National Council for Cement and Building Materials

Six Month
Online Certification Programme on
Advanced Concrete Technology (ACT)



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Online Certification Programme
Advanced Concrete Technology (ACT)



Centre for Continuing Education Services (CCE)
National Council for Cement and Building Materials (NCB)

PROGRAMME OVERVIEW

A 25-week **Online** certification programme designed to bridge the gap between academic learning and industry requirements in concrete technology. Focus on practical learning, lab demonstrations & real-world applications

Mode: Hybrid (Online + Onsite)

Schedule: Weekend Online Classes (3 hrs/week for 24 weeks)

Final Module: Onsite Lab & R&D Exposure at NCB Ballabgarh (Module 15: week- 25)

TARGET PARTICIPANTS

- Industry Professionals (QA/QC Engineers, RMC, Site Engineers)
- Faculty Members & Researchers
- B.Tech / M.Tech Students (Civil & Allied Disciplines)

WHY JOIN?

- Industry-oriented curriculum
- Hands-on laboratory exposure
- Learn from leading experts (NCB, IIT & Industry)
- Certificate awarded by NCB

COURSE FEE

Rs. 50,000 + GST

(Includes boarding & lodging during onsite training).

25 % discount for 4 or more participants from any organisation.

CERTIFICATION

Certificate awarded by NCB

(Subject to minimum 75% attendance)

Registration:
Upto 20th June 2026

Commencement of Course:
1st week of July 2026

Course Coordinator:
Dr. V M Agrawal, Group Manager, NCB
Phone: +91-8007837450, Email: vinay.agrawal@ncbindia.com

Scan for brochure

Scan for registration

Registration in Course

Module 1 Week-1 — Online Session - 3 Hrs
Concrete Technology in Construction Industry
Er. Amit Trivedi, Joint Director, NCB

Module 2 Week-2&3 — Online Session - 6 Hrs
Cement – BIS Codes, Properties & Testing
Er. Puneet Kaura, Group Manager, NCB

Module 3 Week-4&5 — Online Session - 6 Hrs
Aggregates-Selection, BIS Compliance & Testing
Er. Nikhil Kaushik, Manager, NCB

Module 4 Week-6&7 — Online Session - 6 Hrs
Water & Admixtures- Performance & Compatibility
Dr. Sumedha Moharana, Associate Prof., Shiv Nadar Univ.

Module 5 Week-8&9 — Online Session - 6 Hrs
Concrete Mix Design-Practical & Codal Approach
Er. Arup Ghatak, Group Manager, NCB

Module 6 Week-10 — Online Session - 3 Hrs
Fresh Concrete - Testing & Control
Er. Rahul Goel, Head-Technical, UltraTech Ltd.

Module 7 Week-11&12 — Online Session - 6 Hrs
Hardened Concrete – Strength & Acceptance
Dr. Shiva Kumar Kandasami, Manager, L&T

Module 8 Week-13&14 — Online Session - 6 Hrs
Durability & Exposure Conditions
Er. P N Ojha, Joint Director, NCB

Module 9 Week-15&16 — Online Session - 6 Hrs
RMC Plant Operations & Production Control
Dr. Sanjay Mundra, General Manager, NCB

Module 10 Week-17 — Online Session - 3 Hrs
Quality Control & Quality Assurance Systems
Dr. B Pandu Ranga Rao, Joint Director, NCB

Module 11 Week-18&19 — Online Session - 6 Hrs
Site Practices, Concreting & Curing
Er. Amit Prakash, General Manager, NCB

Module 12 Week-20 — Online Session - 3 Hrs
Role of NDT in QA/QC of concrete
Dr. Anjaneya Dixit, Asst. Professor, IIT Roorkee

Module 13 Week-21&22 — Online Session - 6 Hrs
Special, Advanced & Sustainable Concretes
Dr. Brijesh Singh, General Manager, NCB

Module 14 Week-23&24 — Online Session - 6 Hrs
R&D Project Exposure & Emerging Trends
Er. P N Ojha, Joint Director, NCB

4-day on-site session at NCB Ballabgarh (28 Hours)

Module 15 Week-25
Concluding Session
R&D and Practical Insights : Lab demonstrations with Industrial Site Visit

Award of Certificate

National Council for Cement and Building Materials
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www.ncbindia.com, nccbm@ncbindia.com, cceb@ncbindia.com

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Centre for Continuing Education Services (CCE)
National Council for Cement and Building Materials (NCB)

National Council for Cement and Building Materials (NCB)

National Council for Cement and Building Materials (NCB), is the premier R&D organization under the administrative control of DPIIT, Ministry of Commerce and Industry, Govt. of India, for technology development, transfer, continuing education and industrial services for cement and construction industries.

NCB serves as the nodal agency for providing the Government with the necessary support for formulation of its policy and planning activities related to growth and development of cement industry. It is devoted to protect the interests of consumers of cement and concrete in the country. NCB's stakeholders are Government, Industry and Society, who perceive NCB's role as discharging national responsibility, providing adequate technology support and improving the quality of life respectively.

