VectorSolutions™ | RedVector

ONLINE TRAINING CATALOG

AEC PRO+ SUBSCRIPTION

Title	Hours	Level	Description
LIVE INTERACTIVE WEBINARS			**Live webinars are only available with AEC PRO+ subscription.** We continuously update the list of available webinars. For the upcoming live webinars, please click here or copy and paste this link into your browser: https://www.redvector.com/training-for-individuals/course-search/#Webinars Note: Live webinars are delivered via GoToWebinar. Session instructions will be emailed to you 24-48 hours prior to the webinar and the morning of the webinar. If you have not received your instructions for any reason, please call Client Support (1-866-546-1212) the day of the event. Webinars are live and interactive. Students will have the ability to directly interact with and ask questions of the presenter.
2012 International Green Construction Code (IgCC) Fundamentals Part 1	2	Fundamental	The International Green Construction Code (or IgCC) Fundamentals series will provide an overview of the critical concepts of the IgCC. The series will address how the IgCC regulates new construction, existing construction, multiple occupancy classifications and community development. It will also address how the IgCC relates to ASHRAE/189.1, Standard for the Design of High-Performance Green Buildings. This particular course, Part One, will explain chapters 1 through 5 of the IgCC. Developed in partnership with the International Code Council®.
2012 International Green Construction Code (IgCC) Fundamentals Part 2	2	Fundamental	The International Green Construction Code (or IgCC) Fundamentals series will provide an overview of the critical concepts of the IgCC. The series will address how the IgCC regulates new construction, existing construction, multiple occupancy classifications and community development. It will also address how the IgCC relates to ASHRAE/189.1, Standard for the Design of High-Performance Green Buildings. This particular course, Part Two, will explain chapters 6 through 12 of the IgCC, as well as the appendices. Developed in partnership with the International Code Council®.
2012 International Residential Code (IRC) Update	2	Fundamental	It is important to have an up-to-date residential construction code addressing the design and construction of one- and two-family dwellings and townhouses to protect the health and safety of the public as well as provide affordable housing. There have been key changes made to the International Residential Code® (IRC®) since the 2009 edition. This course will identify important changes in the IRC from 2009 to 2012 edition. Participants will be presented with those changes that will most impact their use of the code when they adopt the 2012 IRC. The learner will receive an overview of the most important code changes. ATTN: This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying 2-hours of credit toward the required continuing education.
2015 International Building Code Essentials – Code	2	Fundamental	Some buildings have a high level of hazards that may affect people inside and outside the building, as well as the emergency responders. This interactive online course teaches you about the International Building Code and how it's used to regulate building occupancy and hazards. You will learn about the

Title	Hours	Level	Description
Administration, Enforcement, and Building Planning			code adoption process and how the code is enforced through the review of construction plans and the inspection of the work. You will also learn about the differences between the types of construction and how they are addressed in the design of a building. This course will outline the process to determine the size of buildings based on the occupancy classification and type of construction. Developed in partnership with the International Code Council®.
2015 International Building Code Essentials – Fire Safety	1	Fundamental	Fire and smoke are the leading causes of death in buildings. Fire can spread rapidly within a building and, in some cases, from building to building. This interactive online course teaches you about the International Building Code and how it's designed to limit the spread of fire inside and outside of buildings. You will learn about active and passive fire protection and the different ways buildings and occupants are protected from fire. Developed in partnership with the International Code Council®.
2015 International Building Code Essentials – Health Safety	1	Fundamental	For people to be healthy, we must have certain basic things. We need adequate light to work or live in a building. We need fresh air that is free from contaminants. When it is cold, we need to be provided with heat to keep from getting sick. We also need freshwater and sanitary waste facilities. In this interactive online course, you will learn about the International Building Code requirements for providing a healthy environment in which to live and work. Developed in partnership with the International Code Council®.
2015 International Building Code Essentials – Life Safety	2	Fundamental	Whenever an emergency situation happens in a building, it is important to evacuate people in a safe and efficient manner. This interactive online course teaches you about the International Building Code and how it regulates exit systems. You will learn how to get people out of a building in an emergency and how people with physical disabilities get access to services just like everyone else. You will also learn code requirements designed to protect people from building hazards. Developed in partnership with the International Code Council®.
2015 International Building Code Essentials – Structural Safety	1	Fundamental	Many structural forces are placed on a building over the intended life of the structure. Natural or environmental forces, as well as man-made loads, are placed on the building. The basic design parameters outlined in the code for the design of a structure provide a minimum standard to ensure that the building withstands the forces applied to it. In this interactive online course, you will learn about how the International Building Code regulates the structural design of buildings, as well as how it regulates the kinds of materials used in the construction of buildings. Developed in partnership with the International Code Council®.
2015 International Building Code: Significant Changes to Structural Provisions	2	Intermediate	This course is an overview of the significant structural changes to the 2015 International Building Code® (IBC®) and referenced standards, including ASCE/SEI 7-10. Topics include changes to scope and submittal requirements, deflection limits, and new referenced wood materials, live loads for façade safety equipment, photovoltaic panels and seismic maps. Developed in Partnership with the International Code Council®.

Title	Hours	Level	Description
2015 International Energy Conservation Code - Commercial Essentials	2	Fundamental	This course will demonstrate the critical concepts of the 2015 International Energy Conservation Code for commercial buildings. These concepts provide a basis for the correct use of the code in the design, plan review, inspection, and analysis of commercial building projects. It will provide a clear understanding and correct use of the requirements identified by these basic code provisions, tables and categorizations. You will be able to apply the code in clear-cut situations and build your understanding of the intent of the code when asked to make code compliance decisions in commercial building projects. Developed in partnership with the International Code Council®.
2015 International Energy Conservation Code - Residential Essentials	2	Fundamental	This course will demonstrate the critical concepts of the 2015 International Energy Conservation Code for residential buildings. These concepts provide a basis for the correct use of the code in the design, plan review, inspection, and analysis of residential building projects. It will provide a clear understanding and correct use of the requirements identified by these basic code provisions, tables and categorizations. You will be able to apply the code in clear-cut situations and build your understanding of the intent of the code when asked to make code compliance decisions in residential building projects. Developed in partnership with the International Code Council®.
2015 International Fire Code Essentials – General Safety Precautions	2	Fundamental	How well versed are you in the safety requirements laid out by the 2015 International Fire Code Essentials? In this online interactive course, we give you detailed instruction in code administration, general precautions against fire, and emergency planning and preparedness. Developed in partnership with the International Code Council®.
2015 International Fire Code Essentials – Hazardous Materials	2	Fundamental	Unwanted fires injure and kill thousands annually and inflict a monetary impact on communities. Did you know that over 40 percent of the businesses that experience a fire never reopen because they lose their customer base? That is why fire code enforcement is an important public safety function. In this interactive online course, you will learn the basics of the fire code and how to properly apply the code to the most commonly encountered hazards. You will also review the general requirements for hazardous materials and some of the requirements for the proper storage and handling of compressed gasses and flammable and combustible liquids. Developed in partnership with the International Code Council®.
2015 International Fire Code Essentials – Site and Building Services	2	Fundamental	Fires can cause significant injury or loss of life. It is important to have services in place so firefighters can quickly gain access to a building in the event of an emergency. This interactive online course teaches you about the International Fire Code and how it regulates building services. You will learn about fire service features including roadways for fire department access, water supply manual firefighting operations and means of identifying buildings through its address or other markings. You will also learn about selection and installation requirements for decorative materials and furnishings that could become sources of fuel for fires. Developed in partnership with the International Code Council®.

Title	Hours	Level	Description
2015 International Fire Code Essentials – Special Processes and Building Uses	2	Fundamental	Proper handling of flammable and combustible materials can significantly reduce hazards to property and people. This interactive online course teaches you about the 2015 International Fire Code® (IFC®) and regulations on handling and storage of combustible material. You will learn about sources of ignition, storage, use and handling of flammable and combustible liquids and the operation and maintenance of flammable finishing activities. You will also learn about combustible dust production operations and fire safety during construction and demolition. Developed in partnership with the International Code Council®.
2015 International Fire Code® Essentials – Fire/Life Safety Systems and Features	2	Fundamental	Unwanted fires injure and kill thousands annually and inflict a monetary impact on communities. Did you know that over 40 percent of the businesses that experience a fire never reopen because they lose their customer base? That is why fire code enforcement is an important public safety function. In this interactive online course, you will learn about provisions requiring a fire protection system in the 2015 International Fire Code® (IFC®) and the 2015 International Building Code® (IBC®), including required documents, testing, and procedures for impairment and monitoring. You will also learn requirements for automatic sprinkler systems, including key terms, design and installation standards, types, and other vital requirements. Finally, you will explore means of egress systems and various components, such as load, width, distance, illumination, and maintenance. Developed in partnership with the International Code Council®.
2015 International Fire Code®: Significant Changes	2	Fundamental	Maintaining the life safety of building occupants, the protection of emergency responders, and limiting the damage to a building and its contents is of paramount importance. The purpose of 2015 International Fire Code®: Significant Changes is to familiarize fire officials, building officials, plans examiners, fire inspectors, design professionals and others with many of the important changes in the 2015 International Fire Code (IFC®). This interactive, online course is designed to assist code users in identifying the specific code changes that have occurred and, more important, in understanding the reasons behind the changes. It is also a valuable resource for jurisdictions in their code adoption process. Developed in partnership with the International Code Council®.
2015 International Plumbing, Mechanical, and Fuel Gas Code: Significant Changes	1	Fundamental	Understanding and following plumbing, mechanical, and fuel gas code requirements can significantly reduce hazards to property and people. This interactive online course teaches you about important changes to the plumbing, mechanical, and fuel gas codes. This course is designed to assist code users in identifying the specific code changes that have occurred and, more important, in understanding the reasons behind the changes. Developed in partnership with the International Code Council®.
2015 International Residential Code (IRC): Significant Changes	3	Intermediate	This course reviews and analyzes selected significant changes from Chapters 1-4 of the 2015 International Residential Code (IRC). It assists building officials, plans examiners, inspectors and design professionals in identifying the specific code changes in Chapters 1-4 that have occurred and understanding the reason behind the changes. This course uses the Significant Changes to the International Residential Code, 2015 Edition.

Title	Hours	Level	Description
			Topics include changes to accessory structure scoping, guard height, wind speed and exposure category determination, discussion of a new standard for sunrooms, new tables for minimum footing size, clarification of townhouse separation, emergency escape and rescue openings, stairway illumination and fire protection of floors, and a new requirement for a written statement of the reason for disapproval of an alternate material or method. Developed in Partnership with the International Code Council®.
2015 International Residential Code® Essentials – Code Administration and Site Development	1	Fundamental	Did you know that the International Residential Code® (IRC) is a comprehensive, stand-alone residential code that establishes minimum regulations for the construction of one- and two-family dwellings and townhouses up to three stories in height, including provisions for fire and life safety, structural design, energy conservation and mechanical, fuel-gas, plumbing and electrical systems? These codes serve primarily to protect the safety and welfare of the building occupants and the public. In addition to providing a better understanding of the code provisions and their development, the additional content of this course is organized to correspond to the order of construction, beginning with sitework. Structural topics include conventional footings and foundations (including the fundamentals of soil capacity). Developed in partnership with the International Code Council®.
2015 International Residential Code® Essentials - Health and Safety	1	Fundamental	The health, safety, and welfare of the dwelling occupants is of primary concern to anyone involved in the design, construction, or inspection of residential buildings. The International Residential Code® (IRC) sets minimum requirements for the most commonly encountered building practices. In this interactive, online course you will explore such topics as a safe means of exiting the building and protection from falls and from the hazards associated with breaking glass. The code also sets minimum room dimensions to support a healthy living environment. Other requirements in the code address fire safety and air supply and support concerns for chimneys and fireplaces. Developed in partnership with the International Code Council®.
2015 International Residential Code® Essentials - Protection, Utilities, Conservation, and Hazards	2	Fundamental	Protecting the public is an important part of your job. As part of its purpose statement to protect the health and general welfare of the public, the International Residential Code® (IRC) sets minimum requirements for durable interior and exterior finishes, as well as for providing weather protection. Permanently installed equipment and systems that control environmental conditions of a dwelling are significant in what you plan for and do. Part of this course will focus on common heating, ventilating, and air conditioning (HVAC) systems, gas-fired appliances and gas piping systems. The IRC also covers plumbing system design and installations typical of dwelling construction, as well as focusing on commonly encountered electrical installations for services, branch circuits, devices and fixtures in IRC-regulated buildings. Also addressed in this interactive, online course are the prescriptive methods of the IRC for effective use and conservation of energy through proper design and construction of dwellings and information on structural and environmental hazards often associated with dwelling and accessory building construction. Developed in partnership with the International Code Council®.

Title	Hours	Level	Description
2015 International Residential Code® Essentials - Structural	1	Fundamental	When following conventional construction of residential buildings, protecting the safety and welfare of the building occupants and the public is a primary concern. But as a professional, you don't want to feel backed into a corner by standards. The 2015 International Residential Code® provides comprehensive, easy-to-use standards that afford the greatest design flexibility in recognizing other methods and materials of construction. This interactive, online course explains the difference between “prescriptive” and “performance” requirements. Prescriptive structural design requirements to resist the forces of wind, earthquake and snow are described and illustrated in an easy-to-understand way. Structural topics include conventional wood floor, wall and roof framing, and engineered wood products. Developed in partnership with the International Code Council®.
2015 National Design Specification for Wood Construction	1	Fundamental	In order to maintain the safety and welfare of the population in the United Stated, the structural design requirements as defined in the building codes are consistently updated. Traditionally this occurs in 3-year cycles. In 2015 the American Wood Council updated the National Design Specification for Wood Construction (NDS). As part of the update there were significant changes to the Special Design Provisions for Wind and Seismic (SDPWS). The last significant change to the SDPWS occurred in 2008. This interactive online course will highlight the significant changes in the NDS including the addition of Cross Laminated Timber. Key criteria will be discussed and numerical examples will be provided illustrating the design changes.
2017 NEC Changes: Communications Systems	1	Intermediate	Proper wiring of electrical systems is essential to protecting life and property. Understanding the latest code requirements will ensure safe installation and operation of electrical systems for years to come. Articles 725 through Chapter 8 of the National Electrical Code (NEC) contain requirements for limited energy and communications systems. This interactive online course will teach you about changes made in the articles for remote-control, signaling, and power-limited circuits [725]; communications circuits [800]; and coaxial cables [820]. Notable changes include cable routing assemblies and communications raceways for control circuits, a major change to address fires from limited energy circuits, revisions to requirements for unlisted cables entering buildings, grounding of primary protectors, uses permitted for under-carpet communications wires and cables, and separation requirements for coaxial cables.
2017 NEC Changes: Special Equipment	1	Intermediate	Do you keep up with changes to code? In this interactive online course we cover Chapter 6 of the 2017 National Electrical Code (NEC) and the changes it contains for special equipment requirements. Several changes were made in the articles for special equipment, including signs, electric vehicle charging systems and swimming pools. Notable changes include new requirements for signs with retrofitted illumination systems and changes to wiring methods for swimming pools and similar installations.
2017 NEC Changes: A New Process and Five New Articles	1	Intermediate	The National Fire Protection Association (NFPA) used a new process for considering changes to the 2017 National Electrical Code (NEC). The NEC revision process will be briefly discussed. Additionally, the 2017 NEC will have five new articles covering Fixed Resistance and Electrode Industrial Process Heating Equipment, Large-Scale Photovoltaic (PV) Electric Supply Stations, Energy Storage Systems, Stand-Alone Systems, and Direct Current Microgrids.

Title	Hours	Level	Description
2017 NEC Changes: Appliances and Equipment	1	Intermediate	Chapter 4 of the 2017 National Electrical Code contains requirements for appliances and equipment. Several changes were made in Article 400 for flexible cords and flexible cables, 408 for panelboards, 422 for appliances, 440 for air conditioning and refrigerating equipment, and others. In this interactive, online course, we will discuss some notable changes including new rules for service panelboards, new listing requirements for appliances, new requirements for marking the available fault current, and a new equipment grounding conductor requirement for some air-conditioners.
2017 NEC Changes: Branch Circuit, Feeder and Services	2	Intermediate	Chapter 2 of the 2017 National Electrical Code (NEC) contains requirements for wiring of grounded conductors, branch, feeder and service conductors. Several changes were made for branch circuit conductors, feeder conductors and service conductors in Articles 210, 215, and 230, and, as always, they are some of the biggest in the entire Code. This interactive, online course covers changes that include new and revised rules for GFCI and AFCI protection, dwelling unit circuiting and receptacles outlet revisions, fixing the electric service receptacle rule, adding required lighting, adding receptacles in commercial buildings(!), clarifying how to size feeders, and new listing rules for service equipment, and others as well.
2017 NEC Changes: Conductors and Wiring Methods	1	Intermediate	Chapter 3 of the 2017 National Electrical Code contains requirements for conductor sizing and wiring methods. Several changes were made in Article 310 and the articles covering cable and raceway wiring methods [320-399]. In this interactive, online course, we will discuss several changes in Chapter 3 including 310.15(A)(2) Selection of Ampacity, 310.15(B)(3)(c) Raceways and Cables Exposed to Sunlight on Rooftops, and 310.15(B)(7) Single-Phase Dwelling Unit and Feeder Service Conductors. We will discuss the listing requirements in the Chapter 3.6 section and the .30 sections for securing and supporting throughout chapter 3. We will also examine 336.10 Uses Permitted for (TC cable) or tray cable and 338.10(B)(4)(a) Uses Permitted for service entrance cable or (SE cable), and review 344.14 Dissimilar Metals in Rigid Metal Conduit Systems (RMC). Other topics covered in the course include 350.28 Trimming of Liquidtight Flexible Metal Conduit (LFMC), 358.10 Uses Permitted for EMT. 376.20 Conductors in Parallel for Metal Wireways, and 392.22(A), which covers the number of conductors in (cable trays).
2017 NEC Changes: Enclosures and Boxes	1	Intermediate	Chapter 3 of the 2017 National Electrical Code (NEC) contains requirements for wiring methods, enclosures and boxes. Several changes were made in Articles 312 and 314. In this interactive online course, we discuss notable changes that include the addition of a new column in Table 312.6(A), new box fill requirements for barriers in boxes, clarifying the rules for cables entering enclosures, and new rules for separable attachment fittings.
2017 NEC Changes: General Requirements	1	Intermediate	Chapter 1 of the 2017 National Electrical Code (NEC) contains definitions and general requirements for electrical installations. Several definitions were added, revised or relocated in the 2017 NEC. New and revised requirements for equipment installation, labeling, certification and working space will also be discussed.

Title	Hours	Level	Description
2017 NEC Changes: Hazardous Locations	1	Intermediate	Chapter 5 of the 2017 National Electrical Code (NEC) contains requirements for special occupancies. In this interactive online course, we will review several changes that were made in Articles 500 through 516 for hazardous locations. Notable changes include the relocation of fourteen definitions to Article 100, a surprising new allowance for wiring methods in Class I locations, underground wiring changes for commercial garages and fuel dispensing locations, and new fuel storage classification requirements.
2017 NEC Changes: Overcurrent Protection and Grounding & Bonding	1	Intermediate	Article 240 and 250 of the National Electrical Code (NEC) contain the requirements for overcurrent protection and for grounding and bonding. Several changes were made in Articles 240 and 250. In this interactive, online course, we will discuss notable changes to the 2017 NEC. Such changes include the addition of arc energy reduction requirements for fuses, additional options for the grounding of separately derived systems, changes to the allowed and prohibited types of grounding electrodes, recognizing new options for intersystem bonding, clarifying the rules for parallel conductors, and others.
2017 NEC Changes: Receptacles and Switches	1	Intermediate	How important to you are the changes in the 2017 NEC codes for receptacles and switches? In this interactive online course, you will get the updates to Chapter 4 of the 2017 NEC, which contains the rules for equipment, including switches and receptacles. Several changes were made in Article 404 for switches and in 406 for receptacles. The topics we're going to cover are 404.2 C, Switches Controlling Lighting Loads. We did a lot of good work in that section. 404.9 B, Grounding of Switches. 404.22, Electronic Lighting Control Switches. 406.2, Definitions. 406.3, Receptacle Ratings and Types. 406.4, General Installation Requirements. 406.5, Receptacle Mounting. 406.6 D, Receptacle Face plates with Night Lights or USB Chargers. 406.9 B for Receptacles in Wet Locations. And finally, 406.12, Tamper Resistant Receptacles.
2017 NEC Changes: Special Occupancies	1	Intermediate	The National Electrical Code (NEC) standards govern the installation of electrical wiring and equipment. Incorrect wiring procedures could result in loss of life and property. Keeping up with the latest changes to the NEC is critical to ensuring safe electrical wiring practices. Chapter 5 of the 2017 National Electrical Code (NEC) contains the requirements for special occupancies. This interactive online course will teach you about several changes that were made in the articles for special occupancies, including health care facilities and RV parks as well as marinas and boatyards. Notable changes include new allowable wiring methods and equipment for health care facilities, revised receptacle requirements at RV parks, and more restrictive ground fault protection and signage requirements at marinas and boatyards.
2020 Advanced Florida Building Code - Building, 7th Edition (Internet)	1	Advanced	Being in a subtropical region, Florida is vulnerable to the ravages of hurricanes. The 2020 Florida Building Code, 7th Edition, covers a wide range of topics from life safety, occupancy requirements and structural requirements of buildings to help mitigate damages due to the high wind hurricanes can bring. The most recent update of the code addresses the requirements for resisting hurricane forces and includes code revisions to roof requirements, wall construction, foundation construction and allowable strengths for materials. This online, interactive course will go over these items and show how it is relevant in designing for hurricane and wind loads.

Title	Hours	Level	Description
2020 Advanced Florida Building Code - Energy Conservation, 7th Edition (Internet)	1	Advanced	Sustainability is no longer a trend but becoming incorporated into the Florida Building Codes and building professionals whether they are architects, contractors or building related consultants need to be up to date on sustainability code related items. This interactive online course outlines where the revisions have occurred in the codes and it impacts many areas. It affects the energy metrics of systems, architectural requirements in the realm of daylighting and material insulation requirements as well as renewable systems. While one does not need to be an expert at sustainability to take this course, it is important to note that attending will give some familiarity to other sustainability certifications.
2020 Florida Building Code Advanced 7th Edition: Accessibility Scoping Requirements (Internet)	1	Advanced	This interactive online course covers the scoping provisions of the FBC-A, Chapter 2. Discussion items will include among others where the code is applicable, vertical accessibility, disproportionate costs, exceptions, accessible routes, parking, and a number of specific applications.
2020 Florida Building Code Advanced 7th Edition: Accessibility, Application and Administration (Internet)	1	Advanced	The Florida Building Code governs the design, construction, erection, alteration, modification, repair, and demolition of public and private buildings, structures, and facilities in the state. The Code is updated every three years and is often amended annually to incorporate interpretations and clarifications, so it is important to stay informed of updates and changes. In this interactive, online course, we will discuss the accessibility provisions of the Florida Building Code. We will cover statutory provisions, the format of the code, the use of advisory comments within the code, and the application and administration of the code.
2020 NEC® Changes: Backup Power, Energy Storage, and Limited-Energy	1	Advanced	This course covers the changes in Articles 700, 702, 706, 725, 770 and Chapter 8 of the National Electrical Code®. Article 700 contains the requirements for emergency systems. Article 701 covers optional standby systems. Article 706 covers energy storage systems. Article 725 covers Class 1, 2, and 3 remote-control, signaling, and power-limited circuits. Chapter 8 covers communications systems. Notable changes include clarification of the requirements for transfer equipment, reduced requirements for unit equipment used for emergency lighting, several new requirements for energy storage systems, and the consolidation of several rules in Chapter 8.
2020 NEC® Changes: Branch Circuit GFCI Protection	1	Advanced	Believe it or not, GFCI protection first appeared in the 1962 edition of the NEC®, where it applied to underwater lighting for swimming pools. Many changes have been made to the Code since then. This interactive online course will help walk you through some of the most recent changes concerning this live safety device, as well as review other changes associated with branch circuits. We will address changes to Chapter 2 Wiring and Protection, noting updates to Articles 100, 200, and 210.
2020 NEC® Changes: Conductors, Wiring Methods, and Enclosures	1	Advanced	This interactive online course covers the changes in Articles 300, 310, 311, 312, and 314 of the National Electrical Code®. Article 300 contains general requirements for wiring methods. Article 310 covers conductors rated 2,000V and less. New Article 311 covers conductors rated more than 2,000V.Article 312 covers cabinets, cutout boxes, and meter socket enclosures. Article 314 covers outlet, device, pull, and junction boxes; conduit bodies; fittings; and

Title	Hours	Level	Description
			handhole enclosures. Notable changes include clarifying which fittings may be concealed, harmonizing building code and electrical code rules for stair enclosures, a complete rewrite of Article 310, a new article 311, specific rules for cable trays and enclosures used together, and major changes for boxes in the ceilings of dwelling units.
2020 NEC® Changes: Devices, Lighting, and Gear	1	Advanced	This course covers the changes in Articles 404, 406, 408, and 410 of the National Electrical Code®. Articles 404 and 406 contain the requirements for switches and receptacles. Article 408 covers panelboards, switchboards, and switchgear. Article 410 covers luminaires, lampholders, and lamps. Notable changes include updating the rules for switches, including listing requirements, new prohibited locations for receptacles, expansion of tamper-resistant receptacle requirements, new marking requirements for panelboards, switchboards, and switchgear, and addressing the unique needs of horticultural lighting.
2020 NEC® Changes: Equipment for General Use	1	Advanced	This course covers the changes in Articles 411, 422, 424, 430, 440, 445, 450 and 480 of the National Electrical Code®. Article 411 contains the requirements for low voltage lighting. Article 422 covers appliances. Article 424 covers fixed electric space-heating equipment. Article 430 covers motors and their controllers. Article 314 covers air-conditioning and refrigeration equipment. Article 445 contains the requirements for generators. Article 450 covers transformers. Article 480 covers storage batteries. Notable changes include expanding the GFCI requirements for specific appliances, addressing new overload protection options for certain motors, new listing requirements for generators, and added disconnecting means requirements for generators and batteries.
2020 NEC® Changes: Focus on Wiring Methods	1	Advanced	This interactive online course covers the changes in the Chapter 3 wiring method articles of the NEC, namely Articles 320 through 392 (AC cable through cable trays). Notable changes include new rules for cables in thermal insulation, a new article (337) for Type P cable, clarifying the different types of service entrance cables, clarifying the rules for stainless steel raceways and fittings, and addressing cable trays that utilize flanged openings.
2020 NEC® Changes: General Requirements	1	Advanced	The National Electrical Code® Style Manual has been in existence since 1969 and has been updated nine times since its inception. There was quite a bit of activity in the 2020 NEC® concerning definitions. In this interactive online course, we will cover new definitions added, and existing definitions that have been revised or relocated in the 2020 NEC®. We will also review new and revised requirements for equipment installation, labeling, marking and working space.
2020 NEC® Changes: Overvoltage and Grounding & Bonding	1	Advanced	This interactive online course covers the changes in Articles 242 and 250 of the National Electrical Code®. The new article 242 contains the requirements for overvoltage, or surge, protection. Article 250 covers the grounding and bonding of systems and equipment. Notable changes include the creation of Article 242 and deletion of Article 280 and 285, a new section addressing the bonding of equipment on the line side of the service, specific requirements for aluminum conductors, limiting the role of rebar in the grounding electrode system, fixing an error about the sizing of bonding jumpers, reducing the identification requirements for equipment ground conductors, and providing relief for the sizing of equipment grounding conductors in certain applications.

Title	Hours	Level	Description
2020 NEC® Changes: Process Review and Updated Articles	1	Advanced	This course will briefly discuss the 2020 implementation of the National Fire Protection Association® (NFPA®) new revision process for considering changes to the National Electrical Code® (NEC®). You will be introduced to the 2020 NEC® new articles covering Overvoltage Protection, Medium Voltage (MV) Cable, and Type P Cable. We'll show you how and where the NFPA® has reorganized and relocated articles to expand on Manufactured Buildings and Relocatable Structures. Additionally, we'll review the two articles that were merged into one to cover Marinas, Boatyards, Floating Buildings and Commercial and Noncommercial Docking Facilities. And finally, we'll summarize the changes made to Article 800 General Requirements for Communications Systems.
2020 NEC® Changes: Solar PV Systems and Interconnected Power Systems	2	Advanced	Photovoltaic (PV) systems use the energy from the sun to generate electricity. This electricity can be used to power small, rooftop systems to large-scale utility operations and everything in between. This interactive, online course is designed to give you an overview of Article 690 Solar Photovoltaic Systems, and Article 705, Interconnected Electrical Power Production Sources of the 2020 National Electrical Code® (NEC®). Notable changes in the articles for photovoltaic systems and interconnected electric power production sources include changes to PV overcurrent protection, disconnecting means, and language for interconnection of electric power production sources.
2020 NEC® Changes: Special Equipment	1	Advanced	Did you know the NEC® 2020 has new regulations for using your electric vehicle as a power source? This interactive online course covers the changes in Articles 600 through 695 of the National Electrical Code®, other than Articles 690 and 691 (PV systems). Notable changes include increasing the requirement for selective coordination for elevators; multiple changes addressing electric vehicles used as a power source; further restrictions on underfloor wiring in ITE rooms; listing, inspection, and GFCI protection requirements for pools and bodies of water, and reduced protection requirements for fire pump wiring.
2020 NEC® Changes: Special Occupancies	1	Advanced	The National Electrical code® (NEC®) is updated every three years, so it is important that contractors, electrical professionals and safety professionals stay updated on these changes. This interactive, online course covers the changes in Articles 500 through 590 of the National Electrical Code®. Notable changes are addressing the use of lasers in hazardous locations; clarifying the GFCI requirements throughout Chapter 5; addressing the applicability of Article 517's requirements; major changes for marinas, boatyards, and similar locations; and new requirements for large, temporary wiring installations.
2020 NEC® Changes: Wiring and Protection	2	Advanced	Changes related to load calculations in the 2020 NEC® will place a new emphasis on maintaining equipment. Since reconditioned equipment requirements are completely new to the NEC®, we'll show you how, and you'll see how some changes related to these calculations will have a drastic effect on services sizes. This interactive online course will review various wiring and protection related changes to the 2020 NEC®. Included will be a review of requirements associated with arc fault protection, receptacle locations, feeders, load calculations, and overcurrent protection.

