



आपदा न्यूनीकरण एवं प्रबन्धन उत्कृष्टता केन्द्र, भारतीय प्रौद्योगिकी संस्थान रुड़की,

रुड़की – 247667

CENTRE OF EXCELLENCE IN DISASTER MITIGATION & MANAGEMENT, 3rd Floor,
New Building, Opposite Biotechnology Department

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE, ROORKEE – 247667, UTTARAKHAND, INDIA

Tel: 01332-28-6616 (Office), E-mail: coe_dmm@iitr.ernet.in; www.coedmm.org

1. Subject Code : **DMN-605** Course Title : **Flood Estimation, Forecasting and Control**
2. Contact Hours: **L: 3 T: 1 P: 0**
3. Examination Duration (Hrs.) : **Theory: 3 Practical: 0**
4. Relative Weight : **CWS 25 PRS 0 MTE 25 ETE 50 PRE 0**
5. Credits: **4** 6. Semester: **Spring** 7. Subject Area: **PEC**
8. Pre-requisite: **Nil**
9. Objective : To introduce various methods of flood estimation, forecasting and control.
10. Details of Course :

Sl. No.	Particulars	Contact Hours
1.	Understanding floods, rainfall runoff method, Importance and classification of hydrological forecasts, flash floods, coastal floods, flood routing	3
2.	Statistical procedure for flood frequency estimation, flooding due to dam break, flooding due to embankment failure	4
3.	Urban drainage and runoff computations, urban flooding, GIS based inundation maps	3
4.	Damage and loss due to flood, damage survey proforma	2
5.	Statistical and deterministic approaches for flood estimation	4
6.	Data collection and flood forecasting network design, data transmission	4
7.	Physically based models, graphical and statistical models, stochastic models and adaptive filter models, UH and SCS based deterministic models, watershed models, updating	7
8.	Verification and dissemination of forecast; Flood control measures, river training structures, protection measures for flood safe housing	4
9.	River management using remote sensing techniques	2
10.	Concept of flood risk, risk assessment in technological, social and environment context, techniques of risk assessment, application of probabilistic and Markov models in risk estimation	5
11.	Major flood case studies – Kosi flood, simulation of major flood events	4
	Total	42

11. Suggested Books :

Sl. No.	Name of Authors/Book/Publisher	Year of Publication / Reprint
1.	Marcel, M., Flood risk management, Deltares	2010
2.	Schumann, A., Flood Risk Assessment & Management, Springer Publication	2010
3.	Kjeldsen, T. R., Flood Estimation Handbook, Centre of Ecology & Hydrology, Oxfordshire, UK	2007
4.	Pertti H., Giuliano Z., André Van Der B., Hydrological Forecasting and Real-Time Monitoring: The Watershed Simulation and Forecasting System (WSFS), John Wiley & Sons, ISBN: 9780471899884	2007
5.	US Army Corps of Engineer (USACE), Flood Risk Management and the American River Basin: An Evaluation, The National Academies Press	1995
6.	Central Water Commission, Manual on Flood Forecasting	1980