From the Desk of the Director General



Dr. L P Singh

It is a matter of privilege to introduce the Six-Month Online Certification Programme on Advanced Concrete Technology, an initiative of the National Council for Cement and Building Materials (NCB). As India accelerates its infrastructure development with significant investments and national programmes such as PM Gati Shakti and the National Infrastructure Pipeline, the need for high-quality, durable, and sustainable concrete has become more critical than ever.

Concrete, being the backbone of infrastructure, demands not only material excellence but also skilled professionals equipped with knowledge of advanced mix design, durability-based specifications, quality assurance systems, and modern RMC operations. However, a noticeable gap exists between conventional academic learning and industry expectations. This programme is designed to bridge this gap through a unique blend of theoretical learning, industry-relevant modules, and hands-on laboratory exposure at NCB. Covering areas such as BIS codes, QA/QC practices, durability assessment, advanced concretes, and sustainability, the programme aims to build a competent workforce capable of supporting India's next-generation infrastructure. I am confident that this initiative will significantly contribute to capacity building and strengthening technical excellence in the cement and construction sectors.

Message from the Head of Centre



Dr. Brijesh Singh

The Centre for Continuing Education (CCE) at NCB is proud to introduce the Six-Month Online Certification Programme on Advanced Concrete Technology, designed to meet the growing demands of the construction and Ready Mix Concrete (RMC) industry. The programme has been carefully structured over 25 weeks, combining 72 hours of live online interactive sessions with a 4-day intensive hands-on training at NCB Ballabgarh. It comprehensively covers key areas such as cement and aggregate properties, mix design as per IS 10262, fresh and hardened concrete testing, durability concepts, QA/QC systems, RMC plant operations, and emerging trends like HPC, SCC, and sustainable concretes.

Special emphasis has been laid on practical applications, including laboratory demonstrations, case studies, statistical quality control, and real-world problem-solving. The flexible weekend-based online format ensures accessibility for students, faculty members, and working professionals without disrupting their commitments. Through this programme, CCE aims to enhance technical competency, promote industry-oriented learning, and contribute to the development of skilled professionals capable of ensuring quality, durability, and sustainability in modern infrastructure projects.

Centre for Continuing Education Services (CCE)

The Centre for Continuing Education (CCE) at the National Council for Cement and Building Materials is a dedicated centre focused on capacity building, professional training, and knowledge dissemination for the cement and construction industry.

The objective of CCE is to create technological talent and enhance and continuously upgrade the intellectual capital that exists in Cement, Concrete, Construction and allied Building Materials Sectors through refresher courses on specific areas. CCE draws upon NCB's engineers and technologists having rich and valuable experience, in all aspects of cement manufacture, concrete and construction technology. Besides, experts of relevant fields from the industry, machinery manufactures and consultants are invited as guest faculty.

Background of Six Month Online Certification Programme on Advanced Concrete Technology (ACT)

Government of India's Emphasis on Infrastructure Development

The Government of India has accorded high priority to infrastructure development as a key driver of economic growth. In the Union Budget for FY 2026–27, Rs.12.2 lakh crore has been allocated for capital expenditure, supported by major initiatives such as PM Gati Shakti, National Infrastructure Pipeline, Bharatmala, Sagarmala, PMAY, Smart Cities Mission, AMRUT, and Dedicated Freight Corridors.

This large-scale investment has significantly increased demand for concrete and skilled professionals in advanced concrete technology, QA/QC systems, RMC operations, and durability-based design. With construction contributing about 8–9% to GDP, capacity building and technical training are essential to ensure safe, durable, and sustainable infrastructure.

Role of Concrete Technology in India's Infrastructure Vision

Concrete is the foundational material for major infrastructure projects in India, including highways, metro systems, bridges, dams, airports, and housing. The performance, durability, and sustainability of these structures depend on concrete quality. India, the second-largest cement producer with over 700 million tonnes capacity, has seen rapid growth in the RMC sector, supplying quality-controlled concrete. Demand for RMC is expected to grow at over 10% CAGR, driven by infrastructure investments.

Need for the Programme

Concrete technology has witnessed significant advancements with the adoption of high-performance concrete (HPC), ultra-high performance concrete (UHPC), self-compacting concrete (SCC), fibre-reinforced concrete, and sustainable blended cements using fly ash, GGBS, and LC_3. Modern infrastructure projects increasingly rely on performance-based specifications, durability-based mix design, and digital quality monitoring systems.

However, a gap persists between academic training and industry requirements. While civil engineering programmes provide fundamental knowledge, they often lack depth in advanced mix design, RMC operations, durability assessment, QA/QC practices, and application of updated BIS codes. Bridging this gap is essential for meeting industry demands.

There is a growing need for structured, industry-oriented certification programmes focusing on practical learning, laboratory exposure, and site-based problem solving. Key areas such as mix proportioning, quality control, admixture usage, and compliance with codal provisions require greater emphasis. Flexible, modular programmes can effectively cater to students, faculty, and professionals, while also strengthening capacity building and technical outreach.

Program Overview

To address emerging industry requirements and cater to students, faculty, and professionals from construction and RMC sectors, NCB is introducing a Six-Month Online Certification Programme on Advanced Concrete Technology through its Centre for Continuing Education. The programme integrates theoretical concepts with laboratory training, exposure to RMC operations, case studies, and modern testing and durability assessment techniques. Emphasis is placed on sustainable concrete, performance-based specifications, and service-life design.