Title	Hours	Level	Description
24-hour NJ Engineer (Civil) Discount Package	24	Intermediate	Save more than 15% with this package for New Jersey Engineers that satisfies the license requirements set by the NJ - Board of Professional Engineers and Land Surveyors. This package can be customized to fit your needs by contacting an educational advisor and selecting your courses from over 1,000 options for NJ Engineers. To customize this package to meet your needs or learn about our AEC Pro Subscriptions with access to all these courses and more contact your Education Advisor by calling 1.866.546.1212. Courses in this package include: Design of Utility Infrastructure - RV-11340AW Water-Based Fire Suppression Systems - RV-11284 Building Design and Construction Features for Fire Protection - RV-11316 Reinforced Masonry Design - RV-11339AW Energy From Waste - RV-11337AW Green Landscape Design: Water Conservation in the Landscape - RV-11341AW Effective Groundwater Supply Management - RV-11325 Essentials of Intelligent Transportation Systems - RV-11322AW Essentials of Smart City Applications - RV-11321AW Essentials of the Connected Vehicle - RV-11323AW Unreinforced Masonry Design - RV-11324AW Coastal Engineering: Tsunamis - RV-11200AW Structural Masonry Materials - RV-11301AW Existing Building Commissioning: Implementing Retrocommissioning on Your Project - RV-11300AW Green Street Retrofit - RV-11150AW Aquifer Remediation - RV-11285 Ethical Decision Making - RV-10705AW
24-hour NJ Land Surveyor Discount Package	24	Intermediate	Save more than 15% with this package for New Jersey Land Surveyors. The courses contained in this package have been selected from our list of pre-approved courses for Land Surveyors with the NJ - Board of Professional Engineers and Land Surveyors. To customize this package to meet your needs or learn about our AEC Pro Subscriptions with access to all these courses and more contact your Education Advisor by calling 1.866.546.1212. Courses in this package include: Don Wilson's Court Decisions: Block 1 - Surveying Definitions; Overlapping Titles & Descriptions - RV-7229 Don Wilson's Court Decisions: Block 2 - Description Interpretation - RV-7231 Don Wilson's Court Decisions: Block 3 - Rules of Construction for Interpreting Descriptions - RV-7233 Don Wilson's Court Decisions: Block 4 - Surveying Procedures - RV-3978 Don Wilson's Court Decisions: Block 5 - Boundary Retracement 1 - RV-7236 Don Wilson's Court Decisions: Block 6 - Boundary Retracement 2 - RV-7563 Don Wilson's Court Decisions: Block 7 - Boundary Retracement 3 - RV-10174 Easements: Part One, Basic Elements - RV-7256 Easements: Part Two, Roads & Highways - RV-7645 Easements: Part Three, Reversion Rights - RV-2251 Dave Gibson's All-Star Lot & Block Boundary Cases - RV-7566 Dave Gibson's All-Star Metes & Bounds Boundary Cases - RV-7238 Akin v. Godwin - A Dave Gibson Lot and Block Case - RV-7330 Barba v. Walker - A Dave Gibson Public Lands - Related Case - RV-7446 Frost's Survey- A Dave Gibson Metes and Bounds Case - RV-7632 Ethics for Land Surveyors: Decision-Making in Everyday Practice - RV-10173 Guide to the FEMA Elevation Certificate V2 - RV-10292 Boundary Monuments: Artificial and Natural Markers - RV-10263

Title	Hours	Level	Description
24-hour NJ Landscape Architect Discount Package	24	Intermediate	Save more than 15% with this package for New Jersey Landscape Architects that satisfies the license requirements set by the NJ Landscape Architects Evaluation and Examination Committee. This package can be customized to fit your needs by contacting an educational advisor and selecting your courses from over 50-course options for NJ Landscape Architects. To customize this package to meet your needs or learn about our AEC Pro Subscriptions with access to all these courses and more contact your Education Advisor by calling 1.866.546.1212. High Performance Landscapes: Protecting and Restoring Soil Health in Urban Landscapes - RV-10958 Site Engineering for Landscape Architects: Contours, Forms, Interpolation, and Slope - RV-10709 Site Engineering for Landscape Architects: Design and Layout - RV-10708 Site Engineering for Landscape Architects: Grading - RV-10710 Site Engineering for Landscape Architects: Designing and Sizing Storm Water Management Systems - RV-10714 Site Engineering for Landscape Architects: Determining Rates and Volumes of Storm Runoff - RV-10716 Site Engineering for Landscape Architects: Estimating Runoff Rates, Volumes, and Required Detention Storage - RV-10717 Site Engineering for Landscape Architects: Horizontal and Vertical Road Alignment - RV-10715 Site Engineering for Landscape Architects: Soils in Construction and Earthwork - RV-10711 Site Engineering for Landscape Architects: Storm Water Management and Control - RV-10712 Site Engineering for Landscape Architects: Storm Water Management System Components - RV-10713 Phytotechnologies: Using Plants to Clean Up - RV-10472AW Ethics: Shades of Green - RV-10465AW Sustainable Solutions: Invasive Species - RV-10488 The Sustainable Site Design Process - RV-10483 Sustainable Solutions: Water Shortages - RV-10487 Building a Sustainable Future - RV-10482 Sustainable Solutions: Human Health and Well-Being - RV-10484 Akin v. Godwin - A Dave Gibson Lot and Block Case - RV-7330 Barba v. Walker - A Dave Gibson Public Lands - Related Case - RV-7446 Frost's Survey- A Dave Gibson Metes and Bounds Case - RV-7632 Ethics for Land Surveyors: Decision-Making in Everyday Practice - RV-10173 Guide to the FEMA Elevation Certificate V2 - RV-10292 Boundary Monuments: Artificial and Natural Markers - RV-10263
A Better Construction Contract	2	Intermediate	This 2-hour online interactive course examines two types of Owner-Contractor agreements: (1) stipulated sum, and (2) cost plus a fee with a guaranteed maximum price (often called "GMP") The use of general conditions with both types of contracts is assumed in this course and particular attention is paid to the general conditions as they constitute the bulk of the contract whether it is a stipulated sum or GMP type. This course assumes some familiarity with the AIA documents, the contractually defined roles of the Owner, Contractor, and Architect, and the interrelationship of the Contract Documents, such as the Agreement, General Conditions, and Drawings and Specifications. We will follow the organization of the AIA documents as a starting point. Consequently, the term "architect" will typically be employed, but the principles discussed in this course can apply to other design professionals as well. References to relevant sections of the AIA documents are included in parentheses throughout.

Title	Hours	Level	Description
			As we review the two types of Owner-Contractor agreements, this course identifies major contract issues, performance problem areas, and definitions of important terms. Issues which are likely to cause conflict or generate disputes are identified. Subjects which often appear obscure to design professionals, such as insurance, are discussed. A test is included in at the end of this course.
A Hydrology Primer for Engineers and Design Professionals	2	Intermediate	Many design professionals were introduced to hydrology concepts when they started their careers. But the science and terminology of hydrology continues to evolve. Engineers and other design professionals need to understand hydrology concepts in order to design appropriately. This online interactive course gives you the hydrologic cycle, types of natural storage and infiltration, recharge and base flow, surface runoff, peak rates of flow, I-D-F curves, hyetographs and hydrographs, runoff volume, NRCS hydrologic soil groups, and concentration, as well as a lengthy discussion on the differences between the Rational Method and the federal peak flow methods (using TR-20 and 55).
A Manager's Guide to Performance Appraisals	1	Intermediate	This 1-hour interactive online course covers the techniques required in employee performance evaluation. From first day expectations to end-of-year reviews, this course teaches you as a manager the professional way to get the best from your employees each and every day. Through concise explanations of the roles of both manager and employee, you will cover such topics as first-days setting performance expectations, establishing goals, roles & responsibilities, managing performance, progress review, determining strengths and weaknesses and managing both. Included are helpful chart/log templates for "Goal Statements", "Descriptions and Evaluation of Competencies", "Self Assessment" and more. There is a test included at the end of this course.
A Professional Engineer's Standard of Care	1	Intermediate	The public has the right to expect that professional engineers will exercise their knowledge and skill in a manner consistent with good moral behavior. In this interactive online course, we will explore the ethical requirement for professional engineers to meet an agreed-upon standard of care. We will discuss this standard of care and explore the importance of ethical behavior and ethical practice in terms of our responsibility to the public.
A Wetland Primer for Design Professionals	1	Intermediate	An understanding of wetlands is increasingly important for design professionals, including architects, engineers, land surveyors and landscape architects. This 1-hour online course will acquaint you with the changed perception of wetlands in North America, contemporary definitions of wetlands and types of wetlands found on this continent. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
A Wetland Primer, Advanced: Field Evaluation & Permitting Considerations	2	Advanced	This 2-hour interactive online course is a follow-up to 'A Wetland Primer For Design Professionals' by the same author. Although a basic understanding of wetlands--crucial for architects, engineers, land surveyors and landscape architects--is mastered in that first course, design professionals often need a broader understanding of why wetlands play an increasingly important role in site considerations, and how they are identified. This course does exactly that, in a easily understood series of steps. There will be a multiple-choice quiz at the end of this course.

Title	Hours	Level	Description
			Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Accessibility and Visitability	1	Fundamental	Visitability is the concept of newly constructed houses being built to allow for someone with mobility disabilities to visit the house, move around inside the house, and use the restroom. The movement was founded by Eleanor Smith. The house will likely be around for a long time, and these concepts help not only people who visit, but also people who live there and may want to age in place. This interactive online course will introduce you to the principles of Visitability as well as the benefits of designing to these principles.
Accessibility by Building Type: Multi-Use Facilities	1	Intermediate	This one-hour course will address the design and construction of multi-use facilities using the requirements of the 2010 Americans with Disabilities Act (ADA) Title III Regulations Accessibility Guidelines - ADAAG, effective and mandatory for all such buildings and sites in the United States on and after the 15th of March 2012. You will experience a "virtual" tour of the newly renovated Texas A&M University - Memorial Student Center (MSC) in College Station, Texas by the State of Texas Registered Accessibility Specialist (RAS) of record - both exterior site and interior portions of the additions and renovations project. This presentation will discuss the myriad accessibility issues that had to be met during design and construction and will address the “above and beyond” selection criteria used by the APA / TGCPD Accessibility Awards Program - a joint program between the Accessibility Professionals Association and the Texas Governor's Committee on People with Disabilities. ATTN: The content in this course generally addresses requirements from the American with Disabilities Act (ADA) that is adopted with amendments in the 2015 Minnesota State Building Code in Minnesota Rules Chapter 1341. For specific requirements in the 2015 Minnesota Accessibility Code, please reference the following link: https://codes.iccsafe.org/content/MAC2015/toc
Accessibility by Building Type: Universal Residential Design	1	Fundamental	Universal Design is a term used to describe the idea of creating buildings, products, and spaces accessible to older adults, people with disabilities, and people without disabilities. The focus is on creating an all-inclusive environment usable by everyone, regardless of age or physical ability. Today's designers are challenged by the many rules and regulations in their commercial practice including the American's with Disabilities Act (ADA) and the Fair Housing Act (FHA). The application of Universal Design in architecture and construction allows homeowners to continue to live in homes that they love as their physical needs change. This interactive online course addresses why learning universal design considerations - from the initial design concepts through the life-cycle of the home - is necessary. This course will also assist designers and those in the construction industry in providing an educated and sensitive approach when creating design solutions to meet the everyday "lifestyle" challenges of the disabled. ATTN: This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying 1 hour of credit toward the required continuing education.

Title	Hours	Level	Description
Accessible Design: Curb Ramps, Ramps, and Elevators	1	Fundamental	Curb ramps, ramps, and elevators make the world an easier, more accessible place for not only people with disabilities, but everyone as a whole. Though they may be a small thing, curb ramps are one of the easiest things to use to demonstrate that accessible features benefit everyone, not just people with disabilities. A curb ramp may enable someone in a wheelchair to cross a street, but it will also help an older person who walks with a cane, or a parent with a young child in a stroller, or a perfectly healthy, able-bodied, young person with a cart or dolly stacked with groceries or boxes. Ramps and elevators provide the same level of easy access for greater changes in elevation. This interactive online course illustrates how you can include these designs into your built environment to create accessible spaces for everyone.
Accessible Parking	1	Fundamental	In order to have an accessible site where parking is provided, people must be able to get to the site first. This means accessible parking is a necessity. This is a common part of the accessibility codes that most design professionals and building inspectors will have to deal with in their everyday work. Parking is easy to make accessible, but also easy to get wrong. This interactive, online course will point out why this should be a top priority and how to avoid the pitfalls. Components of accessible parking, location, and how many spaces are required will also be discussed.
Accessible Restrooms	1	Fundamental	Everyone needs to use the restroom. To find a restroom inaccessible due to physical barriers is an indignity that can and should be avoided. This interactive, online course will cover the most common errors that could cause inaccessibility, and how to design an accessible restroom for everyone. ATTN: The content in this course generally addresses requirements from the American with Disabilities Act (ADA) that is adopted with amendments in the 2015 Minnesota State Building Code in Minnesota Rules Chapter 1341. For specific requirements in the 2015 Minnesota Accessibility Code, please reference the following link: https://codes.iccsafe.org/content/MAC2015/toc
Accessible Routes: Getting In, Out, and Around	1	Fundamental	A single step can prevent someone who uses a wheelchair for mobility from being able to access a building. Accessible routes can include ramps, elevators, and platform lifts, in addition to pedestrian paths. This interactive online course will describe components of an accessible route. It will help architects, engineers, contractors, and building inspectors ensure that people with disabilities have access to their buildings and sites. This course will use real-world examples to demonstrate not only the what of the laws, but also the why. Photographs and diagrams can demonstrate both good and bad examples and show how much of a difference properly designed and constructed spaces make in the lives of people with disabilities. ATTN: The content in this course generally addresses requirements from the American with Disabilities Act (ADA) that is adopted with amendments in the 2015 Minnesota State Building Code in Minnesota Rules Chapter 1341. For specific requirements in the 2015 Minnesota Accessibility Code, please reference the following link: https://codes.iccsafe.org/content/MAC2015/toc
Accessible Routes: Getting In, Out, and Around	1	Fundamental	A single step can prevent someone who uses a wheelchair for mobility from being able to access a building. Accessible routes can include ramps, elevators, and platform lifts, in addition to pedestrian paths. This interactive online course will describe components of an accessible route. It will help architects, engineers, contractors, and building inspectors ensure

Title	Hours	Level	Description
			that people with disabilities have access to their buildings and sites. This course will use real-world examples to demonstrate not only the what of the laws, but also the why. Photographs and diagrams can demonstrate both good and bad examples and show how much of a difference properly designed and constructed spaces make in the lives of people with disabilities. ATTN: The content in this course generally addresses requirements from the American with Disabilities Act (ADA) that is adopted with amendments in the 2015 Minnesota State Building Code in Minnesota Rules Chapter 1341. For specific requirements in the 2015 Minnesota Accessibility Code, please reference the following link: https://codes.iccsafe.org/content/MAC2015/toc
Accessible Signage	1	Fundamental	Accessible signage is one of the most commonly missed areas of accessibility because it is not well understood. Accessible signage is important to blind and low vision individuals to help them locate and identify rooms and spaces. This interactive online course aims to improve your knowledge and awareness of accessible signage issues.
Active Shooter and Other Acts of Targeted Violence	1	Fundamental	Active shooter or threat suspects are bent on killing as many people as quickly as possible in most cases. Knowing how to react in a targeted violence situation can increase your chances of survival. This interactive online course will teach you about various types of targeted violence. You will learn how to improve your chances of survival by preparing for targeted violence. You will also learn about the precautions for targeted violence and the indicators and traits to look out for so you'll know what to expect in various situations. Finally, you'll be trained on how to react to targeted violence by identifying roles and responsibilities and relaying communication effectively so that you can calmly interact with first responders.
ADA Compliance in Business	1.25	Intermediate	The Americans with Disabilities Act of 1990 brought with it a complex set of challenges that face employers who wish to avoid discrimination against the disabled in the workplace. This course provides a clear understanding of management's roles and responsibilities under the ADA, detailing standards set by the law. Students will learn the correct procedures for interviewing and evaluating job candidates to avoid discrimination, as well as the procedures for accommodating - and ensuring a safe, discrimination-free environment for - employees with disabilities.
ADA Guidelines 2010: Building Blocks	1	Intermediate	The Americans with Disabilities Act/Architectural Barriers Act Accessibility Guidelines (2010 Guidelines) developed by the U.S. Architectural and Transportation Barriers Compliance Board (the Access Board) effectively replaces the 1991 ADA Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS). This course provides criteria for basic elements considered to be the “Building Blocks” of accessibility as established by the guidelines, including: Ground and floor surfaces (302) Changes in level (303) Wheelchair turning space (304)Clear floor space (305) Knee and toe clearances (306) Protruding objects (307) Reach ranges (308) Operable parts (309)

Title	Hours	Level	Description
ADA Guidelines 2010: Communication Elements and Features	1	Fundamental	The Americans with Disabilities Act/Architectural Barriers Act Accessibility Guidelines (2010 Guidelines) developed by the U.S. Architectural and Transportation Barriers Compliance Board (the Access Board) effectively replaces the 1991 ADA Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS). Chapter 7: Communication Elements and Features of the 2010 ADA Standards for Accessible Design focuses on ADA requirements for accessible modes of communication. In this course, you will learn about the requirements of Title II of the ADA for effective communication. Effective communication means that whatever is written or spoken must be as clear and understandable to people with disabilities as it is for people who do not have disabilities. Questions answered within this course include: What is effective communication? What are auxiliary aids and services? When is a state or local government required to provide auxiliary aids and services? Who chooses the auxiliary aid or service that will be provided? This course also provides criteria for basic elements within Chapter 7: Communication Elements and Features of accessibility as established by the guidelines, including: 701 General 702 Fire Alarm Systems 703 Signs 704 Telephones 705 Detectable Warnings 706 Assistive Listening Systems 707 Automatic Teller Machines and Fare Machines 708 Two-Way Communication Systems ATTN: The content in this course generally addresses requirements from the American with Disabilities Act (ADA) that is adopted with amendments in the 2015 Minnesota State Building Code in Minnesota Rules Chapter 1341. For specific requirements in the 2015 Minnesota Accessibility Code, please reference the following link: https://codes.iccsafe.org/content/MAC2015/toc
ADA Guidelines 2010: General Site and Building Elements	1	Intermediate	The Americans with Disabilities Act/Architectural Barriers Act Accessibility Guidelines (2010 Guidelines) developed by the U.S. Architectural and Transportation Barriers Compliance Board (the Access Board) effectively replaces the 1991 ADA Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS). The General Site and Building Elements section of the 2010 ADA Standards for Accessible Design focuses on ADA requirements for exterior spaces. This course provides criteria for basic elements within the “General Site and Building Elements” of accessibility as established by the guidelines, including: General (501) Parking Spaces (502) Passenger Loading Zones (503) Stairways (504) Handrails (505)

Title	Hours	Level	Description
ADA Guidelines 2010: Plumbing Elements and Facilities	1	Intermediate	The Americans with Disabilities Act/Architectural Barriers Act Accessibility Guidelines (2010 Guidelines) developed by the U.S. Architectural and Transportation Barriers Compliance Board (the Access Board) effectively replaces the 1991 ADA Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS). Plumbing Elements and Facilities (Chapter 6) of the 2010 ADA Standards for Accessible Design focuses on ADA requirements for accessible movement within restrooms and changes the design of plumbing fixtures. This course provides criteria for basic elements within the “Plumbing Elements and Facilities” of accessibility as established by the guidelines, including: 601 General 602 Drinking Fountains 603 Toilet and Bathing Rooms 604 Water Closets and Toilet Compartments 605 Urinals 606 Lavatories and Sinks 607 Bathtubs 608 Shower Compartments 609 Grab Bars 610 Seats 611 Washing Machines and Clothes Dryers 612 Saunas and Steam Rooms ATTN: The content in this course generally addresses requirements from the American with Disabilities Act (ADA) that is adopted with amendments in the 2015 Minnesota State Building Code in Minnesota Rules Chapter 1341. For specific requirements in the 2015 Minnesota Accessibility Code, please reference the following link: https://codes.iccsafe.org/content/MAC2015/toc
ADA Guidelines 2010: Recreational Facilities	2	Intermediate	The Americans with Disabilities Act/Architectural Barriers Act Accessibility Guidelines (2010 Guidelines) developed by the U.S. Architectural and Transportation Barriers Compliance Board (the Access Board) effectively replaces the 1991 ADA Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS). The Recreation Facilities section (Chapter 10) of the 2010 ADA Standards for Accessible Design focus on ADA requirements for accessibility on newly designed or newly constructed and altered amusement rides. An "amusement ride" is defined by the guidelines as a system that moves people through a fixed course within a defined area for the purpose of amusement. ADAAG addresses only the built environment (structures and grounds). This interactive online course provides criteria for basic elements within the “Recreational Facilities” of accessibility as established by the guidelines, including: 1001 General 1002 Amusement rides 1003 Boating facilities 1004 Fishing piers and platforms 1005 Miniature golf courses 1006 Golf courses 1007 Exercise equipment1008 Bowling lanes 1009 Shooting facilities 1010 Swimming pools, wading pools, and spas ATTN: The content in this course generally addresses requirements from the American with Disabilities Act (ADA) that is adopted with amendments in the 2015 Minnesota State Building Code in Minnesota Rules Chapter 1341. For

Title	Hours	Level	Description
			specific requirements in the 2015 Minnesota Accessibility Code, please reference the following link: https://codes.iccsafe.org/content/MAC2015/toc
ADA Guidelines 2010: Small Towns	1	Intermediate	People with disabilities continue to face architectural barriers that limit or make it impossible to access events or services. The American Disability Act (ADA) gives people with disabilities an equal opportunity to participate in the mainstream of public life offered to all Americans. The ADA's regulations and the ADA Standards for Accessible Design, originally published in 1991, set the standard for what makes a facility accessible. While the updated 2010 Standards retain many of the original provisions in the 1991 Standards, they do contain some significant differences. The Americans with Disabilities Act/Architectural Barriers Act Accessibility Guidelines (2010 Guidelines) developed by the U.S. Architectural and Transportation Barriers Compliance Board (the Access Board) effectively replaces the 1991 ADA Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS). This course specifically explores ADA compliance for small towns. Small towns offer a variety of essential programs and services that are fundamental to the public and to everyday American life. Although the range of services offered by small towns varies, it is essential that people with disabilities have the opportunity to participate in the programs and services that towns offer. This course presents an overview of some basic ADA requirements and provides cost-effective tips on how small towns can comply with the ADA. The information in this course comes from various resources. These resources include documents and illustrations from publications released by the ADA National Network, the U.S. Access Board, and the U.S. Department of Justice. This course provides practical information on how to comply with the Americans with Disabilities Act, to clarify potential misunderstandings about the requirements of the ADA, and to highlight its flexible, common-sense approach to accessibility.
ADA Guidelines: Achievable Barrier Removal and Accessibility (B)	1	Intermediate	The information in this course comes from various resources. These resources include documents and illustrations from publications released by the ADA National Network, the U.S. Access Board, and the U.S. Department of Justice. This course provides practical information on how to comply with the Americans with Disabilities Act, to clarify potential misunderstandings about the requirements of the ADA, and to highlight its flexible, common-sense approach to accessibility.
ADA Guidelines: Designing Pedestrian Facilities using Public Right of Way Accessibility Guidelines (PROWAG)	1	Fundamental	The United States Access Board is the entity responsible for maintaining the American with Disabilities Act (ADA) guidelines. While the ADA guidelines address certain features common to public sidewalks, such as curb ramps, further guidance is necessary to address conditions and constraints unique to public rights-of-way. The Access Board has been developing Public Right of Way Accessibility Guidelines (PROWAG) for the past few years. Once PROWAGs are adopted by the Department of Justice, they will become enforceable under Title II of the ADA. This course will provide a summary of the most recent PROWAGs that have been published by the Access Board and how they relate to the design of pedestrian facilities within public right of ways.

Title	Hours	Level	Description
Advanced Management Skills	5	Intermediate	In LearnSmart's Advanced Management Skills Video Training, you'll learn how to become a more confident manager. By taking this course, you will learn the qualities of a healthy, effective team and the techniques that will help you manage that team. Beyond that, you'll learn the advanced management skills of communication, leadership, and motivation -- skills that very few people in the business world truly understand.
Advanced Project Management: Advanced Project Risk Management	2	Advanced	Project risk is based on a simple equation: Event Risk equals the Probability of an Event times the Consequences of the Event. As project managers, we know this, either implicitly because we've studied and read about risk in projects or we know it from first-hand experience. We've also learned along the way that we cannot fully eliminate risk, only mitigate the risk and that there is no such thing as a risk-free project or action. During this interactive online course on project risk management we will go beyond the fundamental truths of project risk and cover how decisions are made, delving into decision theory and decision making in the face of uncertainty; as well as exploring risk management through the four phases of Risk Identification, Risk Analysis, Risk Response, and Risk Mitigation and Control.
Advanced Project Management: Advanced Project Scheduling	1	Advanced	Without a full and complete schedule, the project manager will be unable to communicate the complete effort, in terms of cost and resources, necessary to deliver the project. Knowing scheduling techniques will better prepare you to make decisions about schedule development and give better direction to your project team about schedule performance. This interactive online course will teach you the importance of scheduling in contract fulfillment, as well as introductory concepts for scheduling contract provisions, the concepts of delays and claims, and methods for delay claim resolution. You will also learn about establishing a scheduling model, best practice principles, and the eight steps for developing a good schedule model.
Advanced Project Management: Converting Strategy Into Action	1	Advanced	All strategic change in an organization, any organization, takes place through projects and programs. To ensure that the strategic change results in the desired outcomes, however, takes planning, thought, and focus. In short, to get effective strategic change you need to have an effective strategic plan. Through an effective strategic plan, you are better postured to ensure that the projects and programs that are implemented create the future envisioned for your organization, be it increased profit or manufacturing of a new product. This interactive, online course is intended to change that mindset by helping you understand that to generate the outcomes any organization intends or desires, requires direction via an actionable strategic plan. The course is intended for any engineer, project or program manager, engineering manager or executive who wants to understand strategic planning via a simple process that will replace chance and luck with specific goals, objectives, and action initiatives.
Advanced Project Management: Executing Complex Programs	1	Advanced	In today's fast-paced, competitive, and dynamic environment, the ability for an organization or individual to successfully execute a program is severely challenged. This is because programs are complex, wrought with uncertainty, and ripe with ambiguity. Efforts to navigate the complexity of programs often result in the program manager simply expending more of their vital time to

Title	Hours	Level	Description
			make sense of it all, but there are only so many hours in the week and regardless how many hours you invest, the program will still be complex. In this interactive online course, you're going to be introduced to the Program Management Competency Model, which was developed to assist organizations and individuals make sense of the complexity of programs by focusing energy on the development of specific skill sets that yield the biggest return on investment. The six performance and eight personal competencies highlight areas where the development of knowledge, skills, and experience will return the greatest rewards for both organizations and individuals. The biggest reward being the capability and capacity to better execute complex programs.
Advanced Project Management: Integrated Project Delivery	2	Advanced	Integrated Project Delivery is a construction delivery method that leverages a number of current trends to increase productivity and the speed of project delivery. This interactive online course will teach you about the importance of IPD's foundation of relational contracts, as well as the main ingredients that include a high-level of communications and collaboration and a no-fault work environment, from project charette through building commissioning. You will also learn about the roles that lean construction processes and building information modeling play in performing, as well as recognize that IPD has many of the traits of construction delivery systems that are compatible with green building certification systems.
Advanced Project Management: Managing Project Teams	1	Advanced	Successful projects are not delivered through technical expertise alone. It takes the ability to manage and lead teams and people effectively. The most successful project managers know how to build and maintain an environment in which both teams and individuals are motivated to do their best work. Founded on a wide range of research and real-life experiences, this interactive online course will help you understand how to develop and sustain effective project teams. You will learn tools, techniques, and tips you can add to your toolbox of people-management skills, enabling you to improve performance for yourself, your team, and the individuals on your project team.
Advanced Project Management: Project Management in a Dynamic Environment	1	Advanced	This interactive, online course covers the nine principles that master project managers, and their teams, put into practice managing projects in a dynamic environment. This environment is one experienced by most, if not all, project managers. It's an environment that holds speed and uncertainty as two of its most relevant characteristics. Both of these characteristics can cause severe stress during project planning and execution and can lead to project failure if the project manager doesn't develop the skills, knowledge, and leadership ability demanded in the dynamic environment of today's projects. Mastering these nine principles will help you develop the inward and outward orientation, the formal and informal procedures, and the high-touch and high-tech communications strategy that you will require to be an effective, master project manager on your dynamic projects.
Advanced Project Management: Project Performance Management	1	Advanced	To control a project and keep it on budget and schedule, you need to have a quantified sense of where the project is. How is it doing? Is it on time? Is it on budget? Are the deliverable's being delivered? Are the end users satisfied? To achieve this level of project performance assessment requires a deeper understanding of metrics and measures. During this interactive online course, you will go deeper than the Project Management Institute's Project Management Book of Knowledge® takes

Title	Hours	Level	Description
			individuals in Earned Value Management. This course will also expand your understanding of metrics and Key Performance Indicators, which are essential tools and techniques project managers must develop to effectively conduct project performance measurement on today's complex projects.
Advanced Project Management: Sustainability in Project Management	2	Advanced	Confirming that sustainability concepts are designed into a project from the beginning ensures that project sponsors and owners receive the maximum value, either through reduced project costs or through reduced life cycle costs. This interactive online course will teach you the principles of sustainability and how you can use this basic knowledge to increase the value in the projects you manage. You will also learn about the effects of climate change on projects and how to properly address the risks that arise from climate change. Additionally, you will learn how sustainability can be integrated into traditional project management by addressing each of PMI's five project management process groups and eleven knowledge areas.
Advanced Project Management: The Power of Project Leadership	1	Advanced	This course should look at project management and leadership, then go into the fundamental leadership mistakes made by project managers and how to remedy them. Throughout, actionable tips and recommendations should be provided to enhance the user's skill set in project leadership. The course is geared for active project practitioners with experience in managing projects and mid- to senior-level managers. The course will provide information that can be applied to current projects, allowing for introspection. New project managers, or those aspiring to lead projects, however, can benefit from the course by learning about the skill set required by effective project leaders.
Advanced Project Management: Understanding the Project, Program, and Portfolio Architecture	1	Advanced	Project and construction managers are at the leading edge of delivering benefits to an organization. But how does one's efforts fit in the bigger picture? And why do you even need to know the bigger picture? This interactive, online course will define project, program and portfolio management, as well as explore the key differences and interactions. This course will also introduce you to the concept of benefits realization management and how the project, program, and portfolio hierarchy can be used to bring strategy to life and ensure more successful projects. This course will help professionals both new to, and experienced in, project management. Whether you're new to project management, or have been practicing it for some time, understanding the hierarchy of project, program and portfolio management will help you take your skills to the next level.
Advanced Stormwater Treatment: Design	3	Advanced	This 3-hour interactive online course leads the student through evaluation and design of stormwater treatment systems. Stormwater management is receiving increased scrutiny because of EPA Phase II regulations. It is assumed that the student already has a working knowledge of stormwater management, either through prior experience or the Red Vector.com course, "Introduction to Stormwater Management." Most of the information presented is available from public reports and vendor websites. A multiple-choice quiz will be presented at the end of each section of the course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Advanced Stormwater Treatment: Nutrient Removal	1	Advanced	This 1-hour interactive online course presents the latest information on nutrient removal from stormwater. Stormwater management is receiving increased scrutiny because of EPA Phase II stormwater regulations, and nutrients such as nitrogen and phosphorus are among the chief stormwater concerns. All of the information presented is available in more detail from public and vendor reports and websites. Understanding stormwater management and nutrient removal is an essential skill for engineers, scientists, developers and regulatory authorities. A test will be presented at the end of the course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Adverse Possession: An Advanced Course	2	Advanced	Adverse possession is a legally recognized way, or method, of taking title to property by physical occupation. It is always a hostile act. Based on ancient principles of common law, adverse possession is defined by statute on a state-by-state basis. In all states, possession must run for a statutory period, and the adverse claimant is charged with the burden of proof. Boundary surveyors must be familiar with this doctrine, as retracement surveys are frequently complicated by claims of adverse possession. A survey of original property lines cannot, by itself, revive the rights to land lost in adverse possession. Understanding the elements of adverse rights-with an awareness that variations exist between state laws-is critical. The appearance of surveyors in court is often triggered by issues of adverse possession, with attorneys relying heavily on surveyors as experts in what is often a difficult legal doctrine. This 2-hour online course reviews the historic concepts of adverse possession, the statutory character of these actions, and the burden of proof against the claimant. This course examines the effect of surveys on such claims, exemptions to claims of adverse possession, and the well-established elements of adverse possession. The course also discusses the doctrine of prescription and its relationship to adverse possession. Using various examples both from classic texts and the author's experiences, the course examines statutes of limitations, color of title, and a surveyor's explicit duties to clients and courts. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
AEC Professional Development and Leadership Training Program	2	Fundamental	This two-hour professional development program includes courses on email management, effectively using LinkedIn; finding and becoming a mentor; and managing stress. The courses contained in this program are: AEC Success: 7 Steps for using LinkedIn Effectively (RV-11197) AEC Success: Five Steps to Effective E-mail Management (RV-11193) AEC Success: How to Create a Focused, Productive and Low Stress Career and Life (RV-11194) AEC Success: How to Find and/or Become a Mentor (RV-11195)
AEC Success: Business Development and Sales	1	Fundamental	“Everyone lives by selling something.” Robert Louis Stevenson. In this course our discussion is going to be about developing the seller-doer in you. We'll give you the basics of business development so you can understand the process, technical skills such as communications and networking and how to take a business strategy and creating an effective plan of action.

