



# SILVER OAK UNIVERSITY

Silver Oak Institute of Science

Bachelor of Science Physics

Course Name: Biodiversity and Conservation

Course Code: 2050293106

Semester: 2<sup>nd</sup>

## Prerequisite:

Basic knowledge of Biodiversity, Ecology and Conservation strategies.

## Objective:

1. This syllabus includes understanding of the importance of biodiversity as well as roles and distribution of different species and their relationship with the environment.
2. It describes threats from human activities, such as habitat loss, pollution, climate change, and natural threats, such as invasive species. It also focuses on restoration and conservation of degraded Ecosystems to protect and reduce threats to biodiversity.

## Teaching and Examination Scheme:

Teaching Scheme					Evaluation Scheme				Total Marks
L	T	P	Contact Hours	Credit	Theory		Practical		
					CIE (TH)	ESE (TH)	CIE (PR)	ESE (PR)	
4	0	0	4	4	40	60	0	0	100

## Content:

Unit No.	Contents	Teaching Hours	Weightage %
1	<b>Introduction to Biodiversity</b> <ul style="list-style-type: none"> <li>● Clarification of terms: Biodiversity, taxonomic levels, spatial levels, endemism)</li> <li>● Types of Biodiversity: Genetic, species and ecosystem diversity</li> <li>● Habitat biodiversity: Alpha, beta and gamma diversity</li> <li>● Introduced biodiversity: Alien species including invasive aliens</li> </ul>	12	25

2	<b>Biodiversity : Importance and values</b> <ul style="list-style-type: none"> <li>● Values of biodiversity: Consumptive and productive use, social, ethical, aesthetic and other values</li> <li>● India as a Megabiodiversity nation</li> <li>● Hotspots of biodiversity: characteristics of biodiversity hotspots in India</li> </ul>	12	25
3	<b>Threats to Biodiversity</b> <ul style="list-style-type: none"> <li>● Natural and Anthropogenic threats to Biodiversity</li> <li>● Environmental pollution</li> <li>● Greenhouse gas emission and global warming</li> <li>● Climate change scenario and its impact on biodiversity</li> <li>● IUCN threat categories and criteria</li> </ul>	12	25
4	<b>Conservation strategies</b> <ul style="list-style-type: none"> <li>● Biodiversity conservation : In-situ and ex-situ</li> <li>● Environment Protection Act, Biological diversity Act, Wildlife conservation Act</li> <li>● CITES, IUCN, EIA, RAMSAR convention, Earth overshoot day</li> <li>● Case study: Project Tiger</li> </ul>	12	25

**Course Outcome:**

Sr. No.	CO statement	Unit No
CO-1	Proficiency in the conceptual foundations of Biodiversity that one can apply real world conservation problems.	1
CO-2	Understanding of various components of biodiversity and importance of biodiversity	2
CO-3	Analyze the current threats to biodiversity, including the consequences of climate change on species and ecosystems.	3
CO-4	Evaluate conservation strategies and sustainable development practices to protect, maintain, and restore biodiversity.	4

**Teaching & Learning Methodology: -**

1. Conceptual Learning
2. Cooperative based Learning
3. Competency based Learning
4. Problem - based Learning

**Books Recommended: -**

1. The Diversity of Life Edward O. Wilson.
2. Smith, R. L., Smith, T. M., Hickman, G. C., & Hickman, S. M. (1998). Elements of ecology.

3. Environmental Microbiology. R.M. Maier, I. L. Pepper & G.P. Gerba
4. Brock Biology of Microorganisms” Eighth Edition By- Madigan, T.M.; Martinko, J.M. and Parker, J. Prentice Hall Publication, U.K.
5. Biodiversity and Climate Change: Transforming the Biosphere by Thomas E. Lovejoy

**List of Open-Source Software/learning website:**

- <http://vlabs.iitb.ac.in/vlab/labsps.html>
- <http://silveroakuni.ac.in/video-lecture>
- <https://nptel.ac.in/>

CO. No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO-1	1	1	1	1	1	3	1	1	1	1	1	1	1
CO-2	1	3	1	1	1	3	1	1	1	1	1	1	3
CO-3	1	1	1	1	1	1	1	1	1	1	2	3	1
CO-4	1	1	3	3	1	1	1	1	2	1	1	1	1