Approximately 90% of the course will be delivered through weekend-based online interactive sessions covering materials, mix design, durability, QA/QC practices, and recent developments. The programme concludes with a 28-hour on-site training at NCB Ballabgarh, providing hands-on experience in laboratory testing, equipment, and practical aspects of concrete production.





The online format ensures flexibility while effectively bridging the gap between theoretical knowledge and practical application, enhancing technical competence of participants.

Objectives of the Programme

- Impart comprehensive knowledge of advanced concrete materials, technologies, and recent developments, including high-performance, sustainable concrete systems, emerging binders, and modern construction practices.
- Provide hands-on laboratory exposure on standard and advanced testing methodologies for cement, aggregates, fresh and hardened concrete, admixtures, and durability-related parameters, strengthening the theory–practice linkage.
- Familiarize participants with relevant national and international codes, standards, and prevailing industry practices, including performance-based specifications and quality assurance requirements.
- Develop practical competency in concrete mix design, quality control procedures, and durability assessment to address field-level challenges and enhance service life of structures.
- Offer flexible learning pathways through modular content, online delivery mode, and industry-oriented outcomes to meet the needs of students, faculty members, and working professionals.

Target Participants

- **Industry Professionals:** Working professionals from the construction and concrete sector, including QA/QC engineers, site engineers, Ready Mix Concrete (RMC) plant personnel, laboratory and testing staff, construction supervisors, and technical executives involved in concrete production, quality control, and project execution.
- **Research & Academia:** PhD scholars, research fellows, and faculty members engaged in teaching, research, testing, or consultancy in concrete materials, durability, and construction engineering domains.
- **Students:** B.E./B.Tech (3rd / Final year) and M.E./M.Tech of Civil Engineering, Construction Engineering, or allied disciplines from recognized universities/institutions, seeking the industry-oriented skill enhancement in concrete technology.

Course Duration & Structure

Total Duration:	**25 Weeks**
Mode of Delivery:	**Online (Live Interactive Sessions) + One Onsite Concluding week**
Weekly Engagement:	**3 Hours (online) per Week (week 1 to week 24)**
Total Online Contact Hours:	**72 Hours**
Onsite Exposure:	**4 Day (28 Hours) at NCCBM (physical mode) week 25**
Class Schedule:	**Weekend-only sessions, suitable for working professionals**

The programme shall be conducted over a period of 25 weeks, comprising 72 hours of live online instruction, delivered at the rate of 3 hours per week through interactive weekend sessions. The online component focuses on BIS code–based learning, industry practices, QA/QC systems, RMC operations, case studies, and applied R&D exposure.

In addition, the programme includes a mandatory 4-day concluding session (28 hours) at NCCBM, which will provide participants with hands-on laboratory demonstrations and exposure to advanced testing facilities related to cement, aggregates, concrete, and durability assessment. This session is intended to reinforce theoretical learning through practical demonstrations, live interactions with experts, and discussion of ongoing R&D projects.

Eligibility:

Fresh and working professionals, students, research scholars with degree, diploma in science/ engineering/working professional in relevant field.

Course fee:

- **Rs 50,000/- per participant plus applicable GST.**
- **A discount of 25% will be extended if an organisation nominate 4 or more participants.**
- 1st installment Rs 35,000/- plus applicable GST payable at admission and Rs 15,000/- plus applicable GST as next installment payable before the concluding module.
- This fee includes tuition fee boarding and lodgings during the concluding module at the hostel located within the NCB Ballabgarh.
- The participant will make their own arrangement to reach NCB Ballabgarh.

Certification

Participants who successfully complete the programme will be awarded a Certificate from the National Council for Cement and Building Materials (NCB). The certificate shall be issued subject to a minimum of 75% attendance in the online sessions and on-site sessions/modules.

Registration process

Interested eligible candidate can fill the online application form. Applicants may contact the course coordinator through email/phone for any additional information related to registration for the course.

Course Coordinator

Dr. Vinay Mohan Agrawal, Group Manager, CCE
Mob: 8007837450 Email: vinay.agrawal@ncbindia.com

Faculty & Resource Persons



Er. P N Ojha
Joint Director
NCB



Dr. B Pandu Ranga Rao
Joint Director
NCB



Er. Amit Trivedi
Joint Director
NCB



Er. Rahul Goel
Head-Technical Services
Ultratech Cement Limited



Dr. Sivakumar Kandasami
Manager, L&T



Dr. Anjaneya Dixit
Assistant Professor
IIT Roorkee



Dr. Sumedha Moharana
Associate Professor
Shiv Nadar University



Dr. Sanjay Mundra
General Manager
NCB



Dr. Brijesh Singh
General Manager
NCB



Er. Amit Prakash
General Manager
NCB



Er. Manish Mandre
Group Manager
NCB



Er. Puneet Kaura
Group Manager
NCB



Er. Arup Ghatak
Group Manager
NCB



Er. Nikhil Kaushik
Manager
NCB

Module 1

Week - 1
Online Session - 3 hours

Concrete Technology in Construction Industry

- Role of concrete in infrastructure and building projects
- Industry expectations from concrete and QA/QC professionals
- Overview of RMC industry, specifications, and compliance



Er. Amit Trivedi
Joint Director
NCB

Er. Amit Trivedi is Joint Director at the NCB and heads the Centre for Quality Management, Standards and Calibration Services, bringing nearly three decades of distinguished experience in concrete technology and construction materials. His expertise spans advanced mix design, ready mix concrete, NDT, and geopolymer concrete. He has published 60+ papers and made significant contributions to BIS committees and standardisation.

