M. C. E. Society's

Abeda Inamdar Senior College

Of Arts, Science and Commerce, Camp, Pune-1

(Autonomous) Affiliated to Savitribai Phule Pune University

NAAC accredited 'A' Grade

F.Y.B.Sc. Botany (Minor)

(NEP – Autonomy 2026 Pattern)

Semester - I

Course Title	**Biological Diversity & its Conservation**
Course Code: 26SBBO11MN	**No. of Credits: 02**
Course Type: Minor	**Total Teaching Hours: 30 Hrs**

Course Objectives	
1	To understand biodiversity of India.
2	To know different types of ecosystems.
3	To know hotspots of biodiversity.
4	To understand the difference between species and genetic diversity.
5	To equip the students with skills related to laboratory as well as field based studies.
6	To make them aware about conservation and sustainable development.

Course Outcome	
1	To understand the knowledge of biodiversity and how to conserve it.
2	To address the socio-economical challenges related to biodiversity.
3	Understand the scope & importance of different ecosystems.
4	Learn about the basic concepts of biodiversity and its conservation..

Syllabus		
Unit I	**Biological Diversity – Ecosystem Diversity**	**10 hours**
	Biological Diversity • Definition & Concept • Structure and Function of Ecosystem (Biotic and Abiotic components) • Levels of Ecosystem: aquatic, terrestrial and marine. Food chain, food web, energy flow, homeostasis and ecological pyramids. Nutrient cycling with reference to carbon, nitrogen and Sulphur. • Methods to assess the Biological diversity • Importance of Ecosystem in maintaining Ecological balance	
Unit II	**Species Diversity**	**06 hours**
	a) Species Diversity **Definitions and concept.** **Species Diversity** at Local , National and International Level **Measuring Species Diversity** – Species Richness, Species Abundance and Species Evenness. India as mega diversity nation. **c) Western ghat as a Hot-spot.**	
Unit III	**Genetic Diversity**	**06 hours**
	Definition & Introduction to Genetic Variations in Species. • **Factors** affecting Genetic Diversity. **•Darwin's theory of Evolution and Lamarck's theory of Natural Selection** • **Measurement of Genetic Diversity –** a) Based on DNA & Chromosomes. b) Molecular Marker Techniques.	
Unit IV	**Conservation of Biodiversity**	**08 hours**
	Conservation Methods – In-situ & Ex-situ methods with Example. • National Conservation Efforts – a) The laws – Environment Protection Act, Forest Act, Wildlife Act,	

	Biodiversity Act 2002 **Methods of Conservation** – Sacred Groves /**Sundarbans National Park, Kaziranga National Park :** • **Need & Awareness**	

Suggested Readings	
1.	Text book of Environmental Biology, Imtiyaz Hussain Zaheed (2013), Discovery publishing house PVT.LTD, ISBN 978-93-5056-231-4
2.	Chapman, J.L. and Reiss, M.J. (1998). Ecology: Principles and applications. Cambridge, University Press.
3.	Fitter, A. and Hay, R.K.M. (2001) *Environmental Physiology of Plants*, Academic Press, UK.
4.	Press, M.C., Barker, M.G., and Scholes, J.D. (2000) *Physiological Plant Ecology, British Ecological Society Symposium,* Volume 39, Blackwell Science, UK.
5.	Kormondy Edward (1995). Concepts of Ecology, Pearson Publ.

F.Y.B.Sc. Botany (Minor)
(NEP – Autonomy 2026 Pattern)
Semester I

Course Title	**PRACTICALS ON PLANT PHYSIOLOGY**		
Course Code: 26SBBO12MN			**No. of Credits: 02**
Course Type: Minor			**Total Teaching Hours: 30**

Course Objectives	
1.	Enable the students to understand basic of plant science experiments
2.	To Provide hands on training to find out experiments on Transpiration, seed viability etc
3.	Give the students exposure to the experiences of experts and functioning of plants
4.	To discuss the basic principle involved in paper chromatography
5.	To develop skills of the students to learn a means of self employment and income generation.
6.	Create foundation for further studies in Botany

Course Outcome	
1.	The training course will prepare student for a career in the industries like seed testing etc
2.	Equip the students with skills related to laboratory as well as field based studies
3.	Students will enhance their skills on plant growth.
4.	Equip students with effect of plant growth regulators on the growth of plant

