

CEDX 53	STORM WATER AND FLOOD	L	T	P	C
SDG: 13	MANAGEMENT	3	0	0	3

COURSE OBJECTIVES:

COB1: To understand the concept of storm water flow and its conservation

COB2: To impart the knowledge on watershed management and flood estimation.

COB3: To provide knowledge on flood modeling and its software.

COB4: To expose knowledge on flood prevention, preparedness and mitigation measures

COB5: To provide exposure to flood damage assessment, recovery, rehabilitation measures and National disaster management guidelines on flood management.

MODULE I	STORM WATER SYSTEM	10
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Storm water flows in Channels and Conduits - Gutters and Inlets - Hydraulic routing - Engineered Channels - Hilly Terrain - Coastal Terrain -Buried Storm Water Conduits- Storage Reservoir - Pumping Station - Storm water Storage Pond/Basin - Integration of rainwater harvesting & recharge systems with storm water drainage design

MODULE II	HYDROLOGICAL PROCESS	9
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Water shed - Watershed management- Rain fall runoff process – Hydrologic extremes – Flood – Types of Floods – Effects of Flood – Causes of flood – Impacts - Design concepts of Flood - SPF/MPF - Estimation of design flood – Physical Indicators - Envelope curves - Empirical methods – Rational method.

MODULE III	FLOOD MODELING	8
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Basic principles and aspects of flood modelling - Flood Hazard Modeling – Flood Plain delineation & mapping using GIS – Introduction about HEC RAS & HEC HMS.

MODULE IV	FLOOD RISK MANAGEMENT	9
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Flood plain management – Tools for flood plain management –Flood prevention, preparedness and mitigation – Frame work - Structural and Non-structural flood mitigation measures– Integrated watershed management- Urban and Rural development planning – Public awareness and capacity building.

MODULE V FLOOD MONITORING AND MANAGEMENT 9

Flood forecasting and warning–Indian context - Emergency response planning and management – Evacuation process and Rescue process– Environmental health - Concepts of recovery and rehabilitation – Flood damage assessment – Management of recovery and rehabilitation activities- National disaster management guide lines on flood management - Case studies

L – 45; TOTAL HOURS –45

TEXT BOOKS:

1. Andreas H. Schumann., “Flood Risk Assessment and Management”, Springer Science & Business Media B.V.2011
2. Rangapathy.V. Karmegam. M and Sakthivadivel.R., “Monograph in flood routing methods as applied to Indian Rivers” Anna University Publication,2000

REFERENCES:

1. Ashley R., Garvin S., Pasche E. and Vassilopoulos A., Advances in Urban Flood Management, Balkema, 2007.
2. James C Y Guo. “Urban Flood Mitigation and Stormwater Management” CRC Press, 2017
3. Engineering hydrology by K. Subramanya, Tata McGraw-Hill Education, 2017
4. Frans Klijn and Timo Schweckendiek. “Comprehensive Flood Risk Management: Research for Policy and Practice” CRC Press, 1stedition 2012.
5. Manual on storm water drainage system, CPHEEO, Ministry of Urban Development, GOI, New Delhi, 2019.
6. Paul Sayer, “Flood Risk: Planning, Design and Management of Flood Defense Infrastructure” ICE Publication, 2012.

COURSE OUTCOMES:

At the end of the course the students will be able to

CO1: manage the urban storm water systems to reduce the detrimental impacts

CO2: apply the technical knowledge on hydrological process and flood estimation

CO3: demonstrate their knowledge on flood mapping and modeling

CO4: acquire the knowledge on flood mitigation measures and public awareness.

CO5: analyze the flood forecasting and flood disaster

Board of Studies (BoS) :18th BoS of CE held on 05.04.2023**Academic Council:**20th Academic council held on
13.4.2023

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	H	H	M	M	-	M	H	M	-	-	-	M	M	-	M
CO2	H	H	M	M	H	M	H	M	L	L	H	M	M	-	M
CO3	H	H	-	M	-	M	H	M	L	L	H	M	M	-	M
CO4	H	H	H	M	-	M	H	M	L	L	H	M	M	-	M
CO5	H	M	-	M	H	M	H	M	-	-	-	M	M	-	M

Note: L - Low Correlation M - Medium Correlation H - High Correlation**SDG 13:** Take urgent action to combat climate change and its impacts

Climate change action is increasing the frequency and intensity of extreme weather events such as floods and cyclones, aggravating water management problems, damaging critical infrastructure and interrupting the provision of basic services such as water, sanitation and energy etc.