

Department of Botany.
Course objectives and Outcomes

F.Y.B.Sc.

Sem.-I		
Paper	Objectives	Outcome
BOT -101 : Microbial Diversity,Algae and fungi	To acquaint students with basic concepts of microbial diversity of bacteria, virus and microbes. To study systematic Position, structure, and function of Algae and fungi.	After successful completion of this course students are expected to: Understand the basic microbial structure and study the comparative characteristics of prokaryotes and eukaryotes and also Understand the structural similarities and differences among various physiological groups of bacteria/archaea Know general bacteriology and microbial aspects pertinent to bacteria, fungi and algae To understand the life cycle patterns of Algae and fungi To study the useful and harmful bacteria and virus.
BOT -102 : Plant Taxonomy	To complement the students with the basic knowledge plant and taxonomy. To study the diversity of Angiosperms	After successful completion of this course students are expected to: To study the comparative account among the families of

		<p>Angiosperms. To study the economic important of the angiospermic plant Also to understand the distinguishing features of the angiosperms families. Student will be able to understand the basic knowledge of botanical gardens</p>
BOT -103 Practicals based on BOT 101 &102	<p>To understand the life cycle patterns of Algae and fungi To study the useful and harmful bacteria and virus. Student will be able to understand the basic knowledge of botanical gardens</p>	<p>After successful completion of this course students are expected to: To understand the life cycle patterns of Algae and fungi To study the useful and harmful bacteria and virus. Student will be able to understand the basic knowledge of botanical gardens.</p>
Sem.-II		
BOT -201 : Diversity of Archegoniates	<p>To study salient features of Archegoniates To study the life cycle of selected genera To study economic and ecological important of Archegoniates.</p>	<p>After successful completion of this course students are expected to: To make it students aware of the status of higher Cryptogams and gymnosperms as a group in plant kingdom To understand their life cycle patterns, structure, function and Reproductive str.</p>
BOT-202 - Plant and Ecology	<p>To know if scope and important of the discipline.</p>	<p>After successful completion of this</p>

	To study plant communities and ecological adaptation in plants. Also identify the ecological instrument.	course students are expected to: Student will be able to understand the how to conservation of biodiversity. To know the basic concept of ecology such as biotic and abiotic factors.
BOT 203 Practicals based on BOT 201 &202	To handle ecological instruments.	Learn proper handling of PH meter, soil thermometer, Hair hygrometer etc

S.Y.B.Sc.

Sem.-III		
BOT - 301: Plant and Anatomy.	To acquaint students with basic concepts of plant anatomy To know scope and importance of plant anatomy. To study various tissue system . To study protective tissue system.	After successful completion of this course, students are expected to: understand the basic knowledge of anatomy. Student can easy understand the types of tissues. Various knowledge for meristematic tissues and permanent tissues. To well know the how to describe primary structure of dicot and monocot plant. To study normal secondary growth in plant and their cause. To study protective tissue system for eg. Stomata, epidermal

		appendages, epidermal tissues etc.
BOT - 302: Plant Physiology	<p>To complement the students with the basic knowledge about plant physiology.</p> <p>To know importance and scope of plant physiology.</p> <p>To study plant and plant cell in relation to water</p> <p>To understand growth at various level.</p>	<p>After successful completion of this course, students are expected to:</p> <p>demonstrate theory in plant physiology .</p> <p>Student will be able to understand the different process in relation with structure of organisms and it's environment.</p> <p>Study the plant cell and water relation and also understand the mechanism of absorption of water, gases and solute.</p> <p>Well knowledge develop for process of transpiration, theories of stomatal opening and closing, factors affecting rate of transportation.</p> <p>Identify the plant growth hormone eg. Auxin, gibberellins, cytokinins etc.</p>
BOT - 303: Practical Paper-III	<p>To introduce the students to various structural of tissue.</p> <p>Practical knowledge develop by taking different sections of plant materials.</p>	<p>After successful completion of this course, the students are expected to:</p> <p>learn proper handling of microscope. And how to cutting the section of plant materials</p> <p>perform specific staining techniques and acquired skill of handling microscope while observing stained</p>

		<p>preparations. able to demonstrate physiological experiments To study the effect of two environmental factors (light and wind) on transpiration by the excited twig .</p>
<p>BOT-304 SEC- I: Mushrooms Culture Technology</p>	<p>To learn the History, scope and importance of mushroom technology. To understand the economic of mushroom cultivation</p>	<p>After successful completion of this course, students are expected to: competently explain various aspects of mushroom cultivation. Well understand the nutrition and medicinal value of edible mushrooms. To know their scope and importance. To understand the cultivation technology To know about the storage, marketing and various food preparation of mushroom. To develop the their pseravtive quality.</p>
<p>Sem.-IV</p>		
<p>BOT- 401:- Plant Embryology.</p>	<p>To understand the scope and importance of embryology To study stracture of microsporangium and magasporangium. To give exposure of techniques in embryology.</p>	<p>After successful completion of this course, the students are expected to: Understand the importance of plant embryology To well knowledge develop for stracture Micro. And mega</p>

