



COMMISSONERATE OF COLLEGIATE EDUCATION,



GOVT. DEGREE COLLEGE RAJAMPET, KADAPA Dt. (Affiliated to Yogi Vemana University, Kadapa)

TEACHING PLAN

ACADEMIC YEAR 2023 - 2024.

Name of the Department : Botany
NAME OF THE LECTURER : S. Bhaskar Rao
Course / Group : BZC & BCCB & Botany major.
Subject / Paper : Botany

Sl.No.	Subject	Paper	Page No.
1	Anatomy and embryology of Angiosperm	I	
2	Non-vascular plants	II	
3	Cell Biology, Genetics, plant breeding	IV	
4			

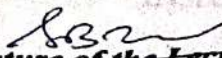
III Anatomy, Embryology & Angiosperm and Ecology.
Biodiversity
Teaching Plan / Lesson No.

Name of the Topic	organization of Apical meristem.
Hours required	2.
Learning Objectives	To know the theories of Apical meristem Tunica - corpus theory and histogen theory
Previous knowledge to be reminded	To recollect previous knowledge.
Examples/Illustrations	Stem tip
Additional inputs	
Teaching Aids used	B.B.
References cited	plant Anatomy. fahn 1990
Student Activity planned after the teaching	Seminar -
Activity planned outside the Class room, if any	Assignment.
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Histogen theory: - Hanstein proposed this theory. It consists of 3 zones ① Dermatogen — Epidermis ② periblem — cortex ③ plerome. — stele.


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Teaching Plan / Lesson No.

Name of the Topic	Tissue System.
Hours required	3
Learning Objectives	To know the Epidermis tissue system, ground tissue system and vascular tissue system.
Previous knowledge to be reminded	To Recollect previous knowledge.
Examples/Illustrations	Epidermal tissue system, Ground tissue system and vascular tissue system
Additional inputs	
Teaching Aids used	B.B and ppt.
References cited	Esau. K (1971) Anatomy of Seed plants.
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment
Any other activity	preparation of charts.
Topic Synopsis	(Continue on the reverse side if needed) Epidermal tissue system: The epidermal tissue system develops from protoderm layer (primary meristem layer). The epidermal tissue system consists of the epidermis, stomata, cuticle and the epidermal appendages like root hair and trichome (stem hair).


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Teaching Plan / Lesson No.

Name of the Topic	Anomalous Secondary Growth.
Hours required	2.
Learning Objectives	TO know the Anomalous Secondary growth of the Boerhaavia and Dracaena Stem.
Previous knowledge to be reminded	TO recollect previous knowledge.
Examples/Illustrations	Boerhaavia, Dracaena
Additional inputs	Nycthus Stem.
Teaching Aids used	B.B and PPT.
References cited	Fahn A (1990). Plant anatomy.
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	chart preparation.
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Boerhaavia Stem:- The primary structure of the stem can be distinguished into ① Epidermis ② General cortex and Endodermis pericycle, Vascular bundle and piths. Anomalous Growth of Stem:- The Boerhaavia of the Cambium remain the abnormal Secondary growth from Normal Cambium.

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Teaching Plan / Lesson No.

Name of the Topic	Mixed Structure.
Hours required	3.
Learning Objectives	To know the Wood Structure of Teak, Rosewood, and Red Sanders.
Previous knowledge to be reminded	To Recall the previous Knowledge.
Examples / Illustrations	Teak, Red sandal, Rose wood.
Additional inputs	
Teaching Aids used	Black board. PPT.
References cited	Plant anatomy. Fahn. (1990)
Student Activity planned after the teaching	Seminar. and Question and Answer
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) <u>Teak:</u> S. name: Tectona grandis Family: Lamiales. It is a large deciduous tree that occurs in mixed hardwood forest Teak is Golden in colour and has Snow grain and texture.

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Teaching Plan / Lesson No.