Title	Hours	Level	Description
AEC Success: Conflict Resolution in the Workplace	1	Fundamental	Team projects often result in conflicts that have to be resolved between different parties. Learning to resolve a conflict is a very valuable skill that can be used in all endeavors of business and life. This interactive online course will teach you five strategies for dealing with conflicts. Additionally, you will learn two core skill that are necessary to successfully resolve conflicts. You will also learn about emotional awareness and how it can help you in certain situations.
AEC Success: Effective Decision Making	1	Fundamental	Do you know that making too many decisions can wear you out? How do you make decisions? Do you have a process, or do you typically go with your gut? This interactive online course provides you with tools and techniques that you can understand and easily apply to any decision you have to make - at work or at home.
AEC Success: How to Become a Top-Notch Industry Leader	1	Fundamental	Are you a positive powerful leader? Most engineers and other technical professionals strive to become a "manager" and in many cases when they do, they micromanage the details of every project to no avail. This course will give you strategies for becoming an exceptional leader. One that inspires his or her team into taking action towards a common goal. In this course, we will challenge you to make an opportunistic mind shift.
AEC Success: How to Communicate and Present Effectively	1	Fundamental	Do you communicate effectively? Engineers and other technical professionals typically work on teams and projects that require constant communication. Your ability to communicate effectively will impact your relationships and your results, both professionally and personally. This course will give you tips to help you transform into a comfortable, confident communicator.
AEC Success: Networking and Relationship Building	1	Fundamental	Too many engineers and technical professionals think of networking as collecting business cards - WRONG! Networking is all about building relationships. In this course you will learn the importance of networking and receive strategies that you can start to use to build strong relationships today! Not just 'business card' relationships, but ones that will yield enjoyment and opportunities for years to come.
AEC Success: Strategies for a Successful Interview	1	Fundamental	We have all been through the interview process, either through applying for a job/promotion or chasing a project. We also often follow established templates that almost everyone uses which result in eye-rolling by the interviewers. This online interactive course can help you get out of this rut so that you can develop a fresh look for your next interview in pursuit of a project. You will learn what to research before the interview, how to observe and analyze the environment of the interview location, a strategic sitting layout and how to use all of this to your advantage prior to the interview. This course will show you how to manage the pace of the interview and how to answer tough questions. Finally, you'll learn how to elegantly end the interview and which follow-up activities will help you stand out amongst the thundering herd. Learn what to do and what NOT to do to subtly manage your client interview to ensure you and your team members shine!

Title	Hours	Level	Description
AEC Success: Time Management and Billable Hours	1	Fundamental	Unlike money or aptitude, time is the one commodity that every person on the earth has the exact same amount of each day. What is needed is a new way of thinking about managing our time. In this interactive online course, we will cover multi-tasking, delegating, and back-to-back scheduling. You will get tactics and tools to make the most of your time and what's most important to you.
Air Quality: U.S. Air Trends	1	Intermediate	The government is using our tax dollars to require improved air quality and to report on the progress of those improvement efforts. Those reports are available to us. You can be knowledgeable about the status of our air quality currently, how it compares to the past, and the effect of climate change. This interactive course gives you the report done by the U.S. Environmental Protection Agency. You get charts, details about pollutants, and supportive activities to help you understand and retain the report information.
Akin v. Godwin - A Dave Gibson Lot and Block Case	2	Intermediate	This 2-hour interactive online course presents ONE interesting land boundary case that is particularly instructional as to the proper application of the principles of boundary location for LOT AND BLOCK parcels. It introduces many of the principles of boundary surveying in a systematic fashion. The problem statement will suggest alternate approaches, principles, and solutions. You must solve the case according to what you think is the proper application of survey principle. You will then compare your solution with DAVE GIBSON'S 'best practices' solution which incorporates the correct application of boundary location principles. Defense for the 'best practices' solution will be given for consideration and further learning by the attendee. If you love to discuss tough boundary location situations, then you will love this case and learn something new. You will also learn other viewpoints for your consideration. The beginner can benefit from the instruction they give as much as the experienced practitioner. This course is a portion of the longer 6-hour course titled "Dave Gibson's All Star Lot and Block Boundary Cases" also offered on RedVector.com. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
American Land Surveying - A History	2	Fundamental	American Land Surveying has a grand and sometimes tumultuous history. Bold personalities have been attracted to the work. George Washington, Thomas Jefferson, Daniel Boone, Abraham Lincoln, Henry David Thoreau all worked as surveyors. Theirs were often the original footsteps which surveyors for generations afterward have retraced. This interactive online course traces that history from ancient days to today. This course also covers early surveying instruments and texts, metes and bounds descriptions, forms of monumentation, Federal and State surveyor regulations, differences between civil engineers' surveys and surveys by boundary surveyors, and an overview of land surveying university programs, state licensure and accreditation.
An Introduction to Fitwel®	2	Fundamental	What is Fitwel®? Fitwel® is a new building certification standard, promoted by the CDC and the Center for Active Design, which aspires to help design and construction professionals, building operators, and occupants of buildings to create and maintain facilities which promote evidence-based practices to promote better health outcomes. Fitwel® seeks practical, economical interventions to promote health, productivity, and healthcare savings over time

Title	Hours	Level	Description
			through its web-based scorecard with 60 benchmark criteria over 7 health impact categories: food, safety, physical activity, well-being, social equity, absenteeism, and community health. This interactive online course will help you learn how to use and implement this new standard, as well as how it is similar and different from other ratings systems like WELL®.
Anatomy of Construction Defects	2	Intermediate	Construction defects create unnecessary risk. Less than 15% questioned in a construction industry poll fully understood the role and significance of ICC ES Reports on reducing construction defect conditions. If you could reduce associated risks and increase safety in the built environment, wouldn't you jump at the opportunity? This interactive online course will set you on the path to do just that.
Anti-Harassment for All Employees - Illinois	1.02	Fundamental	Recent news stories of the implications of workplace harassment have awakened the nation to a pervasive problem. What we have learned is that harassment comes in many forms. Through real-life scenarios, this interactive course will illustrate to all staff members how to recognize inappropriate behavior such as sexual harassment, bullying, and gender discrimination as well as acceptable ways to address and report unwelcomed conduct. This training, combined with your company's policies and commitment to combat all forms of workplace harassment, will help foster an atmosphere of respect.
Anti-Harassment Training for All Employees - Non-State Specific	1	Intermediate	Recent news stories of the implications of workplace harassment have awakened the nation to a pervasive problem. What we have learned is that harassment comes in many forms. Through real-life scenarios, this interactive course will illustrate to all staff members how to recognize inappropriate behavior such as sexual harassment, bullying, and gender discrimination as well as acceptable ways to address and report unwelcomed conduct. This training, combined with your company's policies and commitment to combat all forms of workplace harassment, will help foster an atmosphere of respect. Compliant for use in IL.
Appraising Performance	3.5	Intermediate	Appraising performance is a continuous process, one that should bring out the best in both a manager and his/her employees. When handled properly and effectively, it can encourage even inspire people to strive toward personal growth and improvement. LearnSmart's Performance Appraisal course deals with planning developing a performance plan that includes realistic, meaningful performance goals and the unique role of the manager in today's workplace, where telecommunication fosters relationships with employees you never see. Specific topics include performance goals, motivational techniques, and systematic performance assessment.
Aquifer Remediation	1	Advanced	Approximately 40% of the world's drinking water is drawn from wells, and in some locations, like in the Pacific Southwest, 80% of potable water is drawn from aquifers. Groundwater is an easily accessible resource, and this accessibility is also its biggest threat. Contaminants above ground and underground can easily seep into aquifers. There are a large variety of contamination sources, both natural and man-made. Similarly, there are a wide variety of remediation techniques to properly treat contaminated aquifers. Throughout this course, engineers, architects, planners and contractors will learn about the most common contamination sources and the industry best practices used for groundwater aquifer remediation.

Title	Hours	Level	Description
Architect and Engineer Design Coordination	1	Fundamental	As with all things that require several members to work together, coordination-or lack thereof-can have a tremendous impact on the outcome. When many skillful individuals work together it is very useful to follow a methodological approach when coordination and communicating with each other. This 1-hour interactive online course will analyze project scopes, scheduling, quality control, and the permitting process, all items that will need to be coordinated before and during the design of the project. You will be armed with all the knowledge and skills you need to coordinate and communicate effectively throughout your organization. Use this course to enable a successful project, all the way from the pre-proposal to final construction.
Architectural Concrete	4	Intermediate	The good news about creating formidable, memorable, or simply interesting buildings is that architectural designers can choose from an almost limitless array of patterns, finishes, textures, color oxides, aggregate colors, and cements to fulfill their vision and their purpose. Once the desired combination is achieved, however, responsibility for obtaining the correct architectural product is shared by the contractor and the contracting officer, who must follow stringent guidelines. This interactive online course provides guidance for the design and construction of architectural concrete, including planning and design, forms, materials and proportions, batching and transporting, placement, curing and form removal, exposed aggregate surfaces, finishing, and quality assurance.
ASHRAE 100: Energy Efficiency in Existing Buildings	2	Advanced	The entire design & construction industry is focused on increasing energy, water, and resource efficiency in building designs, however, new buildings represent a very small percentage of the full building portfolio. Over 95% of buildings that will be in operation 10 years from now are already built - the key to a national and cultural improvement in energy and water use is increased efficiencies within existing buildings. This course will explore ASHRAE 100, which is aimed directly at those improvements and standards required to improve resource efficiencies within existing building stock.
ASHRAE Essentials - 62.1-2016 Ventilation for Acceptable Indoor Air Quality	1	Advanced	ANSI/ASHRAE 62.1-2016 - Ventilation for Acceptable Indoor Air Quality, the ventilation standard for non-residential buildings is one of many developed and maintained by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, better known as ASHRAE. The intent of this course is to introduce you to the Standard, its origins, its purpose and its application in maintaining economical and effective air cleaning solutions in buildings that will benefit human health and performance. This one-hour, essential course is intended for engineers of building HVAC systems, architects, building code officials, HVAC equipment manufacturers and building managers and owners and will introduce participants to the ASHRAE standard; cover the fundamental requirements of the standard; explain how these requirements are met; outline challenges experienced in different building types in maintaining a healthy indoor environment; present basic design, construction, and operations & maintenance concepts; and present the relationship of this standard with other current standards (e.g., ASHRAE 189.1, ASHRAE 55).

Title	Hours	Level	Description
ASHRAE Essentials: 55-2017 – Thermal Environmental Conditions for Human Occupancy	1	Advanced	This course is an introduction to ANSI/ASHRAE 55-2017 - Thermal Environmental Conditions for Human Occupancy, the building industry's standard for defining and quantifying relative comfort in the built environment. The Standard is one of many developed and maintained by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, better known as ASHRAE. The intent of this course is to introduce learners to the Standard, its origins, its purpose and its application. This course is intended for engineers of building HVAC systems, architects, building code officials, HVAC equipment manufacturers and building managers and owners.
ASHRAE Essentials: 90.1-2016 - Energy Standard for Buildings Except Low-Rise Residential Buildings	1	Advanced	This course is an introduction to ANSI/ASHRAE 90.1-2016 - Energy Standard for Buildings Except Low-Rise Residential Buildings, the building industry's standard for defining the steps that must be taken to meet and demonstrate minimum energy efficiency in the built environment. The Standard is one of many developed and maintained by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, better known as ASHRAE. The intent of this course is to introduce you to the Standard, its origins, its purpose and its application. This course is intended for engineers of building HVAC systems, architects, building code officials, HVAC equipment manufacturers and building managers and owners.
ASHRAE Guideline 13-2014, Building Automation Systems	2	Fundamental	Perhaps the most complex, and certainly the most dynamic, aspect of building design and construction are the automation and control systems. From pneumatic controls to dry contacts to intelligent multi-modal sensors, the industry has seen dramatic change. This course will discuss ASHRAE guideline 13-2014, which provides a standard framework from which to define and specify DDC (direct digital control) of both HVAC and energy management systems.
Asphalt Pavement - Design Basics	2	Intermediate	Asphalt pavement is used for many applications, including roadways, parking lots, bicycle paths and recreation facilities such as tennis courts and golf cart paths. This 2-hour online course covers some of the basic design considerations for proper structural design of pavements. The text of the course is taken from a guide prepared by the Maryland Asphalt Association. There will be a multiple-choice quiz at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Assessing Occupational Exposure	0.5	Intermediate	Assessing occupational exposures is a process for managing the health risks associated with workplace exposures to chemical, physical, and biological agents. This interactive, online course will cover ways to assess and prioritize exposures into exposure control categories to focus resources on the highest risks, differentiate "acceptable" from "unacceptable" exposures, and discuss ways to control "unacceptable" exposures. This course will introduce comprehensive strategies to best manage risk and resources.

Title	Hours	Level	Description
Asset Condition Management: Alignment and Balancing Training	1	Advanced	Machines that are not maintained can break down overtime and cause significant production delays. Precision alignment and balancing will directly increase asset life and increase the machines' Mean Time Between Failures. This interactive online course will teach you how alignment and balancing fits into the overall reliability and Asset Condition Management (ACM) Program. You will learn about the technologies used in alignment and balancing procedures. Additionally, you will be presented with sample machinery case histories addressing practical considerations for the alignment and balancing procedures.
Asset Condition Management: Motor Testing	1	Advanced	Motor testing techniques are critical procedures for industrial machines and should be performed before initial machine production run startup, and/or after any machine rebuild, and/or after any maintenance routine test that indicates a degraded electrical condition. This interactive online course will teach you how motor testing fits into the overall reliability and Asset Condition Management (ACM) Program. You will learn about common testing equipment and procedures. Additionally, you will be presented sample machinery case histories addressing practical considerations for testing industrial electrical motors.
Asset Condition Management: Vibration Analysis Training	1	Advanced	Machines that are degrading over time emit energy in the form of changed vibration patterns. Vibration Monitoring and Analysis can detect that change prior to catastrophic failure of the machine. This interactive online course will teach you about common problems found with vibration monitoring. You will also learn where vibration fits within a reliability program. Additionally, you will be introduced to new applications and technologies used in condition monitoring.
AutoCAD 2014: Part 1 - Introduction	2	Fundamental	AutoCAD® is the world's leading software for producing technical drawings or computer-aided design and drafting. AutoCAD® has become the global industry standard for technical and engineering drawings. This course presents a hands-on introduction to the AutoCAD® 2014 program and is the first in a series of courses on the 2014 release. You will be introduced to the AutoCAD® 2014 program and take a look at its basic features. You will also get an introduction to drawing basic shapes and lines. This course includes a practical application where you will get to complete real-world examples using the AutoCAD® program.
AutoCAD 2014: Part 2 - Editing Techniques	2	Fundamental	AutoCAD® is the world's leading software and the global industry standard for producing technical drawings or computer-aided design and drafting. This course presents a hands-on introduction to the AutoCAD® 2014 program and is the second in a series of courses on the 2014 release. In this course, you will be exploring the AutoCAD® 2014 program in more detail and looking at layers, object properties, modifying objects, and adding text annotation to drawings. At the start of the course, you will be able to download the project files that the instructor is referencing. It is highly recommended that you download these files so you can follow along with the instructor as he leads you through the AutoCAD® software and its features.

Title	Hours	Level	Description
AutoCAD 2014: Part 3 - Editing & Construction	2	Fundamental	AutoCAD® is the world's leading software and the global industry standard for producing technical drawings or computer-aided design and drafting. This course presents hands-on introduction to the AutoCAD® 2014 program and is the third in a series of courses on the 2014 release. In this course, we shall cover construction lines, auto mode, hatching, dimensioning, and setting up dimension styles. We will have a practical application where we apply all of the above to a real-life situation. At the start of the course, you will be able to download the project files that the instructor is referencing. It is highly recommended that you download these files so you can follow along with the instructor as he leads you through the AutoCAD® 2014 software and its features.
AutoCAD 2014: Part 4 - Drawing Aids and Utilities	2	Fundamental	AutoCAD® is the world's leading software and the global industry standard for producing technical drawings or computer-aided design and drafting. This course presents a hands-on introduction to the AutoCAD® 2014 program and is the fourth in a series of courses on the 2014 release. In this course, we will look at how to create and work with groups, blocks, annotation, and utilities. We'll look at how to set up and use the coordinate systems. And then, we shall have a practical application where we apply the above to a real-life problem. At the start of the course, you will be able to download the project files that the instructor is referencing. It is highly recommended that you download these files so you can follow along with the instructor as he leads you through the AutoCAD® software and its features.
AutoCAD 2014: Part 5 - Template, Layouts, and Viewports	2	Fundamental	AutoCAD® is the world's leading software and the global industry standard for producing technical drawings or computer-aided design and drafting. This course presents hands-on introduction to the AutoCAD® program and is the fifth in a series of courses on the 2014 release. In Part 5 of our lecture series on AutoCAD® 2014 we shall cover layouts, layout templates, viewports, plotting, exporting, and at the end we shall have a practicum. At the start of the course, you will be able to download the project files that the instructor is referencing. It is highly recommended that you download these files so you can follow along with the instructor as he leads you through the AutoCAD® software and its features.
AutoCAD 2014: Part 6 - Advanced Editing & Annotation	2	Fundamental	AutoCAD® is the world's leading software and the global industry standard for producing technical drawings or computer-aided design and drafting. This course presents hands-on introduction to the AutoCAD® program and is the sixth in a series of courses on the 2014 release. In Part 6 of our series on AutoCAD® 2014, we shall cover arrays, annotation scaling, external references, and then we'll have a practical problem where we'll apply these to a real-life engineering situation. At the start of the course, you will be able to download the project files that the instructor is referencing. It is highly recommended that you download these files so you can follow along with the instructor as he leads you through the AutoCAD® software and its features.

Title	Hours	Level	Description
Bamboo Flooring and Beyond	1	Intermediate	Have you heard about bamboo? It is used for food, clothing, and to build bridges. With its inherent sustainability, it's becoming especially popular as a flooring option. Do you know why? Here's your opportunity to learn about and speak knowledgeably about bamboo. This webcast takes you from how bamboo grows and gets harvested to valuable information about its characteristics, how it compares to wood, and why its such an excellent choice for flooring. You'll get basics, processes, and the many choices that are available whether you are looking for "green" options or simply an attractive flooring material. This course will meet your needs.
Barba v. Walker - A Dave Gibson Public Lands - Related Case	2	Intermediate	This 2-hour interactive online-course presents ONE interesting land boundary case that is particularly instructional as to the proper application of the principles of boundary location for PUBLIC LANDS-RELATED parcels. It introduces many of the principals of boundary surveying in a systematic fashion. The problem statement will suggest alternate approaches, principles, and solutions. You must solve the case according to what you think is the proper application of survey principle. You will then compare your solution with DAVE GIBSON'S 'best practices' solution which incorporates the correct application of boundary location principles. Defense for the 'best practices' solution will be given for consideration and further learning by the attendee. If you love to discuss tough boundary location situations, then you will love this case and learn something new. You will also learn other viewpoints for your consideration. The beginner can benefit from the instruction they give as much as the experienced practitioner. This course is a portion of the larger 6-hour course titled “Dave Gibson's All Star Public Lands-Related Cases” also offered on RedVector.com. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Basic Financials for Land Surveyors	1	Intermediate	Many land surveyors are excellent at land surveying, as you would expect, but completely helpless when it comes to operating a business. Surveyors, like other professionals, should not be expected to be expert business people. However, many surveyors are engaged in private practice, or intend to be at some point in their careers, and it is vitally important to understand how to measure the success of the business enterprise. Thus, they need to know about financial statements, the measurement of business success, and the analytical tools to accomplish profitability; they are the measurements necessary to determine the health of the business and to guide managers in making changes to allow attainment of financial objectives. This 1-hour interactive online course is an introduction to the basic financial statements needed to operate a small land surveying business, and a brief overview of their use. This course includes a multiple-choice quiz at the end. This course also includes a downloadable Excel file. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Basic Wind Loads ASCE 7-10	1	Intermediate	If you design buildings, you have to understand wind forces and how to prepare for them. One of your tools in designing for wind loads on structures, including roofs, walls, and windows, is the ASCE 7 Manual, Chapter 28, Envelope Procedure (formerly low-rise buildings in Method 2). This interactive online course gives you the 2010 updates to Chapter 28. You get information, step-by-step instructions, and examples to help you in making your calculations We'll cover how to get started as well as the calculations for wind loads on the ends and sides of a structure.
Basics of Leadership: 01-Leadership Challenges	1	Intermediate	Leaders in the 21st century must accommodate themselves to today's rapidly evolving marketplace. Leadership Challenges will teach you about the characteristics of 21st century organizations. You will become familiar with current trends as they apply to business, and gain a better understanding of changing employee expectations and motivations in the workplace. This is the first course in a series of six courses on 21st century leadership.
Basics of Leadership: 02-Changes in Corporate Culture	1	Intermediate	A company's organizational structure has a significant impact on how well a company performs and how well its employees work together to achieve common goals. In this course, you will learn the characteristics of a healthy organizational culture. You will gain insight into understanding workplace behaviors and learn how to direct cultural change. This course will provide you with ideas on how to shape healthy organizations and the insight needed to lead cultural change in your organization. Changes in Corporate Culture is course number two in a series on 21st century leadership.
Basics of Leadership: 03-Keeping Employees Energized	1	Intermediate	Employees who are excited about being at work each day tend to be more conscientious, yield higher quality work, have more momentum, and are less likely to allow themselves to become distracted. In this course, you will learn about the right ways to energize employees. You will gain insight on how to effectively communicate with and empathize with employees. You will better understand how to build morale in the workplace and how to stimulate creativity and capitalize on employee energy. This course is part of a six-course series on 21st century leadership. This is course 3.
Basics of Leadership: 04-Knowledge Management	1	Intermediate	Knowledge is the most valuable asset most companies possess. Knowledge fuels innovation and represents a strong competitive advantage. Therefore, how companies manage their knowledge directly affects their productivity and capacity to compete. Knowledge Management looks at three different management styles and provides insight into how knowledge workers in the 21st century play an important role in today's workplace and how companies grow their intellectual capital. This is the fourth course in a six-course series on 21st century leadership.
Basics of Leadership: 05-Elements of Change in Business	1	Intermediate	Pushing for change can result in a more competitive organization. But change does not guarantee success and involves risk and cost. However, not doing anything can be risky and costly too. Elements of Change addresses the importance of change and why it's essential to speak up when you see something that can be done better or handled differently. This course will allow you to look at your organization with new perspective and contemplate how it can become more competitive and grow in the marketplace. This is the fifth course in a series of courses dedicated to taking a closer look at successful 21st century leadership.

Title	Hours	Level	Description
Basics of Leadership: 06-Leadership Dynamics	1	Intermediate	Leadership Dynamics will introduce you to some of the common misperceptions about leadership. You will review the fundamental qualities of a great leader and learn how you can develop your own leadership style. You will learn the value of building strong relationships with bosses and co-workers, the power of influence, how to shape corporate culture, and how to build great teams. This is the final course of the Front Line Leadership series.
Basics of Soil Resources 1: Classification, Mapping and Data Bases	2	Fundamental	The rise and fall of civilizations through history has been based on the condition of the soil. From the fertile crescent to the Egyptian Empire and the Han Empire of China, it is the soil that built the empire and land degradation that led to the deterioration and eventual collapse of these civilizations; 99.7 percent of human food comes from cropland, which is shrinking by more than 10 million hectares (almost 37,000 square miles) a year due to soil erosion. This 2-hour online course discusses soil as a complex, dynamic, biogeochemical system that is the principal substrata, vital to every life cycle of terrestrial vegetation and organisms. Soil serves as a reservoir of water and nutrients as well as a medium for the filtration and breakdown of wastes. Faced with climatic changes, increasing population and rapid decreases in the extent and quality of the soil resource base, the global community must now take stewardship of the resource most immediately linked to our survival.
Basics of Soil Resources 2: Erosion, Desertification, Salinization & Soil Acidification	2	Fundamental	This course focuses on the topics of erosion, desertification, salinization and soil acidification. These are issues that affect all life on earth. 70% of earth's land capable of supporting agriculture has suffered erosion and soil degradation. This has a direct impact on the chemical cycles of life, the atmosphere, water and food supplies of the entire planet. The rise and fall of civilizations through history has been based on the condition of the soil. From the fertile crescent to the Egyptian Empire and the Han Empire of China, it is the soil that built the empire and land degradation that led to the deterioration and eventual collapse of these civilizations. Soil and land resources are generated, developed and renewed within a geologic time frame, in processes that take hundreds of thousands or even millions of years. The span of human history is measured in some thousands of years. For this reason, land resources must be regarded as essentially non-renewable. It is therefore exceptionally important to adopt a proactive approach to conservation and sustainable management of these critical resources.
Basics of Water Resources: Groundwater Contamination	2	Fundamental	Since the 1970s there has been a disturbing discovery of hazardous wastes in ground water. Early discoveries of sites such as Love Canal in New York and the Denver Arsenal in Colorado initiated a new era in groundwater studies. Throughout the 1980s numerous studies of abandoned waste sites, spills and leaking underground storage tanks became headline news. Groundwater hydrology is now critical to understand the mechanisms and rates of transport of physical, chemical and biological contamination below the ground, and the impact of those contaminants on the groundwater supply. This 2-hour interactive online course covers the fundamental sources and classifications of groundwater contamination. The course focuses on the discussion of natural and man-made sources of groundwater pollution and gives some perspective into various systems of categorization and classification. The RedVector course entitled Basics of Water Resources:

Title	Hours	Level	Description
			Groundwater Hydrology covers the introduction to the hydrologic cycle and the basic terminology of groundwater. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Basics of Water Resources: Groundwater Hydrology	1	Fundamental	This 1-hour interactive online course covers the fundamentals of water supply hydrology. From the hydrologic cycle to the nature and character of groundwater as it goes from recharge zones to discharge points, the basic concepts and terminology are introduced in a clear and easy to read form. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Basics of Water Resources: Wetland Basics	3	Fundamental	Once perceived as worthless, wetlands are now known to be vital to water quality, erosion control, species diversity, biological productivity and even climate. Their form and function involves a complex interaction between geological setting, hydrology and climate. Their reaction to and interaction with human activity in a region will determine the future of humans in that region, since they ultimately play a role in water quality, flood control, pollution and climate control as well as providing food and recreational resources. This 3-hour interactive online course covers the fundamentals of wetlands. Keywords: wetland, hydrology, climate, flood control, water quality, pollution, climate control, ecology, species diversity, biological productivity, environment, environmental, hydrologic cycle, chemical cycles, swamp, bog, fen, Clean Water Act, Section 404. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Battery Applications	3	Intermediate	This 3-hour interactive online course is an overview of the most common chemical cell batteries in use today. It includes information about both primary and secondary battery types. Battery characteristics such as the chemical composition, electrical parameters, and physical construction are reviewed. Appropriate application issues are discussed for each battery type as well as the appropriate charging methods for rechargeable battery types. The course includes a test at the end of each scenario to measure your understanding of the material.
Best Practices for Creating Superior Land Description Plats	1	Fundamental	This course will define Best Practices for Creating Superior Land Description Plats. It will first describe the intent and purpose of any plat, then briefly review historic practices, basic mapping requirements and minimal data required to record a plat throughout North America. The course will then shift from review to recommendations that will guide a surveyor step by step through the creation of exceptional maps. Recommendations will include a checklist of essential elements that exceed the usual state-required minimum mapping requirements. An important part of the course will be a discussion of the surprising benefits that arise from creating outstanding plats, which include decreasing your own liability as well as aiding surveyors who may walk in your footsteps on some future date.

Title	Hours	Level	Description
Better Business Writing	0.75	Intermediate	Good business writing is imperative to achieving success, no matter what business you're in. Effective communication will help you grow more confident in your ability to express yourself clearly. This course deals with the importance of being able to express yourself clearly through the written word. It also explores the fundamentals of grammar, the importance of finding and defining your personal style, and how to improve upon it as you grow in the business world.
Better Roadway Design - Curbs & Pedestrian Control Devices	2	Advanced	Roadway design is commonly based on minimum AASHTO (American Association of State Highway and Transportation Officials) and state DOT (Department of Transportation) design standards. However, these design standards are based on some assumptions of driver performance that may not be realistic, particularly as our population ages. The Federal Highway Administration has published a design handbook that provides substantially different guidance than that commonly prescribed by AASHTO and state DOT's. This 2-hour interactive online course covers the subjects of edge treatment/delineation of curbs, curb radii, and pedestrian control devices at roadway intersections in the FHWA document. The recommendations of FHWA can generally be implemented very economically. While the AASHTO and state DOT standards remain the minimum standards, the designer should recognize that they are just that - minimum standards. Designs can be improved by following the guidance in this course. There is a test included at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Better Roadway Design - Intersection Signalization	2	Advanced	Roadway design is commonly based on minimum AASHTO (American Association of State Highway and Transportation Officials) and state DOT (Department of Transportation) design standards. However, these design standards are based on some assumptions of driver performance that may not be realistic, particularly as our population ages. The Federal Highway Administration has published a design handbook that provides substantially different guidance than that commonly prescribed by AASHTO and state DOT's. This 2-hour interactive online course covers the subject of signalization for turning movements at roadway intersections in the FHWA document. The recommendations of FHWA can generally be implemented very economically. While the AASHTO and state DOT standards remain the minimum standards, the designer should recognize that they are just that - minimum standards. Designs can be improved by following the guidance in this course. There is a test included at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Better Roadway Design - Intersection Signing	3	Advanced	Roadway design is commonly based on minimum AASHTO (American Association of State Highway and Transportation Officials) and state DOT (Department of Transportation) design standards. However, these design standards are based on some assumptions of driver performance that may not be realistic, particularly as our population ages. The Federal Highway Administration has published a design handbook that provides substantially different guidance than that commonly prescribed by AASHTO and state DOT's. This 3-hour online course covers the subjects of signing at roadway intersections in the FHWA document. The recommendations of FHWA can generally be implemented very economically. While the AASHTO and state DOT standards remain the minimum standards, the designer should recognize that they are just that - minimum standards. Designs can be improved by following the guidance in this course. There is a test included at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Better Roadway Design - Intersections	3	Advanced	Roadway design is commonly based on minimum AASHTO (American Association of State Highway and Transportation Officials) and state DOT (Department of Transportation) design standards. However, these design standards are based on some assumptions of reaction times and driver performance that may not be realistic. The Federal Highway Administration has published a design handbook that provides substantially different guidance than that commonly prescribed by AASHTO and state DOT's. This 3-hour interactive online course covers the subjects of intersections in the FHWA document. The recommendations of FHWA can generally be implemented very economically. While the AASHTO and state DOT standards remain the minimum standards, the designer should recognize that they are just that - minimum standards. Designs can be improved by following the guidance in this course. There will be a multiple-choice quiz at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Better Roadway Design - Lane Assignment, Signals & Lighting	2	Advanced	Roadway design is commonly based on minimum AASHTO (American Association of State Highway and Transportation Officials) and state DOT (Department of Transportation) design standards. However, these design standards are based on some assumptions of driver performance that may not be realistic, particularly as our population ages. The Federal Highway Administration has published a design handbook that provides substantially different guidance than that commonly prescribed by AASHTO and state DOT's. This 2-hour interactive online course covers the subjects of devices for lane assignment on intersection approach, traffic signal performance issues and fixed lighting installations at roadway intersections in the FHWA document. The recommendations of FHWA can generally be implemented very economically.

Title	Hours	Level	Description
			While the AASHTO and state DOT standards remain the minimum standards, the designer should recognize that they are just that - minimum standards. Designs can be improved by following the guidance in this course. There is a test included at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Biofilters: A Natural Approach to Storm Water Pollutant Removal	2	Intermediate	Bioswales and constructed wetlands are under increasing use to address pollutants in storm water runoff. However, many installations of these BMPs have failed or have not been as successful as hoped. This interactive online course provides a discussion of the concepts of biofilters. Most of the failures can be attributed to insufficient information being available or to bad or no expert input into the design, construction, vegetating, or maintenance of the bioswale or constructed wetland. This course is intended to provide information on the design and use of biofilters so that designers will be able to make better decisions on the design, construction, implementation, and maintenance of these Best Management Practices.
Bollard Boot Camp - How to Protect Places and People From Vehicle Incursions	1	Intermediate	Vehicles crash into storefronts, commercial buildings, and pedestrian areas more than 60 times every day, with as many as 500 Americans killed and more than 4000 injured. From 2016 thru 2017, more people in America and Europe were injured or killed in vehicle attacks on crowds than any other form of terrorist attack. More than $150 million in liability claims have been paid out by property owners, property managers, business owners, architects and engineers in the United States in the last two years. In this interactive online course, we will discuss what makes bollards effective safety and protective devices. You will come away with a better understanding of ASTM test standards as well as emerging state codes. Finally, you will learn how to limit possible liability resulting from a failure to include bollards in designs.
Boundary Disputes Between Adjoining Land Owners: Resolutions, Practices & Procedures	1	Fundamental	This course will focus on boundary disputes between adjoining land owners. Such conflicts are not uncommon, and the land surveyor often plays a key role in resolving them. As a licensed professional, the surveyor is viewed as a neutral party, and able to uphold the principle that boundary surveying is a property line between two parties, and not solely the line determining property of the surveyor's client. As such, the public has the expectation that resolution will be both correct and honorable. This course will examine protocols for the professional to follow when encountering disputes between abutters.
Boundary Monuments: Artificial and Natural Markers	2	Intermediate	Land surveying has a rich—and sometimes quirky—history of using monuments that were particular to a given region like wood stakes, iron pipes, and wheelbarrow axles. As a surveyor, you need to know the differences between natural and artificial boundary monuments. This interactive online course gives you a brief history of boundary monuments; legal principles of permanence, visibility, and accuracy; and a discussion of the “ideal” monument.

