COURSE SYLLABUS

# Construction Professional Course Online

This course provides comprehensive, online training in construction fundamentals, management, blueprint reading, scheduling, materials, and estimating. This program prepares students with the technical knowledge and professional skills needed to succeed in today's construction industry.

Group classes (Live Online) and onsite training are available for this course. For more information, email partnerships@vdci.edu or visit: https://vdci.edu/courses/construction-professional-course



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## Course Outline

This package includes these courses

- Site Utilities & Foundation Construction Course Online (10 Hours)
- Building Structure Course Online (10 Hours)
- Building Enclosure Course Online (10 Hours)
- Interiors & Finish Work Course Online (10 Hours)
- Fundamentals of MEP for Buildings Course Online (20 Hours)
- Building Construction Fire Protection Course Online (10 Hours)
- Residential Blueprint Reading Course Online (10 Hours)
- Commercial Blueprint Reading Course Online (20 Hours)
- Intro to Construction Management Course Online (20 Hours)
- Intermediate Construction Management Course Online (20 Hours)
- Construction Scheduling Course Online (30 Hours)
- Construction Materials Course Online (30 Hours)
- Intro to Construction Estimating Course Online (20 Hours)
- Construction Estimating with Bluebeam Course Online (30 Hours)

Attend up to two (2) of these elective courses for free (all are optional).

- Communication & Connection Course Online
- Self-Management Skills Course Online
- Teamwork, Collaboration & Leadership Course Online
- AI Workflows for AEC Professionals Course Online

### Site Utilities & Foundation Construction Course Online

Build a strong foundation in construction site preparation and foundation placement with this introductory course in the

Construction Fundamentals series. You'll learn how construction teams operate on-site, explore different soil types and subsurface conditions, and understand the equipment and heavy machinery used during site work. The course also covers site utilities, earthwork, excavation support, and foundation installation, along with the history of concrete, concrete as a material, and the role of grade beams and foundations. Designed to be practical and job-ready, this course gives you the knowledge needed to handle real-world construction challenges with confidence.

- Key concepts of site utilities, including water, sewer, and drainage systems.
- Best practices for planning and performing earthwork, such as excavation, soil compaction, and grading.
- Detailed overview of foundation systems, including shallow and deep foundations.
- How to analyze and interpret soil reports to guide foundational decisions.
- Methods for ensuring site safety and compliance with construction codes and standards.
- Techniques for coordinating utility installations with other site development activities.
- Insights into sustainable site development to minimize environmental impact.

## Building Structure Course Online

Strengthen your understanding of building structures with this course, part of the Construction Fundamentals course series. You'll gain an in-depth knowledge of structural systems, including techniques and best practices for design and evaluation. Learn how to assess structural components, make informed design decisions, and apply industry standards to ensure safety, stability, and efficiency.

- Understand how structural systems support and distribute loads.
- Key concepts of material properties, such as strength, durability, and load-bearing capacities.
- Techniques for assessing structural stability and identifying potential risks.
- How to interpret structural drawings and effectively communicate with engineers and construction teams.
- The principles of sustainable building practices to optimize performance and reduce environmental impact.
- Real-world applications of structural codes and regulations for safety and compliance.

## Building Enclosure Course Online

Enhance your construction expertise by mastering the critical element of building enclosures. This course, part of the Construction Fundamentals course series, teaches you how to design and construct durable, energy-efficient building enclosures that maintain structural integrity, comfort, and environmental control. You'll learn about key components like exterior walls, cladding systems, roofing, and curtain walls, along with strategies for moisture and thermal control.

- Understanding the primary functions and components of building enclosures (walls, roofs, foundations).
- Controlling thermal, moisture, and air flow to improve energy efficiency.
- Selecting appropriate materials based on climate, budget, and building use.
- Identifying and addressing common issues like moisture intrusion and thermal bridging.
- Implementing sustainable practices to reduce environmental impact.
- Collaborating effectively with professionals to optimize building enclosure performance.

## Interiors & Finish Work Course Online

This course focuses on the detailed work that brings a project to completion, emphasizing both interior finishes and site components for buildings. It is the fourth course of the Construction Fundamentals course series. You will learn about the

different types of walls and interior partitions, the sequence of building interior partitions, different types of drywall and drywall finishes, the construction sequence for finishes, different options for paint, flooring, ceilings, and casework, and the sequence for installing specialties and furniture options.

