

UNIT I FLOOD ESTIMATION

Hydrologic extremes – Flood – Types of Flood – Effects of Flood – Design Flood - SPF/MPF -Estimation
design flood – Physical Indicators - Envelope curves - Empirical methods – Rational method -
Statistical methods – Frequency analysis – Unit hydrograph method.

UNIT II FLOOD MODELLING AND MANAGEMENT Hydrologic and Hydraulic Routing –
Reservoir and Channel Routing - Flood Inundation Modelling –HEC HMS and HEC RAS software -
Flood control methods – Structural and non -structural measures -Flood Plain Zoning – Flood forecasting
Flood Mitigation - Remote Sensing and GIS for Flood modelling and management.

UNIT III DROUGHT AND IMPACTS

Definition – Definitions based on rainfall, stream flow, vegetation and comprehensive aspects -
Characterization of Drought/water shortage/aridity/desertification - Types of Drought – NCA
Classification – Impacts of Drought – Environmental, Social and Economic aspects

UNIT IV DROUGHT ASSESSMENT

Drought Severity Assessment – Meteorological Hydrological and Agricultural methods – Drought Indices
GIS based Drought Information system – Drought Vulnerability Assessment and Mapping Using GIS.

UNIT V DROUGHT MONITORING AND MANAGEMENT

DPAP Programme - Drought Monitoring – Application of Remote sensing – Drought Mitigation –
Proactive and Reactive Approach – Supply and Demand Oriented Measures – Long term and Short term
Measures – Water Scarcity Management in Urban, Industrial and Agricultural sectors

REFERENCES:

1. Chow V.T., Maidment D.R., Mays L.W., "Applied Hydrology", McGraw Hill Publications, New York, 1995.
2. Vijay P.Singh., "Elementary Hydrology", Prentice Hall of India, New Delhi, 1994.
3. Yevjevich V., Drought Research Needs, Water Resources Publications, Colorado State University, USA, 1977.

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