Title	Hours	Level	Description
Brayton Cycle Analysis	1	Intermediate	The ideal cycle for the simple gas turbine is the "Brayton Cycle", also called the Joule Cycle. In this 1-hour interactive online course, the open, simple Brayton Cycle used for stationary power generation is considered. The Brayton Cycle thermal efficiency is also presented (but only for the air as the working fluid) and the thermal efficiency derivation is presented with a simple mathematical approach. The Brayton Cycle is presented in the "T - s" diagram and its major performance trends (specific power output and power output) are plotted in figures as a function of compressor pressure ratio, gas turbine inlet temperature and working fluid mass flow rate. In this course, the student becomes familiar with the Brayton Cycle, its components, T-s diagram, operation and major performance trends. This course provides the student with background material regarding basic thermodynamic concepts and a glossary for reference material. It should be noted that this online course does not deal with capital, operational or maintenance costs.
Bridge Inspection and Maintenance: Laws and Requirements	2	Intermediate	Bridge Inspection has become a serious issue in the United States. Structurally deficient and/or functionally obsolete bridges constitute one fourth of the Nation's bridge inventory. The cost of road and bridge improvements is estimated to be over $200 Billion. In this environment, bridge inspection is a very important factor in the general safety and welfare of all Americans. This 2-hour online course explains the law impacting bridge inspection as well as the general requirements of an inspector. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Broward County Ordinances Chapter 9	1	Fundamental	Chapter 9 of the Broward County Ordinances essentially paraphrases some of the provisions in State of Florida statutes on construction industry laws and rules, mainly from: Chapter 489 Construction Contracting, Chapter 527 Sales of Liquefied Petroleum Gas, and Chapter 553 Building Construction Standards. Chapter 9 of the Broward County Ordinances is entitled simply “Contractors.” Here we find ordinances which apply to specific types of contractors working in Broward County, Florida. This chapter spells out the purpose, scope, and certification requirements as well as the potential disciplinary actions which may apply to contractors who choose to operate in violation of these ordinances. In this course we review the professions covered and the purpose of the ordinances. the requirements for obtaining certification as well as maintaining and renewing a certificate, the complaint and disciplinary system, and terms vital to Chapter 9 of the Broward County Ordinances.
Building a Sustainable Future	1	Fundamental	Over 7 billion people now inhabit the earth, placing unprecedented pressure on the planet's soils, waters, forests, and other natural capital. The majority of the global population lives in urban areas, where their interactions with nature, and the benefits that these interactions provide, commonly occur in small-scale sites and residential settings. Most often, these landscapes are treated as inconsequential, and their full potential to mend humanity's environmental offenses and improve our quality of life is commonly overlooked. This course illustrates the importance of creating regenerative and resilient systems that increase the provision of ecosystem services. Site sustainability is defined, and

Title	Hours	Level	Description
			the value of education about sustainability and stewardship toward our built and natural ecosystems is discussed. The importance of instilling a love of nature in our children is examined, in addition to the monitoring and adaptive management of ecosystems so maintenance practices can be continually adjusted to improve the overall function of the site. The purpose of this course is to elevate the discussion of sustainability beyond “doing less bad”—attempting to merely slow down environmental degradation—to create regenerative sites that restore ecosystem function and rebuild the earth's natural capital. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2012. All rights reserved.
Building Design and Construction Features for Fire Protection	1	Fundamental	Hostile fires are responsible for 3,000 deaths and 16,000 injuries each year. Approximately 100 firefighters die in the line of duty during that same period. In addition to human injury and death, is the property loss which is estimated to be almost $12 billion a year. This interactive online course will teach you the basic, but critical, aspects of how a building design influences the likelihood of a hostile fire and how that same design can mitigate the effects of an emergency fire incident. You will learn about basic building layout, construction components, building materials, fire ratings, occupancy considerations, emergency population management, and passive and active mitigating systems.
Building for Senior Living: Building Codes, Sustainability, and Structural Systems	1	Fundamental	Because the health of the aging can be precarious and their safety is paramount, senior housing and care facilities are very carefully regulated. Federal and state governments subject some new projects to codes that govern program areas and the construction of all the major building systems. In addition, most states have detailed regulations written specifically to govern certain senior housing and care building types, including nursing homes, adult day care, outpatient diagnostic and treatment facilities, and some forms of assisted living. These regulations cover everything from space and environmental standards to resident rights and staffing requirements. This course covers building codes, structural systems, and sustainable building design for senior housing and care facilities. Federal, state, and local codes and regulations will be discussed, including safety and accessibility requirements. Selection of appropriate structural system or combination of systems, and the incorporation sustainable design principles into the senior housing and care facilities will also be covered in this course. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Building for Senior Living: Interior Design Elements and Considerations	2	Fundamental	This course is divided into four major sections - Acoustics, Lighting Design, Interior Design, and Renovation, Restoration, and Reuse. Acoustics, of course, deals with sound. We will cover the many acoustical considerations to keep in mind when designing for everything from the public areas to the very private ones. In the Lighting Design section we'll cover the basics of light levels, lamping options, and daylighting. We'll also review guidelines for specialized spaces, as well as resident rooms in long-term care and assisted living facilities. The Interior Design chapter will discuss the design process, various trends, and guidelines for color, materials, and wayfinding concepts. For Renovation, Restoration, and Reuse, we'll explore options for rehabilitation, deconstruction,

Title	Hours	Level	Description
			and new construction for the various types of facilities. We'll provide comprehensive guidelines, many images of examples, and tables of additional information. You'll get opportunities to apply what we're covering, and printable resources to reference in the future. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Building for Senior Living: Mechanical, Plumbing, Fire-Protection, Electrical, Communications, and Low-Voltage	1	Fundamental	When designing buildings and spaces for an aging population, special requirements for building systems must be taken into consideration. Building systems account for significant parts of both the construction and operating costs of senior housing and care facilities. This course will cover multiple building systems, including mechanical, plumbing, fire-protection, power distribution, communications systems, and low-voltage electrical systems, and discuss special requirements for these systems in senior housing and care facilities. The use of spaces within the building and the needs of its occupants should be carefully analyzed, and design should be focused on the typical comfort, convenience, and safety needs of older adults. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Building for Senior Living: Programming and Planning Guidelines for Facilities Part 1	2	Fundamental	This is the first of two courses on programming and planning guidelines for senior living facilities. The senior living industry has expanded and diversified to address demographic change. This course provides an overview of the major issues involved in the planning, design, and development of specialized environments for this new group of aging Americans. Specifically, these two courses describe the issues associated with each of the 10 major building types within the general framework of design for aging. In Part One, you will be introduced to all 10 building types, and we will take a detailed look at the first four, including Community Based Options, Geriatric Outpatient Clinics, Adult Day Care, and Long-Term Care. The remaining six building types will be looked at in Part Two. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Building for Senior Living: Programming and Planning Guidelines for Facilities Part 2	2	Fundamental	Welcome to the second part of Building for Senior Living: Programming and Planning Guidelines for Facilities. In this course we will continue our discussion on the remaining six building types for these facilities. We will take a detailed look at the guidelines for Hospice, Assisted-Living Residence, Dementia/ Alzheimer's Care, Independent/Residential Living Apartments, Continuing-Care Retirement Community, and Active Adult Community facilities. These guidelines are only a starting point for the project planning or programming effort. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Building for Senior Living: The Future of Senior Living	1	Fundamental	Since the 1980s, the senior living industry's response to a variety of trends and challenges has yielded new models for housing and care. This course summarizes some of the catalysts for that change, as well as those that will accelerate the rate at which the industry continues to evolve. At the end of this course, there is an extended discussion regarding the biggest challenge for the senior living industry: affordability. This course will discuss the following six issues that have been particularly challenging in recent years: 1. Demographics 2. Consumer expectations 3. Lifestyle changes 4. Service partnerships

Title	Hours	Level	Description
			5. New housing and care concepts 6. Affordable options Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Building Information Modeling (BIM) for Contractors	2	Fundamental	Utilizing BIM technology has major advantages for construction that save time and money. An accurate building model benefits all members of the project team, allowing for a smoother and better planned construction process that reduces the potential for errors and conflicts. This course explains how a contractor can obtain these benefits and what changes to construction processes are desirable. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2011. All rights reserved.
Building Information Modeling (BIM) for Owners and Facility Managers	2	Fundamental	Owners and facility managers can realize significant benefits on projects by using BIM processes and tools to streamline the delivery of higher quality and better performing buildings. In this interactive course, we will discover how owners can use BIM to manage project risk, improve project quality, and deliver value to their businesses. You'll also see how facility managers can use BIM to better manage their facilities. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2011. All rights reserved.
Building Performance: Design Through Operations	1	Intermediate	How has building design changed in recent years? Have you thought about how much more energy efficient your design could be today? How about in the next 5, 10, or 15 years? In this interactive online course, we will discuss how to best implement sustainable buildings from the design phase through the operations phase by focusing on the 3 main narratives of integrated design, construction commissioning, and performance tracking. By following up with the design of your building through the performance period, your project can meet the requirements of Architecture 2030 and can become a marketing opportunity of proven performance tracked on sustainable design.
Building Systems for Designers - Advanced Acoustic Design Principles	2	Advanced	Achieving good acoustics has become increasingly difficult for a variety of reasons. Some of those reasons are budgets with low construction budgets, weight of various materials, and an increase in open areas and a higher density of employees in the office. Interior designers can have a profound effect on the acoustical quality of an interior environment. In this course we will look at Sound absorption and Sound Transmission Between Spaces, examine all types of environments from offices, schools, and performance centers. We will examine how sound in one space can be reduced within that space as well as what determines how much sound that travels to an adjoining space will be heard. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Building Systems for Designers - Electrical Appliances and Communications Equipment	1	Fundamental	As we all know from talking with parents and grandparents and from watching old movies and TV shows, technology at home and in the office has changed considerably. Many of the items we consider necessities in our modern world would seem like magic to our ancestors. This course will give you the evolution of our most commonly used appliances as well as current information to use in designing for today's homes and offices. We'll focus on kitchen appliances, laundry equipment, and data and communications wiring. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.

Title	Hours	Level	Description
Building Systems for Designers - Electrical Systems Basics	2	Fundamental	Our reliance on electricity has serious implications for environmental quality and resource conservation. Lighting consumes 25 to 30 percent of the energy used in commercial buildings. This adds heat to a building's interior and increases energy use for air conditioning. In this course we will review basic principles of system design and the various sources of power. We'll also explore the design process, system components, and end-point devices. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Building Systems for Designers - Fire Safety	3	Fundamental	Most deaths caused by building fires occur in homes, yet the National Fire Protection Association reports that only about 23 percent of households have actually developed and practiced a home fire escape plan to ensure they could escape quickly and safely. When fires occur in high-rise buildings, great numbers of persons are required to travel vertically downstairs in order to evacuate so it is especially important to have a plan for evacuation. This course covers how building interiors are designed to prevent fires and help people escape. This is, perhaps, the most valuable information that interior designers should know about building systems. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010. All rights reserved.
Building Systems for Designers - Heating and Cooling Systems	2	Fundamental	The building envelope's design influences comfort in the way it transmits heat to surfaces and slowly changes air temperature. Air and surface temperatures can often be controlled by passive design techniques. Air motion and air humidity contribute to comfortable cooling. Access to outdoor air improves air quality as well as provides daylight, a view, and solar heat on cold days. In the preface to the ninth edition of Mechanical and Electrical Equipment for Buildings, the authors explain how the perspective of engineers has changed: “Buildings today contribute to negative global consequences of the future, and our approach to mechanical and electrical systems must consider how best to avoid environmental impacts.… “We have moved from systems that centralize all sources of heating, cooling, water, and electricity toward those that encourage more localized production and control.” (Benjamin Stein et al., John Wiley & Sons, Inc., Hoboken, NJ, 2006, p. xvii). John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Building Systems for Designers - Indoor Air Quality	2	Fundamental	As buildings become more tightly controlled environments, indoor air quality (IAQ) and its effects on our health become an increasingly critical issue. Today, there are more than 80,000 synthetic chemicals in use, most of which have not been tested individually or in combination for their effects on human health. Also, the materials used in building, furnishing, and maintaining a building potentially can contain toxins that will effect air quality. In this course, we will take a look at the issue, materials, and contaminants that can cause poor indoor air quality. We will look at the was to counter act these issues and create a good indoor air quality through ventilation and air cleaners. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Building Systems for Designers - Introduction to Acoustic Design Principles	1	Fundamental	Interior designers' experience the world in a strongly visual way, they are often deeply affected by messages received by their other senses as well. Perhaps the most critical of these is the sense of hearing. Sound in a well-designed space reinforces the function of the space and supports the occupants'

Title	Hours	Level	Description
			experience. A poorly designed acoustic environment hinders both the function and the enjoyment of the space, and it can even damage the health of the user. In this course we will take a look at the effect that sound can have on the environment. In this course, we will explore the world of sound and the effect it has on building materials and the people occupying the space. We will look at the designers roles and how to deal with Interior Acoustics Design Issues. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Building Systems for Designers - Lighting Systems	2	Fundamental	All interior design projects start with an investigation of existing conditions. The location of an interior project within an existing or newly designed building, whether at the perimeter or at its center, affects light, view, and energy demands. Interior design schools routinely offer full-semester courses on lighting design. It is not the purpose of this course to try to cover all of the facets of lighting design to the degree that a lighting course would. Instead, we will look at how the current approach to lighting developed as well as how current lighting design practices affect relationships between architects, engineers, lighting designers, and interior designers. We will also look at and controls and will consider practical fixture requirements and lighting system maintenance. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Building Systems for Designers - Principles of Thermal Comfort	2	Fundamental	In Regenerative Design for Sustainable Development, John Tillman Lyle writes, “To control the flow of energy within a building, the materials and the details of their assembly must augment the form. Five elements of a building are particularly important for their roles in the thermal regime..." This course explores those five elements and how they determine thermal comfort. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Building Systems for Designers - Structural Systems	3	Fundamental	Although your work as an interior designer is concerned with interior spaces, you will benefit from an understanding of the way buildings are constructed. Why they stand up or fall down, and how different building techniques affect the shaping and utilization of interior space, should be areas of interest to you. In this course we will cover three major areas: Basic Structural Principles and Elements, Structural Forms, and Horizontal Structures and Vertical Movement. We cover everything from superstructure and foundation to windows and walls to horizontal and vertical conveyance. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010. All rights reserved.
Building Systems for Designers - Toilet and Bath Design	1	Fundamental	In this course, we will touch upon the history of plumbing specifically related to bathrooms, which will lead to the various regulations and standards that must be met in the design and placement of toilets, urinals, bathtubs, sinks, and drinking fountains. John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Building Systems for Designers - Water Supply, Distribution, and Waste Systems	2	Fundamental	In this course, we will learn how water gets from its original source to our homes and offices and how it is disposed. We will also cover the various components that make it possible. Additionally, we will learn about efforts currently being made to be more water efficient. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.

Title	Hours	Level	Description
Building Systems for Designers: The Building and Its Environment	2	Fundamental	Although interior designers are primarily concerned with the conditions inside buildings, they benefit from observing a building's site, climate, and geography. Interior spaces are increasingly blended with their natural settings. Wise energy use dictates awareness of how sun, wind, and cold affect the building's interior. Interior designers today are working as part of environmentally aware design teams that blend knowledge of interior design principles with an understanding of a building's natural surroundings. This interactive online course examines the connection between a building's interior and exterior environment and the influence of external weather and site conditions on a building envelope. Sustainable design strategies will be discussed, as well as building codes and regulations. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Business Communication Fundamentals	0.75	Intermediate	In the business world, effective communication is an essential part of getting things done specifically, getting things done right, the first time. Memos, letters, presentations and meetings are the means by which we communicate. This course deals with how to develop them what to include and what not to include for that's what dictates how well we communicate.
Business Disputes: Alternative Resolutions to Litigation	1	Advanced	Design professionals - engineers, architects, surveyors and others - work with developers, clients and attorneys on a daily basis. Unfortunately, having a dispute over business issues such as fees, expenses, services and contract requirements is inevitable during the life of a business professional. This course will help you become familiar with what is known as Alternative Dispute Resolution (ADR). You will learn how to lower the hostility, clearly see the issues from both points of view, and resolve the dispute. This interactive online course provides techniques to do so as quickly and as inexpensively as possible so that you are not dragged into the court system. In addition, this course examines the leading causes of business disputes involving design professionals. It analyzes the techniques and mechanisms used to resolve disputes without litigation.
Business Execution: 01-Execution Strategies	1.5	Intermediate	Business execution is about taking ideas and turning them into reality. But to do that, you need to adopt a culture of execution. Execution Strategies introduces you to the hallmarks of an execution culture, and teaches you how to develop one in your organization. You'll learn about the importance of accountability; how to handle change; how to align the right talent with your goals; and, once you are aligned in executing your strategy, how to stay on track until you get where you want to go.
Business Execution: 02-Inspiring Workplace Excellence	1	Intermediate	When you have the foundation for a business execution culture in place, it takes constant vigilance to keep the momentum going, keep employees energized, and make sure your key people are the right ones to maintain the culture and maximize output. Inspiring Workplace Excellence deals with the importance of keeping employees energized by keeping them empowered. When you maintain positive energy, it helps create a work environment that inspires employees.

Title	Hours	Level	Description
Business Execution: 03-Turning Ideas into Actions	1.5	Intermediate	There are concrete steps you can take to create a culture that will assist, rather than impede, the execution of ideas and strategies. Turning Ideas into Actions will show you how successful organizations establish a business execution culture. In addition, you will see how to avoid wrong questions, inflated numbers, unrealistic projections, and outrageous stretch goals that set departments up for failure.
Business Rules for Land Surveyors	2	Intermediate	This 2-hour online course gives the student a strong background in fundamental principles of managing a land surveying business that are commonly not applied. These are basic rules that are more common sense than anything else but represent 30 years of business experience by the Author. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Campus Planning - An Introduction	1	Fundamental	In this interactive online course you will focus on the important role campus planning takes in forming a distinctive sense of place. You'll be exposed to the fundamentals of campus planning and the importance of planning to the social, cultural, and educational aspects of a higher learning institution. You'll learn to plan successful campuses that: Engage in long-range planning efforts Create spaces of consistent architectural distinction Foster an environment for intellectual and social interaction.
Carbon Tracking/Reduction Strategies for Facility Design and Operations	2	Intermediate	Carbon emissions are increasingly taking center stage at the forefront of sustainability. While concepts like "net zero energy" are gaining mainstream traction and help account for the design/reuse of facility's' energy utilization, they do not holistically account for their long-term operational carbon footprints. Often, these footprints represent the largest consequential greenhouse gas emissions associated with the building(s) over their useful life. This interactive online course will introduce the concept of designing for operational carbon tracking and reduction utilizing a case study project - a multi-building urban college campus in metro-Boston. This project was initiated by students and faculty of the school in 2013. This course will introduce team organization, methodology, an overview of the three "Scopes", and strategies for ongoing reductions towards the goal of carbon neutrality. This course will be useful for anyone interested in single or multi-building projects where carbon tracking, reduction, and off-setting are a priority.
Changes to NFPA 70E® Standard for Electrical Safety in the Workplace® - 2021 Edition	1	Intermediate	This online, interactive course provides an overview of many of the changes in the 2021 edition of NFPA 70E. Notable changes include a reorganization of Article 110, new allowances for clarifications for training, clarifications on who may use test equipment, lockout/tagout revisions, new tasks in the arc flash risk assessment, clarifications to the PPE requirements, new provisions for capacitors, updated calculations (IEE 1584), and a new Annex for capacitors.

Title	Hours	Level	Description
Chemical Reactions and Material Balances	0.62	Fundamental	Chemical reactions are all around us, from the combustion of fuel in an automobile engine, to the rusting of iron metal, to the baking of cookies, to the photosynthesis of carbon dioxide and water in plants. Many industrial processes also involve chemical reactions, where raw materials are converted into products that are desired by customers. Operators who have a good understanding of basic chemistry are better able to understand and troubleshoot plant operations. In this course, we discuss some basic types of chemical reactions, show you how to balance a chemical equation, explain the difference between organic chemistry and inorganic chemistry, and discuss material balances and limiting factors in chemical processes.
Chemicals Used in Mold Remediation	1	Fundamental	Chemicals are an effective tool for each remediation contractor. Knowing which chemicals to use, when to use them and how to use them as part of the overall project is the goal of this course. We will visit the terminology and the recent trends to equip you to make better decisions for your team and project.
Choosing the Best Structural Lateral Force Resisting System	1	Fundamental	The decision of the lateral force resisting system for a building should be made by the structural engineer and the architect. The decision is based on a multitude of factors including structural performance, integration with architectural systems, integration with mechanical systems, constructability, and cost. This course will investigate several common lateral force resisting systems; steel moment frames, steel braced frames, wood shear walls, concrete shear walls and compare the suitability of those systems for use in low-rise buildings. Metrics will be developed to assist in the decision-making process. Use of those metrics will be explored through examples.
Coaching with Confidence	6.5	Intermediate	LearnSmart's Coaching with Confidence video training course teaches the importance of communication, leadership, and a way of thinking that others feel compelled to follow. Students will learn that it's not what coaches are, but what coaches do that has the most value. Coaching with Confidence contains all the essentials that people need to be the best coaches they can be for themselves, and for their teams.
Coastal Engineering: Hurricanes and Nor'easters	2	Intermediate	What is the difference between a hurricane and a nor'easter? What kind of damage can they cause to your building project? Hurricanes and nor'easters can be destructive natural events creating high winds, storm surge, large waves, and causing large amounts of erosion, jeopardizing structures built along the nation's coastlines. This interactive online course will provide information about how to build to better resist the effects of these storms, what foundation types perform better, and why these storms are so damaging to the built environment. A few case studies will be included to illustrate techniques that are known to improve building performance.
Coastal Engineering: Sea Level Rise	2	Intermediate	What are some causes of sea-level rise? Is it impacting all coastlines? Sea-level rise is a very real flood condition that has caught the attention of many coastal communities around the U.S. This interactive online course will provide information about the potential magnitude of this rising water, the planning required to better resist the effects of this rising water, and why sea level rise can be so damaging to the built environment. A few case studies will be included to illustrate what is being done around the country to combat this serious climate change issue.

Title	Hours	Level	Description
Coastal Engineering: Tsunamis	2	Intermediate	What is a tsunami? Tsunamis are destructive natural events that create extremely high storm surge and large waves causing large amounts of erosion, and extensive inundation jeopardizing structures and people along the nation's coastlines where these events can occur. This interactive online course will provide information about the magnitude of tsunami loads, tsunami evacuation shelters, and important issues regarding the placement of structures on tsunami-prone coastlines. Case studies will be included to illustrate techniques that are known to improve building survival of tsunamis.
Cogeneration Systems Essentials	1	Fundamental	Would you know enough about cogeneration to advise a client? Systems that generate both heat and electricity, called cogeneration or combined heat and power (CHP) systems, aim to reduce costs and emissions by providing two things at once. Usable heat is produced when a cogeneration system generates power, providing efficiency gains of nearly twice that of utility power. In this interactive online course we'll discuss the simultaneous goals of providing heat and power, characteristics of turbines and engines in use, and other details such as economics and air emissions limits.
Combustion Analysis	1	Intermediate	Today, global warming is becoming more evident and it is being said that it is primarily caused by CO2 emissions. A detailed combustion analysis can be very useful in determining different fuel and technology scenarios that would result in the reduction of current CO2 emissions. Combustion has a high degree of importance in engineering. This 1-hour interactive online course covers complete and adiabatic combustion of carbon, hydrogen, sulfur, coal, oil and gas, with no heat loss, with standard air as the oxidant at stoichoimetric conditions. Six separate combustion cases are covered and basic combustion performance trends are presented.
Commercial & Residential Mixed Use Development and Sustainability	2	Fundamental	This interactive webcast focuses on the sustainable nature of mixed-use development. Flexible building use gathers multiple functions into a single structure to redefine sustainable growth in the 21st century. Originally, energy was the main focus in creating buildings that were in harmony with the environment. Although focus on energy and resource conservation remains, the focus has expanded to include the concept of flexibility and density. This course also focuses on the various environmental, economic, and social benefits of providing combined commercial and residential space including; water use reduction, energy conservation, infrastructure cost, infill development, and land preservation. In addition, this course also looks at new sustainability initiatives that look outside the building envelope for sustainable opportunities (e.g., LEED Neighborhood Development, Sustainable Sites Initiative).
Commercial Building MEP Design	1	Intermediate	This 1-hour interactive online course details the steps that can be taken to begin the Mechanical, Electrical and Plumbing (MEP) design of a typical commercial building. It provides sources of information, design parameters and discusses requirements of various local jurisdictions in the review of MEP documents for the issuance of building permits. This course includes a test at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Commercial HVAC Systems Essentials	1	Fundamental	When planning HVAC systems for larger types of buildings, there are special considerations to take into account, such as higher density of people, special lighting and equipment, and other conditions that all may potentially generate heat. As a result, in most commercial buildings, the air conditioning and recirculation of air in the space becomes more important than providing heat - this is somewhat dependent on the location of the building. This course will provide essential information regarding HVAC systems in the areas of commercial refrigeration, space heating, boilers and furnaces, as well as controls and interfaces. If you're involved in HVAC systems in the areas of design, construction, maintenance, or management, this course will be a key training experience for your career. As a result of completing this training, you will have a better understanding of these core areas of HVAC systems and will be able to successfully contribute to your company - in system design, overseeing construction/maintenance, and management.
Commercial Plumbing Systems Essentials	1	Fundamental	This course will provide essential information regarding Plumbing Systems in the areas of water supply systems, drainage systems, commercial plumbing fixtures, and backflow compliance. If you're involved in Plumbing systems in the areas of design, construction, maintenance, or management, this course will be a key training experience for your career. As a result of this training, you will have a better understanding of these core areas of Plumbing systems and will be able to successfully contribute to your company- in system design, overseeing construction and maintenance activities, and company management.
Commercial Solar Power Systems	2	Intermediate	Fossil fuels won't last forever and using them often pollutes our world. Solar energy is renewable; it's clean; it's free. You can lead the way to a future where solar energy power systems provide electricity in clean, efficient ways. In this webcast we will give you some history of solar, current ways solar energy is being used and the creative possibilities for how solar can end our dependency on non-renewable energy resources.
Commercial Structural and Building Systems Essentials	1	Fundamental	This course will cover essential information regarding structural and building systems, with a focus on commercial building structures and roofing systems. As a result of reviewing this course, you will gain valuable knowledge and training in these core areas of structural and building Systems. We will also review a number of case studies that will provide you with valuable insight into unique approaches with building construction that are in use today. These case studies will provide you with some interesting viewpoints that you'll find useful in the development of your own projects.
Complete Streets - An Introduction to the Complete Streets Concept	2	Fundamental	This course presents an introduction to the fundamental principles of Complete Streets. The planning and development of Complete Streets projects is presented. You will also learn about the elements of planning for Complete Streets and designing and implementing Complete Streets programs.
Complete Streets - An Introduction to the Design of Complete Streets	2	Intermediate	Complete streets are roads and streets designed and operated to provide safe access for all users, including motorists, bicyclists, pedestrians, and transit riders. Complete streets enable users of all ages, and all physical abilities to safely move along and cross an urban street. This course presents in detail elements of design for complete streets such as intersection design guidelines, modern roundabouts, pedestrian treatments, and bicycle lane guidelines. Each

Title	Hours	Level	Description
			element will be described in terms of the general principles, design considerations, and recommended practice. A variety of case studies will be presented.
Completing the Mold Remediation	1	Fundamental	You work hard each day on the project, but it's how you finish the job that people remember. Remediation projects involve controlling the workplace, consistency, follow through, and finishing. This course will show you how to "set the bar" so the technicians know what to do, clients are happy, and each project has a better chance of profit and success.
Compressed Air Systems in Industrial Plants	3	Intermediate	This three-hour course discusses the application of compressed air systems in industrial plants. The course covers the different types of compressor systems used today. In addition to the compressor, the course covers the components of a compressed air system including dryers, receivers, traps, intercoolers, etc. Applications of compressed air systems are discussed and the economics of using compressed air are reviewed. This course will benefit anyone who uses, recommends, designs, or just wants to know more about the various types of compressed air systems that are used in industrial plants. There is a multiple-choice quiz consisting of thirty (30) questions at the end of the course to obtain PDH credits.
Compressed Air Systems: Introduction to Performance Improvement	3	Fundamental	Compressed air is used widely throughout industry and is often considered the 'fourth utility' at many facilities. Almost every industrial plant, from a small machine shop to an immense pulp and paper mill, has some type of compressed air system. In many cases, the compressed air system is so vital that the facility cannot operate without it. This 3-hour online course discusses the basics of compressed air systems including compressor types, power sources used to drive the compressor, types of system controls, compressor system accessories, and uses of compressed air. This US Department of Energy sourcebook that this course is based on is designed to provide compressed air system users with a reference that outlines opportunities for system performance improvements. It is intended to make compressed air system users aware of the performance improvement potential, details some of the significant opportunities, and directs users to additional sources of assistance. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Compressible Flow Components Analysis	1	Intermediate	The ideal subsonic nozzle, diffuser and thrust analysis is presented only for the air as the working fluid. The technical performance of mentioned compressible flow components is presented with a given relationship between temperature and pressure as a function of the Mach Number. This interactive online course provides the compressible flow components T - s diagrams and their major performance trends (stagnation over static temperature and pressure ratio values) are plotted in a few figures as a function of the Mach Number. In this course, you will become familiar with the compressible flow components (nozzle, diffuser and thrust), their T - s diagrams, operation and major performance trends.

Title	Hours	Level	Description
Concrete 1: Evaluation and Causes of Damage	1	Intermediate	When taking on a concrete repair project, the first step is an important one - conducting a thorough evaluation. This 1-hour interactive online course begins with techniques for surveying the condition of the concrete, and reviews design and construction documentation, operation and maintenance records, instrumentation data, visual examination, methods of nondestructive testing and laboratory specimen analysis. The second part of the course identifies basic causes of deterioration, and covers typical symptoms, and recommendations for preventing further damage. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Concrete 2: Repair Planning and Preparation	1	Intermediate	The success or failure of a concrete repair project is dependent on many things, including how well you plan and prepare for the project. This 1-hour interactive online course discusses factors that should be considered before selecting a concrete repair method, as well as steps that should be taken to prepare the site before the actual repair begins. The first section of the course discusses the properties of repair materials and the concrete substrate, along with a review of important factors at the repair site itself. The second section discusses removal of concrete, and preparation of concrete surfaces for further work. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Concrete 3: Methods, Materials, and Maintenance	2	Intermediate	When a concrete structure fails, it requires repair. However, if not done correctly, the repair can also fail. This 2-hour interactive online course explains various methods and materials for the repair and maintenance of concrete structures. The first portion of this course describes materials and methods that are available for repair or rehabilitation of concrete structures, including their applications, limitations, and procedure. The second section of the course describes materials and procedures appropriate for cleaning and protecting concrete surfaces. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Concrete Additives: Water-Repellency & Efflorescence Control in Masonry	2	Fundamental	About 90% of the surface area of a masonry wall consists of concrete masonry units, with mortar joints making up the remaining. Both concrete and mortar are porous materials and, hence, can permit the passage of water through them. Therefore, a water-repellent masonry system should prevent the entry of water through both the concrete masonry units and the mortar joints. This 2-hour interactive online course provides the details of achieving water-repellency and efflorescence control in masonry construction. While the focus is on single-wythe masonry walls, the admixture technologies presented are applicable to other manufactured concrete products such as pavers and roof tiles.