Name of the Topic	Structure of anther and microsporogenesis
Hours required	2.
Learning Objectives	TO know the structure anther and microsporogenesis and pollen development
Previous knowledge to be reminded	TO Recollect previous knowledge.
Examples/Illustrations	
Additional inputs	1
Teaching Aids used	Black Board . ppt .
References cited	An introduction to embryology of Angiosperm Malhotra
Student Activity planned after the teaching	Seminar.
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) T-S of Anther: The T-S of anther shows the following ① Epidermis ② Endothecium ③ middle layer ④ Tapetum.


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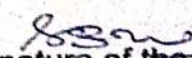
Teaching Plan / Lesson No.

Name of the Topic	Structure & anther microsporangium.
Hours required	2
Learning Objectives	To know the structure of the anther and microsporangium.
Previous knowledge to be reminded	To recollect previous knowledge
Examples / Illustrations	
Additional inputs	
Teaching Aids used	Black board, ppt.
References cited	Introduction to Angiosperm Embryology
Student Activity Planned after the teaching	Seminal
Activity planned outside the class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Structure of anther: ① Epidermis ② Endodermis ③ Middle layer ④ Tapetum. Tapetum types ① Amoeboid tapetum ② Secretory tapetum.

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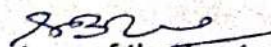
Teaching Plan / Lesson No.

Name of the Topic	Structure of ovule, megasporogenesis
Hours required	3.
Learning Objectives	To know the structure of ovule, mego-sporogenesis, monospermic, bispermic tetra spermic embryo sac.
Previous knowledge to be reminded	To recollect the previous knowledge.
Examples / Illustrations	
Additional inputs	
Teaching Aids used	Black board - Ppt
References cited	Introduction to Angiosperm Embryology
Student Activity Planned after the teaching	Seminar
Activity planned outside the class room, if any	Assignment
Any other activity	Chart preparation
Topic Synopsis	(Continue on the reverse side if needed) Structure of ovule (or) megasporangium. Based on integumentary ovules are 3 types ① Ategmic ovule ② unitegmic ovules ③ bitegmic ovules.


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Teaching Plan / Lesson No.

Name of the Topic	Endosperm, Dicot embryo development
Hours required	3
Learning Objectives	TO know Endosperms types and illustrations and development of dicot embryo
Previous knowledge to be reminded	TO Recollect the previous knowledge
Examples / Illustrations	Crotalaria, Grisebalea, Meadomia Endosperms.
Additional Inputs	
Teaching Aids used	Black board . ppt
References cited	The Text book. Angiosperm Embryology
Student Activity Planned after the teaching	Seminar
Activity planned outside the class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Endosperm provides food material to the growing embryo as well as seedling. In Angiosperms endosperm classified into 2 types ① nuclear ② cellular and ③ Helobial endosperm.


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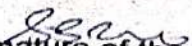
Teaching Plan / Lesson No.

Name of the Topic	Branches of Biology ^{Ecology} Structural component of ecosystem
Hours required	(2)
Learning Objectives	To know the branches of Ecology. Structural component of ecosystem
Previous knowledge to be reminded	To recollect previous knowledge.
Examples / Illustrations	
Additional inputs	
Teaching Aids used	B.B and Seminar
References cited	Plant ecology in S Subramany
Student Activity Planned after the teaching	Seminar
Activity planned outside the class room, if any	Assignment
Any other activity	—
Topic Synopsis	(Continue on the reverse side if needed) Branches of Ecology ① Habitat ecology ② population ecology ③ community ecology ④ Ecosystem ecology


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Teaching Plan / Lesson No.

Name of the Topic	Soil
Hours required	3
Learning Objectives	To know the Soil profile, Soil compiles
Previous knowledge to be reminded	To recollect the previous knowledge.
Examples / Illustrations	
Additional inputs	
Teaching Aids used	Black board - PPT.
References cited	Fundamental Ecology. Eugene A Pardeck.
Student Activity Planned after the teaching	Seminar
Activity planned outside the class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Soil profile : There are 4 horizons in soil profile ① A-Horizon ② B-zone ③ C-zone ④ D-zone


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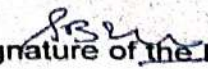
Teaching Plan / Lesson No.