Overview of the Module

This module introduces the role of concrete in modern infrastructure and building projects and explains its importance as the backbone of construction. It discusses the evolution of concrete technology in response to increasing performance demands. An overview of the Ready Mix Concrete (RMC) industry, including its operational structure, specifications, and compliance systems, is provided. The module sets the context for understanding industry expectations from concrete and QA/QC professionals.

Key Takeaways

Participants will understand the significance of concrete in contemporary construction and the functioning of the RMC industry. They will become aware of professional roles in production, quality control, and site supervision. They will recognize the importance of codal compliance and quality management systems. They will develop a foundation for industry-oriented technical learning.

Field Applications

This module enables participants to align their knowledge with real-world construction practices. It helps them appreciate the importance of quality-controlled concrete supply through RMC systems. Participants can contribute more effectively in QA/QC and production roles. The module establishes a strong base for advanced modules in the programme.

Module 2

Week - 2
Online Session - 3 hours

Week - 3
Online Session - 3 hours

Cement – BIS Codes, Properties & Testing

- Types of cement used in RMC and infrastructure projects
- BIS Codes: IS 269, IS 1489, IS 455
- Test Methods: IS 4031 (relevant parts)
- Storage, handling, variability, and performance issues
- R&D case study



Er. Puneet Kaura
Group Manager
NCB

Er. Puneet Kaura is Group Manager at NCB and has about 14 years of experience in concrete technology, with a focus on durability studies of cement and concrete. He is engaged in testing, evaluation, and research on construction materials, contributing to performance assessment, and sustainable construction practices. He has published 30+ papers and made significant contributions to BIS committees.

Overview of the Module

This module covers various types of cement used in RMC and infrastructure projects and explains their properties and performance requirements. It includes detailed discussion on BIS codes such as IS 269, IS 1489, and IS 455. Standard testing procedures as per IS 4031 are introduced. Practical aspects such as storage, handling, and variability issues are also examined.

Key Takeaways

Participants will be able to identify appropriate cement types for different applications. They will interpret laboratory test results as per BIS specifications. They will understand performance parameters and acceptance criteria. They will recognize factors contributing to cement variability in concrete production.

Field Applications

Participants can evaluate cement quality before use in RMC and construction projects. They can ensure compliance with codal provisions during procurement and testing. They can troubleshoot cement-related performance issues effectively. This supports consistency and reliability in concrete production.







Module 3 | **Week - 4** Online Session - 3 hours | **Week - 5** Online Session - 3 hours

Aggregates-Selection, BIS Compliance & Testing

- Aggregate grading, shape, durability, and acceptance criteria
- BIS Codes: IS 383, IS 2386 (Parts I–VIII)
- Field and plant-level quality control practices
- R&D case study



Er. Nikhil Kaushik
Manager
NCB

Er. Nikhil Kaushik is Manager at NCB and has about 15 years of experience in concrete technology, with a focus on performance evaluation of concrete making materials. He is engaged in advanced materials testing, waste utilisation, alkali silica reaction and research on construction materials, contributing to sustainable construction practices. He has published 10+ papers and made contributions to BIS committees.

Overview of the Module

This module focuses on aggregate properties such as grading, strength, shape, and durability that influence concrete performance. It explains BIS provisions under IS 383 and testing methods under IS 2386 (Parts I–VIII). Acceptance criteria and field quality control measures are discussed. Plant-level practices for aggregate management are also covered.

Key Takeaways

Participants will understand how aggregate characteristics affect concrete behavior. They will be able to assess aggregate quality as per BIS codes. They will interpret laboratory and field test results accurately. They will recognize potential aggregate-related risks in concrete production.

Field Applications

Participants can prevent aggregate-related failures in concrete structures. They can improve consistency and durability in RMC production. They can implement systematic aggregate quality control practices. This enhances long-term structural performance.

Module 4 | **Week - 6** Online Session - 3 hours | **Week - 7** Online Session - 3 hours

Water & Admixtures-Performance & Compatibility

- Water quality requirements for concrete
- Chemical and mineral admixtures in RMC
- BIS Codes: IS 456, IS 9103
- Compatibility issues and trial mix evaluation
- R&D case study



Dr. Sumedha Moharana
Associate Professor
Shiv Nadar University

Dr. Sumedha Moharana is Associate Professor at Shiv Nadar University, Delhi NCR. She has a teaching experience of nearly 16 years in the area of concrete technology, non-destructive testing, concrete making materials, micro-structural study of concrete hydration and strength development etc. She has published 90+ papers in various national and international journals and conferences.