Title	Hours	Level	Description
Concrete Fundamentals: An Introduction	2	Fundamental	Are your customers or clients using words like slump, water-cement ratio, cement content, and compressive strength? Do you understand admixtures and their functions? How about reading and understanding a mix design? Do you know how to place and finish concrete? This 2-hour online course introduces the student to the basic fundamentals of concrete. This course includes a multiple-choice quiz at the end.
Concrete Pavement Rehabilitation - Partial Depth Repair	1	Intermediate	This 1-hour interactive online course recommends procedures for selecting, designing, and construction of partial depth repair of Portland cement concrete pavements. Partial depth repair is a concrete pavement restoration technique that corrects localized distress such as spalls, scaling, and popouts in concrete pavements. Partial-depth repair improves the rideability of jointed concrete pavement. Partial-depth repair can be used as a stand-alone rehabilitation technique. However, the Federal Highway Administration recommends its use as part of a comprehensive Concrete Pavement Rehabilitation (CPR) program. Information regarding cost and performance is also included in this course. There is a test included at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Concrete Pavement: Glass Fiber Reinforced Polymers	1	Fundamental	While we're driving on them everyday, the roadways are experiencing stress. When force is applied to concrete pavement it places a certain level of stress on the concrete. It cracks, wears away, and requires costly repairs. Steel-reinforced concrete pavement (CRCP) has been used since 1921 - it's time for a better way. This 1-hour interactive online course gives you the information and the methods to improve the strength of concrete pavements using Glass Fiber Reinforced Polymer rebar. You will see why concrete fails and learn a new way to prevent it. You'll be introduced to fiber reinforced polymers. With these formulas and designs you will build longer lasting, more durable roads.
Concrete Standards and Requirements	2	Intermediate	This course is a review of the Specification for Ready Mixed Concrete, ASTM C94, and discusses the aspects of ordering concrete, production, delivery and testing. It covers the responsibilities of the purchaser and the manufacturer of ready-mixed concrete. The second part of the course covers the Building Code requirements for concrete materials (ACI 318) and covers specifications for concrete as addressed in ACI 301, Specification for Structural Concrete. The presentation covers strength and durability requirements for concrete as addressed in ACI 318 and ACI 301.
Concrete: Self-Consolidating (SCC)	1	Intermediate	Self-Consolidating Concrete (SCC), also called self-compacting concrete, is a revolution in the field of concrete technology. SCC is a very fluid, high strength concrete that flows like water, compacts with little or no vibration, does not segregate, and is self-leveling. Products made with SCC have an excellent finish, and are virtually free of bug holes or honeycombing. Introduced to the concrete industry by the Japanese in the late 1980s, it is just now coming into its own in North America. This 1-hour interactive online course introduces the student to this new concrete product. There is a multiple-choice quiz included at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Confined Spaces in Construction	1	Fundamental	This course will define "confined spaces" and discuss hazards associated with confined space entry. You will learn about emergency procedures associated with confined space entries so you can understand the roles and responsibilities of all involved. This course will provide imagery of various entry points and will identify abnormal behavior and inconsistencies as well as show the proper techniques for monitoring confined spaces.
Conflicting and Non-Existent Accessibility Standards	1	Fundamental	What do you do when you have conflicting accessibility standards? What about when there are no standards? How do you make sure your building or facility is compliant? This interactive online course will cover these scenarios and help you make sure that you are designing and building for accessibility.
Constructed Wetlands - Free Water Surface Wetlands	3	Advanced	Constructed wetlands can be used as artificial wastewater treatment systems. There are many design factors which affect the effluent quality from a free water surface constructed wetland. This 3-hour online course covers the consideration of some of these factors that can significantly reduce the effluent variation. It also provides a brief summary of expected wetland treatment performance, describes issues that are important in the design and layout of a free water surface wetland, and includes several design examples. Construction issues unique to constructed wetlands are also discussed. Additional Red Vector courses are available on other topics related to constructed wetlands. This course is based on guidance documents published by the Environmental Protection Agency. This course includes a multiple-choice quiz after each section to test your understanding of the material. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Constructed Wetlands - Introduction & Basic Concepts	2	Intermediate	Constructed wetlands can be used as artificial wastewater treatment systems. This 2-hour interactive online course provides an introduction into constructed wetlands, their history, common misconceptions and some guidance on when to use constructed wetlands. Also, the basics of constructed wetlands, including ecology, botany, and fauna of constructed wetlands will be discussed. This course includes sections on ecological concerns, human health concerns, on-site applications, and an extensive list of frequently asked questions. This course is based on guidance documents published by the Environmental Protection Agency and provide general information for non-technical individuals such as decision makers and stakeholders, along with design engineers. This course includes a multiple-choice test at the end of each section. This course includes downloadable pdf files. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Constructed Wetlands - Pollutant Removal Mechanisms	2	Advanced	Constructed wetlands can be used as an artificial wastewater treatment system. This 2-hour interactive online course covers the details of how suspended solids, organic matter, nitrogen, phosphorus, pathogens and other contaminants are separated and transformed in constructed wetlands. These

Title	Hours	Level	Description
			processes are generally different between constructed wetlands and standard wastewater treatment systems. This course also includes a discussion on modeling performance of constructed wetlands and guidance on models that should be used. Additional RedVector.com courses are available on other topics related to constructed wetlands. This course is based on guidance documents published by the Environmental Protection Agency. There is a test and the end of each section of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Constructed Wetlands - Vegetated Submerged Beds	2	Advanced	Constructed wetlands can be used as artificial wastewater treatment systems. There are many design factors which affect the effluent quality from a Vegetated Submerged Bed constructed wetland. This 2-hour interactive online course covers the consideration of some of these factors that can significantly reduce the effluent variation. It also provides a brief summary of expected wetland treatment performance, describes issues that are important in the design and layout of a Vegetated Submerged Bed wetland, and includes a design example. Additional Red Vector courses are available on other topics related to constructed wetlands. This course is based on guidance documents published by the Environmental Protection Agency. This course includes a multiple-choice quiz after each section to test your understanding of the material. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Construction Administration: MEP Commercial Buildings	1	Intermediate	This 1-hour interactive online course provides the commercial building professional with guidelines for administering construction activities in the MEP (mechanical, electrical, plumbing) discipline area. Many aspects of construction administration are reviewed to provide information on the roles and responsibilities involved with this position. This course reviews the steps of MEP design for a commercial building that construction administrators are involved in as well as explaining their role in performing MEP building surveys. It provides sources of information, design parameters and discusses requirements of various local jurisdictions in the review of MEP documents for the issuance of building permits. This course contains a lot of the same information as in the course titled 'Performing MEP Commercial Building Surveys', and it is not recommended that these courses be taken together. This course varies because it focuses on the role of the Construction Administrator. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Construction Arbitration: A Brief Overview - Beginner	1	Fundamental	This 1-hour interactive online course provides a brief overview of the arbitration process for the construction professional. Arbitration is often used to resolve disputes arising from the construction process, both during and after contract performance. If you are a prime contractor, subcontractor, architect, engineer, construction manager, owner's representative, surety, insurance company, or otherwise involved in the construction industry, it is highly likely that you will be a party to one or more arbitration proceedings during your career. This course will provide basic information to the construction professional allowing him or her to understand the arbitration process. There will be a multiple-choice quiz included at the end of each scenario. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Construction Claims: Changed Work	2	Intermediate	This 2-hour online interactive course provides a basic understanding of types of changes in work—directed or constructive change—and changed conditions. It provides an in-depth examination of cumulative impact, emphasizing how to identify types of change-related impacts, that includes a detailed discussion of the Leonard Study. In addition, it discusses how to address cumulative impact and assess allowance for recovery. Summaries of actual court cases are incorporated into the course to illustrate how changed work claims are determined. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Construction Cost Estimating: Resources and Processes	1	Intermediate	Being able to accurately estimate (within acceptable ranges) the cost of construction of any project, at any given stage in the process (whether just at concept, during design development, or fully developed and ready-to-advertise design) is an invaluable skill for anyone in the construction industry. How can an estimator become better and more accurate? In order to prepare an estimate, there are several items to consider, including the estimating team, how the quantity takeoff is going to be done, what data resources are available for pricing, how the estimate's going to be prepared and organized and how it's going to be adjusted based on multiple bid factors and the construction economy. In this course, you'll learn how to utilize some of the most important resources and tools available to you, as an estimator.
Construction Cost Estimating: Types and Purposes of Estimates	1	Intermediate	Did you know "opinion of probable cost" does not mean the same thing as an estimation of cost? While this may be a term used by design consultants in the preliminary stages of a project's estimate, this should not be mistaken for an estimation of cost. This is simply a professional opinion based on experience and available knowledge. The responsibility of a Contractor is to provide a detailed quantitative analysis of each material cost or step in the process for a given project. This interactive online course will educate you on the various types of estimates that can be provided as well as the methods to do so accurately.

Title	Hours	Level	Description
Construction Project Delivery Systems	1	Fundamental	This one-hour course will provide an overview of the key attributes of project delivery systems. The primary focus will be on design-bid-build, at-risk construction management, and design-build, with some brief discussion on job order contracting, IPD (integrated project delivery), and public-private partnerships. Program and professional construction management, which can be used on all of the above-referenced systems, will also be addressed.
Construction Project Documentation: Navigating Pitfalls	2	Fundamental	This course will show you how to successfully document your construction projects. While all projects start with the best intentions, problems will inevitably arise. Knowing how to use common documentation forms on a construction project will help ensure the successful resolution of these problems. This course will show you which documents to use, and when; what information to include and why; and what to say, and how to say it persuasively. You will find tips, tools, checklists, along with good and bad examples of documentation. The instructor will lead you through each step to help you navigate the pitfalls of poor construction project documentation. ATTN: This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying 2-hours of credit toward the required continuing education.
Construction Project Management: Construction Practices and Systematic Project Management	2	Intermediate	In this course, we're going to present and discuss the management of field construction projects. We'll also cover management techniques for controlling cost, time, resources, and project finance during the construction process. Emphasis is placed on practical and applied procedures that have been proven effective. Effective management of a project also requires a considerable background of general knowledge about the construction industry. This interactive online course will familiarize you with certain fundamentals of construction practice. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2015 All rights reserved.
Construction Project Management: Managing Time	1	Intermediate	Did you know the schedule plays a central role in construction project management? Developing an initial schedule is a powerful tool that you can use in managing various aspects of a project, including time, resources, production, and cost. This interactive online course concentrates on using the schedule to manage the time required to execute the construction processes. It begins by considering the project as a whole, determining how to shorten the overall project schedule, and looking at the cost trade-offs of expediting the project. It then focuses on current or upcoming parts of the project with the objective of managing the project components more effectively. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2015 All rights reserved.
Construction Project Management: Production Planning	1	Intermediate	Did you know production planning begins well before the project is mobilized in the field and continues throughout the project until all field operations are closed out? Production planning is concerned with how project activities are going to be carried out. It establishes the methods to be used, the assignment of personnel, the movement of material to the workface, and the process of assembling the pieces. This interactive online course considers all resources that contribute to the job, including personnel, materials, construction equipment, the site, the environment, and anything else that might affect the job. It will also cover the

Title	Hours	Level	Description
			lean construction process and BIM, which is beginning to change the way construction is managed and organized. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2015 All rights reserved.
Construction Project Management: Project Coordination	2	Intermediate	Progress reporting provides the opportunity to analyze the current status of the project. Often, this will lead to rescheduling and corrective action to bring the project back within specified time parameters. This cycle of planning and executing activities, measuring and reporting progress, revising the plan based on current status, and updating the schedule is continued repetitively throughout the project. In this interactive, online course, we'll focus on managing the ongoing project. We begin by looking at detailed schedules used by the field supervisor to plan crew work on specific activities in the near term. Then we move on to measurement and reporting of progress.
Construction Project Management: Project Cost System	2	Intermediate	Did you know that managing cost for a construction project is equally important as managing time? It allows you to make decisions that will enable you to maximize resources. This interactive online course covers the various elements of the project cost cycle, starting with the estimate and moving through the project to collection of actual unit costs to be incorporated into the company cost database for use in starting the cycle again for a future project. We will also review the relationship between time and money. Although the details of a specific cost-control system vary substantially from one construction firm to another, the ensuing treatment can be regarded as being reasonably typical of current practice within the construction industry.
Construction Project Management: Project Estimating	1	Intermediate	If you were given the task of estimating the future expense of a unit of production in a manufacturing facility you could do it with considerable precision. A plant offers standard conditions, close controls, and consistent processes. Construction estimating, on the other hand, lacks standardization, presents challenging site locations and project conditions. Nevertheless, a skilled and experienced estimator, using cost accounting information gathered from similar previous construction projects, can do a reasonable job of predicting construction costs. The character or location of a project can present unique problems, but there are usually some basic principles and precedents that apply. This interactive online course will walk you through the steps involved in estimating construction projects starting with an overview of cost-estimating procedures and how the final project budget is reached. Then, you'll learn how to develop monthly progress estimates and change order estimates. Finally, you'll become familiar with details about specific estimates that you'll typically prepare. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2015 All rights reserved.
Construction Project Management: Project Financial Management	1	Intermediate	Did you know the project manager bears the overall responsibility for financial management of the work on a construction project? This includes carrying out such fiscal duties as may be imposed by the construction contract and implementing appropriate monetary procedures according to the dictates of good business practice. Project financial management can involve a broad range of responsibilities. This interactive online course covers project cost breakdowns, the forecasted schedule of progress payments, preparation or approval of periodic pay

Title	Hours	Level	Description
			estimates, and documentation required for final payment. You will also learn how to monitor project cash requirements during the contract period and maintain complete and detailed daily records of the project.
Construction Project Management: Project Planning	1	Intermediate	Project planning is central to project management and takes place at all stages. The plan is typically very simple in concept, though it may be quite complex in execution. Additional participants in the process, such as designers, contractors, specialty contractors, and material suppliers also plan for a project. Their plans often include much greater detail but are limited in scope in order to execute their part of the project. Project planning is essential to any task, whether it be management oriented or focused on execution in the field. The product of the plan is often a schedule. In this course, you will see that the planning process, resulting in the project schedule, is what ties all of the elements of project management together. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2015 All rights reserved.
Construction Project Management: Project Scheduling Applications	2	Intermediate	In previous courses in this series, we focused more on tactical use of the schedule to manage specific components of the project, such as production, time, resources, and costs. In this interactive, online course, we'll consider strategic scheduling applications as they relate to the overall project, including legal aspects of the schedule. This course considers the role of the schedule and the variety of operational schedules available to the project manager. It also discusses the ways scheduling information can be organized and presented.
Construction Project Management: Project Scheduling Concepts	2	Intermediate	How would you account for weather delays in a construction project schedule? What about the availability of labor and equipment? How much time should you allow for each subcontractor to complete their work? In this interactive online course, we'll answer those questions. You'll learn how to determine the duration for individual activities and the calculation process for project times. Through examples, you'll discover new terminology for scheduling, including early and late start and finish, float, critical activities, and lag time. You'll then convert the project days-based schedule into calendar dates. We'll also discuss the pros and cons of the bar chart in construction project scheduling and how computer applications can save time and provide an array of project data in various forms. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2015 All rights reserved.
Construction Project Management: Resource Management	1	Intermediate	Much of the job of a project manager, as well as the job of a field supervisor, focuses on the efficient investment of resources to achieve the project objectives. A resource can be considered anything that adds value to the project. When we talk of resources in the context of construction, we typically think of manpower, equipment, and materials. In addition to what we normally understand manpower to mean—that is, craft workers who actually do the work on the project—there are many other people who add value to the project. It is the job of the project manager to manage all of these resources in support of efficient execution of the project. This interactive, online course will focus on methods and procedures involved with the management of the three primary resources of manpower, equipment, and materials.

Title	Hours	Level	Description
Contract Guide for Design Professionals - Basic Principles	3	Fundamental	This course is written primarily for the design professional - architects, engineers, and other persons that provide professional opinions and services for construction projects. The discussion of contract clauses in this course is intended to provide general information and education for use on traditional design-bid-build projects and does not necessarily apply to the design-build method of contracting. This is because the expectations of the parties on design-build projects are generally different than those on design-bid-build projects. Also, the terms and conditions of contractual agreements on those projects will reflect those different expectations—resulting in a different allocation of risk between the parties. Nevertheless, for a few of the key terms and conditions, a brief discussion of risk allocation and risk management on design-build projects is included in this course. In a similar manner, although this course is focused on traditional commercial projects, brief discussions of clauses and risk management issues germane to Environmental Remediation contracts are included. This course outlines a number of the contract clauses most often identified by construction lawyers and professional liability insurance carriers as requiring particular attention with regard to risk allocation.
Cost Estimating: Fundamentals	1	Fundamental	Engineers, architects and contractors are often asked to prepare cost estimates when working on a new project. This 1-hour interactive online course takes you through the process discussing where, in the various stages in project development, cost estimates are made. Through illustrations, you will consider different methods of cost estimating, the level of project detail required for each, and when the use of each method is indicated. You will understand the uncertainties associated with a bid due to level of detail available and the economics of inflation. You will learn to recognize these uncertainties and include contingencies and adjustments for inflation. For those who are new to cost estimating, this course is an introduction. You may find yourself going over sections more than once. For the experienced Estimator, you will find this course a guide and a reference as the only way for any Estimator to improve is to practice what they have learned. Move on through this course and into the field of cost estimating. ATTN: This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying 1 hour of credit toward the required continuing education.
Crime Prevention Through Environmental Design: Surveys & Floor Plan Reviews	2	Fundamental	This course will introduce Crime Prevention Through Environmental Design (CPTED), as it pertains to professionals assisting their clients to design or obtain safer built environments. Students will understand the CPTED strategies so that they can incorporate them based on clients' needs or better understand the strategies when dealing with security planners or consultants. Displayed examples will include physical security surveys and architectural plan reviews so that after-market security countermeasures can be reduced or eliminated. CPTED can also assist professionals with bidding processes. This course will explore residential, commercial, and venue CPTED concerns through multiple examples of floor plan reviews and physical security survey checklists.

Title	Hours	Level	Description
Critical Facilities - Emergency Electric Power	2	Fundamental	Providing emergency electric power is of critical importance for several types of facilities, and can be mandated by regulatory agencies. For example - emergency egress lighting, hospital emergency rooms, cooling for medical supplies storage, and protection from interruption of public utilities. These systems also help in preventing significant economic losses and, in some cases, disastrous results from natural events. This course presents key information regarding emergency electric power. Included in the topics covered are emergency vs. standby systems, applicable codes, terms and definitions, system components, environmental considerations, and fuel systems. Technical personnel in the design, engineering, maintenance and operations areas of facilities will find this information extremely valuable.
Cryogenic Safety	0.39	Intermediate	Cryogenics is the science related to the production and effects of very low temperatures. There is not an official temperature cutoff, but a boiling point below -238 °F (-150 °C) is a common definition for cryogenic liquids (cryogens). Below this temperature, common gases such as helium, hydrogen, nitrogen, argon, oxygen, and methane are all liquids. Working with liquids at these extremely low temperatures poses some obvious hazards. In this course, we will discuss those hazards and how to work safely with cryogenic liquids.
Data Centers: Connectivity Requirements and Architectural Layouts	1	Intermediate	Once a site for a data center has been identified and acquired, the multi-year process of design, construction, testing & commissioning, and equipment installation begins. Data Centers are resource hogs - but above all, they require tremendous amounts of power and data communication to operate effectively and efficiently. Appropriate network (power & communication) designs are essential; robust and redundant facilities are mandatory to a 24x7x365 uptime environment. Housing this equipment through appropriate site (Civil) and superstructure (Structural) design and construction efforts is the first layer of defense against network or equipment failure. So, what does it take to make a data center run reliable? In this course, we will review the connectivity demands and requirements for fiber and power, as well as some of the best practices for architectural and structural layouts in modern data centers.
Data Centers: MEP, Fire Protection, and Equipment Rooms	2	Intermediate	Connectivity. The internet of things. Uptime. Reliability. What are these things? These are all terms and concepts that relate to the always connected, always “on” world that has evolved out of the digital age. The cornerstone of these concepts is the modern data center - massive, hulking, and also secretive buildings that house the hardware, firmware, and software that power our everyday lives. Email, phone calls, Facebook, Google - these are all services provided by the computers housed in data centers. They are located all over the country and the world. They are in high rise buildings in dense urban areas, and they are located in remote rural campuses. They are small, occupying a few thousand square feet in old, Tier I locations, or they can be massive, hundreds of thousands of square feet with 50MW of electrical power. These technological marvels require significant infrastructure to maintain the always-on, always-available status that we demand of services in the modern world. That level of reliability is not achieved through chance. Significant effort and expense is required to facilitate conditions that are conducive to 24x7

Title	Hours	Level	Description
			reliability. Not the least of which are Mechanical, Electrical, Fire Protection, and Security Systems for these centers. In this course, we will dive into the complexities of these systems. By the end of this course, you will be familiar with the unique language and terms used to discuss the various elements of these systems - like PDU, UPS, EUI, and PUE (and, no, since this is not a one-man interpretation of Robin Williams' efforts in "Good Morning, Vietnam!" you can rest assured that I didn't make up any of those terms). You will also be able to understand the challenging design strategies that drive the installation and maintenance of these complex and integrated systems, and you will also have a much more in-depth understanding of the costs that drive data center design, construction, and maintenance efforts. Note: This course offers subtitles in Brazilian Portuguese and Spanish.
Data Centers: Operations & Maintenance, Upgrades, and Expansions	1	Intermediate	If you have been following along with Red Vector's data center video series, or if you are familiar with the industry, you have an idea of the cost, time, and effort that goes into delivering a data center. From the time that a need is identified, through site search and location, design development, construction, commissioning, and turnover, a company might easily wait 3-5 years or more, and have spent well into the 9 figures. For that level of cost, effort, and duration, you might, not unreasonably, expect the data center to run itself, and maybe even do the dishes, or at least prepare cocktails for the ribbon-cutting ceremony. There is, in fact, an industry term that even implies a self-sufficient facility - a "lights-out" data center. Sadly, at least given current technology, such a scenario is not yet plausible. Without a constant, vigilant, well-planned and well-executed Operations & Maintenance, or "O&M" program, even the most robustly designed and well-constructed and commissioned facility is doomed to failure, sooner or later. In addition to a robust O&M program, while not necessarily inevitable, it's quite typical that over the life of a facility that might well cost over $100M to construct, and house equipment worth multiple times that initial construction cost, a data center will experience an expansion, a system upgrade, or both. For a number of reasons, many of which we will outline later in this lesson, expansions, either planned or unplanned, are a common occurrence in the life of a data center. Upgrades are also quite common given that the life of a data center - typically planned for no less than 25 years - exceeds the expected life of even the most well-maintained electrical and mechanical systems. Thus, over the life of a data center, as untold trillions of bits of information constantly course in, out, and through the facility, the facility manager will all but certainly be faced not only with maintenance of that 99.999% uptime environment, but the assurance of that uptime in the face of upgrades and expansions. Let's take a look at how best practices can minimize risk and maximize chances for success in the face of such a demanding arena.
Data Centers: Planning, Siting, and Selecting	2	Intermediate	Data centers are the brain and nerve centers of today's high tech environment. Email, webpages, phone calls, banking records, online purchasing, and facilities controls are just a few of the myriad items that require efficient, accurate, and secure electronic transmission and storage. The crux of this entire system is the modern data center - millions of square feet of high power and cooling density systems that process quadrillions of signals. Data Centers can cost in excess of $1B to design and construct - and most systems rely on

Title	Hours	Level	Description
			multiple data center locations. Properly siting and planning the data center, or data center network, is the first step in a multi-step process.
Data Centers: Trends, Technologies, and Efficiencies	1	Intermediate	Welcome to the final installment of Red Vector's Data Center Video Series. Today we'll be looking into where Data Center design, construction, operation, and utilization is likely headed in the coming years. Hopefully you have already been able to take advantage of Red Vector's other Data Center Video Series installments, including our segments on location siting and selection, utility and architectural design, Mechanical and Electrical design, and best practices for facility Operations and Maintenance. If you haven't yet taken advantage of these great titles, you should definitely check them out, as they provide essential background information for a more robust understanding of all facets of data center conceptualization, design, construction, and operation. But right now, we're going to try to peer into the future a bit to see where this industry is likely headed. To best forecast where we are headed, though, it's most often beneficial to understand how we've already gotten where we are.
Dave Gibson's All-Star Lot & Block Boundary Cases	6	Intermediate	Discussing the legal points of a good boundary case is FUN and instructive!! This six-hour online course presents interesting land boundary cases that I've enjoyed over the years. They are particularly instructive as to the proper application of boundary location principles for LOT AND BLOCK land parcels. For each case, I'll give a problem statement and then I'll suggest alternate approaches, principles, and solutions. HERE ARE THE INCLUDED CASES: (1) LOT 21 KILARNEY LAKES, (2) PALM COURT, (3) AKIN v. GODWIN, and (4) PALM HARBOR. You can also take these as individual courses offered on RedVector.com. You should do one or the other. Take all four together in this course or take them individually. For each, you must then solve the case according to what you think is the proper application of survey principle. I'll then give my 'best practices' solution and defend it with the reasons why I think my solution is the 'best practices'. You may or may not agree, but you'll learn from this course. If you love to discuss boundary location situations, then you will love this course and learn something new. You will also learn other viewpoints for your consideration. Even though the cases are tough ones, the beginner can benefit from the instruction they give as much as or more than the experienced practitioner. I hope you enjoy them!!! Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Dave Gibson's All-Star Metes & Bounds Boundary Cases	6	Intermediate	Arguing the legal points of a good boundary case is FUN and instructive!! This six-hour online course presents interesting land boundary cases that I've enjoyed over the years. They are particularly instructive as to the proper application of boundary location principles for METES AND BOUNDS land parcels. For each case, I'll give a problem statement and then I'll suggest alternate approaches, principles, and solutions. For each, you must then solve the case according to what you think is the proper application of survey principle. I'll then give my 'best practices' solution and defend it with the reasons why I think my solution is the 'best practices'. You may or may not agree, but you'll learn from this course. HERE ARE THE INCLUDED CASES: (1) Frost's Survey, (2) Henderson et al, (3) Simple 300x100 Parcel, and (4) Stefanic et al. You can also take these as

Title	Hours	Level	Description
			individual courses offered on RedVector.com. You should do one or the other. Take all four together in this course or take them individually. If you love to discuss boundary location situations, then you will love this course and learn something new. You will also learn other viewpoints for your consideration. Even though the cases are tough ones, the beginner can benefit from the instruction they give as much as or more than the experienced practitioner. I hope you enjoy them!!! Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
DC Power in the Data Center	1	Intermediate	Alternating Current (AC) power has been the default for data centers due to many factors, such as equipment availability and familiarity. As companies and agencies push for better energy efficiency, Direct Current (DC) power may become a more viable choice for energy, reliability, and availability of a data center. This course walks through a typical data center power chain then compares using DC power with discussion on five of the most typical DC power voltages in use today.
Decks, Stairs, Rails for Home Inspectors	2	Fundamental	In this course we'll cover the design and construction of the decks, stairs, and rails from the home inspector's point of view. I'll review some of the basic definitions so that you'll know the proper terminology to use in writing your reports. You'll learn what to look for to ensure proper support. You'll see pictures of good construction compared to unsafe construction. We'll cover materials and fasteners and I'll give you specific examples of what you need to watch for and document. We'll review the requirements for heights, widths, and distances between components to assure a safety for users, and as we go through the course, I'll give you inspection tips from my own experience.
Deconstruction and Reuse: Sustainable Construction in Reverse	2	Fundamental	This interactive webcast focuses on the differences between conventional demolition and deconstruction. We will also focus on the environmental and economic rewards from taking a building apart - either wholly or partially - with the intent of salvaging (recycling or reusing) building materials. This approach varies greatly from conventional demolition which involves material removal and disposal. This course will focus on the types of building materials and their potential for reuse. Some materials have a long tradition of reuse (e.g., bricks, metal), whereas other materials are now finding a new vocation (e.g., plumbing fixtures, doors). We will also explore case study examples of both evolving deconstruction techniques and the types of materials salvaged.
Design of Bicycle Facilities - Buffered Bike Lanes	2	Advanced	In the past 10 years the United States has experienced an 80% increase in the use of bicycles as a mode of transportation. While in contrast, there has only been a 5% increase in the use of motor vehicles. For this reason, more and more cities are developing robust bicycle transportation networks. One of the key elements being used to improve bicycle transportation networks is the construction of buffered bike lanes. In this interactive online course, key planning and design considerations for buffered bike lanes will be reviewed. Engineers, Architects, Contractors and other professionals from the A/E industry will learn design guidelines for elements that form part of buffered bike lanes and that support their implementation, such as traffic separator options, mid-block crossings and intersection accommodations.

Title	Hours	Level	Description
Design of Bicycle Facilities - Cycle Track Design	2	Advanced	In the past 10 years the United States has experienced an 80% increase in the use of bicycles as a mode of transportation. While in contrast, there has only been a 5% increase in the use of motor vehicles. For this reason, more and more cities are developing main bicycle thoroughfare facilities, such as cycle tracks, as key elements of their transportation network. Cycle tracks can be considered as bicycle arterials or bicycle highways; this interactive online course will outline the planning and design elements needed to develop cycle tracks that support this main thoroughfare purpose. Engineers, Architects, Contractors and other professionals from the A/E industry will learn design guidelines for elements that form part of cycle tracks and that support their implementation, such as ADA accommodations, vehicular traffic level considerations, and the design of geometric elements to accommodate on-street parking, transit facilities and left-turn movements from the cycle track.
Design of Bicycle Facilities - Multi-Use Paths	2	Advanced	In the past 10 years the United States has experienced an 80% increase in the use of bicycles as a mode of transportation and a 30% increase in pedestrians. While in contrast, there has only been a 5% increase in the use of motor vehicles. For this reason, more and more cities are developing robust bicycle and pedestrian transportation networks. One of the key elements being used is that of multi-use paths. Engineers, Architects, Contractors and other professionals from the A/E industry will gain core knowledge under this course for the planning and design of multi-use paths. This interactive online course will cover key guidelines from AASHTO, FHWA and NACTO in the development of multi-use paths, with a special emphasis in ADA elements, geometric requirements such as horizontal and vertical curvature design, and the adequate development of multi-use path crossings and roadway mid-block crossings.
Design of Buildings for Coastal Flooding	2	Advanced	This course provides information important to the design of foundations used in coastal areas. The design methodology comes from FEMA's Coastal Construction Manual (CCM) and has been developed from studying failures after numerous coastal storms. Flood loads are developed using both ASCE 7 and the CCM and applied to pile-supported structures. Other flood effects such as erosion and scour are covered. Pile design is discussed as well as bracing methods used in pile systems. An example of how to calculate flood loads and how to apply them to the foundation at a coastal location is included to help provide context on the method and magnitude of the loads.
Design of Buildings Using Insulated Concrete Forms (ICF)	1	Advanced	This course is intended to present a comparison of engineering analysis approaches to the design of building structures for Insulated Concrete Forms. The course covers the Prescriptive Method (developed by HUD through PCA) and the two appropriate sections of the 2011 ACI code for walls. A simple, 2-story house with a basement is used as an example to demonstrate the application of both of these methods for a 6-inch thick waffle-slab and a flat panel ICF wall.
Design of Reinforced Concrete Using the ACI Code: Analysis and Design of T Beams and Doubly Reinforced Beams	1	Advanced	In this course you will learn ways to analyze T beams and utilize doubly reinforced beams. This course will demonstrate how to size and find required quantity of steel based on the consideration of strength and serviceability requirements. This course shows how to utilize doubly reinforced beams to account for bending moments. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2014, 2009, 2006, 2005 All rights reserved.