Name of the Topic	Light and temperature
Hours required	②
Learning Objectives	TO know the climatic factor effect on the ecosystem -
Previous knowledge to be reminded	TO recollect the previous knowledge.
Examples / Illustrations	
Additional inputs	
Teaching Aids used	Black board - - PPT
References cited	Pandey - Plant Ecology Text Book
Student Activity Planned after the teaching	Questions..
Activity planned outside the class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) <u>Light:</u> Effect of light on plants ① photosynthesis ② chlorophyll synthesis ③ chlorophyll arrangement

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Teaching Plan / Lesson No.

Name of the Topic	Plant Succession
Hours required	3
Learning Objectives	TO know the type of TO know the type of Plant Successions.
Previous knowledge to be reminded	TO recollect previous knowledge
Examples / Illustrations	
Additional inputs	
Teaching Aids used	B-B.
References cited	Pandey. Plant Ecology Text Book
Student Activity Planned after the teaching	Seminar
Activity planned outside the class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) <u>Xerobere:</u> Succession occurs in drought or dry habitats called Xerobere. It is of two types ① psammobere ② Lithobere.


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Teaching Plan / Lesson No.

Name of the Topic	Population Ecology
Hours required	4
Learning Objectives	To know the Population Ecology.
Previous knowledge to be reminded	To recollect previous knowledge
Examples / Illustrations	
Additional inputs	
Teaching Aids used	B.B.
References cited	The Text & Plant Ecology Pandey
Student Activity Planned after the teaching	Seminal
Activity planned outside the class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Demographic Characters of Population Ecology ① Density ② Natality ③ Mortality & Age distribution ④ Age pyramids — population growth & growth curve — population expansion


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Teaching Plan / Lesson Plan

Name of the Topic	Mathematics
Hours required	1
Learning Objectives	To know the Rule of Addition
Previous Knowledge to be reminded	To know the Addition
Example / Illustration	
Additional notes	
Teaching Aids / Tools	GC, PPT
Teaching Method	To teach the Rule of Addition
Student Activity / Participation	Group
Assessment / Evaluation	Homework
Any other notes	
Teacher's Signature	Mathematics can be a subject and the teacher can teach it in a simple and easy way. ① Addition and Subtraction are the basic operations.

Teacher's Signature

IV

Cell Biology, Genetic and plant breeding

Teaching Plan / Lesson No.

Name of the Topic	Prokaryotic vs Eukaryotic cell, Animal vs Plant Cell
Hours required	A brief account on ultra-structure of plant cell
Learning Objectives	3. To know the prokaryotic cell and Eukaryotic cell and ultra structure of plant cell.
Previous knowledge to be reminded	To Recollects the previous knowledge.
Examples/Illustrations	plant cell and Animal cell
Additional inputs	ultra structure of Animal cell College Botany Vol III - B.P.P
Teaching Aids used	B.B and ppt
References cited	college Botany vol III B.P Pandey
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment.
Any other activity	Preparation. Animal plant cell - charts
Topic Synopsis	(Continue on the reverse side if needed) cell theory - cells are Basic units of all living organisms. cells are units of life and all life come from preexisting life.

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Teaching Plan / Lesson Plan

Name of the Topic	Cell Wall and Cell Membranes
Hours required	1
Learning Objectives	1. Understand the structure and function of the cell wall and cell membrane. 2. Differentiate between the cell wall and cell membrane.
Previous knowledge to be reminded	Cell structure and function
Examples/illustrations	
Additional inputs	
Teaching Aids used	BA and PH
References cited	College Biology Vol. II B.P. Pandey (2014)
Student Activity planned after the teaching	Assignment
Activity planned outside the Class room, If any	Assignment
Any other activity	to prepare chart of cell structure of cell wall.
Topic Synopsis	(Continue on the reverse side if needed) The cell wall is made up of a network of cellulose microfibrils and other complex materials. It is made up of hemicellulose, pectin, lignin, cellulose, hemicellulose, pectin, and small structural proteins. Secondary cell wall: Contains lignin. Middle Lamella: A thin layer of pectin that surrounds the primary cell wall.

