Wind Load Analysis Training Course

Professional Development Training Course Outline

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

Course Introduction

Wind Load Analysis is a critical engineering discipline within structural engineering that focuses on evaluating and designing buildings and infrastructure to withstand wind-induced forces. With increasing climate variability, extreme weather events, and rapid urbanization, aerodynamic stability, structural resilience, computational wind engineering, and code-based wind pressure assessment have become essential competencies for modern engineers. Wind Load Analysis Training Course is designed to equip participants with advanced knowledge of wind load modeling, dynamic response evaluation, CFD simulation techniques, and international design code application (ASCE 7, Eurocode EN 1991-1-4, IS 875 Part 3).

The course bridges theoretical foundations with practical engineering applications, ensuring learners understand both boundary layer wind flow, gust factor methodology, pressure coefficient distribution, and structural response analysis. Through real-world case studies, participants will gain hands-on experience in analyzing high-rise buildings, towers, bridges, and industrial structures under complex wind environments. This training is highly relevant for professionals working in structural design, civil engineering consultancy, offshore engineering, and infrastructure resilience planning.

Programme Curriculum

Wind Load Analysis Training Course

Introduction

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Course Duration

5 days

Course Objectives

1. Master fundamentals of wind engineering and aerodynamic behavior
2. Apply ASCE 7, Eurocode, and IS 875 wind load provisions
3. Perform wind pressure distribution analysis on structures
4. Understand boundary layer wind flow modeling techniques
5. Develop skills in computational fluid dynamics (CFD) for wind simulation
6. Analyze dynamic response of tall and slender structures
7. Evaluate gust factor and turbulence intensity effects
8. Design structures for wind-induced vibration control
9. Interpret wind tunnel testing data and validation methods
10. Assess structural stability under extreme wind events
11. Implement load combination strategies for wind scenarios
12. Use software tools for structural wind load simulation
13. Enhance decision-making in climate-resilient structural design

Target Audience

1. Structural Engineers
2. Civil Engineers
3. Wind Engineering Consultants
4. Architectural Designers
5. Construction Project Managers
6. Offshore & Coastal Engineers
7. Infrastructure Planners
8. Graduate Engineering Students

Course Modules

Module 1: Fundamentals of Wind Engineering

- Basics of atmospheric wind behavior
- Wind speed variation with height
- Terrain category classification
- Pressure and suction mechanisms
- Introduction to wind load standards

- **Case Study:** Wind impact assessment of a mid-rise residential building in a coastal zone.

Module 2: Wind Load Standards & Codes

- Overview of ASCE 7 requirements
- Eurocode EN 1991-1-4 application
- IS 875 Part 3 provisions
- Importance of safety factors
- Code comparison methodology
- **Case Study:** Code-based wind load comparison for a commercial tower.

Module 3: Aerodynamics of Structures

- Flow separation and vortex shedding
- Shape effects on wind pressure
- Drag and lift forces
- Streamlining structural geometry
- Wind-structure interaction principles
- **Case Study:** Aerodynamic performance of a supertall skyscraper.

Module 4: Wind Pressure & Load Calculation

- External and internal pressure coefficients
- Gust factor method application
- Peak wind load estimation
- Pressure zoning techniques
- Load path analysis
- **Case Study:** Wind pressure distribution on an industrial warehouse.

Module 5: Computational Fluid Dynamics (CFD)

- CFD modeling fundamentals
- Meshing and boundary conditions
- Turbulence modeling techniques
- Simulation validation methods
- Interpretation of CFD results
- **Case Study:** CFD analysis of wind flow around a stadium complex.

Module 6: Wind Tunnel Testing

- Principles of scale modeling
- Boundary layer simulation
- Data acquisition systems
- Model calibration techniques
- Correlation with real-world data
- **Case Study:** Wind tunnel testing of a cable-stayed bridge model.

Module 7: Structural Response to Wind

- Static vs dynamic wind effects
- Resonance and vibration control
- Damping systems in structures

- Serviceability criteria evaluation
- Structural health monitoring
- **Case Study:** Vibration control in a high-rise office tower.

Module 8: Advanced Wind Engineering Applications

- Tall building design optimization
- Offshore wind structure analysis
- Climate resilience strategies
- Extreme event simulation
- Integrated design approach
- **Case Study:** Wind resilience design of a coastal offshore platform.

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:

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