reproduction in:** *Rhynia, Lycopodium*	Characteristics of fossil plants , Desciption of *Rhynia* (fossil pteridophyte) Morphology ,sexual and asexual reproduction of *Lycopodium*	PPT cum lecture method , Assignments, Online Videos, Diagrams	Compare the structure and reproduction in various genera of pteridophytes		
	Structure and reproduction *Selaginella, Equisetum, Pteris* and *Marsilea*	Morphology ,sexual and asexual reproduction of *Selaginella, Equisetum, Pteris* and *Marsilea*	PPT cum lecture method, Assignments, Online Test (Google Form)			

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B.Sc. II (SEMESTER IV)

DIVERSITY OF SEED PLANTS (PAPER II) (BOT-401)

Max. Marks : 75 (50Ext; 25 Int) Min. Marks: 30(20 Ext;10 Int) Credit: 03

COURSE PLAN

SEM IV Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
JANUARY	UNIT I **Characteristics of seed plants:** Evolution of seed habit, Seed plants with fruits (Angiosperms) and without fruit (Gymnosperms).	Characteristics of angiosperms and gymnosperms, Concept of seed habit ,evidences to prove seed habit	PPT cum lecture method ,	Understand evolution of seed habit with some examples of primitive angiosperms	*Knowledge Based* -What is seed plants? -Dicuss about paleobotanical evidences of seed habit with help of examples. *Understanding Based* - Illustrate primitive characters of *Trochodendron* and compare it with *Driyms*. - Discuss in detail about the primitive characters of *Cycadeoidea*	Knowledge--50 Understanding-35 Higher Order-15
	Angiosperms: Origin and Evolution, Some examples of primitive Angiosperms (*Magnolia, Degenaria,*	Origin of seed plants ,characteristics of primitive angiosperms Morphology and reproductive structure of *Magnolia, Degenaria,*	PPT cum lecture method, Diagrams ,			
	Some examples of primitive Angiosperms *Trochodendron, Driyms*	Morphology and reproductive structure of *Trochodendron, Driyms*	PPT cum lecture method, Group discussion, Diagrams			
FEBRUARY-MARCH	UNIT II **Gymnosperms:** General characteristics, Classification, Geological time scale	Characteristics of Gymnosperms Classification ,Discussion on periods and era	PPT cum lecture method, Presentation by students, Online quiz	Infer the process of fossilization and focus on fossil gymnosperms		
	Fossilisation and some examples of fossil gymnosperms *Lyginopteris, Glossopteris,*	Types of fossils and methods of studying fossils.	PPT cum lecture method, Online videos			

	Examples of fossil gymnosperms *Ptilophyllum, Williamsonia, Cycadeoidea*	Characters of fossil gymnosperms and morphology and reproductive structure of some fossil gymnosperms.	Diagrams		*Higher Order Thinking Skills Based* -Describe sexual reproduction of *Ephedra* and campare with reproduction in *Cycas* emphasized main on Gametophytic generation	
APRIL-MAY	**Morphology of vegetative & reproductive parts and Anatomy of:** root, stem and leaf, reproductive parts and life cycle *of Cycas,*	Morphology,anatomical and reproductive structure and life cycle of *cycas*	PPT cum lecture method, Diagrams, Online test (Google form), Online videos	Illustrate distribution, morphology, anatomy and reproductive biology of gymnosperms		
JUNE	**Morphology of vegetative & reproductive parts and Anatomy of:** root, stem and leaf, reproductive parts and life cycle *of, Pinus*	Morphology,anatomical and reproductive structure and life cycle of *Pinus*	PPT cum lecture method, Diagrams, Assignments			
JULY	**Morphology of vegetative & reproductive parts and Anatomy of:** root, stem and leaf, reproductive parts and life cycle *of Ephedra*	Morphology,anatomical and reproductive structure and life cycle of *Ephedra*	PPT cum lecture method, Diagrams, Assignments			

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B.Sc. III (SEMESTER VI)

PLANT ECOLOGY (PAPER I) (BOT-601)

Max. Marks : 75 (50Ext; 25 Int) Min. Marks: 30(20 Ext;10 Int) Credit: 03

COURSE PLAN

SEM VI Month	UNIT/TOPIC	Concepts/facts	Teaching Pedagogy	Learning Outcomes	Questions	Marks Weightage (%)
JANUARY	UNIT I **Environment:** Atmosphere (gaseous composition), Water (properties of water cycle), Light (global radiation and photosynthetically active radiation),	Terminology in ecology, Atmosphere and layers of atmosphere , Properties of water and hydrological cycle ,Light and importance of light.	PPT cum lecture method, Diagrams, Assignments, Online videos.	Consider that how the Ecological systems function	*Knowledge Based* -Define ecology. - Recall about atmosphere layer. *Understanding Based* -Discuss about the morphological and physiological characters of hydrophytes and campare it with xerophytes. -Elaborate analytical and synthetic characters of community with help of example.	Knowledge--40 Understanding-40 Higher Order-20
	Temperature. Soil (development, soil profiles, physico-chemical properties)	Temperature and importance of light,soil profile and properties of soil.	PPT cum lecture method, Diagrams, Assignments			
FEBRUARY	UNIT II **Morphological, anatomical and physiological**	Morphological ,anatomical and physiological	PPT cum lecture method, Diagrams,	Understand how food webs and trophic level		

	adaptations of plants to water: hydrophytes, xerophytes and halophytes	characteristics of hydrophytes, xerophytes and halophytes	Assignments , Group discussion	work	*Higher Order Thinking Skills Based* -Discuss about the functional ascepts of ecosystem with help of examples and diagrams. -.Relate hydrosere succession with Xerosere succession and elaborate answer with help of ray diagrams.	
	Population ecology: Growth curves, Ecotypes, Ecads. Types of species Interaction.	Gene Ecology, Population ecology Negative and positive interaction	PPT cum lecture method, Diagrams, Online videos, Online test (Google form)			
MARCH	**Community ecology:** Characteristics, Characters (analytical and synthetic), Biological spectrum, Ecological succession, concept of climax, Ecological niche	Analytical and synthetic characters of community Ecological succession and its type Ecological niche and its type	PPT cum lecture method, Diagrams, Presentation by students			
APRIL –MAY	UNIT III **Ecosystems:** Structure- abiotic and biotic components, food chain, food web, ecological pyramids, energy flow	Defination of Ecosystem and its components Functional aspect of ecosystem	PPT cum lecture method, Diagrams, Assignments, Online videos	Assess the relationship between organisms and their environment		
JUNE	**Biogeochemical cycles** of- carbon, nitrogen and phosphorous	Ecological cycles, C,N and P cycles and their role in ecosystem	PPT cum lecture method, Diagrams, Presentation by students			
JULY	Biogeographical regions of India.Vegetation types of India: Forests and grassland	Forests and grassland and vegetation of India	PPT cum lecture method, Assignments			

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