Title	Hours	Level	Description
Design of Reinforced Concrete Using the ACI Code: Bond, Development Lengths, and Splices	2	Advanced	In this course we will cover how to properly bond beams for a variety of purposes by calculating the development lengths for the reinforcement bars, which will help to provide extra strength to the beams. Factors affecting your developmental length calculation will also be covered, such as critical sections of a beam. We will also cover how splices can help or hinder your project. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2014, 2009, 2006, 2005 All rights reserved.
Design of Reinforced Concrete Using the ACI Code: Design of Rectangular Beams and One-Way Slabs	1	Advanced	In this course you will receive comprehensive information on rectangular beams and one-way slabs. We will give you load factors, considerations necessary for beam design, limitations of lateral bracing and deep beams, and examples of beam design. We'll also cover bundled bars, one-way slabs, and reinforcement of cantilever and continuous beams. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2014, 2009, 2006, 2005 All rights reserved.
Design of Reinforced Concrete Using the ACI Code: Design of Short Columns Subject to Axial Load and Bending	1	Advanced	The purpose of this course is to cover some of the aspects of a column that will influence your selection, design, and/or analysis of a column(s) to be used in the support of a structure. This course will cover such topics as: Describe types of columns Discuss failure of tied and spiral columns Identify the limitations specified by the ACE Code requirements Define economical column design Recognize formulas for design of axially loaded columns Describe various reinforcing methods Describe types of columns Discuss failure of tied and spiral columns Identify the limitations specified by the ACE Code requirements Define economical column design Recognize formulas for design of axially loaded columns Describe various reinforcing methods Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2014, 2009, 2006, 2005 All rights reserved.
Design of Reinforced Concrete Using the ACI Code: Flexural Analysis of Beams	1	Advanced	In this course you will learn the three progressive stages that occur before a beam collapses and how to calculate the stress of concrete beams at the different stages. In this course, we will cover formulas you can use to calculate a beam's stress, both in concrete and steel, and when those formulas should be used. We will be utilizing examples to enhance your understanding of each formula's use and what is occurring at each stage. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2014, 2009, 2006, 2005 All rights reserved.
Design of Reinforced Concrete Using the ACI Code: Introduction	2	Advanced	This course will introduce you to concrete and reinforced concrete. You will get definitions, advantages and disadvantages, and descriptions of the different types of concrete. We'll examine all the aspects of concrete - its composition, compatibility with steel, weights and strengths, and load types. You will learn to analyze your concrete needs and to identify the solutions. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2014, 2009, 2006, 2005 All rights reserved.

Title	Hours	Level	Description
Design of Reinforced Concrete Using the ACI Code: Introduction to Columns	1	Advanced	You need to be familiar with many types of columns in order to design the safest, most economical building that makes the best use of interior space. This course gives you the types of columns, information on column failure, and the limitations of the ACI Code. You also get a discussion of economical column design and formulas you can use to design for axially loaded columns.
Design of Reinforced Concrete Using the ACI Code: Serviceability	1	Advanced	Serviceability addresses the issue of performance. In this course you we will examine deflections and cracks. We'll give you background material on the importance, control, and calculation of deflections. You'll be instructed in effective moments of inertia, long term deflections, simple-beam deflections, and continuous-beam deflections. We'll also review types of cracks, control of flexural cracks, ACI code, provisions concerning cracks, and miscellaneous cracks. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2014, 2009, 2006, 2005 All rights reserved.
Design of Reinforced Concrete Using the ACI Code: Shear and Diagonal Tension	2	Advanced	The objective of today's reinforced concrete designer is to produce ductile members that provide warning of impending failure. To achieve this goal, the code provides design shear values that have larger safety factors against shear failures than do those provided for bending failures. The failures of reinforced concrete beams in shear are quite different from their failures in bending. Shear failures occur suddenly with little or no advance warning. Therefore, beams are designed to fail in bending under loads that are appreciably smaller than those that would cause shear failures. This course discusses shear and diagonal tension on reinforced concrete and how different types of reinforcement can help mitigate the damage caused by cracking. Definitions related to concrete construction and reinforcement will be provided, as well as shear design example problems. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2014, 2009, 2006, 2005 All rights reserved.
Design of Reinforced Concrete Using the ACI Code: Slender Columns	1	Advanced	When a column bends or deflects laterally an amount, its axial load will cause an increased column moment equal to P. This moment will be superimposed onto any moments already in the column. Should this P-moment be of such magnitude as to reduce the axial load capacity of the column significantly, the column will be referred to as a slender column. In this course we will examine the characteristics of slender columns and how the ACI code applies to these columns, paying close attention to the calculations and procedures used in determining K factors and computing moment magnifiers. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2014, 2009, 2006, 2005 All rights reserved.
Design of Reinforced Concrete Using the ACI Code: Strength Analysis of Beams	1	Advanced	This course takes a look at strength analysis of beams according to the ACI code. You will be introduced to two different design methods, working-stress design and strength design; with the focus of the course pertaining to strength design. We will take a look at the advantages of strength design and why it has moved to the preferred method. We will examine two methods used for calculating structural safety of a reinforced concrete structure. We will take a look at varying expressions associated with stress load and beam integrity. We will explain the different ACI codes and how they relate to beam strength. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2014, 2009, 2006, 2005 All rights reserved.

Title	Hours	Level	Description
Design of Reinforced Concrete Using the ACI Code: Two-Way Slabs, Equivalent Frame Method	1	Advanced	In this course, we will illustrate how moment distribution can be applied to the analysis of structures consisting of non-prismatic members. We will also explain the difference between the direct design method and the equivalent frame method, and list the properties of slam beams and columns. An example problem using the equivalent frame method will be demonstrated, as well as explanation of the benefits of computer analysis. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2014, 2009, 2006, 2005 All rights reserved.
Design of Steel Elements for Second Order Effects	1	Intermediate	Many steel designers do not incorporate the requirements of Chapter C Design for Stability (AISC 14th Edition) into their design of steel elements. Chapter C states that stability shall be provided for the structure as a whole and for each of its elements and that the effects of second order effects (also called P-delta effects) shall be considered. It also states that the approximate methods defined in Appendix 8 is permitted as an alternative to a rigorous analysis. This course will define these second order effects and their parameters, calculate their values and compare designs with and without these effects. Simple guidelines will be developed for their use.
Design of Utility Infrastructure	2	Fundamental	Utilities and their infrastructure are one of the main facilities that support our modern society. From drinking water to telecommunications, underground utilities provide the basic services for our communities. Thus, their design is a critical component of construction projects. Through this interactive online course, engineers, architects, planners and contractors will learn design criteria for the design of different utility types, from gravity to pressurized flow facilities.
Design of Water Efficient Buildings	2	Fundamental	This interactive webcast will discuss approaches for conserving water including water efficient building technologies, simple systems for recycling and reusing water on site, and how to drastically decrease the demands on shared supplies. This course will also discuss the many great environmental and economic benefits to water efficient buildings. We will conclude with details on LEED (Leadership in Energy and Environmental Design) criteria for water efficiency, plus additional case study examples on innovations in wastewater treatment and reuse.
Design Traffic and Traffic Impact Study for the Non-traffic Engineer	2	Intermediate	If you work with traffic engineers or transportation planners as part of a project team, then this course is for you! Learn what inputs the traffic professionals need to produce traffic studies, and what kinds of data they can provide on a project, all while learning how to coordinate projects more smoothly. This course will explain land use, access, and 'build out year' information that a traffic engineer needs in order to do a site impact study for a new development - and what the effects will be if any of that information changes during the study. It also explains how design traffic for roadway projects is developed, and how transportation projects are created, prioritized and scheduled as part of a Long Range Transportation Plan - LRTP.
Design-Build Project Delivery System	5	Advanced	This 5-hour online course is the first part of a two-part comprehensive course that explains how the system works and why it is successful today. The Design-Build project delivery system is growing in popularity in both the private and public sectors of the construction industry. There are a number of market trends as we proceed into the 21st century that favor this project delivery system over the currently traditional system of design-bid-build. An integrated approach and renewed focus on innovation places the design-build project

Title	Hours	Level	Description
			delivery system in a unique position to address the current challenges that the construction industry faces. This course provides you with a review of how the Design-Build project delivery system has emerged today and compares and contrasts it with other current methods that are being utilized. The course will then take you through the specific strategies and tactics that make it successful. These steps include formation of the design-build team, responsibilities of the owner, responsibilities of the design-builder, performance specifications for design-build projects, and the complete design-build procurement process. There is a test included at the end of each scenario. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Design-Build Project Implementation	4	Advanced	Design-Build Project Implementation is the second part of a two-part comprehensive course series that explains how the design-build system is implemented after the contract award. This 4-hour online course outlines the contract formation process associated with design-build projects including specific contracting issues and contract forms. This course also presents the laws and liability involving all parties of the design-build process as well as insurance, bonding, management techniques. Finally, the advantages and disadvantages of the design-build process are listed separately for the owner, designer and builder. There will be a test included at the end of each scenario. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Designing and Specifying Pervious Concrete	2	Intermediate	This two-hour webcast provides an overview on implementing pervious concrete pavements as a solution to reducing stormwater runoff from building sites and other paved areas. Participants will learn about pervious concrete pavement systems, engineering properties and construction techniques. The first hour discusses hydrologic and structural design of pervious concrete pavements. The second hour addresses the specifics that every specifier should consider when drafting pervious concrete specifications, with a focus on American Concrete Institute (ACI) Committee 522 Guide to Specification for Pervious Concrete. This webcast will help civil engineers, architects, landscape architects and public works officials understand the principles behind pervious concrete design. Contractors, product suppliers and land developers will also benefit from this webcast.
Designing Buildings for Tornadoes	1	Intermediate	This course will present the most up to date ideas about designing buildings for the devastating effects of tornadoes. The focus will be on how to improve building performance and reduce damage to buildings impacted by tornadoes. The presentation will cover tornado research topics, design methods using ASCE 7-10 with needed modifications to account for tornado wind structures, and some examples on how to apply these concepts to building design.

Title	Hours	Level	Description
Designing for Flood Loads Using ASCE	2	Advanced	This course will provide technical information important to flood design for all types of buildings and all types of flood conditions. We will cover the minimum design and construction standards required by regulations. You will learn the current design methodologies for foundation issues for both riverine and coastal buildings. This course will cover the limitations of prescriptive solutions for flood-design problems. Flood load provisions of ASCE 7-10 Minimum Design Loads for Buildings and Other Structures and ASCE 24 Flood Resistant Design and Construction will be discussed. And you will learn how to retrofit existing buildings with flood-resistant features. As we learn more about this devastating hazard and communities strive to be more sustainable, flood provisions in state and federal regulations are changing, as well as design concepts and methodologies, making it essential for engineers to remain engaged with these changing methodologies.
Designing for Occupant Comfort: SPF Insulation	1	Fundamental	The air barrier system within the building envelope is the most important single element in controlling moisture, energy losses and gains, and structural integrity. This 1-hour interactive online course covers the different factors that affect occupant comfort in buildings and the effectiveness of spray polyurethane foam (SPF) insulation in maintaining proper relative humidity and temperature levels.
Designing Foundation Repairs	2	Intermediate	What is causing that crack in the building? How can you repair it? Building foundations provide structural support to buildings but are often damaged and rendered nearly useless by many natural events (hurricanes, drought, excessive rain, etc.). Most foundations can be repaired and returned to their original load capacity, but each foundation damage case can present unique challenges depending on the extent of damage, the foundation material used, the foundation depth in the ground, and the loads being carried by the foundation. In this interactive online course, we will discuss different types of building foundations and several types of causes of foundation failures. We will also cover methods for foundation repair, as well as new materials and technologies used in repair.
Designing Permanent Erosion and Sediment Control Systems	2	Intermediate	Development of land, whether it is for a new highway or a new office building, requires the re-contouring of terrain. And as such, requires a redistribution of drainage patterns. This change in the land creates the potential for long term erosion through storm events that occur during the life of the project. To prevent long term erosion, permanent erosion and sediment control system need to be developed as an integral part of the projects' designs. The primary goals of this interactive online course are to familiarize Engineers, Architects and Contractors with the design and application of different Best Management Practices (or BMPs for short) in the design of Permanent Erosion and Sediment Control.
Designing PEX Plumbing Systems to Optimize Performance and Efficiency	1	Fundamental	What is PEX and how should you best utilize it in your project? Crosslinked polyethylene (PEX) tubing has been used for plumbing systems in North America for over 25 years, providing safe delivery of potable water and protecting the health of building occupants. A result of modern polymer technology, PEX tubing performs in ways that provide superior reliability, durability and safety.

Title	Hours	Level	Description
			This interactive online course will demonstrate how the properties of PEX tubing can improve the health, safety and welfare of building occupants through reliable long-term delivery of clean water without pipe degradation. Many designers layout PEX plumbing in the same way as copper plumbing systems, without taking advantage of the material flexibility, and increasing installation costs. Other designers use too much pipe, potentially delaying delivery of hot-water to fixtures. Therefore, this course will also explain how PEX systems allow designers to reduce materials, save installation time, and provide faster delivery of hot-water to fixtures by comparing 12 design examples. Finally, using empirical test data generated by NAHB-RC (now Home Innovations Research Labs) comparing various PEX designs, this course will also provide answers about the best ways to design PEX plumbing systems to optimize performance.
Designing Temporary Erosion and Sediment Control Systems	3	Intermediate	Earthwork activities during construction disrupt natural and man-made ground coverage, creating the potential for erosion hazards and the contamination of natural resources. This interactive online course teaches you about best management practices for temporary erosion and sediment control. You will also learn about common regulations and requirements set in place to minimize significant impact upon the health, safety and welfare of the community.
Designing Using LRFD Principles	2	Intermediate	What is LRFD? LRFD (Load and Resistance Factor Design) principles are used in structural engineering applications so structural reliability is more consistent across various materials and loading conditions. This concept becomes particularly important in performance-based design scenarios when the structural engineering solutions are required to address how the structure is used and expected to perform - and not prescriptive building codes. This interactive, online course will review load factors, resistance factors, and reliability theory. We will also discuss the four material types (wood, steel, concrete, and masonry), looking at how each of these material standards deal with LRFD design.
Designing with Structural Composite Lumber	1	Fundamental	What is structural composite lumber? Is it reliable enough to build with in your area? The building industry is constantly developing new materials. Some of this innovation has occurred in the design of timber construction materials. Many of the new products have higher load carrying ability and improved serviceability when compared to their sawn lumber equivalents. In addition, these materials are often more sustainable. This interactive online course will focus on innovations in Structural Composite Lumber (SCL). As a designer, it is critical to understand these materials in order to safely and cost effectively design with them.
Developing 3D Engineered Construction Models	2	Advanced	The benefits of applying 3D engineered models provides a great economic incentive, improves construction crew safety, reduces craftsmanship errors, and improves the efficiency of construction crews. This interactive online course teaches Contractors, Engineers, Architects and Planners about the core principles for developing 3D engineered models that can be applied by the construction industry through Automated Machine Guidance (AMG).

Title	Hours	Level	Description
Developing an Employee Safety Training Program	1	Fundamental	People working in facilities, and in industry, need a solid foundation with respect to safety training, and leading people, and employees. So, this course will provide you with that solid foundation that will help you in developing a valid, and detailed, safety training program for your group. This program can then be applied to your organization's specific safety program's requirements for employee training. This course will provide you with information on Emergency Action Plans, Medical Emergency Plans, Lockout/Tagout requirements, Confined Space Entry Procedures, and other critical topics.
Developing and Implementing an EPA RMP	2	Fundamental	Any facilities that manufacture, use, store or otherwise handle certain extremely hazardous chemicals will be subjected to the EPA's Chemical Accident Prevention regulations at 40 CFR part 68. To comply with this regulation, a facility must develop and submit an EPA Risk Management Plan, or RMP, and implement it in the facility. The primary goal of an EPA RMP is to protect communities from the release of toxic or flammable chemicals that are prone to cause immediate, serious harm to public and environmental health. Thus, it is important for the practitioners to have in-depth knowledge on how to develop an EPA Risk Management Plan so it can be applied in their respective facilities. This course will provide the practitioners and participants with an overview of the EPA Risk Management Plan, the history of the RMP Rule, and requirements for compliance with the EPA's 112(r) Risk Management Program rule (40 CFR Part 68). The different program levels of an EPA RMP will be discussed, in addition to steps for developing a Risk Management Plan. The course will also address the differences between OSHA PSM and EPA RMP Program Regulations, different elements of a RMP Plan, and how to conduct a hazard assessment. Details on dispersion modeling and consequence modeling and the selection and application of these models will be covered in this course, as well as risk communication strategies and the requirements for an Emergency Response Program.
Don Wilson's Court Decisions: Block 1 - Surveying Definitions; Overlapping Titles & Descriptions	2	Advanced	Court Decisions- Block 1: Surveying - Definitions; Overlapping Titles & Descriptions. This 2-hour online interactive course presents four court decisions covering basic issues of surveying including defining what a survey is and dealing with overlapping descriptions. Principles of retracement, original survey, senior-junior conveyancing, apportionment and historical title analysis are discussed and illustrated. Court Cases included are: Kerr v. Fee, 161 N.W. 545, 179 Iowa 545 (1917) Rivers v. Lozeau, 539 So.2d 1147 (Florida, 1989) Hughes v. Yates, 228 Ark. 860 (1958) Parkman v. Ludlum, 69 So.2d 434 (Alabama, 1953) There will be a multiple-choice quiz at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Don Wilson's Court Decisions: Block 2 - Description Interpretation	2	Advanced	Court Decisions- Block 2: Description Interpretation. This 2-hour interactive online course presents five court decisions covering principles of interpretation and construction to be applied to land descriptions. The significance of original land descriptions, ambiguity, references, meanings of words and phrases, and official plats are covered. Some of the court cases included are Harvey v. Inhabitants of Sandwich, 152 N.E. 625, 256 Mass. 379 (1926), Wilson v.

Title	Hours	Level	Description
			DeGenaro, 415 A.2d 1334 (Conn., 1979), Perry v. Buswell, 113 Me. 399 (Maine, 1915), Cragin v. Powell, 128 U.S. 691 (Louisiana, 1888) and Peacher v. Strauss, 47 Miss. 353 (1872). There will be a test included at the end of each scenario. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Don Wilson's Court Decisions: Block 3 - Rules of Construction for Interpreting Descriptions	2	Advanced	This 2-hour interactive online course deals with some of the basic rules of construction for interpreting land descriptions and resolving ambiguities therein. The intent of the parties is the primary requirement, which must be determined from the language of the description viewed in light of the surrounding circumstances at the time. This course includes the following decisions: Case 1 City of North Mankato v. Carlstrom; 212 Minn. 32 (1942) Case 2 People v. Call; 223 N.Y. Supp. 257 (1927) Case 3 Smith v. Smith; 622 A.2d 642 (Del., 1993) Case 4 Smart v. Huckins; 82 N.H. 342 (1926) There is a test included at the end of each section of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Don Wilson's Court Decisions: Block 4 - Surveying Procedures	2	Advanced	Court decisions provide basic principles and guidelines, but in order to apply them, it is first necessary to understand how they arose, and what are their limitations and applications. This 2-hour online course presents four court decisions dealing with basic surveying procedures for land parcels. Topics discussed are property line location, evidence, lost & obliterated corners, legal principles and the resolution of particular problems. The four cases covered are: Myrick v. Peet, 180 P. 574 (Mont., 1919) Hagerman v. Thompson, 235 P.2d 750 (Wyo., 1951) Seaman v. Hodgboom and others, 21 Barb. 398 (New York, 1855) U.S. v. Doyle, 468 F.2d 633 (Colo., 1972) Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Don Wilson's Court Decisions: Block 5 - Boundary Retracement 1	3	Advanced	Court decisions provide basic principles and guidelines, but in order to apply them, it is first necessary to understand how they arose, and what are their limitations and applications. This 3-hour interactive online course is the first of three parts discussing the basics of boundary retracement. Discussion centers around following ancient boundaries, stressing the use, and correction of magnetic bearings. Seven court cases are presented: Beckley v. Bryan and Ransdale, 1 Ky (Ky. Dec.) 91 (1801) Bryan, &c. v. Beckley, 16 Ky (Litt Sel Cas) 91 (1809) Finnie v. Clay, 5 Ky (2 Bibb) 351 (1811) Vance v. Marshall, 6 Ky (3 Bibb) 148 (1813)

Title	Hours	Level	Description
			M'Nairy v. Hightour, 2 Overton 302 (Tenn., 1814) Bradford v. Pitts, 2 Mills. Const. Rep. 115 (South Carolina, 1818) Johnson v. M'Millan, 1 Strobe Law 143 (S. C.,1846) There is a test at the end of each section of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Don Wilson's Court Decisions: Block 6 - Boundary Retracement 2	3	Advanced	This 3-hour interactive online course is the second of three parts and includes seven significant cases in the area of boundary retracement. Basic procedures are outlined by the courts in these decisions. This course includes some of the most complete and well-founded decisions outlining rules for boundary retracement and the reasons behind them. The seven court cases presented are: Cherry v. Slade's Administrator, 3 Murph (N.C.) 82 (1819) Riley, Administratrix, &c v. Griffin, et al, 16 Ga. 141 (1854) Stewart v. Carleton, 31 Mich. 270 (1875) Diehl v. Zanger, 39 Mich. 601 (1878) Wells v. Lagorio et al., 112 Va. 522 (1911) Taylor v. Higgins Oil & Fuel Co., Tex.Civ.App., 2 S.W.2d 288 (1928) Greer v. Hayes, 216 N.C. 396 (1939) Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Don Wilson's Court Decisions: Block 7 - Boundary Retracement 3	3	Advanced	Court decisions provide basic principles and guidelines, but in order to apply them, it is first necessary to understand how they arose and their limitations and applications. This interactive online course is the third installment of the three-part retracement cases. It covers basic principles of boundary retracement along with the use of several types of evidence, such as survey data and original field notes. This course presents four relatively recent, later cases on boundary retracement. Several stress the importance of, and the reasoning behind, strict following of original boundaries. The cases covered are: Case 1 Stafford v. King, 30 Tex. 257 (1867) Case 2 Hart v. Gries, 155 S.W.2d 997 (Texas, 1941) Case 3 Sellman v. Schaaf, 269 N.E.2d 60 (Ohio, 1971) Case 4 U.S. v. Champion Papers, 361 F. Supp. 141 (D.C. Texas, 1973)
Downcycle, Upcycle, Precycle, and Recycle: Waste Prevention and Reuse	2	Fundamental	This interactive webcast explores the concepts of downcycling, upcycling, precycling, and recycling. In an era of resource conservation, the idea of reuse is paramount to meeting sustainability goals. We will introduce green-minded professionals to the concepts of downcycling (reclaiming), upcycling (refashioning), precycling (reducing waste), and recycling (reuse). We will focus on the environmental, economic, and social benefits of these four types of waste prevention. In addition, we will look at the relationship between waste reuse and technological advancement. Lastly, we will explore case studies of cutting-edge waste reuse and reduction.

Title	Hours	Level	Description
Drawing Shortcuts - Digital Drawing Tools	1	Fundamental	In recent years, architects and their clients have begun to rediscover the benefits of using traditional imaging techniques such as sketching, drawing, and physical modeling to communicate their design concepts. As digital imaging and 3-D visualization have become ever more sophisticated (and complicated), many small offices have been forced to make expensive investments in time and software in order to remain current with the quickly evolving technology. Now, there is a new trend in visual communication that combines the best hand-drawing techniques, advanced reprographics, digital imaging, photography, and computer-generated information. In this course we will take a brief glimpse into the wonderful possibilities of using digital and traditional visualization techniques. Some examples are quick and easy to create, while others are very time-consuming and complicated. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Drawing Shortcuts - Drawing Compositions	1	Fundamental	To take a photograph of a street scene, you would not simply “point and shoot”; you would first determine your subject and decide how to frame your image. Until you look through a viewfinder or at the LCD screen of a digital camera—or even your cell phone—your visual reference changes continuously as you look around. But the moment you focus the camera on your subject, you begin making rapid decisions about the composition of your photograph and answering a series of questions, such as: “How close should I be to my subject?” or “Should I take a horizontal or vertical photo?” In this course we will cover drawing considerations, views, and methods that will help you in answering those questions and more. John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Drawing Shortcuts - Tradigital Drawing	1	Fundamental	In recent years, architects and their clients have begun to discover the benefits of using traditional imaging techniques along with digital imaging and 3-D visualization. This discovery has spawned the term “Tradigital.” What does Tradigital mean? How does it affect you? In this course we will answer these questions and outline the steps for merging traditional and digital imagery styles. We will look at four different methods and how you can implement them into your design. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Drawing Shortcuts - Traditional Coloring Tools	1	Fundamental	A black-and-white drawing is often all you need to communicate a design idea, but black-and-white has limitations. Imagine trying to portray autumn foliage on a tree with a black-and-white drawing, or trying to sketch a field of wildflowers in shades of gray! Adding color to your drawings can help you define different materials and objects and also give life to the image. Sometimes you can create a drawing in black-and-white, present the idea, and add color to it at a later time. We'll use some examples to show you that process and we'll recommend the tools you can use to achieve your desired results. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Drawing Shortcuts - Traditional Drawing Tools	1	Fundamental	This course covers the basic how-tos of drawing in black and white with traditional products as well as how to create different effects using various techniques. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.

Title	Hours	Level	Description
Drawing Shortcuts - Traditional Drawing Types	1	Fundamental	This course identifies the basic varieties of traditional drawing, which range from simple sketches to sophisticated presentation renderings. In this course, you will learn how to construct various types of drawings. For each type of drawing, you will learn when to use it, its characteristics, (e.g., size, detail), and the process for developing each. By breaking the drawing process down into a series of small but strategic choices, you will build confidence in your visualization skills and overcome the fear of drawing that so many designers experience. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Drawing Shortcuts - Traditional Entourage Drawing	1	Fundamental	Illustrating people, plants, trees, furniture, automobiles, graphics, and various entourage elements can be among the most challenging aspects of creating drawings. This course discusses sources that can be used to copy these elements, and also offers specific advice for drawing people, cars, and vegetation. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2010 All rights reserved.
Drinking Water Quality - Monitoring & Security	1	Fundamental	It's understood that drinking water should be suitable for human consumption and for all usual domestic purposes. So, what is suitable drinking water? Ideally, drinking water should not contain any microorganisms known to be pathogenic or capable of causing diseases. It should be free from chemical contamination, and it should have the right physical properties. In this interactive, online course, we will discuss key information regarding drinking water monitoring and security required to ensure the health, safety, and welfare of the general population being served by water supply facilities. We will discuss the minimum parameters recommended for monitoring drinking water, and the surveillance process and products used for monitoring water quality. We will also discuss the types of threats to facilities, and types of physical security elements that may be put into place to help protect these facilities.
Drinking Water Quality - Water Treatment Technology	1	Fundamental	Safe drinking water supplies are crucial to the health, safety, and welfare of society. In this interactive, online course, we will discuss key information regarding water treatment technology of drinking water, including characteristics and capabilities of water treatment processes, source water quality, distribution system considerations, and residuals management. Technical personnel in the design, engineering, maintenance and operations areas of facilities will find this information critical to the successful operation of drinking water related facilities. This course addresses critical factors that affect health, safety and welfare of the population being served by the water treatment system.
Driven Piles: Introduction to Static Analysis Methods	1	Advanced	Driven piles are a dependable and cost-effective deep foundation solution to maintain the integrity of structures. Produced as long columns of steel, timber, or concrete, they provide additional support to structures on land and over water, especially during natural disasters such as floods and hurricanes. Testing of installed piles can determine the load carrying capabilities of the pile, ensuring the strength and stability of the foundation before construction begins. This 1-hour interactive online course is the third of a series of courses on driven piles. This course covers an introduction to static analysis methods, including basics of static analysis, events during and after pile driving, load

Title	Hours	Level	Description
			transfer, effective overburden pressure, selection of design soil strength parameters and factors of safety. Other courses cover design of single piles and design of pile groups. It is based on guidance provided by the Federal Highway Administration. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Driven Piles: Pile Type and Selection	2	Advanced	Driven piles are a total engineering solution. The design, installation and quality assurance that are a part of each driven pile combine to eliminate guesswork and produce a known, reliable and cost-effective product that can accommodate a wide variety of subsurface conditions. This 2-hour interactive online course covers the many different types of piles available and explains the appropriate conditions for each type of pile. There is also a section covering the different types of degradation and how each pile substance might respond to these difficult environmental circumstances. The information is provided to help designers choose the best pile type for any given project. This course is based on guidance provided by the Federal Highway Administration. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Driven Piles: Static Analysis - Pile Groups	3	Advanced	Driven piles are pre-manufactured fortifications used to ensure the strength of a structure's base which can be used in different types of foundations. This 3-hour online course is the fifth course in a series on pile design. This course reviews static analysis of driven pile groups, including bearing capacity analysis of pile groups in cohesionless soils, cohesive soils and layered soils. The course material covers analysis of uplift capacity and lateral capacity, special design considerations such as downdrag, lateral squeeze of foundation soil, bearing capacity of piles in soils subject to scour, and soil and pile heave. This course also addresses additional design considerations including time effects on pile capacity, effects of construction techniques, plugging of open pile sections, and pile drivability. To successfully complete this course, it is necessary to have an understanding of the materials covered in earlier courses on driven piles including Driven Piles - Subsurface Exploration and Testing, and Driven Piles - Introduction to Static Analysis. This course is based on guidance provided by the Federal Highway Administration. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Driven Piles: Static Analysis - Single Piles	3	Advanced	Driven piles are pre-manufactured fortifications used to ensure the strength of a structure's base that can be used in different types of foundations. This 3-hour interactive online course is the fourth course in a series on pile design, covering static analysis of single driven piles.

Title	Hours	Level	Description
			This course reviews bearing capacity analysis of single piles in cohesionless soils, in cohesive soils, in layered soils and on rock. Analysis of uplift capacity and lateral capacity is also reviewed. To successfully complete this course, it is necessary to have an understanding of the materials covered in earlier courses on driven piles, including Driven Piles - Subsurface Exploration and Testing, and Driven Piles - Introduction to Static Analysis. This course is based on guidance provided by the Federal Highway Administration. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Driven Piles: Subsurface Exploration and Testing	2	Advanced	Driven piles are a total engineering solution. The design, installation and quality assurance that are a part of each driven pile combine to eliminate guesswork and produce a known, reliable and cost-effective product that can accommodate a wide variety of subsurface conditions. Driven piles easily adapt to variable site conditions to achieve uniform minimum capacity with high reliability, thus eliminating uncertainty due to site variability. This 2-hour interactive online course covers the subjects of subsurface exploration, in-situ testing and laboratory testing. It is based on guidance provided by the Federal Highway Administration. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Ductile Iron Pipe	2	Intermediate	Ductile iron pipe is used for many applications, primarily for potable water lines and sanitary sewage pumping stations, but also for drainage systems. The qualities of ductile iron make it superior to other available products. Along with its predecessor, gray cast iron, it has a very long history of use, particularly compared to many other available products. This 2-hour interactive on-line course discusses the characteristics of ductile iron pipe, the advantages of this type of pipe and the design criteria for proper selection of pressure class. It also briefly discusses joint types available and their applications and the old system of classification for ductile iron (such as Class 52). The material is taken from the Ductile Iron Pipe Research Association. There will be a test at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Easements: Part 1, Basic Elements	3	Fundamental	This 3- hour interactive online course is Part One of a three-part series covering easements and reversion rights. This course deals with the basic elements of easements and rights in land, particularly those interest which are less than absolute, or fee simple, ownership. This course includes a multiple-choice quiz at the end of each section. Part Two deals with rights-of-way, and discusses several types. Part Three covers reversion rights that occur when an easement is terminated. In order to have a full understanding of the existence of easements and their resulting reversion rights, the three parts of the course should be taken in sequence. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Easements: Part 2, Roads & Highways	2	Intermediate	This 2-hour online course contains information on the creation, alteration and termination of public highways and other types of roads. This is Part Two of a three-part course concerning Easements & Reversion Rights. As Part One contains introductory information, including terminology, it is important to complete Part One before beginning Part Two. Part Three contains the action of reversion as a result of easement terination and focuses on roads and streets. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Easements: Part 3, Reversion Rights	3	Advanced	This 3-hour online course contains the elements of reversion and the results when reversion takes place. It also includes diagrams of the methods for the division of vacated streets. This is Part Three of a three-part course series offered on RedVector.com concerning Easements & Reversion Rights. In order to have a full understanding of the existence of easements and their resulting reversion rights, the three parts of the course should be completed in sequence. Part I deals with the basic elements of easements and rights in land. Part II deals with several types of rights-of way. Part III covers reversion rights that occur when an easment is terminated. This course includes a multiple-choice quiz at the end of each section. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Effective Delegation	3	Intermediate	LearnSmart's Video Training Course for Effective Delegation was developed to teach people that delegation is more than just clearing off your desk by assigning tasks to others. Not only does delegation entail teaching others the skills necessary to accomplish certain tasks, but it also serves as an opportunity to foster employees in their career training. The course shows the importance of delegating not just tasks, but also the authority necessary to complete them.
Effective Groundwater Supply Management	1	Advanced	Effective Groundwater Supply Management is essential if groundwater resources are to remain viable for the foreseeable future. Groundwater Management is a rapidly evolving discipline that is incorporating ever more factors into the evaluation of principles that will ensure that no harmful effects arise from the utilization of this resource while ensuring that all potential resources that can be maintained are used to satisfy an ever-increasing demand. This interactive online course will present a history of Groundwater Management from its beginnings in the middle of the last century through the present day. Current parameters and environmental factors of concern will be outlined.
Effective Presentation Skills	1	Intermediate	In LearnSmart's Effective Presentations video training, you will learn how to clearly convey your intended message, while overcoming fear and anxiety. You are provided with an essential overview to successful public speaking. This training highlights the skills needed to make presentations, and the necessary changes involved in presentations to blend personality with clear communication. The video will focus on the following topics: dealing with fears

Title	Hours	Level	Description
			and anxieties, elements of a presentation, nonverbal communication, and how to prepare for a presentation.
EHS Regulatory Overview	1	Intermediate	Violating Environmental, Health and Safety regulations can result in fines and even the closure of your business. This interactive online course will teach you the major regulations for general industry as it pertains to Environmental, Health and Safety. You will learn how to determine which regulations are relevant to your companies and/or industry. You will also learn what your organization can do to maintain regulatory compliance with EHS regulations.
Electric Motors	1	Fundamental	Electric motors are used in all facets of daily life from electric generators, refrigerators, air conditioners, to the electric fan in computers. This interactive online course teaches you about electric induction motors. It covers how a motor works, the types of electric motors available, and how to apply an electric induction motor. This course looks at the relationship between motor speed, slip, and torque, and covers how to select a motor with the correct parameters for a particular load. Finally, all of the basic data on a motor nameplate is reviewed and explained.
Electric Power Substations	1	Fundamental	This webcast covers basic information regarding electric power substations and the distribution of electric power, including components of power substations, individual equipment components, and electric power distribution systems. General information related to operational aspects of substations and distributing electric power is included.
Electrical Fire Alarm Systems	1	Fundamental	This course presents key information regarding electric fire alarm systems. Fire alarm systems are of critical importance for several types of facilities, and are mandated for specific facilities by regulatory and government agencies. We will cover system fundamentals, and the various types of systems available and in use today - specifically, voice and alarm communications, automatic alarm signals, controls and signal initiation, transmission and notification.
Electrical Installations 1: Electrical Laws, Components and Circuits	1	Advanced	The use of electricity, especially at common line voltages, is inherently dangerous. When used haphazardly, electricity can lead to electrocution or fire. This danger is what led to the development of the National Electrical Code® (NEC®), and it is what keeps Underwriter's Laboratories in business. The first real requirement of the NEC is that all work must be done 'in a neat and workmanlike manner.' This means that the installer must be alert, concerned, and well-informed. It is critical that you, as the installer of potentially dangerous equipment, maintain a concern for the people who will be operating the systems you install. This 1-hour interactive online course covers the basic rules of electricity and electronics. It contains enough detail to help you through almost any difficulty that faces you, short of playing electronic design engineer. It will also serve you well as a review text from time to time.
Electrical Work for Florida Pool Contractors	1	Advanced	Are you up-to-date on the 2017 NEC requirements for swimming pools? This interactive online course will review NFPA 70, 2017 National Electrical Code, Article 680 Parts I and II, which contain the requirements for swimming pools, fountains, and similar installations. Included will be a review of certain definitions and the requirements associated with ground fault protection, corrosive environments, motors, lighting, receptacles, and equipotential bonding. Various changes associated with the 2017 NEC will also be highlighted.

