

DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021 (SEMESTER I)

Class : BSc 1st year

Subject : BOTANY

Course / Paper : 1- (Microbial Diversity and Lower Plants)

Unit : I-

No. of Hours Allotted: 15 Hrs

Topics to be covered	No. of. Hours
Bacteria: Structure and nutrition	2
Reproduction and economic importance.	3
Brief account of Archaeobacteria, Actinomycetes and Mycoplasma with reference to little leaf of Brinjal and Papaya leaf curl	4
Viruses: Structure, replication and transmission	3
Plant diseases caused by viruses and their control with reference to Tobacco Mosaic and Rice Tungro.	2
An outline of plant diseases of important crop plants caused by bacteria and their control with reference to Angular leaf spot of cotton and Bacterial blight of Rice.	2
Total	16



Name of the Teacher: Dr. A. Vijaya Bhasker Reddy, Assistant Professor

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LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021 (SEMESTER I)

Class : BSc 1st year

Subject : BOTANY

Course / Paper : 1- (Microbial Diversity and Lower Plants)

Unit : II-

No. of Hours Allotted:15 Hrs

S.No	Topics to be covered	No. of Hours
1	General characters, structure, reproduction of algae	3
2	classification of algae (Fritsch)	2
3	Cyanobacteria: General characters, cell structure	2
4	biofertilizers with special reference to Oscillatoria, Nostoc and Anabaena.	3
5	Structure and reproduction of Chlorophyceae- Volvox, Oedogonium and Chara.	3
6	Phaeophyceae- Ectocarpus	1
7	Rhodophyceae- Polysiphonia.	1

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LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021 (SEMESTER I)

Class : BSc 1st year

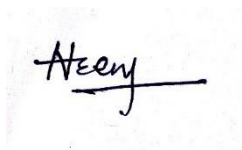
Subject : BOTANY

Course / Paper : 1- (Microbial Diversity and Lower Plants)

Unit : III- Fungi

No. of hours allotted : 15

S NO	Topic to be covered	No. of hours
1	Introduction , General characters of Fungi	2
2	Ainsworth classification of Fungi	2
3	Vegetative structure and reproduction of following :Albugo	2
4	Mucor	2
5	Saccharomyces	2
6	Penicillium	2
7	Puccinia	2
8	Cercospora	1
		15 hrs.



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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021 (SEMESTER I)

Class : BSc 1st year

Subject : BOTANY

Course / Paper : 1- (Microbial Diversity and Lower Plants)

Unit : IV-

S.No	Topics to be covered	No. of Hours
1	Pteridophytes: Structure, reproduction	3
2	life cycle and systematic position of Rhynia	2
3	life cycle and systematic position of Lycopodium	2
4	life cycle and systematic position of Equisetum	2
5	life cycle and systematic position of Marsilea	2
6	Stelar evolution in Pteridophytes	2
7	,heterospory and seed habit in Pteridophytes.	2

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER III)

Class : BSc 2nd year

Subject : BOTANY

Course / Paper : 3- Plant Anatomy and Embryology

Unit : I

No. of Hours Allotted:15 Hrs

S.No	Topics to be covered	No. of Hours
1	Meristems:Types,Histological Organisation of Shoot and Root apex and Theories	6
2	Tissues and Tissue systems: Simple, Complex and Special tissues	6
3	Leaf :Ontogeny,Diversity of internal structure; Stomata and Epidermal outgrowths	3
4	General account of adaptations in xerophytes and Hydrophytes	3



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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER III)

Class : BSc 2nd year

Subject : BOTANY

Course / Paper : 3- Plant Anatomy and Embryology

Unit : II

No. of Hours Allotted:15Hrs

S.No	Topics to be covered	No. of Hours
1	Stem an Root anatomy: Vascular cambium-Formation and function	5
2	Anamalous secondary growth of stem-Achyranthus, boerhaavia ,bignonia, Dracaena Root-Beta vulgaris	5
3.	Wood structure:General account. Study of local timbers-Teak(Tectona grandis),Roswwood(Dalbergia latifolia), Red sanders (pterocarpus santalinus), Nallamaddi(Terminalia tomentosa) and Neem (Azadirachta indica)	6

