COURSE CODE:	ENS-324		
COURSE NAME:	Biodiversity and Conservation		
CREDIT HOURS:	Theory = 02	Practical = 01	Total = 03
CONTACT HOURS:	Theory = 32	Practical = 48	Total = 80
PREREQUISITE:	None		
MODE OF TEACHING:	Instruction: 2 hours of Lecture per week (67%) Lab Demonstration: 3 hours of Lab work per week (33%)		

Course Description:

The objective of this course is to familiarize the students with different forms of biodiversity, threats to biodiversity and its conservation.

TOPICS COVERED:

Week#	Topics
1	Biodiversity: Introduction and levels of biodiversity (Alpha, Beta and Gamma)
2	Biodiversity hotspots (tropical and coral reef ecosystems)
3	Philosophical, ecological, economic, social and ethical values of biodiversity
4	Plants and animal resources of world and Pakistan
5	Conservation of biodiversity: Introduction to biological conservation, its history
6	Guiding principles and characteristics of biodiversity conservation
7	Need and approach of biodiversity conservation and prevailing threats
8	Conservation at species and population level: applied population biology, establishing new populations
9	**Midterm Exam – MSE**
10	Ex situ conservation strategies (botanical gardens and arboreta, zoos, seedbanks and aquaria)
11	Conservation at community and ecosystem level
12	Protected areas, their categories and objectives
13	Considerations for reserve design, ecotourism
14	IUCN threatened species categories

15	Conservation outside protected areas: conservation in man-made ecosystems, croplands, cities
16	Legal protection of species and habitats: national and international laws and agreements for species and habitat protection
17	National Conservation Strategy of Pakistan
18	**End Semester Exam**

Lab/Field Work:

Week#	**Topics**
1	Orientation
2	Intro to basic analysis tools
3	Reconnaissance survey of different local communities
4	Reconnaissance survey of different local communities
5	Study of analytical characteristics of local vegetation types: Population density (D), Relative density (RD)
6	Study of analytical characteristics of local vegetation types: Frequency (F), Relative frequency (RF)
7	Estimating biodiversity, Habitat and ecosystem diversity
8	Estimating biodiversity, Habitat and ecosystem diversity
9	**Midterm Exam – MSE**
10	Species diversity
11	Genetic diversity
12	Indices of biodiversity
13	Species Richness (Richness Index)
14	Species Diversity (Biodiversity Index)
15	Similarity Index (Simpson's Similarity Index)
16	Visit to National Park/Sanctuary, Zoo and Botanical Garden
17	Presentations
18	**End Semester Exam**

Text and Material:

1. A Primer of Conservation Biology. 5th Ed. Sinauer, P.R.B. Associates Inc. Publ. Sunderland. 2012.
2. Conservation Biology: A Primer for South Asia. Bawa, K., Primack, S., Oommen, R.B. and Anna, M., 2011., Orient Black Swan
3. Essentials of Conservation Biology, 6th Ed., Primack, R. B. Sinauer, P.R.B associates Inc. Publishers, Sunderlander MA, USA. 2014.
4. Conservation Biology: Foundations, Concepts, Applications. 3rd Ed. Dyke, F.V., Springer, 2020.

ASSESMENT SYSTEM:

Theoretical/Instruction	**100%**
Assignments	10%
Quizzes	15%
Mid Semester Exam	25%
End Semester Exam	50%

Practical Work	**100%**
Lab Work	70%
Lab Exam/Projects	30%