Title	Hours	Level	Description
Email Etiquette	2.5	Intermediate	Email has long since replaced postal "snail" mail as the preferred method of communication, and this course provides the complete training you'll need to become an expert on the proper usage and terminology that goes along with personal and professional email communication.
Employee or Independent Contractor: The Risk of Misclassification of Employees	0.5	Fundamental	A growing number of workers are trading in the corporate hierarchy for the freedom to be their own boss. These independent contractors can be found in nearly every profession, from lawyers and business consultants to writers and yoga instructors. They set their own schedule and they enjoy a wide variety of work experiences, but they also pay their own taxes and secure their own health insurance. A problem arises, however, when employers misclassify workers who are employees under the law as independent contractors. Depending on the specific terms of the working arrangement with an independent contractor, such as hours worked, reporting structure, payment schedule, et cetera, you may be in violation of some very serious worker classification laws. In this interactive, online course, we will define the term independent contractor. We will describe tests used to classify workers as independent contractors, such as behavior controls, financial controls, and the actual working relationship, and we will discuss examples of independent contractors.
Energy Conversion Analysis (RV-10839)	4	Intermediate	Energy conversion devices are an important element of progress of society. Understanding their limitations and efficiencies is vital to our energy-informed and energy-conscious society. The ideal, simple, and basic power cycles of Carnot Cycle, Brayton Cycle, Otto Cycle, and Diesel Cycle, the ideal power cycle components and processes of compression, combustion, and expansion, and the ideal compressible flow components of subsonic nozzle, diffuser, and thrust are presented in this 4-hour online course. In the presented power cycles, power cycle components and processes, and compressible flow analysis, air is used as the working fluid.
Energy Conversion Ideal vs Real Operation Analysis	4	Advanced	How well do you know the basic power cycles (Brayton Cycle, Otto Cycle and Diesel Cycle)? In this interactive online course we will cover the 3 cycles as well as power cycle components/processes (compression, combustion and expansion) and compressible flow components (nozzle, diffuser and thrust). We'll present power cycles, power cycle components/processes and compressible flow components analysis with air used as the working fluid. For each power cycle, you'll get the thermal efficiency derivation presented with a simple mathematical approach. Also, for each power cycle, a T - s diagram and cycle major performance trends (thermal efficiency, specific power output and power output) are plotted in a few figures as a function of compression ratio, turbine inlet temperature and/or final combustion temperature, working fluid mass flow rate and both isentropic compression and expansion efficiency. We won't deal with costs (capital, operational or maintenance).
Energy From Waste	1	Fundamental	How can you obtain energy from waste? This interactive, online course will cover potential sources of waste available for energy recovery - hot exhaust gases, cooling water, and heat lost from hot equipment surfaces and heated products. Systems utilized for Energy from Waste technologies will also be reviewed. This information is useful training for design professionals, facility managers, and system maintenance personnel.

Title	Hours	Level	Description
Energy Modeling Outcomes - Design with Confidence	1	Intermediate	What is energy modeling and how can it help in your next site design? We all know that having the right information earlier produces substantially superior results. Systematic early design energy modeling assists design teams and owners by clarifying the decision space and bringing relevant information to the discussion. This interactive online course will help you discover the replicable methods to produce better information sooner as well as the incentive programs to look for that will subsidize these best practices. Building energy modeling and distributed generation systems will be covered so you will have all of the tools necessary to push for net zero building designs.
Engineering Economic Analysis	5	Advanced	This five-hour online course is a review of engineering economy analysis concepts. The course reviews the basic concepts of economic analysis, including the time value of money, cash flow diagrams, and present value methods. The most common analysis factors that are used in economic analysis are explored. Both discrete compounding and continuous compounding factors are discussed. Methods for converting annual values to present values, future values to present values, and future values to annual values are shown, as well as their complement equations. Several different analysis methods are reviewed, including present worth, annual cost, capitalized annual cost, payback, and multiple alternative analysis. The effects of taxes, including depreciation effects, are explained and shown in examples.
Essential Lighting: The Language, Metrics & Process of Lighting Design	3	Fundamental	This 3-hour interactive online course provides a basic understanding of lighting, its properties, and the terminology used to define various aspects of lighting. From the ability to accurately describe characteristics of color and intensity of a light source, to understanding how we respond to light, you will come away with insights on how lighting can literally change your world - in ways that can be good or bad. The author provides numerous examples that allow the reader to relate the technical issues to the everyday experience. Everyone knows lighting from their experience of it. Understanding its metrics, how it can be manipulated to help us perform better, use energy more effectively, and improve our moods can be valuable not only to designers, but to anyone interested in their environment. The course also delves into how lighting design decisions are made, and the positive potential effects of good lighting design practice. Some examples of common, everyday lighting problems and solutions are discussed at the end of the course to bring the value of thoughtful lighting design into perspective. Understanding terminology and concepts discussed in this course will be important before advancing to additional lighting design topics. There will be a test included at the end of each section of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Essentials of I-9 Compliance	0.5	Fundamental	To many employers, a Form I-9 may appear to be a simple one-page piece of hiring paperwork. However, the one page Form I-9 comes with enough rules and regulations to fill a 69-page how-to manual, the M-274 Handbook for Employers. There are many common mistakes and human errors that can be made while completing and maintaining Form I-9 records. If an employer fails to complete or maintain I-9 documentation correctly, that employer may fall out of compliance and suffer harsh financial penalties. This interactive, online course contains valuable information on how to complete Form I-9, an important document used for employment eligibility verification. The Form I-9 is a valuable and easy-to-use tool. The use of Form I-9 helps protect jobs for authorized workers and ensure a legal workforce.
Essentials of Industrial Wastewater Treatment	1	Fundamental	High-quality fresh water is an increasingly rare and valuable commodity. The Earth contains a finite supply of water and the small fraction which is useable for drinking and other valuable uses will continue to come under increasing pressure. With a worldwide focus on water quality and management, the fate of wastewater generated by industry is more important than ever. Treating water for discharge or reuse, and minimizing the amount of water to be treated, are important concepts for the engineering, science or other professional to understand. This interactive online course will focus on considerations and technologies for treating industrial wastewater. Treatment of municipal and domestic wastewater, such as at publicly owned treatment works (POTWs), will be discussed briefly.
Essentials of Intelligent Transportation Systems	1	Fundamental	What is an Intelligent Transportation System? Intelligent Transportation Systems (ITS) apply a variety of technologies to monitor, evaluate, and manage transportation systems to enhance efficiency and safety. This interactive online course provides an overview and history of ITS from early initiatives through the evolution of technology, systems engineering, and institutional structures. We will also describe the role of ITS in changing travel and commuter patterns and travel demand management.
Essentials of Lean Manufacturing	1	Advanced	What is Lean Manufacturing and how can it be used to improve the efficiency and effectiveness of your company's processes or services? Lean Manufacturing is more than just a method and a set of tools for improving processes, it is also a philosophy for how to do work every day. This interactive online course will provide you with a simplistic approach to Lean Manufacturing, promote a mindset change, and share the tools needed to implement value-creation processes with minimum waste. You will learn how to "think Lean" and apply Lean methods and tools to improve the quality and efficiency of your company.
Essentials of Quality Concrete	2	Fundamental	This course provides an overview of concrete, including its properties and basic components, the properties required for plastic and hardened concrete, and the variables that influence the quality of concrete. It will discuss some of the mechanical and durability characteristics required of concrete for various applications. The materials used in concrete mixtures, including portland cement, supplementary cementitious materials, aggregates, water and air will

Title	Hours	Level	Description
			be discussed along with the general concepts of proportioning concrete mixtures. This course will introduce admixtures and explain their purpose. It explores air entraining and water reducing admixtures, accelerators and retarders, as well as other "value added" admixtures. This course also provides the basics of troubleshooting concrete slabs, such as workability, place-ability, finish-ability, and causes for cracking and other defects in concrete.
Essentials of Smart City Applications	1	Fundamental	What is a smart city? A smart city is an urban development vision to integrate multiple information and communication technologies and Internet of things (IoT) solutions in a secure fashion to manage a city's assets. This interactive, online course will list possible stakeholders of a smart city, as well as how a smart city policy is developed. Smart city technologies will also be discussed.
Essentials of the Connected Vehicle	1	Fundamental	What is a connected vehicle? Connected vehicles offer a fundamental change in systems management and ITS infrastructure by focusing on vehicle-to-vehicle and vehicle-to-roadway communication. This interactive, online course discusses the current and emerging technology and the institutional, policy, and funding challenges of connected vehicle applications.
Ethical Decision Making (RV-10705AW)	2	Fundamental	Professionals associated with site, building, or neighborhood planning, design, and development have a unique charge to make ethical decisions with the welfare of both the environment and citizens in mind. The goal of this course is to expose professionals to some of the most common ethical considerations within planning, design, and construction professions and give the opportunity to learn how to create a built environment that improves the quality of life of a community while adhering to simple strategies to facilitate ethical practice in the workplace.
Ethical Decision Making for Design and Construction Professionals	2	Intermediate	Designers, Planners, Architects, Landscape Architects, and Engineers all need to know about and adhere to established codes of ethics. Then you will protect the public and the environment now as well as in the future. This webcast gives you the history of the events that led to our current attitudes regarding ethical decision making. You will get specific examples of the consequences for making unwise decisions. You'll also receive instruction in the ethical considerations involved in making good, safe, ethical decisions. ATTN: This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying 2-hours of credit toward the required continuing education.
Ethical Decision Making for Engineers #1	2	Fundamental	In this course we examine the NSPE Code of Ethics. We review cases ruled upon by the NSPE Board of Ethical Review, which will be key to helping you determine how you should act when faced with ethical decisions. We explore each of the 6 fundamental canons.
Ethical Decision Making for Engineers #2	1	Fundamental	Engineering is an important and learned profession. As a member of the engineering profession, you are expected to maintain the highest standards of honesty and integrity. In order to continue this effectiveness, the services that you as an engineer provide require honesty, impartiality, fairness, and equity, and must be dedicated to the protection of the public safety, health, and welfare. Engineers must adhere to a standard of professional behavior

Title	Hours	Level	Description
			upholding the highest principles of ethical conduct. We call the standard of behavior “engineering ethics,” and embody it in the codes of ethics published by the state boards and by professional societies, such as NSPE. In this second course, we will continue the direction of the NSPE Code of Ethics by looking at a few case studies and how the Code specifically applies in each case. We will look into a case involving the use of unlicensed software to create work products. We will review the concept of conflict of interest. Finally, we will discuss cases involving licensure and practicing in different states.
Ethical Decision Making for Engineers #3	1	Fundamental	Engineering is an important and learned profession. As a member of the engineering profession, you are expected to maintain the highest standards of honesty and integrity. In order to continue this effectiveness, the services that you as an engineer provide require honesty, impartiality, fairness, and equity, and must be dedicated to the protection of the public safety, health, and welfare. Engineers must adhere to a standard of professional behavior upholding the highest principles of ethical conduct. We call the standard of behavior “engineering ethics,” and embody it in the codes of ethics published by the state boards and by professional societies, such as NSPE. In this third course, we will continue the direction of the NSPE Code of Ethics by looking at a few case studies and how they apply specifically to the Code. We will look into the topic of using existing work for different clients and disclosing required information. We will look at cases involving conflict of interest and the engineer's responsibilities for handling incomplete specifications. Finally, we will look at the ethical responsibility to notify authorities and owners of potentially dangerous conditions.
Ethical Decision Making for Engineers #4	1	Fundamental	Engineering is an important and learned profession. As a member of the engineering profession, you are expected to maintain the highest standards of honesty and integrity. Engineered solutions to modern problems require public acceptance and often public funding, both of which require continued public confidence in the engineering profession. Public confidence in any profession, whether it is engineering, medicine, law, etc., may easily be shaken by indications of unethical behavior in that profession. The engineering profession today enjoys a very high level of public confidence and, consequently, is effective in meeting the technological needs of society. In order to continue this effectiveness, the services that you as an engineer provide require honesty, impartiality, fairness, and equity, and must be dedicated to the protection of the public safety, health, and welfare. Engineers must adhere to a standard of professional behavior upholding the highest principles of ethical conduct. We call the standard of behavior “engineering ethics,” and embody it in the codes of ethics published by the state boards and by professional societies, such as NSPE. In this fourth course, we will continue the discussion of the Code of Ethics by looking at a few case studies and how they apply specifically to the Code. We will look into cases involving conflicts of interest and the appearance of conflicts of interest. We will also look at a case involving responsibilities of the engineer in situations that may endanger public safety. Finally, we will look at the responsibilities of an engineer when reviewing another engineer's work.

Title	Hours	Level	Description
Ethical Decision Making for Engineers #5	1	Fundamental	Engineering is an important and learned profession. As a member of the engineering profession, you are expected to maintain the highest standards of honesty and integrity. Engineered solutions to modern problems require public acceptance and often public funding, both of which require continued public confidence in the engineering profession. Public confidence in any profession, whether it is engineering, medicine, law, etc., may easily be shaken by indications of unethical behavior in that profession. The engineering profession today enjoys a very high level of public confidence and, consequently, is effective in meeting the technological needs of society. In order to continue this effectiveness, the services that you as an engineer provide require honesty, impartiality, fairness, and equity, and must be dedicated to the protection of the public safety, health, and welfare. Engineers must adhere to a standard of professional behavior upholding the highest principles of ethical conduct. We call the standard of behavior “engineering ethics,” and embody it in the codes of ethics published by the state boards and by professional societies, such as NSPE. In this fifth course, we will continue the direction of the Code of Ethics by looking at a few case studies and how they apply specifically to the Code. We will look into the topic of participating in political fundraisers. We will also look at a case involving the ethics in employee agreements. We will discuss the implications of protecting wildlife. Finally, we will look the rights of engineers when speaking out about matters of public policy.
Ethics for Certified Planners	1.5	Intermediate	Most planners will work either in the public sector or in close connection with the public sector at some point in their professional career. Planners associated with the public sector have a unique charge to make ethical policy decisions with the welfare of citizens in mind. The goal of this 2-hour interactive online course is to expose planners to the importance of ethics within the planning profession and develop a thorough understanding of the American Institute of Certified Planners (AICP) Code of Ethics and Professional Conduct. This course explains the importance of the AICP Code of Ethics and Professional Conduct and helps planners hone their ethical problem-solving skills through practice ethical scenarios. This course will also cover some of the most common ethical considerations within the planning profession, including Serving the Public Interest Social Responsibility Environmental Responsibility Consequences of Policy Implementation Interrelatedness of Decisions
Ethics for Land Surveyors: Abiding By the Rules & Regulations for Surveying	1	Fundamental	This course discusses everyday decisions that professional land surveyors face and examines a surveyor's conduct in the context of the National Society of Professional Surveyors (NSPS) “Creed and Canons.” This course focuses on the second canon - abiding by the rules & regulations for surveying. The scenarios presented in this course affirm the underlying professional principle that surveyors are guided by a common moral understanding.

Title	Hours	Level	Description
Ethics for Land Surveyors: Client Conflicts, Advertising & Professional Integrity	1	Fundamental	This course discusses everyday decisions that professional land surveyors face and examines a surveyor's conduct in the context of the National Society of Professional Surveyors (NSPS) “Creed and Canons.” This course focuses on the fifth, sixth, and seventh canons - client conflicts, advertising, and professional integrity. The scenarios presented in this course affirm the underlying professional principle that surveyors are guided by a common moral understanding.
Ethics for Land Surveyors: Decision-Making in Everyday Practice	1	Intermediate	Examining the ethics of an individual's actions, given a theoretical or “teaching” situation, is a standard method of appraising and judging professional practices. Many State Boards of Registration have promulgated either a “Code of Ethics” or a “Creed and Canons” with the intention of setting the bar for professional ethics. These guides are based on moral assumptions considered essential to our culture, and are the standards by which professionals are expected to make decisions, behave and act. This 1-hour interactive online course examines seven situations that surveyors may commonly face, and discusses correct actions in the context of what the National Society of Professional Surveyors (NSPS) calls its “Surveyor's Creed and Canons.” This course reviews the basic ethics and conduct expected of surveyors in professional practice. In the context of the “Surveyor's Creed and Canons” published by the National Society of Professional Surveyors (NSPS), you will learn the parameters of ethical decision-making by examining a series of challenges that surveyors typically encounter on a regular basis.
Ethics for Land Surveyors: Refraining From Conduct Detrimental to the Public	1	Fundamental	This course discusses everyday decisions that professional land surveyors face and examines a surveyor's conduct in the context of the National Society of Professional Surveyors (NSPS) “Creed and Canons.” This course focuses on the first canon - refraining from conduct that is detrimental to the public. The scenarios presented in this course affirm the underlying professional principle that surveyors are guided by a common moral understanding.
Ethics for Land Surveyors: Working Outside Your Area of Expertise and Avoiding Conflicts of Interest	1	Fundamental	This course discusses everyday decisions that professional land surveyors face and examines a surveyor's conduct in the context of the National Society of Professional Surveyors (NSPS) “Creed and Canons.” This course focuses on the third and fourth canons - working outside your area of expertise and avoiding conflicts of interest. The scenarios presented in this course affirm the underlying professional principle that surveyors are guided by a common moral understanding.
Ethics for Professional Architects Part I	2	Fundamental	Unethical conduct by prominent individuals in various professions from government to business, from teaching to architecture, is constantly being reported in the news. In a time when our moral foundations are continually being questioned, what tools do architects have to deal with ethical dilemmas? In this 2-hour interactive online course, standards of ethical conduct are examined in a variety of situations amply illustrated with case studies. The architect will focus on ethical issues in contemporary professional practice by looking at a sampling of “real” ethical issues that other professionals sometimes face. Using the AIA Code of Ethics as a guide and applying the ethical decision-making model, the architect will examine some of the everyday complex issues of professional practice, such as conflicts of interest, whistle-

Title	Hours	Level	Description
			blowing, safety, confidentiality and gifts. This course includes a multiple-choice quiz to test your understanding of the material. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Ethics for Professional Architects Part II	2	Fundamental	Unethical conduct by prominent individuals in various professions from government to business, from teaching to architecture, is constantly being reported in the news. In a time when our moral foundations are continually being questioned, what tools do architects have to deal with ethical dilemmas? In this 2-hour interactive online course, standards of ethical conduct are examined in a variety of situations amply illustrated with case studies. The architect will focus on ethical issues in contemporary professional practice by looking at a sampling of “real” ethical issues that other professionals sometimes face. Using the AIA Code of Ethics as a guide and applying the ethical decision making model, the architect will examine some of the everyday complex issues of professional practice, such as conflicts of interest, whistle-blowing, safety, confidentiality and gifts. This course includes a multiple-choice quiz to test your understanding of the material. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Ethics for Professionals	1	Fundamental	What are ethical guidelines and how do they apply to you in your professional field? Every day you face decisions that have ethical implications. While the welfare and safety of the public are everyone's primary concerns, time, personal and resource pressures can often challenge these commitments. Taking a pro-active approach to workplace ethics is the best course of action to mitigate this risk, avoid legal problems, and build a working atmosphere of integrity, trust and purpose. In this interactive online course, we will explore how to develop a strong and sustainable set of workplace ethics and guidelines designed to mitigate ethics creep, avoid legal implications, and build a solid ethical foundation for a healthy workplace culture. We will explore common ethical topics and challenges and will detail the best practices when faced with thought provoking situations. We will also present the differences between a Code of Conduct and a Code of Ethics and how they can affect each professional differently.
Ethics for Texas Residential Contractors	1	Fundamental	Residential contractors are responsible for creating and maintaining safe homes for their communities. Contractors are considered to be professionals and should always act in an appropriate and professional manner; therefore it is important to have an understanding of the ethics that govern this profession. The goal of this 1-hour interactive online course is to examine chapters in the Texas Statues Property Code to develop a working knowledge of professional ethics and an understanding of the complexities of professional decision-making. The following sections from the Texas Statutes Property Code will be discussed in this course: Title 4: Chapter 28. Prompt Payment to Contractors Title 5: Chapter 53. Liens Title 16: Chapter 418. Prohibited Practices

Title	Hours	Level	Description
Ethics for the Practicing Engineer - An Introduction	1	Fundamental	This course is designed to satisfy state board requirements for continuing education in ethics. This will be an introduction to professional ethics, contrasting common morality to professional ethics, and will present analytical tools to identify and classify ethical dilemmas potentially faced by practicing engineers.
Ethics for the Practicing Engineer - Managing Risks Imposed on the Public	1	Intermediate	All engineering designs and all operations of engineered systems expose the public to some risk. Engineers are ethically obligated to protect the public from unacceptable levels of risk, which raises the questions: How is risk defined and quantified? What levels of risk are acceptable? In this interactive online course, we will discuss ways to evaluate risks imposed on the public by engineers. We will also discuss ways to determine which risks are acceptable and which are unacceptable.
Ethics for the Practicing Engineer - Organizational Issues	1	Intermediate	Organizational issues can affect the decisions made by engineers every day. This interactive online course will focus on issues facing engineers working in large organizations. Case studies of organization-induced problems (such as the two space shuttle failures, the Macondo blowout, the GM ignition switch case) will be used to help participants recognize when organizational problems might cause ethical issues for engineers.
Ethics: Shades of Green	3	Fundamental	This webcast will focus on how our professional ethics are no longer black and white, they are shades of green. Not only do professionals have an obligation to design for the health, welfare, and safety of people they represent; they also have an obligation to safeguard the environment. This course will discuss why professionals have a green ethical obligation to promote excellence of design and endeavor to conserve and preserve the integrity and heritage of the natural and built environment. We will focus on how professional societies and registration boards are holding professionals accountable for sustainable design and planning practices and to consider the environment in everything they do.
Existing Building Commissioning: Implementing Retrocommissioning on Your Project	1	Intermediate	What is retrocommissioning and how will it benefit your building? Learn about the retrocommissioning process and how to implement this process on an existing building, with lessons learned from a commissioning professional and Professional Engineers. This interactive online course will give a quick overview of commissioning and the benefits of commissioning for existing buildings, followed by how to implement retrocommissioning by walking the participant through each step of the process. Benefits of and difficulties with implementing the commissioning process on existing projects are evaluated. Finally, a sample case study is given which discusses lessons learned on the retrocommissioning implementation process.
Explosive and Flammable Chemicals	1	Intermediate	A review of the U.S. Chemical Safety Board's website shows a running scroll of chemical accidents in the news. Almost on a daily basis, there is a listing for a fire or explosion at an industrial site and many of these accidents are due to an explosive or flammable chemical. While production and use of these types of chemicals are essential to many industries, it is vital that they are handled

Title	Hours	Level	Description
			properly to prevent the loss of life, property damage, or evacuations of nearby communities. Through this interactive, online course, a foundation for recognizing the classification of explosive or flammable chemicals will be provided. In addition, safe work practices for the storage and use of these chemicals will be presented.
Facilitating Meetings and Groups	7	Intermediate	LearnSmart's Facilitating Meetings and Groups video training course demonstrates the extensive range of skills and tools needed to organize meetings that are both productive and time efficient. Through this course, viewers learn how to take charge, how to lead, and how to move groups towards their goals.
Facility Asset Management	1	Fundamental	Facility asset management is the process of taking care of things of value in and around a facility; equipment, buildings, systems, walls, roofs, sidewalks, parking lots, and so on. In this course you will learn about the components necessary to implement an effective asset management program. You will also learn about the relationship of asset cost to maintain and future capital expenditures, purchasing the appropriate quality assets and parts, documenting asset history and performance, critical asset analysis, failure mode and effect analysis (FMEA), auditing of the maintenance process, life cycle analysis, forecasting and budgets, and performance measures.
Facility Maintenance Management	1	Fundamental	Facility maintenance management is the logistical component of taking care of a facility, and involves managing the day to day maintenance requirements of a facility. In this course, you will learn about work request management, work planning and work scheduling, computerized maintenance management systems (CMMS), and communication methods and techniques associated with the maintenance function. You will also learn about how to address staffing concerns, how to address travel and transportation of your maintenance technicians, and backlog management. Also discussed are how to properly lead a facility maintenance team, and how to develop a long-term facility maintenance management plan.
Facility Management Essentials	1	Fundamental	In this course, you will learn about the key principles you need to understand to be able to be a successful facility manager. You will learn about leadership and management skills needed in facility management, in addition to topics around business finance, staffing, workflow/asset tracking, work planning/scheduling and maintenance, management and craft training, performance measures, and customer/client communication and coordination.
False Alarm Prevention	2	Fundamental	Across the country, state laws are evolving on a constant basis to address the problem of false alarm signals. The daily operation of alarm companies across the United States is critical and essential to the success of reducing the number of false alarm dispatches. The problem of false dispatches will not be reduced on any significant level without a careful and constant review of these ordinances, as well as the conscientious application of aggressive procedures in designing, installing and servicing alarm systems, and training alarm system end users. This 2-hour online course provides solutions for the prevention of false alarms based on statistical information, as well as the application of technical and

Title	Hours	Level	Description
			operational procedures. This course provides a foundation for alarm contractors to help reduce false alarms by educating their customers about proper alarm operation, the role of law enforcement, and the technical responsibility of the alarm contractor. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Financial Management 1: Negotiating Contracts	1	Intermediate	Cash flow is the life blood of your firm and lack of cash is the primary cause in 92 percent of all bankruptcies. Increasing cash flow, managing cash, and using cash to your best advantage is as important to your business as superior architecture or design work. This 1-hour interactive online course helps you develop the skills needed to price your services to ensure profitability on every job. There is a test at the end. This is the first chapter of the "Financial Management for the A/E/C Firm" course series from PSMJ Resources, Inc. offered through RedVector.com in its entirety. We strongly recommend that you take all nine chapters of this course series. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Financial Management 2 & 3: Pricing for Profits, Generating Cash and Getting Paid	2	Intermediate	Cash flow is the life blood of your firm and lack of cash is the primary cause in 92 percent of all bankruptcies. Increasing cash flow, managing cash, and using cash to your best advantage is as important to your business as superior architecture or design work. This 2-hour interactive online course helps find new ways to generate cash and get your clients to pay quickly. This is the second and third chapter of the "Financial Management for the A/E/C Firm" course series from PSMJ Resources, Inc. offered through RedVector.com in its entirety. We strongly recommend that you take all nine chapters of this course series. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Financial Management 4: Accounting & Cash	1	Intermediate	Cash flow is the lifeblood of your firm and lack of cash is the primary cause in 92 percent of all bankruptcies. Increasing cash flow, managing cash, and using cash to your best advantage is as important to your business as superior architecture or design work. This 1-hour online course helps you choose the appropriate type of accounting system to optimize your firm's cash flow. This is the fourth chapter of the "Financial Management for the A/E/C Firm" course series from PSMJ Resources, Inc. offered through RedVector.com in its entirety. We strongly recommend that you take all nine chapters of this course series. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Financial Management 5: Strategic Planning & Budgeting	1	Fundamental	Cash flow is the life blood of your firm and lack of cash is the primary cause in 92 percent of all bankruptcies. Increasing cash flow, managing cash, and using cash to your best advantage is as important to your business as superior architecture or design work. This 1-hour interactive online course helps you master the strategic planning process and control your financial operations effectively. This is the fifth chapter of the "Financial Management for the A/E/C Firm" course series from PSMJ Resources, Inc. offered through RedVector.com in its entirety. We strongly recommend that you take all nine chapters of this course series. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Financial Management 6 & 7: Financial Controls, Monitoring & Project Budgeting	1	Fundamental	Cash flow is the life blood of your firm and lack of cash is the primary cause in 92 percent of all bankruptcies. Increasing cash flow, managing cash, and using cash to your best advantage is as important to your business as superior architecture or design work. This 1-hour online course gives you the knowledge you need to choose a budget method that will control your firm's project costs. This is the sixth and seventh chapter of the "Financial Management for the A/E/C Firm" course series from PSMJ Resources, Inc. offered through RedVector.com in its entirety. We strongly recommend that you take all nine chapters of this course series. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Financial Management 8: Controlling Labor Costs	1	Intermediate	Cash flow is the life blood of your firm and lack of cash is the primary cause in 92 percent of all bankruptcies. Increasing cash flow, managing cash, and using cash to your best advantage is as important to your business as superior architecture or design work. This 1-hour interactive online course helps you control labor and overhead costs and increase your likelihood of profitability on every project. This is the eighth chapter of the "Financial Management for the A/E/C Firm" course series from PSMJ Resources, Inc. offered through RedVector.com in its entirety. We strongly recommend that you take all nine chapters of this course series. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Financial Management 9: Purchasing	1	Fundamental	Cash flow is the life blood of your firm and lack of cash is the primary cause in 92 percent of all bankruptcies. Increasing cash flow, managing cash, and using cash to your best advantage is as important to your business as superior architecture or design work. This 1-hour interactive online course helps you develop the attributes necessary to create a good purchasing, leasing, and renting system for your firm. This is the ninth and final chapter of the "Financial Management for the A/E/C Firm" course series from PSMJ Resources, Inc. offered through

Title	Hours	Level	Description
			RedVector.com in its entirety. We strongly recommend that you take all nine chapters of this course series. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Fire and Smoke Dampers Simplified	1	Intermediate	Fire and smoke dampers are essential components of fire and life safety systems of a building. Their operation prevents the spread of fire and smoke and allows building occupants to safely exit a building during a fire. Fire and smoke dampers are also vital to the integrity of fire and smoke rated building assemblies. Improper specifications, installation, actuation or simply the lack of fire and smoke dampers can result in damage to a building or worse, loss of human life. This interactive online course will discuss fire walls, fire barriers, smoke barriers, fire partitions and horizontal assemblies.
Fire Essentials and Fire Science	1	Fundamental	According to the National Fire Protection Association, in 2011, the cost of unwanted fire events accounted for $329 Billion, or 2.1% of the GDP. Understanding the fundamentals of fire behavior is critical for planners, designers and the construction trades to achieve a safe and sustainable society. Controlling and managing a friendly or hostile fire process or event is a specialty unto itself and requires a strong foundation in fire science for future education and professional development. All fields of engineering and design will be touched by this ever-present tool and hazard. This interactive online course will guide you through fire history, simplified explanations of the processes of various types of fires, health risks, and common control and suppression techniques for a hostile fire.
Fire Safety Design: Egress & Extinguishing Systems	4	Intermediate	Understanding fire is the first step toward designing features to prevent and protect against it. We cannot eliminate the potential for fire, but we can achieve a high level of fire safety by applying fundamental life safety principles during building planning, design, and operation. This 4-hour interactive online course focuses on two important life safety protection features- means of egress and extinguishing systems- in the context of two of the leading codes used in the U.S. today: the National Fire Protection Association (NFPA®) Life Safety Code, and the International Code Council® (ICC) International Fire Code. There is a test at the end of each section of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Fire Water Systems – Storage, Pumping & Distribution	2	Fundamental	Having a readily available water supply for firefighting procedures is essential for protecting the health, safety, and welfare of the general public. This means water must be available and accessible in any weather condition. This interactive online course will teach you about water storage systems and design considerations for water sources. You will also learn about water pumping and distribution systems.