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER III)

Class : BSc 2nd year

Subject : BOTANY

Course / Paper : 3- Plant Anatomy and Embryology

Unit : III

No. of Hours

Allotted: 15Hrs

S.No	Topics to be covered	No. of Hours
1	History and importance of embryology	2
2	Anther structure, Microsporogenesis and development of male gametophyte	4
3	Ovule structure and types; megasporogenesis; types and development of female gametophyte	4



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LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER III)

Class : BSc 2nd year

Subject : BOTANY

Course / Paper : 3- Plant Anatomy and Embryology

Unit : IV

EMBRYOLOGY

No. of Hours

Allotted:15Hrs

S.No	Topics to be covered	No. of Hours
1	Pollen Morphology, Pollination and Fertilization, Pollination types, Pollen-pistil Interaction, Double fertilization	7
2	Seed-Structure appendages and dispersal mechanisms	2
3	Endosperm- Development and types. Embryo development and types; Polyembryony and Apomixis-an outline	7



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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER V)

Class : BSc 3rd year

Subject : BOTANY

Course / Paper : 5- cell and molecular biology

Unit : I – techniques in biology

S.No	Topics to be covered	No. of Hours
1	Principles of microscopy; Light microscopy; Fluorescence microscopy;	5
2	Transmission electron microscopy - sample preparation for electron microscopy, cryofixation, negative staining, shadow casting, freeze fracture, freeze etching.	5
3	Scanning electron microscopy - sample preparation for electron microscopy, cryofixation, negative staining, shadow casting, freeze fracture, freeze etching.	5
		15 hrs

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER V)

Class : BSc 3rd year

Subject : BOTANY

Course / Paper : 5- cell and molecular biology

Unit : II – cell organelles

S.No	Topics to be covered	No. of Hours
1	Mitochondria	4
2	chloroplast	3
3	Golgi body and lysosomes	2
4	Nuclear envelop	2
5	Euchromatin and heterochromatin	1
6	Nucleus and ribosomes	3
		15 hrs

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER V)

Class : BSc 3rd year

Subject : BOTANY

Course / Paper : 5- cell and molecular biology

Unit : III – cell membrane and genetic material

S.No	Topics to be covered	No. of Hours
1	Mitosis	3
2	Miosis	3
3	Transcription	2
4	Translation	2
5	Regulation of gene expression	2
6	Lack operon tryptophan operon	3
		15 hrs

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER V)

Class : BSc 3rd year

Subject : BOTANY

Course / Paper : 6- Economic botany and biotechnology

Unit : I

S.No	Topics to be covered	No. of Hours
1	Legumes: General account with special reference to soyabean and gram	4
2	Cereals: Wheat Origin, morphology and uses.	4
3	Spices: part used, economic importance with special reference to, clove and black pepper	4
4	Beverages: Tea, (morphology, processing & uses)	3
		15 hrs

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER V)

Class : BSc 3rd year

Subject : BOTANY

Course / Paper : 6- Economic botany and biotechnology

Unit : II

S.No	Topics to be covered	No. of Hours
1	Edible oils & Fats: General description, extraction, uses and health implications of groundnut	4
2	Fiber -yielding plants general description , morphology, family name ,etc,with special reference to cotton	4
3	Micropropagation	4
4	Endosperm culture with their applications	3
		15 hrs

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER V)

Class : BSc 3rd year

Subject : BOTANY

Course / Paper : 6- Economic botany and biotechnology

Unit : III

S.No	Topics to be covered	No. of Hours
1	Blotting techniques	4
2	DNA fingerprinting	4
3	PCR	4
4	ELISA and immunodetection	3
		15 hrs

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER II)

