Stat-415 Environmental Statistics

50 Marks: 02 Credits

Number of Class: 20-26

Introduction: Concept of environmental statistics, uses and importance of environmental statistics.

Environmental Pollution: Pollution and its importance, why does pollution happen? pollutant sources, detail study of air and water pollution, global climate change and global warming.

Stochastic process in Environment: Applications of Bernoulli. Poisson and normal processes to environmental problems.

Environmental sampling: Network Sampling, composite sampling, ranked-set-sampling.

Detectability of Sampling: Basic Concept of Detectability, constant detectability over region, estimating detecatability, effect of estimated detectability, detectability with simple random sampling.

Diffusion and Dispersion of Pollutants: Wedge Machine, Particle Frame machine, Plume model.

Dilution of Pollutants: Deterministic dilution, stochastic dilution. Theory of successive random dilution (SRD), application of SRD to Environmental phenomena: Air quality, indoor air quality, water quality, concentrations of pollutants in soils, plants and animals. Concentration in food and human tissue.

Statistical Theory of Rollback: Predicting concentrations after source control, correlation, previous rollback concepts, environmental transport models in air and water.

Text

1. Barnett, V. and Turkman, K.F (1993): *Statistics For the Environment,* John Wiley and Sons, Chichester.

References

1. Bryan, F. J.: *Statistics for Environment Science and Management,* 1st Ed. CRC Press.
2. Hill. M.K.: *Understanding Environmental Pollutions,* Cambridge University.
3. Millard, S.P and Neerchal, NK.: *Environmental Statistics Using S-Plus,* CRC Press
4. Wayner .R. Ott,(2002): *Environmental Statistics and Data analysis,* Lewis Publishers, England.