**Remote Sensing and Digital Image Processing for Geoscientists**

**Course overview:** The course on Remote Sensing and Digital Image Processing (RS & DIP) is aimed to equip the geoscientists in interpretation of satellite images for geoscientific and geohazard studies.

The course includes series of lectures, demonstration and practical exercises in various techniques of RS & DIP viz. image geometric correction, enhancement, classification, generation of DEM derivative maps and their application in geological interpretation, material mapping and finally map generation.

The course focuses on the use of RS & DIP for identification of potential areas for mineral exploration and for Geohazard studies and also to train the participants independently to use Remote Sensing techniques in their respective countries for natural resource development and management.

The course will include project work at the end, enabling the trainees to develop their skills in processing and interpretation of satellite data independently. The project aims at providing high level of confidence to trainee to independently carrying out assignments in the related fields in his/her country. The trainees will be encouraged to carry out project on the digital data pertaining to their area of interest.

### Course Content

* Principles of remote sensing, sensor and platforms
* Geomorphic processes, landforms and their significance in image interpretation
* Interpretation criteria for rock types and structure.
* Image statistics and digital image formats
* Digital image processing- Image Geometric correction, image mosaicing etc;
* Image Enhancement- Radiometric, spatial and spectral enhancement
* Multispectral image classification
* DEM and DEM derivative maps and its applications.
* Image interpretation for geoscientific studies
* Feature extraction and map composition
* Principles of thermal, hyperspectral and microwave remote sensing
* Application of RS in Disaster studies
* Application of RS in landslide hazard and seismic hazard studies
* Application of RS in Mineral exploration
* Visit to Scientific organizations and Cultural Heritage sites
* Project work and presentation.