Technology Transfer Program
Institute of Transportation Studies
University of California, Berkeley

Introduction to Pavement Engineering and Management (IDM-31)

CLASS OUTLINE

Day 1 (two hours)

- **Module 1** Pavement overview
  - What are pavements
  - Functional requirements
  - What stakeholders want
  - Pavement types and key issues
  - Drainage
  - Pavement life cycle

- **Module 2** Pavement materials
  - Strength, stiffness, damage definitions
  - Soils and stabilization
  - Aggregate
  - Asphalt and asphalt mixes
  - Sprayed asphalt
  - Cement and concrete
  - Materials of the future

- **Module 3** Sustainability considerations
  - Cost sustainability and life cycle cost analysis (LCCA)
  - Environmental sustainability and life cycle assessment (LCA)
  - Environmental impacts of materials production and construction
  - Environmental Product Declarations

Day 2 (two hours)

- **Module 4** Traffic, Environment and Basics of Treatment Types
  - Treatment definitions
  - Pavement life cycle
  - Traffic variables
  - Climate variables

- **Module 5** Pavement Distresses for Asphalt Surfaced Pavement
  - Structural distresses
  - Surface distresses
  - Soils problems
  - Preservation and maintenance treatments
  - Decision tree logic to address distresses with preservation and maintenance

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Day 3 (two hours)

- **Module 6** Rehabilitation and Reconstruction Design and Selection Process
  - Project investigation
    - Desktop
    - Site
    - Sampling and testing
  - Examples of inadequate site investigation
  - Treatments
    - Asphalt overlays
    - Partial-depth reclamation
    - Full-depth reclamation
    - Concrete overlays
  - Decision logic

- **Module 7** Pavement Distresses for Concrete Surfaced Pavement
  - Concrete pavement distress mechanisms
    - Design and construction
    - Pavement design, jointing
    - Mix design
  - Construction
  - Concrete pavement maintenance and rehabilitation

Day 4 (two hours)

- **Module 8** Pavement Distresses for Surface Treated, Gravel Surfaced and Permeable Pavements
  - Gravel and surface treated roads
    - Distress mechanisms
    - Engineered Gravel
    - Unpaving to engineered gravel
  - Permeable pavement
    - Distress mechanisms
    - Functionality
    - Use

- **Module 9** Overview of Pavement Management
  - What is a pavement management system
  - How a PMS works
    - Framework
    - Condition survey
    - Decision trees
    - Prioritization

- **Module 10** Overview of LCCA and LCA and How to Use This Information
  - Introduction to LCCA
  - Introduction to LCA
    - How it works
    - What to focus on now to improve sustainability
    - EPDs
- **Overview of Other Pavement Courses in the CCPIC/Tech Transfer Program**