BOMDC-114T: Fundamentals of Biological Sciences

Semester: I	Course Title: Fundamentals of Biological Sciences	Credits: 2
Course No.: BOMDC-114 T	MDC-T	Hours: 2/week

COs

COs	COURSE OUTCOMES
CO 1	Remember the definitions of ecology and ecosystem. Understand the structure and function of an ecosystem. Understand the principle and working of some ecological instruments;
CO 2	Understand the various interactions between organisms. Apply the understanding in further understanding of biotic factors.
CO 3	Remember and understand the importance, formation and various features of soil. Learn factors of soil erosion and apply the knowledge for soil conservation practises.
CO4	Understand and remember diversity in lower plants like algae and fungi based on their features. Learn about mushroom cultivation and its entrepreneurial scope

CO-PO Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	1	1		
CO 2	1	2	1		
CO 3		1	2		
CO 4	1	2	2	1	

Unit	Detailed Syllabus	No. of Hours of Teaching
I	**Soil and Environment** -Introduction, Scope and Branches of Ecology -Ecosystems, Kinds of Ecosystems: Natural, Artificial -Components of Ecosystem, Components of Freshwater Ecosystem (Pond), Components of Terrestrial Ecosystem (Grassland) -Food chain, food web, Ecological Pyramids, Productivity of an Ecosystem, Energy flow in an Ecosystem -Biogeochemical Cycles- Nitrogen, Sulphur -Biotic Factors : Symbiosis: Mutualism, Proto-cooperation, Commensalism Antagonism: Predation, Parasitism, Antibiosis, Competition, Saprophytism -Edaphic factor: Importance of soil, Effect of soil on plants -Composition of soil, origin and development of soil, soil profile	15

	-Soil composition, Soil texture -Soil water, water holding capacity -Soil-air, soil organisms -Electrical conductivity of soils -Soil erosion -Soil conservation	
II	**<u>Study of Diversity in Lower Plants</u>** -General account: Habit and habitat of Algae, Fungi. General characters, Pigments, Food reserves, flagella, thallus organization & -Modes of reproduction in Algae. -Life history of the following genera including morphology and reproduction excluding development: (Classification as per G. M. Smith) *1. Spirogyra 2. Nostoc 3. Volvox* -Importance of Algae in Industry & Agriculture -Life history of the following genera including morphology and reproduction, excluding development (Classification according to Ainsworth*) 1. Mucor 2. Agaricus* -Mushroom Cultivation – Importance -Economic importance of fungi. -Study of Lichens and their types	15

Suggested Reference Books:

1. Kumar, H.D. (1999). *Introductory Phycology*, 2nd edition. New Delhi, Delhi: AffiliatedEast-WestPress.
2. Lee, R.E. (2008). *Phycology*, 4th edition. Cambridge, Cambridge: Cambridge UniversityPress,
3. Raven, F.H., Evert, R.F., Eichhorn, S.E. (1992). *Biology of Plants*. New York, NY: W.H.Freemanand Company
4. Alexopoulos,C.J.,Mims,C.W.,Blackwell,M.(1996).IntroductoryMycolog y,4thedition.Singapore, Singapore: John Wiley&Sons.
5. Sethi, I.K. andWalia,S.K.(2011).TextbookofFungiandTheir Allies.Noida,U.P.:MacmillanPublishersIndiaLtd.
6. Webster,J.,Weber,R.(2007).IntroductiontoFungi,3rdedition.Cambridge,U. K.:Cambridge UniversityPress.
7. GanguleeH.C.,Kar,A.K.andSantraS.C.(2011). CollegeBotanyVolII. 4thEditionNewCentralBook Agency.

BOMDC -114 P: Botany Multi Practical

Semester: I	Course Title: Botany multi practical 114	Credit: 2
Course No.: BOMDC-114 P	MDC-P	Hours: 4/week

COs

COs	COURSE OUTCOMES
CO 1	Understand the various interactions between organisms as biotic factors. Learn the basics of soil science.
CO 2	Identify life cycle patterns of various groups. Describe the vegetative and reproductive structure of the forms studied.
CO 3	Understand the process of mushroom cultivation and analyze its entrepreneurial scope. Study lichens and their economic importance.

CO-PO Mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	1	1		
CO 2	1	2	1		
CO 3		1	2		

List of Practicals

Practical No.	TitleofthePractical
1.	Study of Chart of Ecosystem classification
2.	Study of artificial ecosystem by Terrarium chart/model
3.	Study of Biotic factors
4.	Study of Soil pH
5.	Soil texture & soil types
6.	Electrical conductivity of soil
7.	Study of soil Water holding capacity
8.	Study of *Spirogyra*
9.	Study of *Nostoc*
10.	Study of *Volvox*
11.	Study of *Mucor*
12.	Study of Mushroom
13.	Study of Lichens and types by chart/specimen/slides