Overview of the Module

This module explains the quality requirements of water used in concrete and its impact on performance. It covers chemical and mineral admixtures commonly used in RMC operations. Relevant BIS provisions under IS 456 and IS 9103 are discussed. Compatibility evaluation through trial mixes is emphasized.

Key Takeaways

Participants will understand the influence of water quality on concrete properties. They will select suitable admixtures for specific performance needs. They will assess cement–admixture compatibility through trial evaluations. They will interpret performance outcomes in fresh and hardened states.

Field Applications

Participants can optimize workability and strength development through proper admixture usage. They can prevent compatibility-related site problems. They can enhance durability and consistency in RMC production. This improves overall concrete performance.







Module 5

Week - 8
Online Session - 3 hours

Week - 9
Online Session - 3 hours

Concrete Mix Design-Practical & Codal Approach

- Mix proportioning philosophy for RMC
- BIS Codes: IS 10262, IS 456
- Exposure conditions, durability-based design
- Mix approval and documentation
- R&D case study



Er. Arup Ghatak
Group Manager
NCB

Er. Arup Ghatak is Group Manager at NCB and has about 15 years of experience in concrete technology, with a focus on performance evaluation of cement and concrete. He is engaged in materials evaluation, SCMs, concrete mix design, mass concrete and research on construction materials, contributing to performance assessment, and sustainable construction practices. He has published 20+ papers and made significant contributions to BIS committees.

Overview of the Module

This module presents practical mix proportioning methods aligned with IS 10262 and IS 456. It emphasizes durability-based design considering exposure conditions. Systematic documentation and mix approval processes are discussed. Industry case examples are included for better understanding.

Key Takeaways

Participants will design concrete mixes as per codal requirements. They will understand durability and exposure classifications. They will evaluate and modify mix proportions systematically. They will prepare documentation for approvals and compliance.

Field Applications

Participants can develop reliable mix designs for RMC and site use. They can optimize material usage without compromising performance. They can ensure compliance and durability in projects. This strengthens technical decision-making capability.

Module 6

Week - 10
Online Session - 3 hours

Fresh Concrete -Testing & Control

- Workability requirements for placement and pumping
- Test Methods: IS 1199, IS 7320
- Segregation, bleeding, slump loss issues
- R&D case study



Er. Rahul Goel
Head-Technical Services,
UltraTech Ltd.

Sh. Rahul Goel is a cement and concrete technology professional with over three decades of experience, currently associated with UltraTech Cement. His expertise includes cement performance evaluation, concrete quality control, field troubleshooting, mobile laboratory testing, and technical interface with plant operations, along with material testing, compliance with standards, and implementation of quality systems in civil engineering fields.

Overview of the Module

This module discusses fresh concrete properties and workability requirements for placement and pumping. Testing methods as per IS 1199 and IS 7320 are covered. Common issues such as segregation, bleeding, and slump loss are analyzed. Control measures in RMC plants and sites are emphasized.

Key Takeaways

Participants will conduct fresh concrete tests confidently. They will interpret workability and consistency results. They will identify causes of fresh concrete variability. They will understand production and placement controls.

Field Applications

Participants can improve workability management during transportation and placement. They can reduce rejection and wastage at site. They can maintain production consistency in RMC plants. This ensures smooth concreting operations.







Module 7 | **Week - 11** Online Session - 3 hours | **Week - 12** Online Session - 3 hours

Hardened Concrete – Strength & Acceptance

- Strength development and influencing factors
- Test Methods: IS 516
- Acceptance criteria and statistical quality control
- R&D case study



Dr. Shiva Kumar Kandasami
Manager
L&T

Dr. Sivakumar Kandasami is a Civil Engineer, specializing in concrete and materials technology, with extensive experience in durability design for infrastructure projects, including civil nuclear facilities. Currently associated with Larsen & Toubro (L&T), providing technical guidance for execution of concrete works. Expertise includes coordination with structural design and site teams to ensure quality, compliance, and efficient project delivery.

Overview of the Module

This module focuses on strength development and influencing factors. Testing procedures as per IS 516 are explained. Acceptance criteria and compliance requirements are discussed. Statistical quality control principles are introduced.

Key Takeaways

Participants will interpret compressive strength results accurately. They will apply acceptance criteria as per BIS provisions. They will understand variability and statistical evaluation methods. They will diagnose strength-related non-conformities.

Field Applications

Participants can evaluate concrete performance systematically. They can implement statistical monitoring tools in QA/QC systems. They can address strength shortfalls effectively. This improves reliability in RMC operations.

Module 8 | **Week - 13** Online Session - 3 hours | **Week - 14** Online Session - 3 hours

Durability & Exposure Conditions

- Durability concept and service life approach
- BIS Codes: IS 456, IS 2645
- Chloride ingress, sulphate attack, carbonation
- R&D case study



Er. P N Ojha
Joint Director
NCB

Er. P. N. Ojha is Joint Director and Head of the Centre for Construction Development and Research at the NCB, Ballabgarh. A senior expert with more than three decades' experience in cement and concrete, in the field of R&D, concrete technology, durability, condition assessment, and standardisation. He has authored 125+ papers, contributed to IS 456 revisions, and actively represents India in BIS and ISO technical committees.

