Pavement Design Training Course

Professional Development Training Course Outline

Category	Construction Institute	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Pavement Design Training Course is designed to develop advanced expertise in sustainable pavement engineering, resilient infrastructure development, smart transportation systems, and modern pavement design methodologies. This course equips civil engineers, highway professionals, consultants, and infrastructure specialists with the latest knowledge in flexible pavement design, rigid pavement design, pavement performance analysis, geotechnical evaluation, material characterization, and climate-resilient road construction. Participants will gain practical skills in applying international standards, advanced design software, and data-driven approaches to create durable, cost-effective, and high-performance pavement systems.

With growing demand for smart mobility, green infrastructure, asset management, and sustainable transportation networks, this training provides hands-on exposure to current industry practices, innovative materials, and emerging technologies in pavement engineering. Through real-world applications, engineering simulations, and global case studies, participants will learn how to optimize pavement lifecycle performance, reduce maintenance costs, and deliver safe, reliable, and environmentally responsible road infrastructure projects

Programme Curriculum

Pavement Design Training Course

Introduction

Pavement Design Training Course is designed to develop advanced expertise in sustainable pavement engineering, resilient infrastructure development, smart transportation systems, and modern pavement design methodologies. This course equips civil engineers, highway professionals, consultants, and infrastructure specialists with the latest knowledge in flexible pavement design, rigid pavement design, pavement performance analysis, geotechnical evaluation, material characterization, and climate-resilient road

construction. Participants will gain practical skills in applying international standards, advanced design software, and data-driven approaches to create durable, cost-effective, and high-performance pavement systems.

With growing demand for smart mobility, green infrastructure, asset management, and sustainable transportation networks, this training provides hands-on exposure to current industry practices, innovative materials, and emerging technologies in pavement engineering. Through real-world applications, engineering simulations, and global case studies, participants will learn how to optimize pavement lifecycle performance, reduce maintenance costs, and deliver safe, reliable, and environmentally responsible road infrastructure projects.

Course Duration

5 days

Course Objectives

By the end of this Pavement Design Training Course, participants will be able to:

1. Understand advanced principles of modern pavement engineering and infrastructure sustainability.
2. Apply flexible and rigid pavement design methodologies using international standards.
3. Evaluate pavement materials through advanced laboratory testing and performance analysis.
4. Develop skills in traffic loading analysis and pavement thickness optimization.
5. Perform geotechnical investigations and subgrade evaluation techniques.
6. Use pavement design software and digital engineering tools for smart infrastructure planning.
7. Analyze pavement failures using forensic pavement investigation methods.
8. Implement climate-resilient pavement design strategies for changing environmental conditions.
9. Apply sustainable practices using recycled materials and green pavement technologies.
10. Understand pavement asset management and lifecycle cost optimization.
11. Improve decision-making through data analytics and pavement condition monitoring.
12. Explore innovative solutions in AI-based pavement assessment and predictive maintenance.
13. Develop practical solutions for high-performance transportation infrastructure projects.

Target Audience

1. Civil and Highway Engineers
2. Pavement Design Engineers
3. Transportation Infrastructure Consultants
4. Road Construction Project Managers
5. Government Highway and Public Works Professionals
6. Geotechnical and Materials Engineers
7. Infrastructure Asset Management Specialists
8. Engineering Academics and Researchers

Course Modules

Module 1: Fundamentals of Pavement Engineering and Design Principles

- Overview of modern pavement engineering systems and transportation infrastructure
- flexible, rigid, composite, and sustainable pavement structures
- Functional and structural pavement requirements
- Pavement design parameters and performance criteria
- Introduction to international pavement design standards

- Case Study: Highway Expansion Project – Sustainable Pavement Planning for Increased Traffic Demand

Module 2: Traffic Analysis and Pavement Design Inputs

- Traffic forecasting and axle load evaluation
- Equivalent Single Axle Load (ESAL) calculations
- Vehicle classification and traffic growth analysis
- Reliability factors and design life assessment
- Advanced traffic modeling techniques
- Case Study: Urban Expressway Project – Optimizing Pavement Thickness Using Traffic Forecasting

Module 3: Flexible Pavement Design Techniques

- Asphalt pavement structure design principles
- Asphalt layer characterization and performance evaluation
- Subgrade strength assessment and improvement methods
- Mechanistic-empirical pavement design concepts
- Asphalt fatigue and rutting prediction
- Case Study: Airport Access Road Project – Designing High-Durability Flexible Pavement

Module 4: Rigid Pavement Design and Concrete Pavements

- Portland cement concrete pavement fundamentals
- Joint design and slab performance analysis
- Concrete material properties and durability assessment
- Load transfer mechanisms and stress analysis
- Maintenance strategies for rigid pavements
- Case Study: Industrial Highway Project – Long-Life Concrete Pavement Design Application

Module 5: Pavement Materials, Testing, and Quality Control

- Asphalt binder and aggregate evaluation
- Soil classification and stabilization techniques
- Laboratory testing methods for pavement materials
- Quality assurance and construction monitoring
- Innovative pavement materials and additives
- Case Study: Recycled Asphalt Pavement Project – Sustainable Material Implementation

Module 6: Pavement Failure Analysis and Rehabilitation Strategies

- Common pavement distress identification
- Crack, rutting, and deformation analysis
- Pavement condition assessment techniques
- Rehabilitation and maintenance planning
- Advanced pavement repair technologies
- Case Study: Aged Highway Rehabilitation Project – Pavement Life Extension Strategy

Module 7: Sustainable Pavement Design and Smart Technologies

- Green pavement engineering principles
- Recycled materials and circular economy approaches

- Smart sensors and pavement monitoring systems
- AI and machine learning applications in pavement evaluation
- Climate-adaptive pavement solutions
- Case Study: Smart Road Infrastructure Project – AI-Based Pavement Monitoring System

Module 8: Pavement Management Systems and Future Trends

- Pavement asset management frameworks
- Lifecycle cost analysis and optimization
- Pavement performance prediction models
- Digital twins and smart infrastructure applications
- Future trends in autonomous and sustainable transportation networks
- Case Study: National Highway Asset Management Program – Data-Driven Maintenance Planning

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com