



## Remote Sensing, GIS for Emergency Management

**Objective:** This course introduces the principal concepts and techniques of Remote Sensing and GIS, primarily from the perspective of disasters and its aptness for disaster management. It addresses fundamentals and theoretical aspects of interpretation. Course consists of two interrelated parts: a theoretical one that focuses on the concepts to understand disasters footprint as one of Sendai priorities and a practical one that aims at developing hands-on skills in understanding and displaying risk prone areas using (mostly software) tools.

### Course Content:

1. Significance of space, location, place and map making
2. Understanding Disaster and associated risk: Introduction to disasters, impact and mitigation in Global and Indian context; causes and consequences of disaster, introduction to vulnerability and risk assessment, socio-economic and physical aspects of vulnerability and elements of risk mapping, assessment, and reduction strategies
3. Remote Sensing: The electromagnetic radiation principles, spectral reflectance curves, sensors and platforms, specific missions for earth observation, GEOSS, Geocast, NOAA, long term environmental observation sites and land information system.
4. Geographic information system and spatial data types: vector and raster representation, topology and spatial relationships, scale and resolution, spatial data entry and preparation, integration of data and map.
5. RS & GIS Global and national initiatives for Disaster Risk Management: Disaster management framework of India and recent initiatives by Govt. of India with special emphasis on DRR, Global initiatives (UNISDR, Committee on the Peaceful Uses of Outer Space and etc), Disaster Management Support (DMS), Status in India for use of space inputs Mainstreaming DRR in Development, Planning Sustainable development in the context of Sendai framework and SDG's, Disaster Recovery-Strategy

### Suggested Readings:

1. Joseph, G. (2003), *Fundamentals of Remote Sensing*, Orient Longman Press, Bangalore.
2. Lillesand, T.S. and R. W. Kiefer, (2002), *Remote Sensing and Image Interpretation*, Fourth Edition, John Wiley and Sons, New York.
3. Sabins, F.F., (1996), *Remote Sensing: Principles and Interpretation*, 3<sup>rd</sup> Ed., Freeman & Co., New York.
4. Berke PR, Lyles W, Smith G (2014), Impacts of Federal and State Hazard Mitigation Policies on Local Land Use Policy. *J Plann Educ Res* 34(1):60–76.
5. Jenson, J.R., (1996), *Introduction to Digital Image Processing: A Remote Sensing Perspective*, Prentice Hall, Upper Saddle River.
6. Joseph, G. (2003), *Fundamentals of Remote Sensing*, Orient Longman Press, Bangalore.

7. Lillesand, T.S. and R. W. Kiefer, (2002), *Remote Sensing and Image Interpretation*, Fourth Edition, John Wiley and Sons, New York.
8. Raju E, Becker P (2013). Multi-organisational coordination for disaster recovery: The story of post-tsunami Tamil Nadu, India. *Int J Disaster Risk Reduct* 4:82–91. doi: 10.1016/j.ijdr.2013.02.004
9. Kumar P, Geneletti D (2015) How are climate change concerns addressed by spatial plans? An evaluation framework, and an application to Indian cities. *Land Use Policy* 42: 210–226. doi: 10.1016/j.landusepol.2014.07.016