Syllabus		
1	Determination of Diffusion Pressure Deficit (DPD) Using Potato Tuber.	2 P
2	Study of rate of transpiration in shade, light and wind using burette potometer	1 P
3	To demonstrate curling of tissue due to osmosis, Ringing and Imbibition.	1 P
4	To Study the phenomenon of Plasmolysis in *Rhoeo* leaf.	1 P
5	Demonstration of the Effect of Auxins on Rooting	2 P
6	Assessing seed viability by TTC method	1 P

7	Studying the structure and distribution of stomata	1 P
8	Demonstration of Mineral and Nutrient deficiency in plants.	1 P
9	To study extraction and estimation of Chlorophyll content in plant tissue	1 P
10	Study of plant growth by Arc Auxanometer	1 P
11	Effect of monochromatic light on the rate of photosynthesis	1 P
12	Estimation of carbohydrate	1 P
13	Separation of photosynthetic pigments by paper chromatography	1 P
14	Demonstration of anaerobic respiration	1 P
15	Field visit to study to seed testing Laboratory	1 P

Suggested Readings

6.	Jain, V.K. (2000) *Fundamentals of Plant Physiology,* S. Chand & Co, New Delhi.
7.	Sayyed Iliyas (2020) *Steps in Plant Physiology*, Lambert Academic Publishing, Mauritius.
8.	Fitter, A. and Hay, R.K.M. (2001) *Environmental Physiology of Plants*, Academic Press, UK.
9.	Press, M.C., Barker, M.G., and Scholes, J.D. (2000) *Physiological Plant Ecology, British Ecological Society Symposium,* Volume 39, Blackwell Science, UK.
10.	Kirkham, M.B. (2004) *Principles of Soil and Plant Water Relations*, Elsevier, Amsterdam, Netherlands.
11.	Imtiyaz Hussain Zaheed (2023) *A text book of Plant Morphology and Ecology,* ISBN No 970-93-91204-38-9

F.Y.B.Sc. Botany
Semester I
(NEP – Autonomy 2026 Pattern)

Course Title	**MUSHROOM CULTIVATION AND TECHNOLOGY**	
Course Code: 26SBBO11SE		**No. of Credits: 02**
Course Type: Skill Enhancement Courses (SEC)		**Total Teaching Hours: 30**

Course Objectives	
7.	Enable the students to identify edible and poisonous mushrooms
8.	Provide hands on training for the preparation of bed for mushroom cultivation and spawn production
9.	Give the students exposure to the experiences of experts and functioning mushroom farms
10.	Help the students to learn a means of self-employment and income generation.

Course Outcome	
5.	The training course will prepare student for a career in mushroom cultivation.
6.	Gain the knowledge of cultivation of different types of edible mushrooms and spawn production
7.	Manage the diseases and pests of mushrooms
8.	Help the students for self employment and income generation.

Syllabus		
1	Identification of different edible mushroom species Oyster and Button Mushroom	1 P
2	Microscopic and anatomical observations of different mushroom species. *Pleurotus*, *Agaricus*.	1 P
3	Pure culture - preparation of medium (PDA medium) and Master culture.	2 P
4	Isolation and stages of preparation of spawn.	1 P
5	Study of cultivation practices in mushroom cultivation.	1 P
6	Mushroom bed preparation - paddy straw / maize straw.	2 P
7	Inoculation and spawning of compost.	2 P
8	Incubation and harvesting of mushrooms and storage.	1 P

9	Diseases and pest management for mushroom cultivation.	1 P
10	Study of recipes of mushroom with its nutritional value added.	1 P
11	Study tour to mushroom cultivation farms.	2 P
12	Project work on preparation of mushroom bed by using paddy straw.	2 P

Suggested Readings	
12.	Pathak Yadav Gour (2010) *Mushroom Production and Processing Technology*, Published by Agrobios (India).
13.	S.Kannaiyan& K.Ramasamy (1980), *A hand book of edible mushroom*, Today & Tomorrows printers & publishers, New Delhi
14.	Nita Bahl, oxford, *Handbook on Mushrooms*
15.	Pandey R.K, S. K Ghosh, 1996, *A Hand Book on Mushroom Cultivation*. Emkey Publications.
16.	Pathak, V. N. and Yadav, N. (1998), *Mushroom Production and Processing Technology*, Agrobios, Jodhpur
17.	N. Pathak, Nagendra Yadav and Maneesha Gaur (2000), *Mushroom Production and Processing Technology*, Vedams Ebooks Pvt Ltd., New Delhi