UNIVERSITY OF DELHI

CNC-II/093/1(22)/2022-23/212
Dated: 06.10.2022

NOTIFICATION

Sub: Amendment to Ordinance V

[E.C Resolution No. 18-1-3 dated 18.08.2022]

Following addition be made to Appendix-II-A to the Ordinance V (2-A) of the Ordinances of the University;

Add the following:

Syllabi of Semester-I of the following departments under Faculty of Science based on Under Graduate Curriculum Framework -2022 to be implemented from the Academic Year 2022-23.

FACULTY OF SCIENCE

DEPARTMENT OF BOTANY

BSc. (Hons.) Botany
Category-I

DISCIPLINE SPECIFIC CORE COURSE – 1: Plant Diversity and Evolution

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Plant Diversity and Evolution	**DSC-1**	**2**	0	**2**	10+2 from any recognized Board with Biology & Candidates must appear in CUET in the following subject combination: **Physics+ Chemistry+ Biology/Biotechnology**	**Nil**

Learning Objectives

The Learning Objectives of this course are as follows:

- To make students aware about the diversity of plants and microbes present on the planet and how are they possibly related to each other in light of evolution.

Learning outcomes

The Learning Outcomes of this course are as follows:

By studying this course students will gain basic knowledge on

- The diversity of plants and microbes
- Their general characteristics
- Various groups of plants and their evolutionary relationships
- Basic principles and concepts of evolution that contribute to plant diversity

SYLLABUS OF DSC-1

Unit1: Origin of life **Hours: 6**

Principles and concepts of evolution, Tree of Life, and classification (upto six kingdoms)

Unit2: Bacteria **Hours: 4**

General characteristic features, cell structure, asexual reproduction and modes of gene transfer (conjugation, transformation and transduction), brief introduction to Archaebacteria.

Unit3: Viruses **Hours: 4**

General characteristic features, replication, RNA virus (structure ofTMV), DNA virus (structure of T-phage), Lytic and Lysogenic life cycle (Lambda phage).

Unit4: Algae **Hours: 6**

General characteristic features, cell structure, range of thallus, methods of reproduction and evolutionary classification (only upto groups). Brief account of *Spirogyra*, *Sargassum*.

Unit5: Fungi **Hours: 8**

General characteristic features, reproduction and broad classification. Myxomycetes and their similarities with fungi, plants and animals, Brief account of *Rhizopus*, *Agaricus*. Introduction to lichens.

Unit6: Bryophytes **Hours: 8**

General characteristic features and reproduction, adaptation to land habit, broad classification, evolutionary trends in Bryophytes. Brief account of *Marchantia*, *Funaria*.

Unit7: Pteridophytes **Hours: 8**

General characteristic features and reproduction, broad classification, evolutionary trends in Pteridophytes, affinities with Bryophytes. Brief account of *Adiantum*, *Selaginella*.

Unit8: Gymnosperms **Hours: 8**

General characteristic features and reproduction, broad classification, evolutionary trends in Gymnosperm, affinities with Pteridophytes. Brief account of *Gnetum*, *Ephedra*.

Unit9: Angiosperms **Hours: 8**

General characteristic features and reproduction, Concept of natural, artificial and phylogenetic system of classification. Affinities with Gymnosperms.

Practical component (60 Hours)

1. To study structure of TMV and Bacteriophage (electronmicrographs/models). (**01)**
2. To study morphology of *Volvox*, *Oedogonium*, *Chara*, *Fucus* and *Polysiphonia* (Temporary preparation/specimens/slides). (02)
3. To study *Rhizopus*, *Penicillium*, *Alternaria* (Temporary preparations), symptoms of rust of wheat, white rust of crucifer (specimen). (02)
4. To study *Marchantia* (morphology, WM of rhizoids and scales), *Anthoceros* (morphology), *Sphagnum* (morphology, WM of leaf), *Funaria* (morphology WM of rhizoid and leaf). (02)
5. To study *Selaginella* (morphology, WM of strobilus and spores), *Equisetum* (morphology, WM of spores), *Pteris* (morphology, tease mount of sporangia and spores). (03)
6. To study *Cycas* (morphology, leaf, leaflet anatomy, coralloid root, bulbils, megasporophyll and microsporophyll); *Pinus* (morphology of dwarf shoot, needle anatomy, male and female cones, WM pollen grains). (02)
7. To study variation in leaf venations in dicots and monocots (at least two specimens each). (01)
8. To study the types of inflorescences in angiosperms (through specimens).(01)
9. To study the types of fruits in angiosperms (through specimens). (01)

Essential/recommended readings

- Campbell,N.A.,Reece,J.B.(2008.)Biology,8thedition,PearsonBenjaminCummings,San Francisco.
- Evert,RF.,Eichhorn,S.E.(2012).RavenBiologyofPlants,8thedition, NewYork,NY: W.H.Freeman and Company.
- Bhatnagar,S.P.,Moitra,A.(1996).Gymnosperms.NewDelhi,Delhi:NewAgeInternational(P)

Ltd Publishers.

- Kumar,H.D.(1999).IntroductoryPhycology,2ndedition.Delhi,Delhi:AffiliatedEast-West. Press Pvt. Ltd.
- Pelczar,M.J.(2001).Microbiology,5thedition.NewDelhi,Delhi:TataMcGraw-HillCo.
- Puri,P.(1985).Bryophytes.NewDelhi,Delhi,AtmaRam andSons.
- Sethi,I.K.andWalia,S.K.(2018).TextbookofFungiandTheirAllies.(2ndEdition),Medtech Publishers, Delhi.
- Tortora,G.J.,Funke,B.R.,Case.C.L.(2007).Microbiology.SanFrancisco,U.S.A:Pearson Benjamin Cummings.
- Vashishta,P.C.,Sinha,A.K.,Kumar,A.(2010).Pteridophyta.NewDelhi,Delhi:S.Chand &Co Ltd.
- Singh,G.(2019)PlantSystematics-AnIntegratedApproach.4th edition.CRCPress,TaylorandFrancisGroup.
- Blackmore,S.,Crane,P.(2019)HowPlantsWork–Form,Diversity,Survival,PrincetonUniversity Press; Illustrated edition
- Ingrouille,M.,Eddie,B.(2006)Plants:EvolutionandDiversity.CambridgeUniversityPress.

Suggestive readings

- Parihar,N.S.(1991).AnIntroductiontoEmbryophyta.Vol.II.Pteridophytes.Prayagraj:U.P .: CentralBook Depot.
- Singh,V.,Pandey,P.C.,Jain,D.K.(2001).ATextBookofBotany.Meerut,UP:Rastogiand Co.
- Webster,J.,Weber,R.(2007).IntroductiontoFungi.Cambridge,CambridgeUniversityPres s.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.