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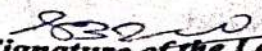
Teaching Plan / Lesson No.

Name of the Topic	polymorphic cell organelles plastids
Hours required	2.
Learning Objectives	to know the different types of plastids and functions of plastids.
Previous knowledge to be reminded	to recollect previous knowledge.
Examples/Illustrations	Lysosome, mitochondria, Golgi complex, Endoplasmic reticulum, vacuoles, vesicle, centrosome.
Additional inputs	leucoplast and chromoplasts.
Teaching Aids used	BB. and PPT.
References cited	Cell Biology. S.C Rastogi (2008)
Student Activity planned after the teaching	Seminars
Activity planned outside the Class room, if any	Assignment
Any other activity	-
Topic Synopsis	(Continue on the reverse side if needed) polymorphic cell organelles are organelles that can take on multiple shapes and functions. ① lysosome ② mitochondria ③ Golgi complex ④ plastids.

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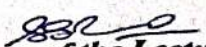
Teaching Plan / Lesson No.

Name of the Topic	ultra Structure of chloroplast
Hours required	2.
Learning Objectives	TO know the ultra structure of chloroplasts and functions of chloroplast.
Previous knowledge to be reminded	TO Recollect previous knowledge.
Examples/Illustrations	Chloroplast.
Additional inputs	Role of chloroplast in photosynthesis.
Teaching Aids used	B.B and ppt.
References cited	Cell Biology - S.C Rastogi
Student Activity planned after the teaching	Seminar.
Activity planned outside the Class room, if any	Assignment
Any other activity	—
Topic Synopsis	(Continue on the reverse side if needed) Chloroplast are organelles in plant cells that are responsible for photosynthesis. They have a complex structure that includes a double membrane, a third internal membrane, and several compartments.


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Teaching Plan / Lesson No.

Name of the Topic	Structure of plastid DNA.
Hours required	1
Learning Objectives	To know the structure of plastid DNA.
Previous knowledge to be reminded	To Recollect previous knowledge.
Examples/Illustrations	plastid DNA.
Additional inputs	mitochondrial DNA.
Teaching Aids used	B B
References cited	Cell Biology Sc Rastogi (2008)
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) The DNA of the chloroplast is double stranded, circular and range in size from 120 to 169 kb. 120


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Teaching Plan / Lesson No.

Name of the Topic	prokaryotic v Eukaryotic Chromosomes, morphology of Eukaryotic Chromosomes.
Hours required	2.
Learning Objectives	TO know the prokaryotic and eukaryotic chromosomes and morphology of Eukaryotic chromosomes.
Previous knowledge to be reminded	TO recollect previous knowledge of chromosomes.
Examples/Illustrations	prokaryotic chromosomes and Eukaryotic chromosomes
Additional inputs	Different types of chromosomes.
Teaching Aids used	BB and PPT.
References cited	Cell and Molecular Biology. P.K. Gupta 2009
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) The main difference between the structure of prokaryotic and Eukaryotic chromosomes is the number of chromosomes their shape, and their location within the cell.


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Teaching Plan / Lesson No.

Name of the Topic	Euchromatin and Heterochromatin + Karyotyping
Hours required	90 min (4)
Learning Objectives	TO know the Euchromatin and Heterochromatin and Karyotypes and Idiograms.
Previous knowledge to be reminded	TO Recollect previous knowledge
Examples/Illustrations	Yemenic DNA, Barr Body.
Additional Inputs	
Teaching Aids used	B.B and PPT
References cited	Cell and molecular Biology. PK-Gupta 2004
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Euchromatin and heterochromatin are two types of chromatin which is a combination of DNA, protein and nucleic acid that controls cell division and plays a role in the structure of the nucleus.


