

**Objective(s)**

To imparting knowledge of growth, development and yield analysis, To develop crop growth model for yield prediction.

**UNIT I**

Photosynthesis, Respiration and photorespiration, Nitrogen metabolism, Solute transport and photoassimilate translocation: uptake, transport and translocation of water, ions, solutes and macromolecules from soil, through cells, across membranes, through xylem and phloem; transpiration; mechanisms of loading and unloading of photoassimilates

**UNIT II**

Principles of crop production; Evaluation of crop responses to weather element; impacts of natural and induced variability of climate on crop production

**UNIT III**

Empirical and statistical crop weather models, their application with examples, regression model incorporating weather, soil, plant and other environmental related parameters and remote sensing inputs; growth and yield production models

**UNIT IV**

Crop Simulation models, e.g., CERES, WOFOST, InfoCrop, SPAW

**UNIT V**

Verification, Calibration and Validation of models

**Reference Book(s)**

1. Principles of Agricultural Meteorology – by Bisnoi O. P. (2007). Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi
2. Simulation of Water Use, Nitrogen Nutrition and Growth of a Spring Wheat Crop. Simulation Monographs, PUDOC, Wageningen
3. Agro-meteorological Crop Monitoring and Forecasting – by Frere, M. and Popav, G. (1979) FAO.

**Practical(s)**

Working with statistical and simulation model, DSSAT model, WOFOST, SPAW, InfoCrop