

## Twenty Nine IIRS Outreach Programme

On

# Hyperspectral Remote Sensing and Its Applications

Coordinator: Speakers/ Resource Persons:	Time (Hrs)	Resource Persons
<b>(19.02.2018)</b>		
<b>First Session: Hyperspectral Remote Sensing (HRS): An Overview and Applications</b> <ul style="list-style-type: none"> <li>- Principle of Hyperspectral Remote Sensing (HRS)</li> <li>- Terrestrial, Airborne and Space borne HRS</li> <li>- Causes of absorption,</li> <li>- Multispectral Vs Hyperspectral,</li> <li>- Overview of hyperspectral data processing,</li> <li>- Hyperspectral data processing softwares</li> <li>- Limitations of hyperspectral data</li> </ul>	16:00-17:30	Shri. Vinay Kumar
<b>(20.02.2018)</b>		
<b>Second Session: Hyperspectral remote sensing: Platform and sensors</b> <ul style="list-style-type: none"> <li>- Past, Present and Future HRS sensors,</li> <li>- Airborne hyperspectral sensors,</li> <li>- Spaceborne (Earth and Extra-terrestrial) hyperspectral sensors,</li> <li>- Ground based hyperspectral sensors</li> <li>- ISRO Program on HRS Imaging</li> <li>- Future ISRO hyperspectral Sensors and their characteristics</li> </ul>	16:00-17:30	Shri. Vinay Kumar
<b>(21.02.2018)</b>		
<b>Third Session: Hyperspectral Image Pre-processing</b> <ul style="list-style-type: none"> <li>- Radiometric errors (sensor, atmospheric related)</li> <li>- Bad band and bad column removal</li> <li>- Atmospheric correction (relative and absolute)</li> </ul>	16:00-17:30	Mrs. Manu Mehta
<b>(22.02.2018)</b>		
<b>Fourth Session: Demonstration on Hyperspectral Data Pre-processing</b> <ul style="list-style-type: none"> <li>- Sensor error correction (Bad band &amp; bad column removal)</li> <li>- Atmospheric correction using FLAASH</li> </ul>	16:00-17:30	Shri. Vinay Kumar

<b>(23.02.2018)</b>		
<b>Fifth Session: Data dimensionality reduction</b> - Data Dimensionality reduction - Endmember selection	16:00-17:30	Mrs. Richa U Sharma
<b>(26.02.2018)</b>	Break	
<b>(27.02.2018)</b>		
<b>Sixth Session: Demonstration on spectro-radiometer and spectral library creation</b> - Spectral Data collection using ground spectro-Radiometer - Creation of Spectral library	16:00-17:30	Shri. Vinay Kumar
<b>(28.02.2018)</b>		
<b>Seventh Session: Optical and Thermal Hyperspectral Image Classification</b> - Pixel based hard classification algorithms - Pixel based soft classification algorithms - Role of Indices for hyperspectral data classification – showcase of in-house tool - Accuracy assessment methods – hard and soft output	16:00-17:30	Dr. Anil Kumar
<b>(01.03.2018 to 04.03.2018)</b>	<b>Holi Holidays</b>	
<b>(05.03.2018)</b>		
<b>Eighth Session: Demonstration on Hyperspectral data classification</b> - Classification using Spectral Angle Mapper (SAM) and Linear Spectral Unmixing (LSU)	16:00-17:30	Shri. Vinay Kumar
<b>(06.03.2018)</b>		
<b>Ninth Session: Hyperspectral Remote Sensing for Agriculture and soil Studies</b> - Soil type Studies - Soil fertility Studies - Crop related studies	16:00-17:30	Shri. Justin George K
<b>(07.03.2018)</b>		
<b>Tenth Session: Hyperspectral Remote Sensing for Forestry Applications</b> - Plant species/community level detection and discrimination. - Canopy chlorophyll estimation. - Foliar nitrogen content estimation. - Vegetation spectral library	16:00-17:30	Dr. Hitendra Padalia

<b>(08.03.2018)</b>		
<b>Eleventh Session: Hyperspectral remote Sensing for Geological Applications</b> <ul style="list-style-type: none"> <li>- Spectra of minerals and their diagnostic absorptions</li> <li>- Mineral Mapping using hyperspectral data</li> <li>- Planetary HRS</li> <li>- Case studies, Planetary Geology</li> </ul>	16:00-17:30	Mrs. Richa U Sharma
<b>(09.03.2018)</b>		
<b>Twelfth Session: Hyperspectral Remote Sensing for Urban Studies</b> <ul style="list-style-type: none"> <li>- Road extraction and mapping</li> <li>- Extraction of Impervious surfaces</li> <li>- Hyperspectral classification for urban areas</li> </ul>	16:00-17:30	Ms. Asfa Siddiqui
<b>(12.03.2018)</b>		
<b>Thirteenth Session: Hyperspectral Remote Sensing for Water and snow cover Studies</b> <ul style="list-style-type: none"> <li>- Water Quality Mapping</li> <li>- Snow Physical Parameters</li> <li>- Recent attempts on Soil Moisture Mapping</li> </ul>	16:00-17:30	Dr. Vaibhav Garg
<b>(13.03.2018)</b>		
<b>Panel discussion</b>	16:00-17:30	By Programme Faculty