FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2022-23

Programme: Bachelor of Technology (Electrical Engineering)

Semester: V

Course Code: 202030521

Course Title: Disaster Management

Course Group: Open Elective Course - I

Course Objectives: The objectives of the course are to understand the various features of natural and manmade disasters and the safety measures associated with each disaster. Students learn the concept of Disaster Management Cycle and Framework. Different tools used to minimize the risk of disasters with the effective use of Remote sensing and GIS is covered in the syllabus. The course also provides insight to the initiatives of disaster management taken at global, national and regional level.

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
3	0	0	3	50/ 18	50/17	NA	NA	100 / 35

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	**Introduction:** Concepts and definition of Disaster, Hazard, Vulnerability and Factors affecting vulnerability such as impact of developmental projects and environmental modifications (including of dams, land use changes, urbanization etc.), Risk, Capacity Nature, Importance, Scope of Disaster Management	2
2	**Disaster**: Types, causes, consequences and disaster reduction strategies. **Natural disasters:** Geological Disasters (earthquakes, landslides, tsunami, volcanic eruption); Hydro-Meteorological Disasters (floods, cyclones, lightning, thunder-storms, hail storms, avalanches, droughts, cold and heat waves). **Man-made Disasters**: Chemical disasters, biological disasters, radiological disasters, nuclear disasters, building collapse, **Fire** – building fire, coal fire, forest fire, Oil fire, **Accidents**- road accidents, rail accidents, air accidents, sea accidents , **Biological Disasters** (epidemics, pest attacks, forest fire);	8

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3	**Disaster Management Cycle:** **Pre-Disaster** – Risk Assessment and Analysis, Risk Mapping, zonation and Micro-zonation, Prevention and Mitigation of Disasters, Early Warning System; Preparedness, Capacity Development. **During Disaster** – Evacuation – Disaster Communication – Search and Rescue – Emergency Operation Centre – Incident Command System. **Post-disaster** – Damage and Needs Assessment, Restoration of Critical Infrastructure – Early Recovery – Reconstruction and Redevelopment. **Disaster reduction strategies:** Multi Hazard Mapping– Losses from Global Disasters and Expenses in Reconstruction and Retrofitting of structures.	**10**
4	**Disaster Management in India:** Disaster Profile of India – Mega Disasters of India and Lessons Learnt, Disaster Management Act 2005 – Institutional and Financial Mechanism, National Policy on Disaster Management, National Guidelines and Plans on Disaster Management; Role of Government (local, state and national), Non-Government and Inter-Governmental Agencies.	**7**
5	**Technologies for Disaster Management:** Definition and Concept of Remote Sensing, GIS and GPS, Early warning system, Application of Modern Technologies for the Emergency communication, Land Use Planning and Development Regulations, Disaster Safe Designs and Constructions, Application of Remote Sensing, GIS and GPS in Disaster Management.	**13**
6	**Various case studies:** Recent case studies on Cyclone, Earthquake, flood, Fire, tsunami etc.	**2**

Reference Books:

1	Disaster Management- G.K Ghosh-A.P.H. Publishing Corporation .
2	Disaster management – S.K.Singh, S.C. Kundu, Shobha Singh A – 119, William Publications, New Delhi..
3	Disaster Management – Vinod K Sharma- IIPA, New Delhi,1995.
4	Manual on natural disaster management in India, M C Gupta, NIDM, New Delhi.
5	R Gaur, Disaster Management, 1st Edition Saujanay Books, Delhi, 2008.
6	Bryant Edwards (2005): Natural Hazards, Cambridge University Press, U.K.
7	Roy, P.S. (2000): Space Technology for Disaster management: A Remote Sensing & GIS Perspective, Indian Institute of Remote Sensing (NRSA) Dehradun.
8	Disaster Mitigation and Management Post – Tsunami Perspectives P, Jagadish Gandhi.

Supplementary learning Material:	
1	http://www.emdat.be
2	http://www.nws.noaa.gov
3	http://nidm.gov.in
4	http://www.imd.gov.in

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Pedagogy:

- Direct classroom teaching
- Audio Visual presentations/demonstrations
- Assignments/Quiz
- Continuous assessment
- Interactive methods

Internal Evaluation:

The internal evaluation comprised of written exam (40% weightage) along with combination of various components such as Certification courses, Assignments, Mini Project, Simulation, Model making, Case study, Group activity, Seminar, Poster Presentation, Unit test, Quiz, Class Participation, Attendance, Achievements etc. where individual component weightage should not exceed 20%.

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						**R**: Remembering; **U**: Understanding; **A**: Applying; **N**: Analyzing; **E**: Evaluating; **C**: Creating
R	**U**	**A**	**N**	**E**	**C**	
20%	50%	20%	10%	0%	0%	

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Understand various types of natural and manmade disaster and safety measures.	30
CO-2	Analyse disasters, disaster preparedness and apply the mitigation measures	30
CO-3	Evaluate disaster management acts and guidelines along with role of various stack-holders during disasters	10
CO-4	Apply IT applications, remote sensing, GIS and GPS in risk reduction	30

Curriculum Revision:	
Version:	2.0
Drafted on (Month-Year):	June 2022
Last Reviewed on (Month-Year):	-
Next Review on (Month-Year):	June 2025

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