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Teaching Plan Worksheet

Name of the Test	Basic anatomy of chordates and invertebrates
Skills required	1. To know the chordate characteristics
Learning Objectives	To know the chordate characteristics
Prerequisites knowledge to be provided	To know the chordate characteristics
Examples/ Illustrations	Amphioxus, Tunicate, Cephalochordate, Vertebrate, etc.
Additional notes	
Learning Aids used	2. To know the chordate characteristics
References cited	Cell and Molecular Biology, Dr. S. S. Choudhary
Student Activity planned after the learning	1. To know the chordate characteristics
Activity planned outside the classroom, if any	2. To know the chordate characteristics
Any other activity	3. To know the chordate characteristics
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Signature

Teaching Plan / Lesson No.

Name of the Topic	Brief account of chromosomal aberrations. Structural and numerical changes
Hours required	(2)
Learning Objectives	To know the chromosomal aberration
Previous knowledge to be reminded	To recollect the previous knowledge.
Examples/Illustrations	Aneuploidy, Triploidy, Tetraploidy. Deletions, Addition, Translocation, Inversion
Additional inputs	—
Teaching Aids used	B.B. & PPT
References cited	Cell and Molecular Biology. P.K. Gupta (2002)
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) There are several types of chromosomal aberration including numerical and structural abnormalities.

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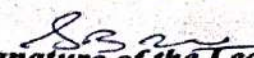
Teaching Plan / Lesson No.

Name of the Topic	organisation of DNA in Chromosomes (Solenoid and Nucleosome model).
Hours required	2
Learning Objectives	TO know about Solenoid and Nucleosome models of chromosomal DNA.
Previous knowledge to be reminded	TO recollect the previous knowledge.
Examples/Illustrations	Solenoid chromosome, nucleosome model, DNA models.
Additional Inputs	
Teaching Aids used	B.B. & PPT.
References cited	Cell and molecular Biology : Dr. Gupta et al.
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Solenoid-type chromosomal DNA: The solenoid describes the packing of DNA as 30nm fibre of chromatin and results from the helical winding of at least five nucleosome strands.

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Teaching Plan / Lesson No.

Name of the Topic	Mendel's Law of Inheritance, Incomplete dominance and Co-dominance. Multiple allelism.
Hours required	4
Learning Objectives	TO know about Incomplete dominance and co-dominance, multiple allelism
Previous knowledge to be reminded	TO recollect the previous knowledge of Mendel's Laws of Inheritance.
Examples/Illustrations	Incomplete Dominance, Co-Dominance and multiple allelism.
Additional Inputs	
Teaching Aids used	B.B and ppt.
References cited	Genetics. B.P Singh (2008)
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Incomplete Dominance: - Incomplete dominance is a form of Gene interaction in which both alleles of a gene at a locus are partially expressed often resulting in an intermediate or different phenotype. It is also known as partial dominance. For Rose the alleles for red colour is Dominant over alleles of white colour.


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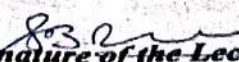
Teaching Plan / Lesson No.

Name of the Topic	Complementary, Supplementary and Duplicate gene interactions
Hours required	3
Learning Objectives	TO know about the Complementary, Supplementary and Duplicate gene interaction.
Previous knowledge to be reminded	TO recollect previous knowledge about gene interaction.
Examples/Illustrations	Pea Sweet pea plant. Wheat.
Additional inputs	
Teaching Aids used	B.B & PPT
References cited	Cell & Molecular Biology. PK Gupta 2002
Student Activity planned after the teaching	Seminar and Group Discussion
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) <u>Complement gene interaction</u>: - Complementary gene interaction is a type of gene interaction where two or more gene work together to create a new trait. or phenotype, that is different from the effect of each gene individually. : Complementary gene help control the colour of the flower in Sweet pea plant.

