

CORE ELECTIVE COURSE

COURSE: PLANT ECOLOGY AND BIOSTATISTICS

Course Code: BOT(N)-350

Objectives- To study the structure and function of hydrosphere, atmosphere, lithosphere and biosphere, Applications and techniques used in remote sensing and elementary knowledge of Biostatistics.

Syllabus:

- Definition, branches and scope of ecology.
- Ecosystem structure: Types, Structure, Abiotic and Biotic components, Food chain, Food web, Ecological pyramids, Population ecology and Community ecology
- Ecosystem functioning: Energy flow, Productivity, Biogeochemical cycles: sulphur, carbon, and nitrogen cycles, Ecological succession.
- Ecological factors: Climatic, Edaphic, Physiographic and Biotic.
- Pollution Ecology: Air, Noise, Water and Soil.
- Biogeographical regions of India, vegetation types of Uttarakhand: Forests and grasslands Remote sensing- Tools and techniques: Application, Physical basis of remote sensing.
- Methods graphic and non-graphic presentation of data.
- Measurements of central tendencies- Mean, Median, Mode.
- Measures of dispersions and deviations: Measures of dispersion- range, Mean deviation and Standard deviation.
- Correlation, statutory test: Coefficient of correlation, chi-square test, t test.

Unit Schedule

BLOCK-1: GENERAL ECOLOGY AND ECOSYSTEM

- Unit-01 : Definition, branches and scope of ecology.
- Unit-02 : Ecosystem structure
- Unit-03 : Ecosystem functioning
- Unit-04 : Ecological factors
- Unit-05 : Pollution Ecology
- Unit-06 : Biogeographical regions of India, special reference to vegetation types of Uttarakhand.

BLOCK-2: APPLIED ECOLOGY AND REMOTE SENSING

- Unit-07 : Remote sensing, GIS- tools and techniques.
- Unit-08 : Aerial and space platforms, aerial photography and photo-interpretation.

BLOCK-3: BIOSTATISTICS

Unit-09 : Methods graphic and non-graphic presentation of data.

Unit-10 : Measurements of central tendencies.

Unit-11 : Measures of dispersions and deviations.

Unit-12 : Correlation, statutory test.

COURSE: PLANT ECOLOGY AND BIOSTATISTICS (LABORATORY)

Course Code: BOT(N)-350L

Objective- To identify the plant based on the bases of semi-technical description and to identify the anatomical, embryological materials on preparation based description of the plant material.

Syllabus:

- **Plant ecology and biostatistics:** To determine the minimum size of quadrat by species area curve method and to be laid down for the vegetational analysis of the given area. Determine frequency (comparison of frequency diagram with Ruankiaer's normal frequency diagram), density and abundance of each species in a community by quadrat method. Determine the mean basal cover and total basal cover. Statistical problems of central tendencies- mean, median, mode and Standard deviation and Chi-square test, coefficient of correlation and T-test.

Exercise Schedule:

Unit-1(L)	To determine the minimum size and number of quadrat by species area curve method for the vegetational analysis of the given area.
Unit-2(L)	To determine the frequency, density and abundance of each species in a community by quadrat method.
Unit-3(L)	To determine the mean basal cover and total basal cover.
Unit-4(L)	To solve the statistical problems on central tendencies and Chi-square test.

Practical

Distribution of marks- 50 Marks

Lab Practical.....30 Marks

Records.....10 Marks

Viva10 Marks