SCANDINAVIAN ACADEMY

For Training and Development

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Course: Pavement Construction and Maintenance Management Based on GIS

Code	City	Hotel	Start	End	Price	Language - Hours
635	Geneva (Switzerland)	Hotel Meeting Room	2025-07-07	2025-07-11	5450 €	En - 25

Course Introduction:

Geographic Information Systems (GIS) have revolutionized the planning, construction, and maintenance of pavement infrastructure. The integration of GIS with pavement management enhances decision-making, optimizes resource allocation, and improves the longevity of road networks. This training program is designed to provide professionals with in-depth knowledge of pavement construction, maintenance strategies, and GIS-based management systems.

Through theoretical instruction, hands-on exercises, and real-world case studies, participants will gain practical expertise in utilizing GIS for pavement assessment, maintenance planning, and cost-effective infrastructure management.

Course Objectives:

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

- Understand the fundamentals of pavement materials, design, and construction.
- Apply GIS for pavement condition assessment and maintenance planning.
- Implement advanced techniques for pavement performance monitoring.
- Develop efficient maintenance strategies to extend pavement lifespan.
- Optimize data management and decision-making through GIS applications.
- Ensure compliance with industry standards and sustainability goals.
- Integrate remote sensing and AI for pavement assessment.

- Improve decision-making for road network expansion and rehabilitation.

Target Audience:

- Civil and Transportation Engineers
- Road and Infrastructure Planners
- GIS Specialists and Analysts
- Public Works and Municipal Officials
- Highway Maintenance Managers
- Construction and Project Managers
- Urban Planners and Smart City Developers

Course Outline

Day 1: Fundamentals of Pavement Construction and Materials

- Overview of pavement types and structural design
- Selection and properties of pavement materials
- Construction techniques for flexible and rigid pavements
- Quality control and assurance in pavement construction
- Innovations in pavement material technologies (recycled materials, smart pavements)
- Workshop: Testing and evaluating pavement material properties

Day 2: GIS Applications in Pavement Management

- Introduction to GIS in transportation and infrastructure
- Data collection and integration for pavement assessment
- Spatial analysis techniques for pavement performance evaluation
- Workshop: GIS-based mapping of pavement networks
- Role of GPS and drones in pavement data acquisition
- Case study: GIS-driven pavement asset management in urban planning

Day 3: Pavement Condition Assessment and Performance Monitoring

- Methods for evaluating pavement conditions (visual inspections, sensors, drones)
- Pavement deterioration models and life-cycle analysis
- Data-driven decision-making for maintenance prioritization
- Practical exercise: Pavement data collection and analysis using GIS
- Traffic load impact and road deterioration forecasting
- Workshop: Conducting a pavement condition survey with GIS

Day 4: Pavement Maintenance Strategies and Optimization

- Preventive, corrective, and rehabilitation maintenance techniques
- Pavement maintenance planning and budgeting
- GIS-based predictive maintenance and risk assessment
- Case study: Implementation of GIS in pavement maintenance programs
- Optimizing pavement maintenance scheduling with machine learning algorithms

Day 5: Advanced GIS Techniques for Pavement Management

- GIS-based asset management and network optimization
- Integration of remote sensing and AI in pavement analysis
- Sustainable pavement solutions and environmental considerations
- Case study: Evaluating pavement performance under climate change conditions
- Closing discussion and future trends in GIS-based pavement management

The Scandinavian Academy for Training and Development adopts the latest scientific and professional methodologies in training and human resource development, aiming to enhance the efficiency of individuals and organizations. Training programs are delivered through a comprehensive approach that includes:

- Theoretical lectures supported by PowerPoint presentations and visual materials (videos and short films).
- Scientific evaluation of participants before and after the program to measure progress and knowledge acquisition.
- Brainstorming sessions and practical role-playing to simulate real-life scenarios.
- Case studies tailored to align with the training content and participants work nature.
- Assessment tests conducted at the end of the program to evaluate the achievement of training objectives.

Each participant receives the training material (both theoretical and practical) in printed form and saved on a CD or flash drive. Detailed reports, including attendance records, final results, and overall program evaluations, are also provided.

Training materials are prepared professionally by a team of experts and specialists in various fields. At the end of the program, participants are awarded a professional attendance certificate, signed and accredited by the Scandinavian Academy for Training and Development.

Program Timings:

- 9:00 AM to 2:00 PM in Arab cities.
- 10:00 AM to 3:00 PM in European and Asian cities.

The program includes:

- A daily buffet provided during the sessions to ensure participants comfort.