Applied GIS and Remote Sensing for Environmental Monitoring Training Course



19 - 23 Oct 2026

Cape town

4600 € (Per Person)

Ref: #ENV4327_266866

Course Introduction / Overview:

This training course is designed to provide environmental professionals with the skills needed to use Geographic Information Systems (GIS) and remote sensing for effective environmental monitoring. The ability to collect, analyze, and visualize geospatial data is a game-changer in the fields of conservation, urban planning, and resource management. This program, offered by BIG BEN Training Center, provides a hands-on approach to using powerful geospatial tools to solve real-world environmental problems. We will explore how satellite imagery and aerial photography can be used to track changes in land cover, monitor pollution, and assess the health of ecosystems. The curriculum is informed by the work of academics like Paul Bolstad, whose book GIS Fundamentals: A First Text on Geographic Information Systems is a foundational text in the field. The course goes beyond theoretical concepts to focus on practical applications, ensuring participants can confidently use GIS software to conduct their own analyses and create professional maps and reports. We will guide you through the entire process, from data acquisition and processing to spatial analysis and visualization. This course is for anyone who wants to use cutting-edge technology to make more informed decisions and become a leader in environmental data analysis.

Target Audience / This training course is suitable for:

- Environmental scientists and engineers.
- Urban and regional planners.
- GIS analysts and technicians.
- Conservation and natural resource managers.
- Government officials in environmental agencies.
- Field biologists and ecologists.
- Consultants in environmental firms.
- Government agencies and equivalents.

Target Sectors and Industries:

- Environmental consulting and services.
- Government and public administration agencies.
- Urban and regional planning.
- Forestry and agriculture.
- Oil and gas.
- Utilities and energy.
- Construction and mining.
- Water resource management.

Target Organizations Departments:

- Environmental affairs and planning.
- GIS and mapping.
- Natural resource management.
- Public works.
- Sustainability and corporate social responsibility (CSR).
- Project management.
- Research and development.
- Data analysis and reporting.

Course Offerings:

By the end of this course, the participants will have able to:

- Collect, manage, and analyze environmental data using GIS software.
- Interpret and process remote sensing imagery for environmental monitoring.
- Create professional maps and geospatial visualizations.
- Assess land cover change and track deforestation or urbanization.
- Monitor water quality and pollution sources.
- Conduct spatial analysis for site selection and environmental impact studies.
- Use geospatial tools for natural resource management and conservation planning.
- Integrate GPS data with other environmental datasets.

Course Methodology:

This training course uses a hands-on, project-based methodology that ensures participants gain practical skills they can apply immediately. We go beyond lectures by having participants work on a series of real-world environmental monitoring scenarios using GIS software. The program includes guided exercises where participants will analyze satellite imagery to identify changes in a specific landscape, create pollution risk maps, and assess suitability of habitats. The curriculum is designed to be highly interactive, with dedicated time for troubleshooting and one-on-one assistance. BIG BEN Training Center is committed to providing a learning environment that is both challenging and supportive, ensuring that participants feel comfortable with the software and confident in their ability to perform complex geospatial analyses. This approach transforms a complex topic into an accessible and powerful skill set, preparing participants for a wide range of career opportunities in the environmental field.

Course Agenda (Course Units):

Unit One: Introduction to GIS and Remote Sensing

- Defining GIS and its role in environmental management.
- Fundamentals of geospatial data and coordinating systems.
- Introduction to remote sensing and different types of imagery.
- Understanding spatial data models: raster and vector.
- The process of environmental monitoring with GIS.
- Acquiring and managing geospatial data.
- Ethical considerations in geospatial data.

Unit Two: Geospatial Data Analysis

- Performing spatial queries and selections.
- Using geoprocessing tools for analysis.
- Conducting proximity analysis and buffering.
- Working with attribute data and databases.
- Creating and editing geospatial data.
- Overlay analysis for multi-criteria assessment.
- Calculating basic environmental metrics.

Unit Three: Remote Sensing for Environmental Monitoring

- Processing and interpreting satellite and aerial imagery.
- Identifying and classifying land cover types.
- Detecting change over time, such as deforestation or urban growth.
- Using remote sensing for water resource management.
- Monitoring pollution and environmental hazards from a distance.
- Understanding image resolution and sensor types.
- LiDAR and its applications in environmental mapping.

Unit Four: Applied Environmental Mapping

- Designing and creating effective maps.
- Symbolizing data to tell a clear story.
- Creating professional map layouts.
- Exporting maps for presentations and reports.
- Best practices in cartography.
- Visualizing temporal data and trends.
- Communicating complex data to non-technical audiences.

Unit Five: Advanced Applications and Future Trends

- Integrating GIS with GPS and mobile data collection.
- Using GIS for climate change and resilience planning.
- Advanced spatial modeling and analysis.
- The role of GIS in sustainable urban planning.
- Future trends in geospatial technology.
- Case studies in successful GIS environmental projects.
- Career pathways for GIS professionals.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

How can the power of geospatial technology be used not only to monitor environmental problems but also to foster greater community engagement and social equity in environmental decision-making?

What unique qualities does this course offer compared to other courses?

This training course stands out by providing a targeted and practical focus on the environmental applications of GIS and remote sensing. Unlike general courses that cover a wide range of applications, our curriculum is specifically designed for professionals who need to solve environmental problems. We go beyond the basics of software operation to teach the strategic thinking and data analysis skills necessary for effective environmental monitoring. The program is a hands-on experience, with exercises that directly simulate real-world environmental challenges. This course is for professionals who want to turn complex environmental data into actionable insights, providing them with a powerful and highly sought-after skill set. We empower participants to use technology as a tool for informed decision-making, ensuring their work has a lasting positive impact on the environment.