Chloroplast pigments

10. To study the effect of Light intensity and CO_2 concentration on the rate of Photosynthesis
11. Demonstration of Hill's Reaction and study the effect of Light intensity (any 2 light conditions).
12. Demonstration of Etiolation and de-etiolation.

Essential/ recommended Readings:

- Björn, L. O. (2015) 3rd Ed. *Photobiology: Science of Light and Life,* L.O. Bjorn.,Springer
- Buchanan, B. B., Gruissem, W., and Jones, R. L. (2000). *Biochemistry and molecular biology of plants.* Rockville, Md.: American Society of Plant Physiologists.
- Huner, N. and Hopkins, W. (2013). *Introduction to Plant Physiology.* In: 4th ed. John Wiley & Sons, Inc.
- Kohen E., Santus R., Hirschberg J.G. (1995) 1st Ed., *Photobiology* Academic Press
- Randall D., Burggren W., & French k. (2001) 5th Ed. *Eckert, Animal Physiology Mechanisms*
- *and Adaptations.* W.H. Freeman and Co.

Suggested Readings:

- Gross M. (2003). Light and Life. Oxford University Press
- Shimomura O., (2012) Bioluminescence: Chemical Principles and Methods, World Scientific,
- Taiz, L., & Zeiger, E. (1991). Plant physiology. Redwood City, Calif: Benjamin/Cummings Pub. Co.

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

DISCIPLINE SPECIFIC CORE COURSE – 3: Diversity in lifeforms I

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		
Diversity in L ife forms I	**DSC-103**	**2**	**0**	**2**	10+2 from any recognized Board with Biology & Candidates must appear in CUET in the following subject combination: **Physics+ Chemistry+ Biotechnology Biology/**	**Nil**

Learning Objectives

The Learning Objectives of this course are as follows:

- The course will acquaint students with variations and variability in the living world and the objectives of biological classification. The course covers important aspects of biodiversity and its components with emphasis on understanding the features of Kingdom Animalia and Plantae and systematic organization of the same based on their evolutionary relationships. Studentswill also understand the importance of taxonomy and structural organization of animals from Protista to Echinodermata to appreciate the diversity of non-chordates living in varied habitats. They will study about the general characteristics and significance of Algae, Fungi, Bryophytes and Pteridophytes

Learning outcomes

After studying this course the student will be able to:

- Understand characteristic features of different plant and animal life forms.
- Identify, classify and differentiate diverse non-chordates based on their morphological, anatomical and systemic organization.
- Understand similarities and differences in life functions among various non-chordates.
- Appreciate and understand the relevance of wild relatives of cultivated plants, their domestication and green revolution.
- Understand the general characteristics, classification, economic importance, morphology, asexual and sexual reproduction of Algae, Fungi, Bryophytes and Pteridophytes

SYLLABUS OF DSC-3

Please provide weekly distribution

Unit I: Algae and Fungi (6 hours)

Importance of biodiversity in daily life. Biodiversity crisis and biodiversity loss,
Five kingdom classification and the position of Algae, Fungi, Bryophytes and Pteridophytes.
Algae: Study of general characteristics, Outline Classification, Economic Importance, Thallus Organization and Reproduction in Nostoc, Polysiphonia, Ectocarpus.
Fungi – General Characteristics, Outline Classification, Economic Importance, Thallus Organization and Reproduction in Rhizopus and Puccinia, Lichens (crustose, foliose and fruticose), Mycorrhiza (ectomycorrhiza and endomycorrhiza,VAM)

Unit II: Bryophytes and Pteridophytes (6 hours)

Bryophytes: General Characteristics; Outline Classification; Ecological and Economic Importance; Morphology, Structure and Reproduction (comparative) in *Marchantia* and *Anthoceros*
Pteridophytes: General Characteristics; Outline Classification; Economic Importance; Morphology, Structure and Reproduction in *Selaginella*

Unit III Introduction to Animal Life Forms (6 hours)

Introduction to animal diversity, Basic Taxonomy (Linnaean system of classification, Whittaker's five kingdom classification, ICZN Rules), General Characteristics of Non-Chordata and Chordata.

Unit IV: Non-Chordata Taxonomy and Diversity (10 hours)

Study of General Characteristics and Classification up to classes (Protista, Porifera, Cnidaria, Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Mollusca, Echinodermata)

Practical component: (60 hours)

FLORA

1. Study of Vegetative and Reproductive Structures through Temporary Preparations and Permanent Slides- *Nostoc, Oedogonium, Polysiphonia; Chlamydomonas* (Through Photograph/Electron photomicrograph)
2. Study of Asexual Stage from Temporary/ Tease Mounts- *Rhizopus Albugo; Puccinia* - WM uredospores, teleutospores, Section of Leaf through pustules to show conidia
3. *Marchantia*-Morphology of Thallus, W.M. Rhizoids, V.S. Thallus through Gemma Cup, Antheridiophone (Permanent slide), Archegoniophore (Permanent Slide)), *Funaria*-Morphology of Gametophyte bearing Sporophyte, W.M. Rhizoids, W.M. Leaf, W.M. Operculum, W.M. Peristome, W.M. Spores (all Temporary Slides), L.S. Capsule (Permanent Slide).
4. *Selaginella*- Morphology, T.S. Stem, W.M. Strobilus, W.M. Microsporophyll and Megasporophyll (all Temporary Slides), L.S. Strobilus (Permanent Slide*)*, *Pteris*-Morphology,
   V.S. Sporophyll, W.M. Sporangium, W.M. Spores (all Temporary Slides), W.M. Prothallus withSex Organs (Permanent Slide).

FAUNA

5. **Study of following specimens:** *Euglena, Paramecium, Sycon, , Tubipora,Taenia solium, Ascaris Phertima, Hirudanaria, Peripatus, Scolopendra, Julus, Cancer, Daphnia, Apis, Pila,Dentalium, Octopus, Asterias*
6. **Dissections / Virtual demonstration:** Nervous system of Cockroach, Salivary apparatus andOvary of Cockroach.
7. Study of adult *Fasciola hepatica*, *Taenia solium* and their life stages (Slides/micro-
   photographs).
8. Study of following permanent Slides.

a. T.S. and L.S. of *Sycon*.
b. Crustacean larvae (W.M. Mysis, W.M. Megalopa, W.M. Zoaea).

9. To study faunal composition of water samples (Lucky drop method).
10. Field trip on: Biodiversity park/reserve/ NBPGR. (Botany + Zoology)

Essential/ recommended readings:

- Barnes, R.D. (1982). *Invertebrate Zoology*, 5th. Edition
- Campbell N. A., (2008).*Biology* 8th Edition, Pearson
- Barrington, E.J.W. (2012). Invertebrate Structure and Functions. II Edition, EWP Publishers
- Singh, V. (2010). *A text book of botany*. Rastogi Publications.
- Ennos, R., & Sheffield, E., (2000). *Plant Life*. UK: University Press, Cambridge.

Suggested readings:

- Ingrowille, M., (1992).*Diversity and Evolution of land plants*. Chapman and Hall
- Wilson, E. O., (1998). *Biodiversity*.National Academic Press.
- Barnes, R.D. (2006). Invertebrate Zoology, VII Edition, Cengage Learning, India.

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