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Teaching Plan / Lesson No.

Name of the Topic	A Brief account of linkage and crossing over Chromosomal mapping - 2-point and 3-point test crosses
Hours required	2
Learning Objectives	TO know about linkage and crossing over.
Previous knowledge to be reminded	TO recollect previous knowledge
Examples/Illustrations	Chromosomal mapping - 2-point and 3-point test crosses.
Additional Inputs	
Teaching Aids used	B.B.
References cited	Cell and molecular Biology. P.K Gupta 2002
Student Activity planned after the teaching	Group discussion
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Linkage and Crossing over are two processes that affect genes on the same chromosome in different ways. ① 2-point test crosses ② 3-point test crosses


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Teaching Plan / Lesson No.

Name of the Topic	Concept of maternal inheritance (Correns's Experiment on <i>Mirabilis Jalapa</i>): Mitochondrial DNA
Hours required	2
Learning Objectives	To know maternal inheritance and mitochondrial DNA
Previous knowledge to be reminded	To recollect previous knowledge
Examples/Illustrations	<i>Mirabilis Jalapa</i>
Additional inputs	
Teaching Aids used	B.B and ppt
References cited	Cell and molecular Biology. Dr. Gupta 2002
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Carl Correns used the four o'clock plant <i>Mirabilis Jalapa</i> to study cytoplasmic inheritance and non-Mendelian inheritance pattern. ① cytoplasmic inheritance ② non-Mendelian inheritance ③ mitochondrial DNA


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Teaching Plan / Lesson No.

Name of the Topic	Watson and Crick model of DNA. Brief account on DNA Replication.
Hours required	2.
Learning Objectives	TO know about Watson and Crick model of DNA and DNA Replication
Previous knowledge to be reminded	TO recollect the previous knowledge
Examples/Illustrations	DNA,
Additional Inputs	
Teaching Aids used	B.B and PPT
References cited	Cell and molecule Biology P.K. Gupta (2002)
Student Activity planned after the teaching	Seminar.
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Watson and Crick model of DNA is a Double - standard helix that describes the structure of DNA. ① DNA Structure ② Replication of DNA

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Teaching Plan / Lesson No.

Name of the Topic	Brief account on Transcription, types and function of RNA.
Hours required	2.
Learning Objectives	To know about types of RNA and Transcription
Previous knowledge to be reminded	To recollect previous knowledge
Examples/Illustrations	RNA types.
Additional inputs	
Teaching Aids used	B.R and PPT.
References cited	Cell & Molecular Biology P.K. Gupta
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Transcription: - The process by which a cell makes an RNA copy of a piece of DNA. The RNA copy called mRNA carries the genetic information needed to make protein in a cell. It carries the information from the DNA in the nucleus of the cell to the cytoplasm where proteins are made.

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Teaching Plan / Lesson No.

Name of the Topic	Gene concept and genetic code and Translocation.
Hours required	2.3.
Learning Objectives	to know about concept of Gene and Genetic code and Translocation.
Previous knowledge to be reminded	to recollect previous knowledge.
Examples/Illustrations	Gene concept, Genetic code and Translocation
Additional Inputs	
Teaching Aids used	B.D. and PPT
References cited	Cell Biology Sc. Rastogi
Student Activity planned after the teaching	Seminar. Question and Answer
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Gene concept: - The gene is considered the basic unit of inheritance. Genes are passed from parent to offspring and contain the information needed to specify physical and biological traits. Most genes code for specific proteins or segments of protein which have different functions within the body.

J.R.R.
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Non-Vascular plants

Teaching Plan / Lesson No.

Name of the Topic	General characters of Algae, occurrence, distribution, cell structure, pigment, flagella and reproduction
Hours required	(1/2)
Learning Objectives	To know about the character of Algae and Distribution, cell structure, pigment and flagella of Algae
Previous knowledge to be reminded	To recollect previous knowledge.
Examples/Illustrations	Algae
Additional inputs	
Teaching Aids used	B.B and PPT
References cited	B.P. Pandey College Botany
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assigned
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) <u>General characteristics of Algae</u> ① Algae are photosynthetic Eukaryotic pigments ② They are commonly found in aquatic environments including fresh water, marine, and brackish water ③ They are either motile or non-motile.