- Learn about the intricate steps involved in completing building interiors, from drywall installation to painting, millwork, and flooring.
- Understand the principles of exterior site work, including paving, hardscapes, landscaping, and site furniture installation.
- Explore the variety of materials used in finishes, their properties, and their best applications to ensure durability and aesthetic appeal.
- Master the techniques needed to communicate effectively with design, construction, and subcontractor teams to execute finishing phases seamlessly.
- Gain expertise in assessing project quality, ensuring compliance with design specifications, and performing final inspections.
- Learn to manage budgets and timelines specific to the finishing phases of a construction project.

## Fundamentals of MEP for Buildings Course Online

Understanding MEP systems is a critical foundation for construction and design projects and is the focus of the fifth course in the Construction Fundamentals series. This course introduces the essential principles of Mechanical, Electrical, and Plumbing systems that support building performance, efficiency, and safety, including HVAC systems and controls, thermal comfort, indoor air quality, and plumbing for domestic water.

- Discover the fundamentals of HVAC (Heating, Ventilation, and Air Conditioning) and how these mechanical systems contribute to occupant comfort and building performance.
- Explore the components of building electrical systems, including power distribution, lighting, and low-voltage systems such as AV, telecom, and data.
- Learn the principles of plumbing systems, including water supply, drainage, and waste systems, and their role in maintaining hygiene and safety in buildings.
- Understand how MEP systems integrate within a project and the importance of designing them for efficiency, sustainability, and cost-effectiveness

## Building Construction Fire Protection Course Online

This course, the final course in the Construction Fundamentals Series, covers the critical startup, testing, and closeout phases of fire protection systems in building construction. You'll learn to ensure fire suppression and alarm systems are designed, installed, and maintained according to industry standards. Key topics include wet-pipe and dry-pipe fire suppression systems, fire alarm components, life-safety requirements, and final MEP activities. By the end of the course, you'll gain practical knowledge of compliance with fire safety codes and regulations.

- Designing and installing fire protection systems, including wet-pipe and dry-pipe suppression systems.
- Conducting startup, testing, and inspection of fire protection systems.
- Understanding fire safety regulations and ensuring compliance.
- Documenting system performance and ensuring quality assurance.
- Troubleshooting and resolving issues during system commissioning.
- Communicating effectively with engineers, inspectors, and stakeholders.

## Residential Blueprint Reading Course Online

Taught by a licensed architect, this course is designed to provide you with a thorough understanding of how to interpret and analyze residential construction blueprints. This comprehensive, instructor-led course is ideal for beginners looking to gain

essential skills, as well as for seasoned professionals seeking to improve their ability to collaborate on residential projects.

- Demonstrate an understanding of the inter-relationship between the drawings included in a set of Construction Documents (blueprints).
- Analyze different drawings and see how scale is presented throughout a set of Construction Documents.
- Evaluate the similarities between all sets of blueprint construction documents submitted for building permits.
- Recognize the need for consistency in presenting information in all types of Construction Documents in this online blueprint reading course.

## Commercial Blueprint Reading Course Online

Learn to interpret and analyze commercial construction blueprints in this class taught by a licensed architect. Designed for construction professionals and students, this course focuses on mixed-use commercial projects, including hotel, retail, and parking structures. You'll develop skills to read architectural, structural, mechanical, and electrical plans.

- Gain a comprehensive understanding of architectural, structural, mechanical, and electrical plans as applied to a mixed-use commercial construction project.
- Learn to read and interpret symbols, notations, and technical details in accordance with industry standards. Evaluate the similarities between all sets of construction documents submitted for building permits.
- Work with real-world construction drawings and documents to build practical skills.
- Understand how blueprints are used to estimate costs, plan projects, and ensure on-site accuracy during construction.

## Intro to Construction Management Course Online

This course offers a solid foundation in construction management, covering everything from project planning to completion. Ideal for aspiring professionals or those transitioning into the field, you'll learn key skills like scheduling, cost estimation, and effective communication with stakeholders. Through real-world examples and exercises, you'll gain practical experience in managing construction projects successfully. Topics include construction technology, reading construction documents, and contract administration. Whether you're new to the industry or moving into a management role, this course gives you the knowledge needed to succeed.

