

## **OPEN ELECTIVE COURSES**

### **ESE461 BASIC SCIENCE CONCEPT IN ENVIRONMENT**

#### **UNIT I (13 hours)**

Definition and scope of Environmental Science; Earth and its environment: Structure and Composition. Biosphere-Atmosphere, Lithosphere, Hydrosphere and Water cycle.

#### **UNIT II (13 hours)**

Atmosphere: Structure and composition. Temperature, pressure, humidity of atmosphere. Winds and clouds – their classification, formation and circulation, artificial rain, acid rain, global warming, green house effect.

#### **UNIT III (13 hours)**

Hydrosphere: Water as a resource, sources of water, water related issues, purification of water, water management.

Biogeochemical Cycles: Sedimentary cycles, gaseous cycles, cycling of heavy metals and radioactive compounds, Effect of anthropogenic activities on biogeochemical cycles.

#### **References**

1. Agrawal, K.C., 2001. Fundamentals of Environmental Biology, Nidhi Publishers, Bikaner, India.
2. Asthana D.K. and Meera Asthana, 2006. A text Book of Environmental Studies, S. Chand & Co. Ltd., New Delhi.
3. Clarke, G.L., 1974. Elements of Ecology, John Wiley & Sons, New York.
4. Odum, E.P., 1971. Fundamentals of ecology.
5. Arya, S.P., 2002. Introduction to Micrometeorology, 2<sup>nd</sup> Ed.
6. Gilbertson, D.D., Kent, M. & Pyatt, K.B., 1985. Practical ecology for Geography and Biology: Survey, Mapping and Data Analysis. Hutchinson.
7. Haines – Young, R.H. & Petch, J.R., 1986. Physical Geography: its nature and methods. Harper.
8. John, J.W.R. and Geoffrey, F.P. 1998. People and the Earth, Cambridge University Press.
9. Tucker, M., 1988. Techniques in Sedimentology. Blackwell.

### **ESE462 ENVIRONMENTAL EDUCATION AND LEGISLATIONS**

#### **UNIT I (13 hours)**

Introduction to environment, components of environment – biosphere, atmosphere, lithosphere, hydrosphere; biotic and abiotic components; environmental problems including acid rain, ozone hole, global warming, deforestation; significance of environmental education and legislations.

## **UNIT II (13 hours)**

Environmental Education: Definition, goals, objectives, principles; environmental education programmes; formal (primary and secondary school level and tertiary level) and non-formal environmental education; environmental education for professional groups. Environmental education in India – Status and policy of environmental education – Action Plan. Environmental Institutions and NGOs.

## **UNIT III (13 hours)**

Environmental Legislations: Water Act -1974, Air Act - 1981, Environment (Protection) Act – 1986, Cess Act – 1977, Role of Parliament, State legislatures, Government departments including Pollution Control Boards in environmental protection. Environmental Protection Agencies/Organisations.

Legislation for protection of forest and wildlife in India, Indian Forest Act – 1927, Forest Conservation Act – 1980, Biodiversity Acts, Wildlife Protection Acts, Coastal Regulatory Zone (CRZ), Conservation Projects.

## **References**

1. Agrawal, K.C., 2001. Fundamentals of Environmental Biology, Nidhi Publishers, Bikaner, India.
2. Pandey, G.N., 1998. Environmental Science and Technology, Annual Publication, New Delhi.
3. Asthana, D.K. and Meera Asthana, A text book of Environmental Studies, S. Chand & Co. Ltd., New Delhi.
4. Sharma, P.D., 2012. Ecology and Environment, Rastogi Publications, Meerut.