Class : BSc 1st year

Subject : BOTANY

Course / Paper : 2 – Bryophytes , pteridophytes, Gymnosperms and taxonomy

Unit : I

No. of Hours Allotted: 15

S.No	Topics to be covered	No. of Hours
1	Bryophytes general characters	3
2	Classification of bryophytes	1
3	structure, reproduction, life cycle and systematic position of Marchantia	3
4	Structure, reproduction, life cycle and systematic position of Anthoceros	3
5	Structure, reproduction, life cycle and systematic position of Polytrichum	3
6	Evolution of sporophyte in Bryophytes	2
		15hrs

Name of the Teacher:CHEKKA NAGESH
of Botany

Head Department

Signature:

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021 (SEMESTER II)

Class : BSc 1st year

Subject : BOTANY

Course / Paper : 2 – – Bryophytes , pteridophytes, Gymnosperms and taxonomy

Unit : II

S.No	Topics to be covered	No. of Hours
1	Pteridophytes general characters	3
2	Classification of pteridophytes	1
3	structure, reproduction, life cycle and systematic position of Rhynia	2
4	Structure, reproduction, life cycle and systematic position of Lycopodium	2
5	Structure, reproduction, life cycle and systematic position of equisetum	2
6	Structure, reproduction, life cycle and systematic position of marsilia	2
	Stelar evolution	2
	Heterospory and seed habit	1
		15hrs

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021 (SEMESTER II)

Class : BSc 1st year

Subject : BOTANY

Course / Paper : 2 – – Bryophytes , pteridophytes, Gymnosperms and taxonomy

Unit : III

S.No	Topics to be covered	No. of Hours
1	General characters , distribution , classification economic importance of gymnosperms	5
2	Pinus life cycle	2
3	Gnetum life cycle	2
4	Fossil and importance of gymnosperms	2
5	Geological time scale	2
6	Bennettitales	2
		15hrs

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021 (SEMESTER II)

Class : BSc 1st year

Subject : BOTANY

Course / Paper : 2 - Bryophytes , pteridophytes, Gymnosperms and taxonomy

Unit : IV

No. of Hours Allotted: 15 Hrs

Topics to be covered	No. of Hours
Introduction to Angiosperm Taxonomy	2
Taxonomy and its significance and Opportunities	1
Basic principles of Plant taxonomy	1
International Code of Nomenclature (ICN for plants)	2
Binominal system of nomenclature	1
Typification	1
History of classification	1
Types of classifications –Artificial classification (Linnaeus system)	1
Natural classification (Bentham & Hooker system)	1
Phylogenetic classification (Engler & Prantl system)	1
APG system of classification	1
Herbarium techniques	1
DNA barcoding. Web resources – BHL, IPNI, Species 2000, Tropicos and The Plant List.	1
Total	15 Hours

Name of the Teacher: Dr. A. Vijaya Bhasker Reddy

DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021 (SEMESTER IV)

Class : BSc 2nd year

Subject : BOTANY

Course / Paper : 4 – plant physiology and metabolism

Unit : I

S.No	Topics to be covered	No. of Hours
1	Plant water relation: Water potential, Osmosis osmotic pressure potential, absorption and transport of water.	5
2	Mineral Nutrition : Essential micro and macro nutrients and symptoms of mineral deficiency	4
3	Transport of ions	3
4	Transpiration and its significans	3
		15hrs

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER IV)

Class : BSc 2nd year

Subject : BOTANY

Course / Paper : 4 - plant physiology and metabolism

Unit : II

S.No	Topics to be covered	No. of Hours
1	Photosynthesis: Photosynthetic pigments, Cyclic and Non-cyclic Photophosphorylation. Carbon assimilation pathways: C3, C4 and CAM	5
2	Photosystem I	3
3	Photosystem II	3
4	Electrontransport system	4
		15hrs

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER IV)

Class : BSc 2nd year

Subject : BOTANY

Course / Paper : 4 - plant physiology and metabolism

Unit : III

S.No	Topics to be covered	No. of Hours
1	Respiration: Aerobic and Anaerobic	5
2	Glycolysis, Krebs cycle and oxidative phosphorylation.	4
3	Enzymes: Nomenclature, properties, Classification and factors regulating enzyme activity.	3
4	TCA cycle	3
		15hrs