Overview of the Module

This module introduces durability concepts and service-life approaches. Exposure classifications as per IS 456 are explained. Mechanisms such as chloride ingress, sulphate attack, and carbonation are discussed. Preventive strategies through material selection are emphasized.

Key Takeaways

Participants will identify durability risks in projects. They will apply codal provisions for exposure conditions. They will understand deterioration mechanisms. They will relate mix design to long-term performance.

Field Applications

Participants can design durable concrete for aggressive environments. They can reduce maintenance and repair needs. They can enhance service life of infrastructure assets. This supports performance-based construction.







Module 9

Week - 15
Online Session - 3 hours

Week - 16
Online Session - 3 hours

RMC Plant Operations & Production Control

- RMC plant layout, batching, mixing, and logistics
- Calibration and maintenance practices
- Production consistency and documentation
- R&D case study



Dr. Sanjay Mundra
General Manager
NCB

Dr. Sanjay Mundra is a General Manager and head of Estate Management and Technical Services at the NCB, with 27 years of expertise in concrete technology, RMC, condition assessment, and sustainable construction materials. His research focuses on advanced material testing, advanced electronics, repair and rehabilitation, cathodic protection for sustainable infrastructure. He has published 30+ papers, 1 patent and made contributions to BIS committees.

Overview of the Module

This module provides an overview of RMC plant layout, batching, mixing, and logistics management. Calibration and maintenance practices are discussed. Production consistency and documentation systems are explained. Operational challenges are examined.

Key Takeaways

Participants will understand plant workflow and batching systems. They will recognize the importance of calibration accuracy. They will monitor production consistency. They will maintain proper documentation practices.

Field Applications

Participants can improve operational efficiency in RMC plants. They can reduce production deviations. They can strengthen plant-level quality control systems. This ensures consistent concrete supply.

Module 10

Week - 17
Online Session - 3 hours

Quality Control & Quality Assurance Systems

- QA/QC frameworks in RMC and construction projects
- BIS Codes: IS 4926, IS 1199, IS 516
- Control charts, non-conformance handling
- R&D case study



Dr. B Pandu Ranga Rao
Joint Director
NCB

Dr. B. Pandu Ranga Rao, Joint Director at NCB, has over three decades of experience in civil and structural engineering, with a strong focus on concrete quality assurance. He has contributed to major infrastructure projects, ensuring quality and durability. His expertise includes high-performance and fibre-reinforced concrete, sustainable materials, and QA/QC practices. He has also contributed to BIS committees and holds memberships in several professional bodies supporting the construction sector.

Overview of the Module

This module explains QA/QC frameworks in RMC and construction projects. Relevant BIS codes and testing standards are discussed. Control charts and audit procedures are introduced. Non-conformance handling is explained.

Key Takeaways

Participants will implement structured QA/QC systems. They will use statistical tools for monitoring performance. They will identify deviations and corrective actions. They will ensure audit readiness and documentation compliance.

Field Applications

Participants can strengthen organizational quality systems. They can reduce risks of non-compliance. They can improve reliability of concrete production. This enhances institutional credibility.







Module 11

Week - 18
Online Session - 3 hours

Week - 19
Online Session - 3 hours

Site Practices, Concreting & Curing

- Best practices in placing, compaction, and finishing
- Curing methods and monitoring
- Common site issues and corrective actions
- Self Compacting Concrete
- R&D case study



Er. Amit Prakash
General Manager
NCB

Er. Amit Prakash is General Manager at NCB, with over 20 years of extensive field experience in quality control, quality assurance, and concrete construction. He has contributed to diverse infrastructure projects, including buildings, flyovers, underpasses, convention centres, pre-engineered structures and hospitals with expertise in execution, supervision, and ensuring compliance with construction standards and best practices.

Overview of the Module

This module focuses on site execution practices including placing, compaction, finishing, and curing. Monitoring and supervision requirements are discussed. Common site problems are analyzed. Corrective measures are emphasized.

Key Takeaways

Participants will understand correct concreting procedures. They will evaluate curing adequacy. They will identify execution-related issues. They will implement corrective measures effectively.

Field Applications

Participants can improve site-level quality control. They can reduce defects and rework. They can enhance durability through proper curing. This improves structural performance.

Module 12

Week - 20
Online Session - 3 hours

Role of NDT in QA/QC of Concrete

- Fundamentals and principles of NDT methods for concrete
- Rebound Hammer, Ultrasonic Pulse Velocity (UPV), and Corrosion Assessment
- Interpretation of results for QA/QC and decision-making
- R&D Case study



Dr. Anjaneya Dixit
Asst. Professor,
IIT Roorkee

Dr. Anjaneya Dixit is presesntly working as Assistant Professor at IIT Roorkee with 7 years of academic experience specializing in sustainable construction materials, cement chemistry and material characterization. His major research areas of expertise include carbon storage in cementitious composites and industrial wastes, and development of lightweight concrete. He has published 15+ papers in various national and international journals and conferences.

Overview of the Module

This module covers principles and applications of Non-Destructive Testing (NDT) for evaluating concrete quality without damage. It focuses on integrating NDT methods into QA/QC processes for reliable assessment of strength, uniformity, and durability.

