MANGALORE UNIVERSITY
Department of Biosciences
MSc Biosciences

OPEN ELECTIVE COURSES

BSE461 BIODIVERSITY

Course Outcomes:
After successful completion of the course, students will be able to :

- Gain theoretical knowledge and appreciate the importance of biodiversity.
- Understand the relevance of biodiversity in conservation.
- Become familiar with and understand the key terminologies of Ecology.
- Describe the levels of biodiversity organizations.
- Know about Indian ecological/geographical diversity, including Himalayan region, Desert.
- Western Ghats, Coastal region and Hotspots of biodiversity.
- Understand what is microbial diversity and its importance.
- Know how to culture bacteria in lab for various microbial products.

Unit I (13 hours)
Basic concepts and definitions, scope, biosphere, habitats, food chain, food web. Levels of biodiversity organizations – Genetic diversity, Species diversity and Ecosystem diversity. Indian ecological/geographical diversity: Himalayan Region, Deserts, Semiarid region, Gangetic plains, Western Ghats, Coastal region; Hotspots of biodiversity,

Microbial diversity : Bacteria, Cyanobacteria, Fungi and Lichens, Algae, Protozoa and viruses, habitat. Mushrooms – edible and nonedible. Plant and animal association with microbes. Beneficial and harmful microbes, Culture, Cultivation of bacteria. Microbial products.

Unit II (13 hours)
Plant diversity : Lower and higher group of plants, plant ecosystem and its classification. Major ecosystem types, tropical forests, temperate forests. Arid and Semiarid ecosystems, boreal forests, Arctic and Alpine systems, grasslands, wetland ecosystem. Marine ecosystems, Epiphytes, parasites and orchids. Values and uses of plant diversity.

Animal diversity: Lower and higher group of animals, their ecological niches. Zoogeographical regions of the world and India. Animals in temperate, tropical and boreal forests, cave and mountains, Coastal ecosystems, mangrove and estuaries, coral reefs.

Unit III (13 hours)

Biodiversity Conservation: Causes and prevention of Plant and Animal biodiversity loss; IUCN Red List Categories and Criteria;

Conservation strategies – *Ex-situ* and *In-situ* conservation, Protected ecosystems – Biosphere reserves, National parks, Sanctuaries, Botanical gardens, Sacred groves; Wildlife conservation and wildlife conservation act; Centers of diversity study.

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