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER IV)

Class : BSc 2nd year

Subject : BOTANY

Course / Paper : 4 - plant physiology and metabolism

Unit : IV

S.No	Topics to be covered	No. of Hours
1	Nitrogen Metabolism: Biological nitrogen fixation.	3
2	Physiological role of Phytohormones	3
3	Auxins, gibberellins, cytokinins	3
4	ABA, ethylene and Brassinosteroids	3
5	Photoperiodism SDP and LDP and phytochrome	3
		15

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER V)

Class : BSc 3rd year

Subject : BOTANY

Course / Paper : 7 - Genetics and plant breeding

Unit : I

S.No	Topics to be covered	No. of Hours
1	Mendelism: History, Principles of inheritance	3
2	Mendelism: History, Principles of inheritance	3
3	Autosomes and sex chromosomes, Incomplete dominance and Co-dominance. Multiple alleles, Lethal alleles, Epistasis, Recessive and Dominant traits, Polygenic inheritance.	3
4	. Multiple alleles, Lethal alleles,	3
5	Epistasis, Recessive and Dominant traits, Polygenic inheritance.	3
		15

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER V)

Class : BSc 3rd year

Subject : BOTANY

Course / Paper : 7 - Genetics and plant breeding

Unit : II

S.No	Topics to be covered	No. of Hours
1	Linkage and crossing over,	3
2	Mendelism: History, Principles of inheritance	3
3	Linkage and crossing over,	3
4	Variation in chromosome number and structure	3
5	Gene mutations: Types of mutations;	3
		15

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER V)

Class : BSc 3rd year

Subject : BOTANY

Course / Paper : 7 – Genetics and plant breeding

Unit : III

S.No	Topics to be covered	No. of Hours
1	Introduction to plant breeding	3
2	Objectives and breeding systems	3
3	Centers of origin and demystification of crop plants	3
4	Plant genetic resources	3
5	Hybridization	3
		15

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER V)

Class : BSc 3rd year

Subject : BOTANY

Course / Paper : 8 - Analytical Techniques in Plant Sciences

Unit : I

S.No	Topics to be covered	No. of Hours
1	Principles of microscopy	3
2	Light microscopy; Fluorescence microscopy; Confocal microscopy	4
3	Use of fluorochromes: Fluorescence-activated cell sorting (FACS); Applications of fluorescence microscopy: Chromosome banding, FISH, chromosome painting.	4
4	Transmission and Scanning electron microscopy - sample preparation for electron microscopy, cryofixation, negative staining, shadow casting, freeze fracture, freeze etching	4
		15

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER V)

Class : BSc 3rd year

Subject : BOTANY

Course / Paper : 8 - Analytical Techniques in Plant Sciences

Unit : II

S.No	Topics to be covered	No. of Hours
1	Spectrophotometry: Principle and its application in biological research.	3
2	Chromatography: Principle; Paper chromatography; Column chromatography, TLC, GLC, HPLC, Ionexchange chromatography; Molecular sieve chromatography; Affinity chromatography.	4
3	Characterization of proteins and nucleic acids: Mass spectrometry; X-ray diffraction; X-ray crystallography; Characterization of proteins and nucleic acids;	4
4	Electrophoresis: PAGE, SDS-PAGE	4
		15

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DEPARTMENT OF BOTANY: NIZAM COLLEGE

LESSON PLAN FOR THE ACADEMIC YEAR OF 2020-2021(SEMESTER V)

Class : BSc 3rd year

Subject : BOTANY

Course / Paper : 8- Analytical Techniques in Plant Sciences

Unit : III

S.No	Topics to be covered	No. of Hours
1	Biostatistics: Statistics, data, population, samples, parameters;	5
2	Representation of Data: Tabular, Graphical; Measures of central tendency:	5
3	Arithmetic mean, mode, median; Measures of dispersion: Range, mean deviation, variation, standard deviation; Chi-square test for goodness of fit	5
		15

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