Remote Sensing Specialist: Satellite & Aerial Data Analysis

TRAINIT ACADEMY

COURSE TITLE

Remote Sensing Specialist: Satellite & Aerial Data Analysis

COURSE DATE/ VENUE

03rd- 07th Nov 2025

London

COURSE REFERENCE

GP150

COURSE DURATION

05 Days

DISCIPLINE

Geophysics

COURSE INTRODUCTION

The **"Remote Sensing Specialist: Satellite & Aerial Data Analysis"** course is designed for professionals seeking to harness the power of remote sensing technologies to monitor, analyze, and interpret Earth's surface. This course focuses on the principles and techniques of using satellite and aerial data to tackle complex environmental, agricultural, and urban challenges.

COURSE OBJECTIVE

Upon successful completion of this course, the delegates will be able to:

1. **Understand the Fundamentals of Remote Sensing:**

2. **Acquire and Process Satellite Data:**

3. **Implement Aerial Data Collection and Processing:**

4. **Analyze Remote Sensing Data for Practical Applications:**

5. **Apply Advanced Data Analysis Techniques:**

6. **Assess and Interpret Remote Sensing Data for Decision Making:**

7. **Stay Abreast of Current Trends and Future Directions:**

COURSE AUDIENCE

✓ **Remote Sensing Specialists:** Professionals who wish to deepen their expertise in satellite and aerial data analysis techniques.

✓ **Geospatial Analysts:** Individuals responsible for processing and interpreting geospatial data for environmental, urban, and agricultural applications.

✓ **Environmental Scientists and Managers:** Those working in environmental monitoring, conservation, and management who need to leverage remote sensing data for natural resource management and environmental impact assessments.

✓ **GIS Professionals:** Geographic Information System (GIS) experts who want to integrate remote sensing data into their spatial analysis and decision-making processes.

COURSE CONTENT

Day 1: Introduction to Remote Sensing and Data Acquisition

- **Overview of Remote Sensing Technologies**
    - Definition and principles of remote sensing
    - Types of remote sensing systems: satellite, airborne, ground-based
    - Platforms: satellites, drones, and aircraft
    - Sensors and their functions: passive vs active sensors
- **Remote Sensing Data Acquisition**
    - Types of remote sensing data: optical, radar, thermal, LiDAR
    - Data sources: Satellite data (Landsat, MODIS, etc.), UAV (Unmanned Aerial Vehicle), aerial imagery
    - Overview of satellite and aerial missions
- **Practical Applications of Remote Sensing**
    - Environmental monitoring, land-use mapping, agricultural monitoring, urban planning

---

Day 2: Satellite Remote Sensing Techniques

- **Satellite Data Processing and Interpretation**
  - Understanding the satellite image processing chain: Raw data to final output
  - Image rectification, georeferencing, and resampling
  - Radiometric and geometric corrections
- **Types of Satellite Sensors**
  - Optical sensors: Multispectral, hyperspectral imaging
  - Radar sensors: SAR (Synthetic Aperture Radar)
  - Thermal and LiDAR sensors
- **Satellite Image Classification and Analysis**
  - Image classification techniques: Supervised and unsupervised
  - Feature extraction and change detection

Day 3: Aerial Data Acquisition and Processing

- **Aerial Remote Sensing: UAVs and Aircraft Sensors**
  - Overview of UAV platforms and their use in remote sensing
  - Sensor types for aerial platforms: RGB cameras, multispectral, LiDAR, thermal
- **Aerial Data Collection Methods**
  - Flight planning: Altitude, resolution, and overlap considerations
  - Georeferencing and calibration of aerial imagery
- **Aerial Image Processing and Analysis**
  - Photogrammetry: Orthorectification, mosaicking, and 3D modeling
  - Image fusion and enhancement techniques

Day 4: Data Analysis Techniques for Remote Sensing

- **Data Fusion and Integration**
  - Integrating satellite and aerial data for enhanced analysis
  - Using GIS to overlay remote sensing data with other spatial data
- **Advanced Image Processing and Analysis**
  - Object-based image analysis (OBIA)
  - Classification accuracy assessment and validation

- **Applications of Remote Sensing in Environmental and Urban Studies**
  - Land cover/land use mapping, forest management, agriculture, water resources
  - Urban growth and infrastructure analysis
- **Automation in Remote Sensing Analysis**
  - Machine learning and AI applications for remote sensing data interpretation

---

Day 5: Practical Applications, Trends, and Future Directions
- **Applications in Environmental Monitoring and Disaster Management**
  - Monitoring deforestation, desertification, and coastal changes
  - Tracking natural disasters: Floods, earthquakes, wildfires, and hurricanes
- **Trends in Remote Sensing Technology**
  - Emerging technologies: Small satellite constellations, hyperspectral remote sensing, AI-based data analysis
  - Future of remote sensing in precision agriculture, climate change, and urban development
- **Data Interpretation and Reporting**
  - Visualizing remote sensing data for non-technical audiences
  - Preparing reports and actionable insights from remote sensing data

COURSE CERTIFICATE

TRAINIT ACADEMY will award an internationally recognized certificate(s) for each delegate on completion of training.

COURSE FEES

£5,750 per Delegate. This rate includes participant's manual, Hand-Outs, lunch, coffee/tea on arrival, morning & afternoon of each day.

COURSE METHODOLOGY

The training course will be highly participatory and the course leader will present, guide and facilitate learning, using a range of methods including formal presentation, discussions, sector-specific case studies and exercises. Above all, the course leader will make extensive use of real-life case examples in which he has been personally involved. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Case studies & Practical Exercises
- 10% Role Play
- 10% Videos, Software or Simulators (as applicable) & General Discussions