Biodiversity and Evolution (LS 508)

Prof. Nirala Ramchiary* and Dr. Bhupendra Chaudhary

Sl. No.	Syllabus	No. of Lectures
1	Introduction to biodiversity: germplasm, gene pool, and population biology	2
2	Types of biodiversity: genetic, species and ecosystem diversity	2
3	Centres of origin and biodiversity hotspots	2
4	Patterns of species distribution: biomes, gradients, island biogeography and species-area relationship, measuring biodiversity	3
5	Role of biodiversity in ecosystem function and stability	2
6	Biodiversity extinction, patterns and drivers of biodiversity decline: habitat loss and fragmentation, extractive uses, invasive species, endangered species	3
7	Biodiversity conservation and management, convention on biological diversity	2
8	Role of biodiversity in agriculture and industry	2
9	Concepts and theories of evolution	2
10	Homology and other evidence of evolution	2
11	Forces affecting evolution – mutation, insertion/deletion (indels), recombination and gene flow; variation and divergence of populations	2
12	Micro- and Macro-evolution, mechanism of species formation (sympatric and allopatric) and evolution	2
13	Molecular basis of species/strain identification	3
14	Molecular evolution of genes and proteins, evolution of genomes, phylogeny and systematics, molecular clock	3
15	Field visit to National park/Wildlife Sanctuary/Biodiversity hotspot/Biosphere Reserves of India during the semester to study biodiversity practically.	--

Text Books

1. Text Book of Biodiversity by K. Krishnamurthy, Publisher: Science Publishers, Inc Post office Box 669, Enfield, New Hampshire, 03784, USA
2. Biodiversity: An Introduction (Second Edition) by Kevin J. Gatson and John I Spicer, Publisher: Blackwell Science Ltd, Blackwell publishing Company
3. Principals of Population Genetics (Fourth edition) by Daniel L. Hartl and Andrew G. Clark, Publisher: Sinauer Associates, Inc.; 4th edition (December 31, 2006)
4. An Introduction to Evolutionary Ecology by Andrew Cockburn, Publisher: Wiley-Blackwell Publisher
5. Evolution: Principles and Processes by Brian K Hall, Publisher: Jones & Bartlett Learning
6. Molecular Evolution and Phylogenetics by Masatoshi Nei and Sudhir Kumar, Publisher: Oxford University Press, USA; 1 edition (August 15, 2000).