Advanced Concrete Technology Training Course

Professional Development Training Course Outline

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

Course Introduction

The Advanced Concrete Technology course is designed to empower engineers, architects, and construction professionals with in-depth knowledge of high-performance concrete materials, innovative construction techniques, and sustainable solutions in structural engineering. Advanced Concrete Technology Training Course focuses on cutting-edge topics such as self-healing concrete, fiber-reinforced composites, green cement, nano-materials, and smart sensors in concrete. With growing demands in the construction industry for durability, sustainability, and innovation, this advanced-level course offers the tools to solve real-world challenges using state-of-the-art concrete technologies.

Participants will gain hands-on experience and expert insights into modern design practices, testing protocols, and advanced mix designs for specialized applications in civil infrastructure, megaprojects, and precast construction. Through interactive modules, case studies, and lab simulations, this course bridges the gap between theory and field application, making it a perfect fit for professionals aiming to lead future-ready concrete innovations.

Programme Curriculum

Advanced Concrete Technology Training Course

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Course Objectives

1. Understand the properties of high-performance concrete and ultra-high-performance concrete (UHPC).
2. Analyze advanced concrete mix design techniques using SCMs and admixtures.
3. Evaluate the impact of nanotechnology in concrete for enhanced strength and durability.
4. Explore the use of self-healing concrete for infrastructure longevity.
5. Apply non-destructive testing (NDT) for quality control and assessment.
6. Learn about smart concrete embedded with sensors for real-time monitoring.
7. Investigate fiber-reinforced concrete (FRC) applications in seismic zones.
8. Integrate green cement and eco-friendly materials into sustainable construction.
9. Design concrete for marine and aggressive environments.
10. Study the behavior of concrete under extreme weather and load conditions.
11. Review 3D printing in concrete for rapid prototyping and construction.
12. Master concrete durability testing methods and performance-based design.
13. Gain insights into global trends and future innovations in concrete technology.

Target Audience

- Civil Engineers
- Structural Engineers
- Construction Managers
- Architects
- Materials Scientists
- Research Scholars
- Project Consultants
- Graduate Students in Civil/Structural Engineering

Course Duration: 5 days

Course Modules

Module 1: Introduction to Advanced Concrete Materials

- Evolution of concrete technology
- Classification of advanced concretes
- Role of mineral and chemical admixtures
- Importance of SCMs (Supplementary Cementitious Materials)
- Emerging trends in material engineering

Module 2: Advanced Mix Design Techniques

- Performance-based mix designs
- Role of water-cement ratio in strength
- Optimization using fly ash, silica fume, GGBS
- AI-driven mix design modeling
- Testing protocols for high-performance mixes

Module 3: Nano and Smart Concrete Technologies

- Nano-silica and carbon nanotubes in concrete
- Benefits of nano-enhanced durability
- Embedded sensors for stress and crack detection
- Smart concrete applications in infrastructure
- IoT integration in smart concrete systems

Module 4: Fiber-Reinforced and Self-Healing Concrete

- Types of fibers and their properties
- Structural benefits of FRC in seismic areas
- Mechanism of self-healing via bacteria or capsules
- Case studies on FRC bridges and tunnels
- Durability enhancement via fiber technology

Module 5: Sustainability and Green Construction

- Low-carbon concrete and eco-cement
- Life cycle assessment of green materials
- Carbon capture and reuse in concrete
- Use of recycled aggregates and industrial by-products
- Global standards and certification systems

Module 6: Testing and Quality Assurance

- Non-destructive testing (NDT) methods
- Advanced durability testing techniques
- Real-time monitoring and data collection
- Lab vs. field performance evaluations
- Setting up a quality assurance framework

Module 7: Specialized Applications in Infrastructure

- Marine concrete structures and protection
- Concrete in nuclear and industrial plants
- Lightweight and pre-stressed concrete systems
- Challenges in mega infrastructure projects
- Retrofitting and rehabilitation with new tech

Module 8: Future Trends and Innovations

- 3D printing in concrete structures
- Artificial intelligence in concrete design
- Autonomous robotic construction
- Sustainable policies shaping the concrete industry
- Research frontiers in concrete nanoscience

Training Methodology

- Blended learning model
- Video lectures
- Live webinars
- Virtual labs
- Industry case studies
- Group projects
- Hands-on simulations.

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

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