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Teaching Plan / Lesson No.

Name of the Topic	Classification of Algae by F.E. Fritsch et al.
Hours required	2
Learning Objectives	To know the F.E. Fritsch or Lee Classification of Algae.
Previous knowledge to be reminded	To Recollect previous knowledge.
Examples/Illustrations	Chlorophyceae, Phaeophyceae, Xanthophyceae, Rhodophyceae.
Additional Inputs	
Teaching Aids used	BB & PPT.
References cited	B.P. Pandey College Patna
Student Activity planned after the teaching	Exercise Question and Answer
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) F.E. Fritsch classified Algae into 11 classes based on the characteristics of their pigments flagella, and reserve food material. There are 11 classes in F.E. Fritsch classification.


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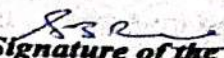
Teaching Plan / Lesson No.

Name of the Topic	Thallus organization and life cycles of Algae.
Hours required	2.
Learning Objectives	TO know the thallus organization and life cycle of Algae.
Previous knowledge to be reminded	TO recollect previous knowledge.
Examples/Illustrations	Haploid cycle, Diploid life cycle Haplo-diplontic life cycle.
Additional Inputs	
Teaching Aids used	B.B. ppt.
References cited	B.P. Pandey. college Botany
Student Activity planned after the teaching	Group Discussion
Activity planned outside the Class room, if any	Assignment.
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) <u>Life cycle of Algae</u> Haplontic Life cycle: - In the Haplontic life cycle the plant body is called gametophyte (haploid) in contact, the sporophyte (diploid) stage is exclusively represented by zygote.


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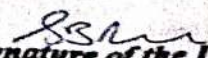
Teaching Plan / Lesson No.

Name of the Topic	Economical and Economical Importance of Algae
Hours required	2
Learning Objectives	TO know the about Economic Importance of Algae.
Previous knowledge to be reminded	TO recollect previous knowledge.
Examples/Illustrations	Diatoms.
Additional inputs	
Teaching Aids used	BB and Ppt
References cited	B.P Pandey, College Botany
Student Activity planned after the teaching	Seminal
Activity planned outside the Class room, if any	—
Any other activity	—
Topic Synopsis	(Continue on the reverse side if needed) Algae are photoautotrophic that can prepare their own food and they produce O_2 during photosynthesis. Algae are ubiquitous. Majority of Algae are abundant stagnant water.


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Teaching Plan / Lesson No.

Name of the Topic	Occurrence, Structure, Reproduction and life cycle of Spirogyra.
Hours required	2
Learning Objectives	TO know the structure, reproduction and life cycle of Spirogyra.
Previous knowledge to be reminded	TO recollect the previous knowledge
Examples/Illustrations	Spirogyra species.
Additional inputs	
Teaching Aids used	Ppt. B.B
References cited	B.P. Pandey college Botany
Student Activity planned after the teaching	Seminal
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Spirogyra, a green algae found in fresh water, has a haplontic life cycle with three type of reproduction: Vegetative Asexual and Sexual. Spirogyra commonly known as "water silk or pond silk". They have a filamentous, and unbranched, vegetative structure.


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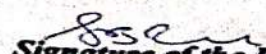
Teaching Plan / Lesson No.

Name of the Topic	Occurrence, Structure, reproduction and Life cycle of Ectocarpus.
Hours required	2.
Learning Objectives	To know about the structure, reproduction & Life cycle of Ectocarpus.
Previous knowledge to be reminded	To recollect previous knowledge.
Examples/Illustrations	Ectocarpus.
Additional inputs	
Teaching Aids used	B.B & PPT.
References cited	College Botany. B.P Pandey (2013)
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) <u>Ectocarpus:</u> Thallus: The thallus is sparingly to profusely branched, the cells are uniseriate, joined end to end in row in some some species the older portion of the main branches are corticated by layer of descending, rhizoidal branches.