Key Takeaways

Participants will understand major NDT techniques and their appropriate selection for different scenarios. They will develop the ability to interpret test results effectively for quality assurance, defect identification, and performance evaluation.

Field Applications

participants can evaluate in-situ assessment of concrete structures for strength, defects, and durability issues. They can ensure construction quality and contribute in maintenance, repair, and rehabilitation decision-making.







Module 13

Week - 21 Online Session - 3 hours

Week - 22 Online Session - 3 hours

Special, Advanced & Sustainable Concretes

- High-strength and high-performance concrete
- Ultra high-performance concrete (UHPC)
- Fibre-reinforced and sustainable concrete
- R&D case study



Dr. Brijesh Singh
General Manager
NCB

Dr. Brijesh Singh is General Manager and Head of Centre for Continuing Education, NCB. With over 18 years of experience in concrete technology, durability, ultra-high performance concrete, condition assessment and advanced concrete composites. He has published 160+ papers, significantly contributed to BIS committees, including IS 456 revisions, and received multiple national awards for excellence in concrete research and innovation.

Overview of the Module

This module introduces advanced concretes such as HPC, UHPC, and fibre-reinforced systems. Blended cements and SCMs including fly ash, GGBS, and LC3 are discussed. Low-carbon binder systems are covered. Performance requirements and production challenges are examined.

Key Takeaways

Participants will understand characteristics of advanced concretes. They will identify suitable applications in infrastructure projects. They will evaluate sustainability aspects. They will recognize production and placement challenges.

Field Applications

Participants can adopt advanced and sustainable concrete solutions. They can improve performance in specialized projects. They can contribute to low-carbon construction initiatives. This promotes innovation in the RMC sector.

Module 14

Week - 23 Online Session - 3 hours

Week - 24 Online Session - 3 hours

R&D Project Exposure & Emerging Trends

- Exposure to ongoing and completed R&D projects in concrete technology
- Case studies on durability, mix optimization, and failure investigations
- Emerging trends and innovation in concrete materials



Er. P N Ojha
Joint Director
NCB

Er. P. N. Ojha is Joint Director and Head of the Centre for Construction Development and Research at the NCB, Ballabgarh. A senior expert with more than three decades' experience in cement and concrete, in the field of R&D, concrete technology, durability, condition assessment, and standardisation. He has authored 125+ papers, contributed to IS 456 revisions, and actively represents India in BIS and ISO technical committees.

Overview of the Module

This module presents exposure to ongoing and completed R&D projects in concrete technology. Case studies on durability, mix optimization, and failure investigations are discussed. Emerging trends and innovations are highlighted. The link between research and practice is emphasized.

Key Takeaways

Participants will understand how research outcomes translate into industry solutions. They will analyze case studies critically. They will identify innovation opportunities. They will appreciate evidence-based decision making.

Field Applications

Participants can apply research insights to practical challenges. They can enhance troubleshooting strategies. They can support innovation in their organizations. This bridges academia and industry practice.







Module 15 Week - 25
4-day on-site session at NCB Ballabgarh (28 Hours)

Concluding Session R&D and Practical Insights : Lab demonstrations with Industrial Site Visit

Dr Sanjay Mundra
Er. Manish Mandre
Er. Puneet Kaura
Er. Arup Ghatak
Er. Nikhil Kaushik

- Lab demonstrations
  - Physical and Mechanical testing of Aggregates – IS 2386
  - Physical Testing of Hydraulic Cement – IS 4031
  - Tests of Pozzolanic materials – IS 1727, IS 16714, IS 15388
  - Specifications of Concrete Admixture – IS 9103
  - Concrete mix design proportioning – IS 10262
  - Sampling and Analysis of Fresh Concrete – IS 1199
  - Tests for Mechanical and durability properties of hardened concrete – IS 516, RCPT, NT Build 492, Water permeability test, Accelerated carbonation resistance, Sulphate resistance, Sorptivity (ASTM C1585), Acid resistance (ASTM C 267), Corrosion potential measurements (ASTM C 876)
  - NDT, Advanced Calibration laboratory and 3D Concrete printing demo
- R&D Projects and Emerging Trends in Concrete industry
- On-site Industrial visit for real world Exposure
- Concluding session and award of course completion certificate

Overview of the Module

This module comprises onsite exposure at NCCBM, including laboratory demonstrations, interaction with experts, and an industrial site visit. It also includes the concluding session of the programme.

Key Takeaways

Participants will gain firsthand exposure to advanced testing facilities, ongoing R&D activities, and real-world industrial operations. They will consolidate their learning through expert interactions and discussions.

Field Applications

This module enhances practical understanding, reinforces theoretical concepts, and strengthens professional confidence through direct exposure to both national-level R&D facilities and industrial practices.

COURSE FEE

Rs. 50,000 + GST (Includes boarding & lodging during onsite training).

25 % discount for 4 or more participants from any organisation.

