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Fire Alarm System Design Course - Canadian Codes and Standards

View Course Details

COURSE DATES AND TIMES

Why Our Fire Alarm System Design Course Matters

Fire alarm system design is an essential life-safety system, serving as the first line of defence for occupant protection, property preservation, and compliance with the Canadian Building Code. Improper design or misunderstanding of requirements can lead to costly rework, inspection failures, or even life-threatening system malfunctions.

A well-engineered fire detection system is the foundation of effective building safety. Skilled designers and engineers prepare accurate fire alarm drawings that coordinate smoke detectors, notification devices, and control panels to ensure optimal response time and reliable alarm monitoring.

This Fire Alarm System Design course equips participants with the technical and regulatory knowledge to design, commission, and verify systems that meet or exceed life-safety code requirements. Students learn how to apply both prescriptive and performance-based provisions of the NBCC 2020, achieving full compliance while preparing for the enhanced requirements of the 2025 edition that will govern federal projects.

In an evolving regulatory environment where accountability and reliability are crucial, this training enables professionals to master commissioning and verification processes, enhance design efficiency, and deliver safer, more effective fire alarm systems across all building types.

For those interested in a broader understanding of Canadian life safety systems, consider our Fire Alarm Training course. This 12-hour instructor-led program covers best practices for installation, inspection, testing, and maintenance.

If you work under U.S. codes and standards, our NFPA 72 Training course provides in-depth instruction on fire alarm system design, installation, inspection, testing, and maintenance in compliance with NFPA 72.

A well-designed fire alarm system is engineered to alert occupants quickly during a comprehensive fire event while also detecting hazards such as carbon monoxide that may not be visible. By integrating heat detectors and other sensors correctly, systems provide accurate signals to occupants and emergency services, reducing response time and improving life safety. Proper design, zoning, and device selection also minimize false alarms, ensuring alarms are credible, trusted, and acted on immediately when real hazards occur.

Learning Outcomes

Upon completion of this fire alarm system design course, students will be able to:

- Interpret and apply fire alarm design requirements from the 2020 NBCC and related ULC standards.
- Understand the relationship between the NBCC, National Fire Code of Canada (NFC), and referenced ULC standards.
- Identify key differences and transitional implications of the 2025 NBCC for federally regulated projects.
- Design compliant fire alarm system layouts for various occupancy types and building classifications.
- Select appropriate system types (conventional, addressable, or networked) based on project needs and code criteria.
- Understand the criteria for reviewing and accepting fire alarm Verification and Integrated Systems Test Reports (CAN/ULC 537, Standard for Verification of Fire Alarm Systems and CAN/ULC 1001, Standard for Integrated Systems Testing of Fire Protection and Life Safety Systems)”
- Ensure proper documentation, coordination, and communication with Authorities Having Jurisdiction (AHJs).
- Successfully navigate common design challenges and integration issues with other interconnected systems, including fire sprinklers, EECOM radio repeaters, elevators, smoke control, and smoke venting systems.
- Formulate an enhanced field review process that identifies errors, omissions, and deviations from your design, NBCC, local Bylaws, and CAN/ULC 524, Standard for Installation of Fire Alarm Systems.

WHO SHOULD ATTEND

This fire alarm system design course is designed for a wide range of industry professionals involved in the planning, design, and maintenance of fire alarm systems, including:

- Electrical and fire protection engineers
- Designers and consultants working on building systems
- Building code officials, plan reviewers, and inspectors
- Electrical contractors and project managers
- Commissioning agents and verification professionals
- Facility managers responsible for federal or institutional projects
- Safety coordinators and compliance officers in the construction and building sectors

STUDENTS RECEIVE

- Fire Alarm System Design Course Certificate
- 1.2 Continuing Education Unit (CEU) Credits (12 Professional Development Hours)
- $100 Coupon toward any future Electricity Forum event (restrictions apply)
- 100-Page Electrical Safety Handbook - Value $20 (details below)
- FREE Magazine Subscription (Value $25)
- Course Presentations in PDF Format

COURSE OUTLINE

Fire Alarm System Design Course Outline

Day 1 – Fundamentals and Code Framework

1. Introduction to Fire Alarm Systems

- Purpose and function of fire alarm systems
- Role in life safety, property protection, and code compliance
- Overview of key system components (initiating devices, notification appliances, control units, power supplies)

2. Canadian Code and Standard Structure

- Relationship between the NBCC, NFC, and ULC standards
- How provinces and territories adopt and amend the NBCC
- Understanding the implications for designers and engineers work

3. 2020 NBCC Fire Alarm Design Requirements

- Application of Part 3 (Fire Protection, Occupant Safety and Accessibility)
- Fire alarm requirements by occupancy classification to detect smoke
- Fire separations, fire compartments, and alarm zoning
- Smoke detection and sprinkler system integration

4. Referenced Standards Overview

- **CAN/ULC 524**: Standard for Installation of Fire Alarm Systems
- **CAN/ULC 537**: Standard for Verification of Fire Alarm Systems
- **CAN/ULC 536**: Standard for Inspection and Testing of Fire Alarm Systems
- **CAN/ULC 561**: Standard for Installation and Services for Fire Signal Receiving Centres and Systems
- **CAN/ULC 1001 Standard for Integrated Systems Testing or Fire Protection and Life Safety Systems**

5. System Types and Design Criteria

- Conventional, addressable, and networked systems
- Power supplies, standby capacity, and wiring requirements
- Signal transmission methods and fire alarm control panels

Day 2 – Fire Alarm System Design - Application, Design Practice, and Emerging Standards

6. Design Process and Documentation

- Design intent and system layout
- Drawing standards and symbols
- Preparing design documents and specifications
- Coordination with electrical, architectural, and mechanical disciplines

7. Notification and Audibility Requirements

- Audible and visual signal criteria under NBCC and ULC standards
- Accessibility requirements (CSA B651)
- Special considerations for high-rise and mixed-use buildings

8. Verification, Inspection, and Commissioning

- Requirements under CAN/ULC 537, CAN/ULC 536, CAN/ULC 561, and CAN/ULC 1001
- Roles and responsibilities of designers, contractors, and authorities having jurisdiction (AHJs)
- Documentation and sign-off procedures

9. Common Design Challenges and Solutions

- Addressing retrofit and existing building scenarios
- Integration with mass notification systems
- Fire alarm network design and cybersecurity considerations

10. Transition to the 2025 NBCC for Federal Projects

- Overview of key proposed 2025 NBCC and referenced ULC updates
- New performance-based design approaches
- Federal adoption timeline and implications for consultants
- Designing to meet both the 2020 provincial and 2025 federal requirements

Course Materials

- Course manual with NBCC excerpts and ULC standard summaries
- Design checklists and sample drawings
- Reference guide to provincial code adoption schedules
- Digital certificate of completion

COURSE TIMETABLE

Both days:

Start: 10:00 a.m. - Eastern Time
Finish: 4:30 p.m. - Eastern Time

Contact us Today for a FREE quotation to deliver this course at your company's location.

Request Quote