COMPLETION REPORT

CERTIFICATE COURSE
Artificial Intelligence/Machine Learning (AI/ML) and Data Analytics:
Theory into Practice in Disaster Management

Organized by: Department of Geography, Loreto College, Kolkata

Collaborators: Keio University (Japan), IIT Roorkee (India), RIKA Institute

Duration: 42 hours (Hybrid Mode)

Duration: September 27, 2024 – January 27 2025

Introduction

The increasing frequency and intensity of natural disasters worldwide have amplified the urgency of integrating advanced technologies into disaster risk reduction and management strategies. Recognizing this, Loreto College, Kolkata, launched a 42-hour hybrid certificate course titled *"Artificial Intelligence/Machine Learning and Data Analytics: Theory into Practice in Disaster Management"* in collaboration with Keio University, Japan, IIT Roorkee, and RIKA Institute.

In her inaugural address, Dr. Sushma Sahai, Head of the Department of Geography, emphasized that disaster management must be central to sustainable development policies of disaster-prone countries. She highlighted its relevance to the Sustainable Development Goals (SDGs) and UNESCO's commitment to improving education and public awareness.

Course Objectives

1. To gain theoretical understanding of disaster management, AI, ML, and their real-world applications.
2. To provide hands-on experience in GIS tools (Open- source mapping software QGIS), Python, R and basic coding.
3. To apply acquired knowledge and skills in developing innovative disaster management solutions.

Learning Outcomes

At the end of the course, participants:

- Acquired the ability to apply AI and data analytics to disaster management and climate change contexts.
- Gained theoretical knowledge and practical exposure in QGIS tools, Python, R and basic coding, enhancing their industry readiness.
- Developed competence in using cutting-edge technologies for effective disaster risk management.

Key Resource Persons

- Prof. Rajib Shaw, Graduate School of Media and Governance, Keio University, Japan; Co-chair, Asia Science Technology Academic Advisory Group; Coordinating Lead Author, IPCC 6th Assessment Report – highlighted the critical role of technology in disaster management.
- Dr. Ranit Chatterjee, Co-founder, RIKA Institute, and Visiting Associate Professor, Keio University – discussed disaster risk reduction and climate change adaptation.
- Prof. Sudip Roy, Department of Computer Science and Engineering, IIT Roorkee – emphasized computer-aided design, IoT applications, and AI/ML techniques.
- Mr. Saikat Patra, Birla Institute of Technology, Mesra, Ranchi
- Dr. Kartick Chandra Mondal, Jadavpur University, Kolkata
- Ms. Krishnakali Ghosh, Program Manager, RIKA – presented the role of GIS in disaster management.

Participation

The course attracted 83 participants from diverse academic backgrounds, from Loreto College as well as from partner institutions in Kolkata and other cities through existing

Memoranda of Understanding. The hybrid format ensured accessibility to both local and outstation students.

Conclusion

The certificate course successfully combined theory with practical application, fostering interdisciplinary learning and equipping participants with the skills to leverage AI, ML, and data analytics in disaster management. The collaboration with international and national experts enriched the program and strengthened Loreto College's commitment to research, innovation, and capacity building in line with global best practices.