Mode of Payment: Online

Canara Bank , Faridabad Main, Haryana, India

SB Account No.: 0330101028220 **IFSC Code:** CNRB0000330

PAN No.: AAATN2477N **TAN No. :** DELN09625A **GST No. :** 06AAATN2477N1Z6

Refund

No refund of course fee will be made once the enrolment of the candidate is confirmed. Fee once paid can be adjusted against replacement or nomination for any other training programme during the calendar year. In case a course is cancelled on account of inadequate participation or any other unforeseeable reasons, the participants will be informed of the cancellation by telephone/e-mail and the fee will be refunded. NCB will not be liable for any other expenses incurred by the company or the participant.

Laboratory Facilities

The programme shall utilize existing laboratories of NCCBM, related to: Cement, aggregate, and concrete testing, Mix design, Fresh and Durability paramaters, NDT etc.

Training Facilities

The campus is beautifully landscaped and has spacious class rooms fully equipped with state-of-the-art teaching aids. Ample well-furnished, air-conditioned accommodation and mess facility is available in the hostel, which is located within the NCB-Ballabgarh Campus.

Certification

Participants who successfully complete the programme will be awarded a Certificate from the National Council for Cement and Building Materials (NCB). The certificate shall be issued subject to a minimum of 75% attendance in the online sessions and on-site sessions/modules.

Registration process

Interested eligible candidate can fill the online application form. Applicants may contact the course coordinator through email/phone for any additional information related to registration for the course.

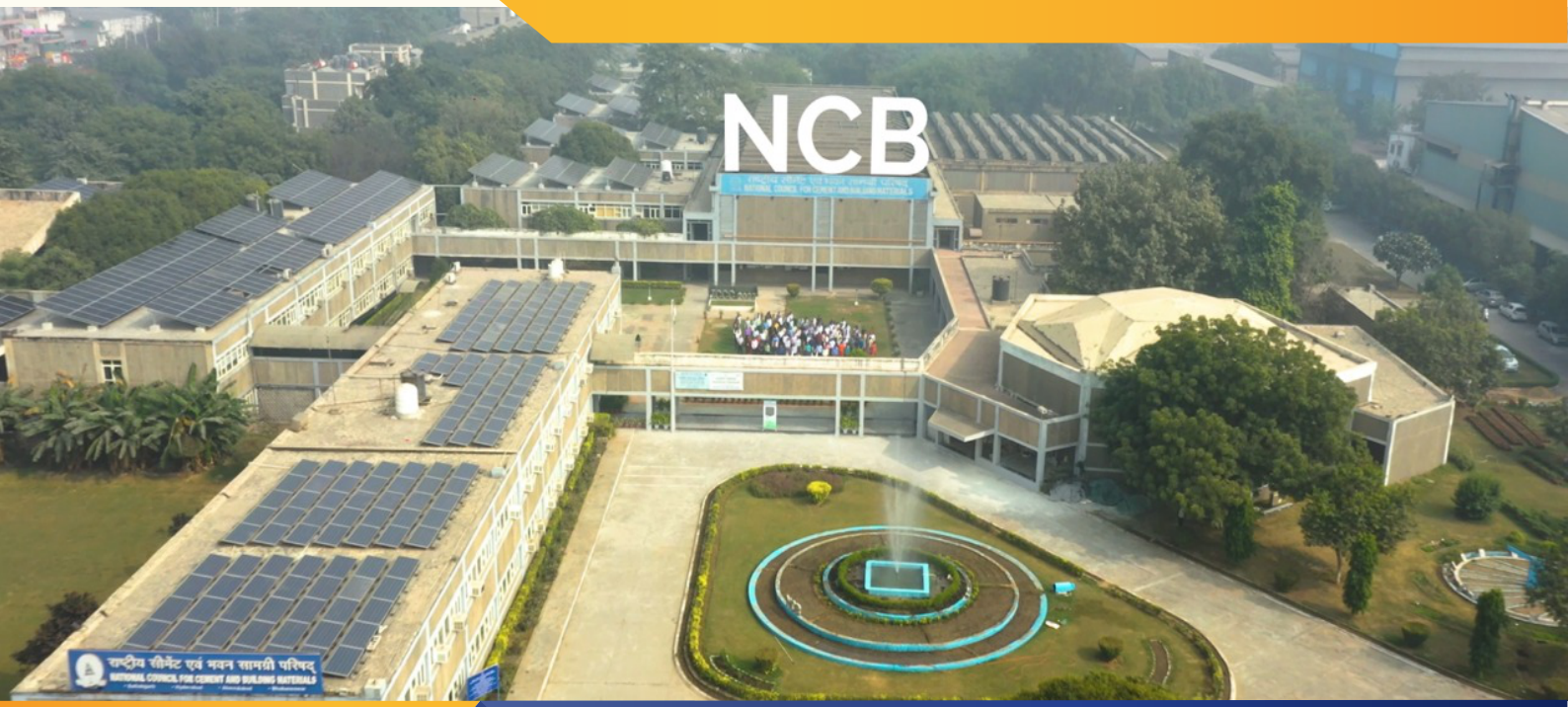
Scan for Registration

Contact Details

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National Council for Cement and Building Materials

(under the administrative control of DPIIT,
Ministry of Commerce and Industry, Govt. of India)

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Published by HOC-CCE & HOC-CIS and Designed by CIS
for National Council for Cement and Building Materials