



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

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1. Subject Code : **DMN-603** Course Title : **Disaster Induced Risks**
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 develop understanding of both natural and anthropogenic disaster induced risks and impacts on various components of the environment and manmade systems.
10. Details of the Course:

| S. No. | Particulars | Contact Hours |
|--------|--|---------------|
| 1. | Introduction and scope: Natural and anthropogenic disasters | 2 |
| 2. | Hazards and disasters: emergencies, disasters and related concepts, nature-society interface, fragmented Vs systems thinking, concept of disaster systematics, simple and compound disasters | 6 |
| 3. | Disasters Vs development: Disaster-development linkages, interaction of socio-economic developmental activities and disasters, development plans incorporating disaster risks; Human Development Index (HDI) Vs Disaster Risk Index (DRI), cross-cutting themes in Disaster-Development interface | 6 |
| 4. | Causes and effects of disasters: Hazards, vulnerability and risk; Risks taxonomy according to hazardous agents such as physical, chemical, and biological agents, natural forces, social-communicative hazards, and synergic (or complex) manmade-systems hazards; Risk patterns at the national and local levels; Disasters and climate change | 6 |
| 5. | Risk governance framework: Risk perception, pre-assessment, appraisal, characterization and evaluation, analysis, assessment, communication, management and governance | 4 |
| 6. | Risk assessment: Hazard identification and estimation, exposure / vulnerability assessment, risk estimation; Risk characterization: Simple risk problems, complexity-induced risk problems, uncertainty-induced risk problems, ambiguity-induced risk problems | 6 |
| 7. | Impacts of disasters: Impacts on the environment, critical infrastructure and socio-economic systems, factors affecting social vulnerability to hazards, short-term and long-term impacts, systemic resilience, emergency response; Disaster recovery and rehabilitation; Lessons learnt for better policies and programs to effectively mitigate and manage future disasters | 6 |
| 8. | Present status and future directions in assessment and management of disaster-induced risks and impacts: Hazard specific risk profiles, risks in urban and rural settings, disaster indicators, disaster risk and impacts in the context of global change and technological advancement, multi-hazard disaster risk and impact modeling; Integrated climate risk management | 6 |
| | Total | 42 |

11. Suggested Books:

| S. No | Name of Authors/Book/Publisher | Year of Publication |
|-------|---|---------------------|
| 1. | Grossi, P. and Kunreuther, H. (eds.) , Catastrophe Modeling: A New Approach to Managing Risk, Springer | 2005 |
| 2. | Kirschenbaum, Chaos Organization and Disaster Management, Alan Marcel Dekker | 2004 |
| 3. | MacDaniels T.L. and Small M.J. (eds.) Risk Analysis and Society: An Interdisciplinary Characterization of the Field, Cambridge University Press | 2004 |
| 4. | Jaeger,C., Renn,O., Rosa, E. and Webler, T., Risk, Uncertainty and Rational Action, Earthscan | 2001 |
| 5. | WBGU (Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen), World in Transition: Strategies for Managing Global Environmental Risks, Springer | 2000 |