- Key principles of construction management and project organization
- Essentials of construction technology and how it applies to the industry
- How to interpret and analyze construction documents effectively
- Fundamentals of contract administration and legal requirements in construction
- Practical strategies for managing resources, schedules, and budgets
- Communication and leadership skills to manage teams and stakeholders
- Insight into industry best practices and real-world applications
- Overview of the key parties involved, industry sectors, design vs. construction
- Overview of the major project delivery systems, payment/procurement options, bonds, and insurance

## Intermediate Construction Management Course Online

Take your construction management skills to the next level with this intermediate course. This course is designed for individuals with a foundational knowledge of construction management and aims to expand your expertise through practical applications and advanced concepts. You will learn how a construction project is managed from start to finish. Y ou'll learn about cost estimating and scheduling concepts, earthwork estimating, and contracts. Get a head start in the construction industry with these useful insights, tips, and terminology.

- Advanced project scheduling and resource allocation strategies.
- Budget estimation and cost control techniques.
- Risk assessment and management in construction projects.
- Effective communication and collaboration in multidisciplinary construction teams.
- Insights into regulatory compliance and contract administration.
- Overview of safety plans, quality plans, site logistics plans, phasing plans, and stormwater management plans.
- Overview of document control, submittals, RFIs, issue management, and jobsite records.

## Construction Scheduling Course Online

Learn the essential skills to plan, organize, and manage construction projects effectively with Smartsheet. From understanding scheduling basics to creating detailed project timelines, this course provides experience using Smartsheet to build and maintain professional construction schedules.

- The fundamentals of creating construction schedules tailored to project requirements
- Techniques for utilizing scheduling software to streamline project timelines and workflows
- Strategies for identifying and managing critical paths to avoid delays and ensure timely completion
- Best practices for resource allocation and balancing workloads across project teams
- Methods for monitoring progress and updating schedules to adapt to changing project conditions
- Tips for communicating schedules with stakeholders and maintaining transparency throughout the project lifecycle

## Construction Materials Course Online

The course provides a clear, practical overview of the materials and systems used in both residential and commercial construction, from concrete foundations through roofing systems. It covers how key construction materials are used, their properties, and sustainability considerations, giving you the knowledge needed to make informed decisions on construction projects.

- Understand the properties and uses of essential construction materials, including concrete, steel, wood, and more
- Explore the latest innovations in sustainable and green construction materials
- Learn how to evaluate and select the appropriate materials for various project requirements
- Gain practical knowledge on applying materials in both residential and commercial contexts
- Develop skills to assess material performance, durability, and cost-effectiveness
- Discover industry trends and best practices for using materials in modern construction projects

## Intro to Construction Estimating Course Online

This course will show you the purpose of construction estimating, the tools used, and the skills required for construction estimating. You will go over quantity takeoffs and how to determine prices based on estimated quantities. The course wraps up discussing cost estimate proposals and what is included and excluded when creating an estimate.

- Understand the fundamentals of construction estimating for residential and commercial projects.
- Learn to interpret architectural and structural plans to extract relevant cost-related data.
- Master different types of estimates, such as conceptual, preliminary, and detailed estimating .
- Gain insight into quantity surveying, estimating takeoffs, labor costs, equipment costs, and contingency planning.
- Explore industry-standard tools and software used for creating precise cost estimations.

- Develop problem-solving skills to analyze discrepancies and mitigate cost overruns effectively.

## Construction Estimating with Bluebeam Course Online

Learn how to perform accurate digital takeoffs and organize construction estimates in this class. Designed for contractors, estimators, and construction professionals, this course focuses on using Bluebeam Revu to generate quantity reports, streamline workflows, and prepare data for project proposals.

- Build a solid foundation in digital estimating by learning key concepts such as takeoffs, quantities, and bid preparation using Bluebeam Revu.
- Practice using Bluebeam's measurement, markup, and dynamic fill tools to calculate quantities across all building systems, including walls, windows, flooring, and roofing.
- Learn to manage data using tool chests, layers, spaces, and customizable columns. Export your takeoffs into shareable, editable reports for clients or team use.
- Apply your skills to real project drawings with structured exercises and assignments that mirror professional estimating workflows.