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Teaching Plan / Lesson No.

Name of the Topic	Occurrence, Structure, reproduction and life cycle of Vaucheria.
Hours required	2.
Learning Objectives	To know the about Vaucheria structure reproduction and life cycle.
Previous knowledge to be reminded	To recollect previous knowledge.
Examples/Illustrations	
Additional inputs	
Teaching Aids used	B.B. PPT
References cited	College Botany. B.P. Pandey (2013)
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Thallus :- The plant body of Vaucheria is filamentous, branched, coenocytic and siphonaceous thallus. They are mostly aseptate in structure.


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Teaching Plan / Lesson No.

Name of the Topic	Occurrence, Structure, reproduction and life cycle of polysiphonia
Hours required	3.
Learning Objectives	To know the about the polysiphonia structure, reproduction, and life cycle.
Previous knowledge to be reminded	To recollect Previous knowledge.
Examples/Illustrations	Polysiphonia
Additional inputs	
Teaching Aids used	B.B and PPT.
References cited	College Botany. B.P. Pandey (2013)
Student Activity planned after the teaching	Seminar.
Activity planned outside the Class room, if any	Assignment.
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Thallus: Thallus composed of upright axis and a tightly, intricately entangled stolon ① corticated thallus with 4 pericentral cells ② thick and setaceous thalli in the mature stage. ④ Non-septate adventitious Rhizoids ⑤ sharply pointed ultimate branchlet

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Teaching Plan / Lesson No.

Name of the Topic	A Brief account of Bacillariophyceae
Hours required	1
Learning Objectives	TO know about Bacillariophyceae
Previous knowledge to be reminded	TO recollect previous knowledge.
Examples/Illustrations	Bacillariophyceae Diatoms.
Additional inputs	
Teaching Aids used	B.B and ppt
References cited	College Botany B.P. Pandey (2013)
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment.
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) Bacillariophyceae also known as diatoms. Imp characteristics. ① some characteristics of diatoms ① cell wall ② Shape ③ pigment ④ Reproduction ⑤ movement


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Teaching Plan / Lesson No.

Name of the Topic	culture and cultivation of chlorella.
Hours required	1
Learning Objectives	to know about culture and cultivation of chlorella.
Previous knowledge to be reminded	to recollect previous knowledge.
Examples/Illustrations	Chlorella
Additional Inputs	
Teaching Aids used	B B & ppt
References cited	College Botany B.P. Pandey (2013)
Student Activity planned after the teaching	Seminar
Activity planned outside the Class room, if any	Assignment
Any other activity	visit to culture area
Topic Synopsis	(Continue on the reverse side if needed) Chlorella culture - Step by step process Step I: - Nutrition Chlorella seeds are grown in Lab Step II: - collected seedling are cultivated in fermentation equipment Step III: - The grown seedling are taken to outdoor cultivation tank for maximum growth.

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Teaching Plan / Lesson No.

Name of the Topic	General characteristics of fungi, and Arnoworth (1923) classification.
Hours required	2.
Learning Objectives	To know about general characteristics of fungi and classification.
Previous knowledge to be reminded	To Recollect previous knowledge.
Examples/Illustrations	Classes of fungi.
Additional Inputs	—
Teaching Aids used	B.B.
References cited	Introduction mycology. C.T. Alexopoulos
Student Activity planned after the teaching	Seminal Question and Answer.
Activity planned outside the Class room, if any	Assignment.
Any other activity	
Topic Synopsis	(Continue on the reverse side if needed) General characteristics of fungi. Cell structure: - Eukaryotic cell organism cell walls made up of chitin, Nutrition: - Heterotrophic. Reproduction: - Asexually, or Sexually and some species can do both

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