

Course Code	Course Title	Credit Hours
ENS-824	Freshwater Ecology	3 (3+0)

Course Description

This course is focused on learning about water characteristics and freshwater reservoirs, life in these environments and handling procedures to support aquatic life. This course helps students to understand the importance of freshwater environments and their commercial value under changing climate.

Course Outline

Hydrology and physiography of various types of freshwater systems. Chemistry of various freshwater systems and associated organisms. Physical relationships, movement of light, heat and chemicals in water, hydrology and physiography of groundwater and wetland habitats, physiography of lakes and reservoirs. Types of aquatic organisms: cyanobacteria, eukaryotic algae, aquatic fungi, protozoa, non-vascular plants and vascular plants. Animals: porifera, cnidaria, platyhelminthes and nemertea, gastrotricha, rotifera, nematoda, mollusca, annelida, bryozoa, tardigrada, arthropoda, fishes, tetrapods; biodiversity of freshwaters, measures of diversity, temporal and spatial factors, short term factors influencing local distribution. Invasions of nonnative species, extinction. Chemicals in freshwater, redox potential, potential energy and chemical transformations. Distribution of dissolved oxygen in environment, transformations of carbon, fermentation, methanogenesis, nitrogen, sulfur, phosphorus and other nutrients. Effects of toxic chemicals and other pollutants on aquatic ecosystems, fish ecology, freshwater ecosystems: groundwater ecosystems, streams, lakes and reservoirs, wetlands.

Recommended Books

1. Dodds, W.K., (2002). *Freshwater Ecology: Concepts and Environmental Applications*. Academic press. London.
2. Dodds, W.K. and Whiles, M.R., (2010). *Freshwater Ecology: Concepts and Environmental Applications of Limnology*. 2nd edition. Academic press. London.
3. Lampert, W. and Sommer, U., (2007). *Limno-ecology: the Ecology of Lakes and Streams*. 2nd Edition Oxford University Press, New York.