		<p>sporangium.</p> <p>To study pollination, fertilization, endosperm and embryology.</p> <p>Also understand the seed structure and dispersal by wind, dispersal by water, by animals.</p>
BOT – 402 Plant metabolism	<p>To understand the scope and importance of plant metabolism.</p> <p>To study the properties, mechanism and classification of enzymes</p> <p>To study respiration in higher plant.</p>	<p>After successful completion of this course, the students are expected to:</p> <p>understand the process of photosynthesis in higher plant C₃, C₄ and CAM pathways.</p> <p>To study mode of enzymes are action, role of photosynthesis pigment : chlorophyll, I carotenoids and phycobillins.</p> <p>Also identify the mechanism of Aerobic respiration and Anaerobic respiration.</p> <p>well knowledge develop for nitrogen metabolism</p>
BOT -403 Practical	<p>To enhance practical skills of observing the permanent slide of T.S of microsporangium. T. S of ovules and different kind of embryo Sac.</p>	<p>After successful completion of this course students are expected to:</p> <p>Structure and functions of Micro. And magasporangium.</p> <p>Able to mounting of embryo from suitable seed.</p> <p>Study the Activity of catalase and study the effect of PH and enzyme concentration.</p> <p>Know chromatography</p>

		<p>techniques.</p> <p>Students can be able to detect isolation and inoculations of rhizobium and CO₂ essential for photosynthesis</p>
<p>BOT 404 SEC-II: Nursery and Gardening</p>	<p>To aware the students to the adverse effects of plant production and protection of chemicals on the biotic and abiotic components of environment.</p> <p>To familiarize students with the microbes used as biofertilizers for various crop plants and their advantages over chemical fertilizers</p>	<p>After successful completion of this course students are expected to:</p> <p>Completion of the course will give an overview of to create awareness about home gardening.</p> <p>To develop different skill regarding the gardening operation.</p> <p>The students will become familiar with the plant</p> <p>To know the different technique of making a garden and nursery.</p> <p>Well knowledge develop for botanical name of plant, also their cultivation practice, ornaments value and how to maintenance and care of them</p>

T.Y.B.Sc.

Sem.-V		
<p>BOT 501- Lower Cryptograms (Theory and Practical)</p>	<p>To develop and understanding of the Economic and ecological important of cryptogamic plant</p>	<p>Students will be able to understand the cryptograms as a group in plant kingdom</p>

BOT 502 – Morphology and systematic s of Angiosperm. (Theory and Practical)	To understand structure and function and morphology of Angiosperm plant Also understand the how to describe their floral parts and formulas	Students will be able to understand structure, function and morphology of different Angiospermic plant . And vegetative character's of Angiospermic plant.
BOT. 503 – Cell Biology and Genetics. (Theory and Practical)	To determine how cells or organelles performance different function in plant body. And also introduced cell cycle ,history of genetic and heredity.	Students will be able to identify the physical and chemical properties of plant cell. To introduce the students with ,"science of Heridity."
BOT 504 – Plant Physiology and Biochemistry . (Theory and Practical)	To develop and understand of growth pattern of plant and their physiological method you introduce the secondary metabolites of plant	Students will be able to develop fundamental knowledge in how to factor affecting to growth in plant .And secondary metabolites role in plant.
BOT. 505 – Biofertilizers. (Skill Enhancement Course)	To understand and introduce application of biofertilizers technology in agriculture.	Students will be able to identify the familiarize with microbes and used as biofertilizers and well knowledge for Application in biofertilizers
BOT 506 (B) – Horticulture. (Elective Course)	To understnd different Horticulture method and their practice	Students will be able to understand method of preservation and preparation of preserved products prevailing especially in this part of the state
Sem. VI		
BOT 601 – Higher Cryptograms.	To understand the life cycle of higher cryptograms for	Students will be able to understand

(Theory and Practical)	selected genera	economic importance of higher cryptograms plant.
BOT.602 Gymnosperms and Paleobotany (Theory and Practical)	To understand the study of Gymnosperms with distinguishing characteristics with their classification. Introduce the scope of paleobotany ,types of fossils and geological time scale.	Students will be able to identify developmental study of life cycle of "Pinus and Gnetum",. And also introduce the various fossil genera representing different fossil group
BOT 603 – Molecular Biology. (Theory and Practical)	To understand structure and function of cell and molecular organization of nucleic acid . To understand the tools and techniques in molecular biology	Students will be able to understand structure and function of different cell organelles and the molecular organization and role of nucleic acids.
BOT .604 – Economic Botany (Theory and Practical)	To understand the useful bio prime important to mankind	Students will be able to the acknowledge about various groups of plant of the world as well of India.
BOT 605 – Floriculture (Skill Enhancement Course)	To understand floriculture and it's important and different features of garden.	Students will be able to learn different techniques of the commercial floriculture. To create efficiency for plant propagation
BOT 606 (B) – Plant Breeding. (Elective Course)	To understand the techniques of production of new Superior Crop varieties.	To introduce the students with branch of plant breeding for the survival of human being from starvation.

