**GOVERNMENT OF INDIA**

**Geological Survey of India Training Institute**

**Hyderabad**

**Scheme: ITEC Proposed Year: 2020-21**

**Course Content for FY 2020-21 (**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 trainees with the latest trends in remote sensing, its application in various fields and interpretation of different satellite imageries for geoscientific studies. The course includes series of lectures, demonstration and practical exercises in various techniques of RS & DIP viz. principles of remote sensing, about multispectral remote sensing, hyperspectral remote sensing, thermal and microwave remote sensing & its applications, handling of satellite data, image correction, enhancement techniques, classification and interpretation of satellite data etc. for the identification of potential areas of interest.

The course includes, project work by individual trainees which will help in enabling the trainees to develop their skills in processing and interpretation of satellite data independently and to provide high level of confidence to trainee for 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

* Fundamental of Remote Sensing (Principles of Electromagnetic Radiation, Satellite, Sensors Platform).
* Introduction of digital remote sensing (Pixel, rows, column, data format), Image Statistics, Image Resolution and data formats).
* Image Enhancement Techniques (Geometric correction, Spectral Enhancement techniques - PCA, INDICES, Radiometric enhancement, Spatial enhancement).
* Principles of satellite image interpretation (Identification of Landforms, Geological Structures Interpretation criteria for Igneous, Sedimentary and metamorphic rocks).
* Digitalimage classification techniques and its application.
* Change detection studies and its application.
* Introduction toHyperspectral Remote sensing and its applications.
* Spectroscopy of rocks and mineral and generation of spectral signature.
* Introduction to Thermal and Microwave Remote sensing and its applications.
* Application of remote sensing in landslide hazard mapping.
* DEM and DEM derivative maps and its applications.
* Concept of Geo-rectification and datum, feature extraction and map composition.
* Visit to Scientific organizations and Cultural Heritage sites.
* Project work and presentation.

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