

B. Tech. Civil Engineering

Course code: Course Title	Course Structure			Pre-Requisite
CE425: Flood and Drought Estimation and Management	L	T	P	Nil
	3	1	0	

Course Objective: The objective of this course is to provide an in-depth exploration of the principles and practices of flood and drought management. The course typically focuses on ensuring that students gain a comprehensive understanding of the principles, strategies, and techniques related to managing and mitigating the impacts of floods and droughts.

S. No	Course Outcomes (CO)
CO1	Gains an understanding of the causes of floods and their impacts on society.
CO2	Understands various aspects of droughts and their impact on society.
CO3	Able to estimate magnitude and behaviour of floods for forecasting, relevant warning, and flood fighting.
CO4	Proficiency in economic analysis of flood control works and their management. Enhanced ability to develop integrated flood management plans that combine structural and non-structural measures.
CO5	Gains an understanding of Water Conservation and water management practices.

S. No.	Contents	Contact Hours
UNIT 1	Floods: Definition and types of floods; Causes of floods (natural and man-made factors); Impacts of Floods: Social, Environmental, Economic, and Political Basic causes of flood: Flood-prone areas in India and their problems, case history of some important river basins of India.	8

UNIT 2	Droughts: Definition and types of droughts; Causes of Drought (natural and human-induced factors); Impacts of droughts: Social, Environmental, and Economic.	8
UNIT 3	Estimation of flood magnitudes using rainfall runoff relationships, hydrological modelling, and flood routing techniques. Flood forecasting, flood warning and flood fighting. Morphological study of river behaviour.	8
UNIT 4	Economic aspects of flood control schemes, cost-benefit analysis. Flood Management: Floodplain zoning; Land use planning. Infrastructure development; Early warning systems. Community preparedness; Insurance and risk deduction.	10
UNIT 5	Drought Management: Water Conservation; Drought monitoring and early warning system; Diversification of water sources; Drought-resilient agriculture; Water management policies; Community engagement; Research and innovation.	8
	Total	42

REFERENCES		
S. No.	Name of Books/Authors/Publishers	Year of Publication / Reprint
1	Drought and Water Crises Science, Technology, and Management Issues By Donald A. Wilhite, 1st Edition Published, 22 March 2005, CRC Press.	2005
2	Chow V.T., Maidment D.R., Mays L.W., "Applied Hydrology", McGraw-Hill Publications, New York, 1995.	1995
3	Vijay P. Singh, "Elementary Hydrology", Prentice Hall of India, New Delhi, 1994.	1994
4	Rangapathy V., Karmegam M., and Sakthivadivel R., Monograph in Flood Routing Methods as Applied to Indian Rivers, Anna University Publications.	2005
5	Yevjevich V., Drought Research Needs, Water Resources Publications, Colorado State University, USA, 1977	1977
6	Drought and Water Crises: Integrating Science, Management, and Policy, Second Edition (2017) By Donald Wilhite.	2017