M.Sc.-First Year

Sem.-I		
BOT 101- Angiosperms Taxonomy (Theory and Practical)	To understand general range of variation in the group angiosperms. To study character of biological important families of angiosperms. Identify genus and species with the help of flora of the plant material.	Students will be able to understand the various rules, principles and recommendations of plant nomenclature. To know modern trend in taxonomy.
BOT 102 – Environmental Botany and Biostatistics (Theory and Practical)	To understand the the environment botany. To study the nature and it's co-relation with human society. Also improve environmental Ethics. Identify the sampling method, mean mode and median.	Students will be able to understand the how to impact of human activities on environment. To understand global issues concernd with environment. To understand sustainable development and care of environment To understand the relationship between economic growth and environment degradation.
BOT.103Cytogenetics, and Molecular Biology (Theory and Practical)	To study structural organizations and variation in chromosomes as well as karyotype analysis. To study method gene regulations, in prokaryotes and eukaryotes. Well know as DNA replication, repair and recombination.	Students will be able to study extra - chromosomal inheritance in plant system. To understand the molecular biology in relation to genetic material it's inheritance, modification replication and repair.
Sem.-II		

<p>BOT 201 – Diversity of lower Cryptogams (Theory and Practical)</p>	<p>To understand the salient features of Algae and Fungi. To study algae and fungi for human welfare</p>	<p>Students will be able to understand the diversity of lower Cryptogams in plant. To study the life cycle patterns in lower Cryptogams. To develop well knowledge for section cutting it and staining for lower Cryptogams plant materials.</p>
<p>BOT. 202– Diversity of Higher Cryptogams (Theory and Practical)</p>	<p>To understand study of higher Cryptogams eg. Bryophyta and pteridophyta. To study method economics important of higher Cryptogamic plant. To understand the which one contribution of Indian pteridologist For eg. S. S. Bir B.k.Nayar. etc. Was contribution of Indian pteridologist.</p>	<p>To make students aware of the status of higher Cryptogams as group in plant kingdom. To study distinguishing features, interrelationship, phylogeny and evolutionary. Also make well known for section cutting.</p>
<p>BOT 203 - Plant Physiology and Biochemistry. (Theory and Practical)</p>	<p>To understand plant structure in the context of physiological functions of plant. To understand the stress of plant and its adaptation.</p>	<p>Students will be able to understand physiological details of photosynthesis and respiration. How to make plant metabolites synthesized and their redox system of plant.</p>

M.Sc.II

<p>Sem. –III</p>		
<p>BOT 301- Gymnosperms and Paleobotany. (Theory and Practical)</p>	<p>To develop and understanding of the diversity of Gymnosperms in</p>	<p>Students will be able to understand the evolutionary trend and</p>

	<p>india. And study applied aspects of paleobotany.</p>	<p>affinities of living gymnosperms with respect to external and internal feature. And important of fossils type in different group of plant .</p>
<p>BOT 302 – Plant Biotechnology and Bioinformatics (Theory and Practical)</p>	<p>To understand the fundamental of totipotent , plant tissue culture techniques .And also understand the application of the plants tissue culture and transgenic plant in the field of botany.</p>	<p>Students will be able to understand plant tissue culture have been suitable amended wherever needs but the basic aspects remain the same expect for new addition.</p>
<p>BOT. 334 – Angiosperm Taxonomy .(Special paper -I) (Theory and Practical)</p>	<p>To understand the classification in Angiosperm and study of primitive and advanced groups of Angiosperm . To understand different orders of taxonomy. To introduce the local flora angiosperms.</p>	<p>Students will be able to identify the different family plant and their taxonomic structure of angiosperm .And also study orderl if 'Engler and Prantal ' system of classification. Student make expertise for identification of the local angiospermic plant.</p>
<p>Sem. –IV</p>		
<p>BOT 401 – Developmental Botany. (Theory and Practical)</p>	<p>To understand the vascular ,structure of wood and anomalous secondary growth, adulteration and forensic files botany. To study method of pollination and fertilization.</p>	<p>Students will be able to understand the sturtcture and development of , magasporangium, microsporangium, embryo and endosperm. And development of structure of pollen grain</p>

<p>BOT. 424 – Angiosperms Taxonomy special day paper -II (Theory and Practical)</p>	<p>To understand study biosystematic and numerical taxonomy. Also introduced chemotaxonomic investigation, techniques</p>	<p>Students will be able to identify ultrastructural systematic. To study angiospermic phylogeny Grup system Application of data in the classification of higher taxa.</p>
<p>BOT 434- Angiosperms taxonomy special paper III (Theory and Practical)</p>	<p>To understand wood anatomy To study ecological anatomy of angiosperms. Also identity different from school of embryology and their contribution.</p>	