Title	Hours	Level	Description
Fire! Designing Means of Escape	2	Advanced	Understanding fire is the first step toward designing features to prevent and protect against it. We cannot eliminate the potential for fire, but we can achieve a high level of fire safety by applying fundamental life safety principles during building planning, design, and operation. This 2-hour online course focuses on one of the important life safety protection features-adequate means of egress-in the context of two of the leading codes used in the U.S. today: the National Fire Protection Association (NFPA®) Life Safety Code, and the International Code Council® (ICC) International Fire Code. There is a test at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Fixing A Boundary Line: Boundary Control & Legal Principles	1	Intermediate	Fixing A Boundary Line reviews boundary control and legal principles for professional land surveyors. The course addresses and enumerates many of the legal principles that control the boundary location of real property. Land surveyors play a key role in interpreting and implementing these often confusing principles. This course is associated with another RedVector course by the same author, Boundary Disputes Between Adjoining Owners. Together the two courses provide an excellent overview of some of the most common boundary problems that professionals encounter, with insights into practical solutions. With an emphasis on adverse possession, the course examines legal principles, including prescriptive easements, estoppel, acquiescence, practical location and unwritten agreements. It further explores conditional boundary lines and parol agreements, which are part of unwritten agreements. From these principles the course develops protocols for the professional to follow when encountering difficult situations. It also lists key references to use when a good boundary line solution is seemingly out of reach. The course emphasis is on the surveyor as a professional, as one who uses well-established principles of law to knowledgeably resolve boundary disputes and unexpected challenges.
FL Financial Responsibility and Stability 14-hour Program #2	14	Intermediate	In Part One of this 13-part program, we'll give you the basics of business development so you can understand the process, technical skills such as communications and networking and how to take a business strategy and create an effective plan of action. Part Two of this interactive online course provides you with tools and techniques that you can understand and easily apply to any decision you have to make - at work or at home. Part Three provides tactics and tools to make the most of your time and what's most important to you. Parts 4 through 6 help you develop the skills needed to price your services to ensure profitability on every job. Part 7 discusses key concepts such as negotiation strategies, scope, and compromise are presented to help you better understand how to reach a mutually beneficial agreement with your clients.

Title	Hours	Level	Description
			Part 8 covers important strategies for hiring, interviewing, and managing your employees are presented. The part concludes by discussing the importance of quality management and outlines how to create an effective quality control program. Part 9 looks at the financial responsibilities of the project manager. Topics such as choosing the appropriate accounting method and improving cash flow are presented. The course also includes an in-depth look at over 100 ways to cut overhead costs. Part 10 of this interactive online course will help you create a budget by discussing best practice methods and methodologies that have proven fruitful for many formerly harried individuals, You will learn tested strategies for establishing and maintaining a budget that works for you. In Part 11 you will learn the importance of networking and receive strategies that you can start to use to build strong relationships today! Not just 'business card' relationships, but ones that will yield enjoyment and opportunities for years. In Part 12 you will examine contract basics, including contract sections and appropriate terms, in addition to negotiating rules and ways to manage risk. The final portion of this program discusses profit. Every design firm is in the business of providing professional consulting services to its clients. To be successful and remain in this business, however, its projects must be profitable (that is, the revenue must exceed all costs including overhead and profit expectations). In addition, clients must receive invoices in a timely manner, and your firm must receive payment for the completed work within the time specified in the contract.
FL Statutes Ch. 489, Part I: Construction Contracting 2 [V.06]	4	Fundamental	The construction business is one of the largest industries in Florida, employing hundreds of thousands of workers who construct residences, businesses, and highways to support the state's tourism industry and growing population. This 4-hour online course is the second of two courses based on Title XXXII, Chapter 489 of the Florida 2006 Statutes, Regulation of Professions and Occupations: Contracting. The purpose of Chapter 489 is to regulate the construction industry for the health, safety, and well-being of the community, and help prevent public financial losses due to unlicensed contracting. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
FL Statutes, Chapter 489, Sections 101 - 114: Construction Contracting [V.02]	1	Fundamental	The construction business is one of the largest industries in Florida, employing hundreds of thousands of workers who construct residences, businesses, and highways to support the state's tourism industry and growing population. This interactive online course is based on Title XXXII, Chapter 489, Sections 101-114 of the Florida 2009 Statutes, Regulation of Professions and Occupations: Contracting. The purpose of Chapter 489 is to regulate the construction industry for the health, safety, and well-being of the community, and help prevent public financial losses due to unlicensed contracting.

Title	Hours	Level	Description
Floodproofing	5	Intermediate	Flooding has caused damage throughout the United States and all areas of the World, ever since man decided to occupy areas adjacent to rivers and lakes. Recent history has shown an alarming increase in the amount of damage being experienced, in spite of the many efforts on the part of various levels of government to guide people out of the floodplains. This 5-hour interactive online course focuses on the floodproofing and/or retrofitting of buildings to keep them safe from flood damage, or at least, reduce their exposure to flood damage. There are several methods that can be employed to reduce flood damages. They include relocation, elevation, dry floodproofing, wet floodproofing, permanent barriers, emergency barriers, sewer backup protection and utilities protection. Very often, a combination of measures is the best choice to provide the most effective and cost-beneficial protection. This course covers all of the above methods of floodproofing. In addition to the types of floodproofing measures available, this course covers the selection issues that must be considered before selecting a measure to employ. These issues include floodway implications; regulatory agency requirements at the federal, state and local levels, choosing the flood protection elevation; the building uses; human intervention; and the owner's preferences. Design requirements are presented for all of the floodproofing approaches, as well as discussions of required coordination, flood and geologic data implications and permit requirements. Finally, the course discusses the bidding process, contractor selection, and the construction phase of the project through final project approval. There is a test included at the end of each scenario of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Florida - Wind Design and Wind Mitigation Requirements	1	Fundamental	The Sunshine State is known for it's beautiful beaches and tropical weather. Surrounded by warm ocean waters, it is this location that makes it especially vulnerable to severe tropical storms. Winds from these storms can cause severe destruction; therefore, the State of Florida has enacted building regulations to help minimize the damages caused by severe storms. This interactive online course will cover the latest wind design and wind mitigation requirements from the Florida Building Code (based on ASCE 7-10, the 2010 version of the ASCE standard). In this course, we will cover what is applicable in this building code, types of issues covered in the wind design arena, and changes to the wind speed maps. Other issues covered include exposure of a building site, opening protection and enclosure classifications for how to protect a building in wind regions. The code has an alternate all heights method which will be covered briefly. We will also talk about roof and wall components, and the special requirements for those components in high velocity hurricane zones, or more specifically, south Florida.

Title	Hours	Level	Description
Florida Building Inspectors: Ethics	1	Fundamental	Florida Building Inspectors, like other workers upon whom the public depends for impartial assessments, are subject to certain ethical mandates that prohibit conflict between public duty and private interests. This 1-hour interactive online course covers the chapters that apply to building inspectors based upon the Florida Commission on Ethics' "Code of Ethics for Public Officers and Employees," Chapter 112, Part III, F.S., and Chapter 468, Part XII, F.S. The course also takes a look at ethical issues that may arise "on the job," and gives the guidelines many inspectors use to uphold their own reputations and that of their profession.
Florida Construction Contracting: Chapter 489, Section 101-114	1	Fundamental	The construction business is one of the largest industries in Florida, employing hundreds of thousands of workers who construct residences, businesses, and highways to support the state's tourism industry and growing population. This interactive online course is based on Title XXXII, Chapter 489, Sections 101-114 of the Florida 2009 Statutes, Regulation of Professions and Occupations: Contracting. The purpose of Chapter 489 is to regulate the construction industry for the health, safety, and well-being of the community, and help prevent public financial losses due to unlicensed contracting.
Florida Construction Lien Law, Chapter 713	1	Fundamental	This course covers Chapter 713 Part I of the Florida Statutes which addresses Construction Liens. We have prepared it with contractors, laborers, subcontractors, sub-subcontractors, and materialmen in mind to familiarize you with the core concepts in this Chapter. Our goal is to increase your understanding of the terms and concepts used in Chapter 713 so you are familiar with them when reviewing the text of the statutes for yourself or conferring with your own counsel on Construction Liens. We will review key portions of Chapter 713 and elaborate on them with explanatory notes and commentary. For the full text of each statute please refer to the Florida Statutes. These can be found at: http://www.leg.state.fl.us/Statutes/ Because this is an evolving law, you should consult legal counsel with any questions you may have.
Florida Engineering Laws and Rules	1	Intermediate	It is important for engineers to avoid illegal activity or immoral conduct by familiarizing themselves with Florida's laws and rules. The purpose of this interactive online course is to provide engineers with the bare essentials of laws pertaining to their field in the state of Florida. The rules presented here are not intended to serve as a substitute for actual statutes and laws but rather as introductions and summaries of the law per the current Florida Statutes.
Florida Landscape Architects' Laws, Chapter 481 (V.13)	2	Fundamental	This course provides two hours of training for Landscape Architects. The Florida Statutes and Regulations regulating landscape architecture are set forth with annotations elaborating on the concepts contained therein. Multiple-choice questions throughout the course encourage you to review and retain the material. It is crucial you understand the rules governing your profession. The profession of Landscape Architecture in Florida is governed by the Department of Business and Professional Regulation (DBPR). The DBPR has the authority to make rules, administer licensing examinations, set fees and oversee disciplinary proceedings. In this course we will review Chapter 481 of the Florida Statutes and Subtitle 61G10 of the Florida Administrative Code. It is in these two places where the rules and regulations governing the profession of Landscape Architecture can be found.

Title	Hours	Level	Description
Florida Laws and Rules for Electrical and Alarm Contractors Based on Published Florida Statutes	1	Fundamental	This interactive course will review three Florida specific documents. First, we'll review Florida Statute 455 General Provisions related to Business and Professional Regulation. Included will be information concerning licensing, examinations, penalties, and address of record. We'll then review Florida Statute 489, Part II, Regulation of Professions and Occupations related to Electrical and Alarm System Contracting. Included will be information concerning definitions, renewals, alarm system agents, alarm confirmations and audible alarms. And last, we'll review Florida Administrative Code 61G-6 related to the Electrical Contractor Licensing Board. Included will be information concerning continuing education, disciplinary guidelines, burglar alarm system agents, and identification cards.
Florida Workers' Compensation Law (V15)	1	Intermediate	Accidents can happen anywhere, even at work. That's why every state in the country, including Florida, has some form of workers' compensation program. It is very important for all employers and employees to know what the law states, and how it relates to them. This 1-hour interactive online course focuses on coverage, construction related exemptions, and other specific construction concerns. This course has been updated according to the 2013 Florida Statutes, Chapter 440 Workers' Compensation. Some of the text of the statute is used in this course, as well as other useful information. This course includes a multiple-choice test at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Florida: Building Inspector's Laws & Rules	2	Fundamental	This informative course thoroughly explores the state of Florida's rules and regulations for building code administrators, building code inspectors and plans examiners. Requirements from Chapter 61G19 of the Florida Building Code Administrators and Inspectors Board are presented as well as a look at Chapter 468 from the Florida Statues which discusses similar state regulations. In addition, FS Chapter 553 has been added. Chapter 553, Florida Statutes (F.S.), Part IV, is known as the Florida Building Codes Act. This statute addresses building construction standards and provides for a unified Florida Building Code. The information provided will keep any interested building professional informed on the latest licensing, penalty, certification, and education specifications for the state of Florida.
Florida: Laws for Surveyors [V.09]	6	Intermediate	The State of Florida has passed several laws pertaining to surveyors and mappers, which must be followed in their work. This interactive online course discusses these laws and recent changes to these standards and is intended to provide one of the two required portions of the continuing education requirements (CEU's) for Professional Land Surveyors and Mappers. This course discusses Chapter 177: Land Boundaries, Chapter 472: Land Surveying and Mapping, FL Administrative Code 5J-17.001 - 5J-17.048, Chapter 161: Parts I - IV, and Chapter 455.01 - 455.32: Business and Professional Regulation.

Title	Hours	Level	Description
Florida: MTS for Surveyors [V.08]	6	Intermediate	The State of Florida has enacted laws for professional surveyors and mappers that illustrate the minimum requirements for this occupation. This interactive online course discusses the minimum technical standards for surveyors, Florida Administrative Code Chapter 5J-17.050 - 5J-17.052. Professional surveyors and mappers shall abide by these minimum standards, striving to exceed these minimum guidelines when performing their work, and checking their work against these standards to ensure these laws are followed correctly.
Formation Evaluation by Wireline Logging	1	Fundamental	This course is designed to convey the basics of formation evaluation by wireline logging technique to the construction professionals and learners. Wireline logging operations has a sensitive and critical importance as it deals with complex electronic and mechanical tools, radioactive and nuclear sources. For a new person in this field, it is essential to have sound theoretical knowledge about formation evaluation by wireline logging techniques before getting started practically. Its importance in this regard is undeniable. In the oil and gas industry, safety is the first preference. If a person possesses superficial knowledge and understanding of equipment and tools, he/she may not be recommended for any field work. This course is important to impart basic knowledge of wireline logging to assist drilling operation and formation evaluation; it also covers basic earth formation parameters and calculations.
Fracking: Environmental Consequences	2	Intermediate	Hydraulic fracturing is done with surprising precision and with an eye on the environment, yet it is interesting how the public reacts to the practice in relation to other techniques used throughout the world. Valid points are made on both fronts. The major concern against fracking resides in the overall health and well-being of people close to a well site, as well as the land, water, and air that might be adversely affected. With proper examination and logic, this course was developed to provide insight and reason in a practice fueled by profit for some and by civil concern for others. We will explore the history, public and media perception, and environmental and economic impacts. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
From Project Manager to Principal 1: Foundations of Management	1	Fundamental	The evolution to senior management requires both a broad range of skills, including marketing, financial management and leadership, and great expertise within each area. The leader who has excelled while dealing directly with projects and design issues must now learn to deal indirectly with people issues and leadership challenges. This course series developed by PSMJ Resources, Inc. and offered through RedVector.com in its entirety, tutors the newly minted executive in every aspect of these new skills, including strategy, team development, financial management, and more. This 1-hour interactive online course is the first chapter of the "From Project Manager to Principal" course series and explores the tools each business person needs to develop into a successful manager. Concepts such as transitioning from project developer to a management position, behavior changes, self-evaluation and leadership qualities are discussed. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
From Project Manager to Principal 2: Marketing Your Services	1	Fundamental	The evolution to senior management requires both a broad range of skills, including marketing, financial management and leadership, as well as great expertise within each area. The leader who has excelled while dealing with projects and design issues must now learn to deal with people issues and leadership challenges. This course series developed by PSMJ Resources, Inc. and offered through RedVector.com in its entirety, tutors the newly minted executive in every aspect of these new skills, including strategy, team development, financial management, and more. This 1-hour interactive online course is the second chapter of the "From Project Manager to Principal" course series. The focus of this course is the importance of marketing to project management and the overall success of your business. The material presented will help you better understand the project manager's role in creating winning proposals and successfully marketing your services. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
From Project Manager to Principal 3: Negotiation Outcomes & Strategies	1	Fundamental	The evolution to senior management requires both a broad range of skills, including marketing, financial management and leadership, as well as great expertise within each area. The leader who has excelled while dealing with projects and design issues must now learn to deal with people issues and leadership challenges. This course series developed by PSMJ Resources, Inc. and offered through RedVector.com in its entirety, tutors the newly minted executive in every aspect of these new skills, including strategy, team development, financial management, and more. This 1-hour interactive online course is the third chapter of the "From Project Manager to Principal" course series. This course explores the "art" of negotiation between a firm and a client and the vital role that project managers play in the discussion process. Key concepts such as negotiation strategies, scope, and compromise are presented to help you better understand how to reach a mutually beneficial agreement with your clients. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
From Project Manager to Principal 4 & 5: Manpower & Quality	1	Fundamental	The evolution to senior management requires both a broad range of skills, including marketing, financial management and leadership, as well as great expertise within each area. The leader who has excelled while dealing with projects and design issues must now learn to deal with people issues and leadership challenges. This course series developed by PSMJ Resources, Inc. and offered through RedVector.com in its entirety, tutors the newly minted executive in every aspect of these new skills, including strategy, team development, financial management, and more. This 1-hour interactive online course covers the fourth and fifth chapters of the "From Project Manager to Principal" course series, and it begins with a look at creating your work force. Important strategies for hiring, interviewing and managing your employees are presented. The course concludes by discussing

Title	Hours	Level	Description
			the importance of quality management and outlines how to create an effective quality control program. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
From Project Manager to Principal 6: Financial Management	1	Fundamental	The evolution to senior management requires both a broad range of skills, including marketing, financial management and leadership, as well as great expertise within each area. The leader who has excelled while dealing with projects and design issues must now learn to deal with people issues and leadership challenges. This course series developed by PSMJ Resources, Inc. and offered through RedVector.com in its entirety, tutors the newly minted executive in every aspect of these new skills, including strategy, team development, financial management, and more. This 1-hour interactive online course is the sixth and final chapter of the "From Project Manager to Principal" course series This course looks at the financial responsibilities of the project manager. Topics such as choosing the appropriate accounting method and improving cash flow are presented. The course also includes an in depth look at over 100 ways to cut overhead costs. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Frost's Survey- A Dave Gibson Metes and Bounds Case	2	Intermediate	This 2-hour interactive online course presents ONE interesting land boundary case that is particularly instructional as to the proper application of the principles of boundary location for METES AND BOUNDS parcels. It introduces many of the principles of boundary surveying in a systematic fashion. The problem statement will suggest alternate approaches, principles, and solutions. You must solve the case according to what you think is the proper application of survey principle. You will then compare your solution with DAVE GIBSON'S 'best practices' solution which incorporates the correct application of boundary location principles. Defense for the 'best practices' solution will be given for consideration and further learning by the attendee. If you love to discuss tough boundary location situations, then you will love this case and learn something new. You will also learn other viewpoints for your consideration. The beginner can benefit from the instruction they give as much as the experienced practitioner. This course is a portion of the longer 6-hour course titled 'Dave Gibson's All Star Metes and Bounds Boundary Cases' also offered on RedVector.com. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Fuel and Combustion Systems Safety - Business Contingency Planning	1	Intermediate	Welcome to Fuel and Combustion Systems Safety - Business Contingency Planning. Everything presented in this course is focused on helping you to reduce the probability and severity of a fuel or combustion system accident. However, nothing can bring all of this to zero risk. For example, there will always be things beyond your control, such as weather events. This course will help you to respond in an effective and timely manner and to know something about what to expect should there be an incident at your facility. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Fuel and Combustion Systems Safety - Combustion Basics	2	Intermediate	Welcome to Fuel and Combustion Systems Safety - Combustion Basics. In this course we lay a foundation for more complete technical understanding of fuel systems and combustion equipment. If you've been associated with this world, there may be little here that is new. If not, this is a course you may refer to over and over again in your career. The information in this course is out there in many forms and places. We will define combustion, review fuels, and explore the fire triangle. You'll get combustion chemistry and how to apply it to burner systems. We'll delve into environmental emission issues, basic burner design issues, and draft systems. We'll cover flames and instruct you in where to look and what to look for as well as fuel/air ratios evaluations. Throughout the course you will be given real-life stories so that you can see the practical applications for what you are learning. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Fuel and Combustion Systems Safety - Controlling Combustion Risks: Equipment	1	Intermediate	Welcome to Fuel and Combustion Systems Safety - Controlling Combustion Risks: Equipment It's intuitive that controlling equipment risks involves regular safety testing and maintenance of equipment. However, much of the safety and risk management of fuel-fired equipment needs to occur in the design and specification of equipment, along with its installation and commissioning. In this course we address these issues as well as ongoing safety device testing requirements. Throughout the course you will be given real-life stories and the lessons learned from them. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Fuel and Combustion Systems Safety - Controlling Combustion Risks: People	1	Intermediate	Welcome to Fuel and Combustion Systems Safety - Controlling Combustion Risks: People. This course focuses on one of the three key concepts found to form the basis of long-term sustainable fuel and combustion system safety: people, policies, and equipment. These are the three legs of a three-legged safety and risk management approach. Any successful program must contain elements of each to be successful. The “people” piece involving controlling human error is among the most important. Human error has been the leading cause of many fuel and combustion system accidents. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Fuel and Combustion Systems Safety - Controlling Combustion Risks: Policies	2	Intermediate	Welcome to Fuel and Combustion Systems Safety - Controlling Combustion Risks: Policies. There comes a time in the life of a fuels and combustion equipment safety and risk management program when thought must be provided to make things sustainable. The immediate fixes must become institutionalized. Knowledge-based practices need to become rule based. In this course 10 important concepts are summarized, reinforced, and framed in an approach for developing sustainable policies. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.

Title	Hours	Level	Description
Fuel and Combustion Systems Safety - Gas Piping Repairs and Cleaning	2	Intermediate	Welcome to Fuel and Combustion Systems Safety - Gas Piping Repairs and Cleaning. In this course we provide advanced concepts for facilitating the safe repair and cleaning of gas piping systems. Some of the most significant and horrific tragedies have come about from mistakes made in preparing gas piping for maintenance, bringing gas piping back into service, and trying to clean gas lines. The concepts presented in this course need to be made the subject of policies and practices with both designers and maintenance staffs. A section at the end of this course highlights a relatively new standard, NFPA 56, Standard for Fire and Explosion Prevention During Cleaning and Purging of Flammable Gas Piping Systems, which is central to this topic. It took many months of meetings with contributions from over a dozen experts to write NFPA 56. This is a very important and ground-breaking piece of work that applies directly too many of the concepts presented in this course. Anyone who does or oversees activities related to gas line repairs and cleaning must become familiar with this standard. This course is not a design guide or a “how to” for gas line purging and cleaning. Each site and its circumstances and conditions are different, and nothing here should be seen as a replacement for sound engineering judgment and the requirements prescribed by applicable codes. Throughout the course Subject Matter Expert John R. Puskar will provide real-life stories and the lessons learned from them. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Fuel and Combustion Systems Safety - Gas Supply System Issues	1	Intermediate	Welcome to Fuel and Combustion Systems Safety - Gas Supply System Issues. Once natural gas piping is inside a facility, it is pretty easy to look up, see it marked, and understand what it is. Many people don't quite understand how the gas might have gotten there. It's important to know where the gas came from, who owned it and at what point, how the pressure got controlled, and how to shut it all off if necessary. In this course we also discuss alternative fuel considerations, such as propane, landfill, or digester gas service issues. Throughout the course you will be given real-life stories and the lessons learned from them. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Fuel and Combustion Systems Safety - Global Perspective on Fuel and Combustion System Risks	1	Intermediate	Welcome to Fuel and Combustion Systems Safety: Global Perspective on Fuel and Combustion System Risks. It's a big world out there and combustion equipment is everywhere. You can learn a lot by seeing what the state of the art is and is not in both developed and developing countries. This course provides insights from such experiences. You will see the good, the bad, and the ugly so that you can take advantage of them all without the pain that others have experienced to gain this knowledge. This course is especially important if you operate equipment in developing countries. This can be an entirely different experience and one that requires considerable thought about fuel choices, installation issues, and training of staff. To be successful your focus has to be on simplicity. Real-life stories in this course communicate this clearly. Don't be fooled by the title of the course. There's information here that applies for equipment operated anywhere. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.

Title	Hours	Level	Description
Fuel and Combustion Systems Safety - Natural Gas Piping Basics	1	Intermediate	Welcome to Fuel and Combustion Systems Safety - Natural Gas Piping Basics. Combustion systems start with fuel systems and fuel systems start with piping. By far the most common fuel burned throughout the world is natural gas. Natural gas use is growing even more in popularity as the United States develops shale gas deposits. For this reason, the primary focus of this course is piping related to natural gas systems. Before we discuss advanced gas piping concepts it's important to review the basics. In this course, we attempt to discuss the most basic natural gas-related piping concepts starting with the piping itself, how it's made, and how it's installed. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Fuel and Combustion Systems Safety - Understanding Boilers and Their Special Risks	1	Intermediate	Welcome to Fuel and Combustion Systems Safety - Understanding Boilers and Their Special Risks. The potential for catastrophes is much greater for boilers than for any other category of combustion equipment because there is a twofold risk, fuels and saturated water/steam. Heating water in boilers or hot water heaters is by far the single biggest application of heat energy and fuel trains on the planet. In the United States alone, a 2005 study indicated that there are over 163,000 commercial and industrial boilers. There are millions of residential boilers and hot water heaters as well. In this course we describe different boiler types and also provide insights into some of the hazards associated with steam systems, including safety relief valves and steam piping. Throughout the course Subject Matter Expert John R. Puskar will provide real-life stories and the lessons learned from them. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Fuel and Combustion Systems Safety - What You Don't Know Can Kill You!	1	Intermediate	Welcome to Fuel and Combustion Systems Safety - What You Don't Know Can Kill You! In this course, we will cover the safety aspects of fuel and combustion systems. We will explore the gaps in the knowledge of people responsible for system safety. You will get instruction in developing safe environments, codes and standards, and the organizations that publish the codes. We will also review risk assessment and the insurance industry. You'll also receive information on the possibility of personal criminal liability. Throughout the course, you will be given real-life stories and the lessons learned from them. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Fundamentals of Asphalt Pavement Design	2	Fundamental	This training presents the fundamentals of asphalt pavement design. This course will introduce asphalt pavement systems, as well as asphalt pavement materials and their properties. The characteristics of asphalt concrete are presented, followed by description of the properties of asphalt pavements. A review of current asphalt concrete mix design methods is presented. The elements of the structural design of asphalt pavements will be discussed in detail. This includes the AASHTO method for determining layer thicknesses. This course will enable pavement engineers, materials engineers as well as materials technicians to gain a better understanding of the fundamentals of the asphalt pavement design process and analysis. Examples and sample calculations are included throughout this course.
Fundamentals of Business Crisis Management	2.5	Intermediate	In LearnSmart's Business Crisis Management Video Training, you'll learn the steps to take before, during and after a crisis, which will help determine your company's outlook once the storm has passed. In addition, you'll learn the tools for anticipating business crises, and processes for developing crisis management capabilities -- particularly, how to develop a crisis management plan.

Title	Hours	Level	Description
Fundamentals of Petroleum Engineering	2	Intermediate	This course is designed to convey the basics of the oil and gas industry to the Construction Professional. Oil and gas operations have a sensitive and critical importance as it deals with very high pressure, temperature, and extreme natural conditions. So for a new person in this field, it is essential to have sound theoretical knowledge about oil and gas operations before getting started.
Gabions - Design of Retaining Walls	2	Advanced	Gabions are a common method of construction for retaining walls. They can be less expensive and more aesthetically pleasing than concrete retaining walls. This 2-hour interactive online course contains guidance on how to design gabion retaining walls. The text of this course is taken from a design guide provided by Modular Gabion Systems, a manufacturer of gabions. Several design examples are provided to aid the student in understanding the design process. There is a test included at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
General Electrical Hazard Awareness for Site Safety	1	Intermediate	Electrical safety is essential for all businesses. Understanding necessary electrical standards and compliances is essential for keeping your employees and your site safe. Has your organization defined what electrical risks you may have? Are you fully in compliance? Do you have all the proper electrical personal protective equipment needed? If OSHA audited your site today, would you have any electrical safety violations? This interactive online course is geared towards all businesses regardless of industry and will focus on what you need to know as well as useful tips and best practices regarding overall general electrical safety within your organization.
Generating Electricity	1	Fundamental	This course is an introduction to the basics of generating electricity and covers the primary types of generation used today. The main pieces of equipment used in electricity generation are covered, as well as how generation is managed to meet demand from customers.
Geothermal Heat Pumps	2	Intermediate	This 2-hour interactive online course is an overview of geothermal heat pump systems. The course covers the basics of how a heat pump works and the specific differences between an air source heat pump and a geothermal heat pump. The benefits of using geothermal are discussed as well as the costs including installation costs, energy cost, and maintenance costs. Issues such as how to select the most appropriate antifreeze solution are discussed along with the merits of each type of loop system likely to be used in a geothermal application. There is a test included at the end of this course to assess the student's understanding of the material. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Going Green with BIM and GIS	2	Intermediate	The goal of sustainable design is to create healthy environments through environmentally responsible planning and development. Geographic Information Systems (GIS) and Building Information Models (BIM) are both sophisticated technological tools that provide information in a more efficient and readily available manner than traditional design tools (e.g., CAD, maps).

Title	Hours	Level	Description
			Traditional tools prove too costly, too time-consuming, and do not contain sufficient information for environmentally focused assessments and performance analysis. This interactive online course will expose planning, design, and construction professionals to the importance of using Building Information Models (BIM) and Geographic Information Systems (GIS) to work collaboratively throughout projects and to help professionals develop a thorough understanding of how these technological tools provide critical information when making sustainability decisions. GIS and BIM allow project team members to answer questions and solve problems by warehousing data that can be quickly analyzed and easily shared. Both GIS and BIM allow for providing consistency in coordinating changes for the design team and allow advanced visualization before project siting (GIS), design, or construction (BIM) has taken place.
Grading and Drainage Design of Modern Roundabouts	1	Advanced	Modern roundabouts are a proven and effective safety improvement for roadway intersections. The main focus of roundabout design documentation has been in its traffic capacity and geometry. Once these features are set, the vertical design (grading and drainage) becomes the most critical portion of the design execution and the main component in determining the construction cost of roundabouts. In this interactive online course, engineers, architects, planners and contractors will learn design techniques and best practices to develop efficient roundabout grading and drainage designs.
Green Building Materials: An Introduction	3	Fundamental	Growing concern over the future of our planet makes Green Building Materials: An Introduction a must for any professional in the AEC industry. This 3-hour interactive online course advocates the environmental benefits of green building materials by introducing you to the positive effects of building with environmentally friendly products, made especially with the future in mind. You will learn about green building materials and why they are important not only to the environment, but also to humans because they prevent future health problems caused so often by toxic chemicals. You'll also learn about the economic benefits, common misconceptions, consumer demand, professional responsibilities, and the “look” of green material. This is the first of two courses in a series on green building material. ATTN: This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying 3 hours of credit toward the required continuing education. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Green Building Materials: Product Selection & Specification	4	Intermediate	Selecting the right green building material for your project and then actually incorporating it into your design can sometimes be an overwhelming process. However, with the resources and step-by-step procedures detailed in this 4-hour interactive online course, you’ll have a better understanding of where you can find answers to your questions about green materials, which materials are right for you, and how the construction process actually works. This course introduces you to the green building products selection process, product specification process, and the construction process. It also includes a detailed conclusion that summarizes both the history and future of green building materials. This is the second course in the two-part series, Green Building Materials. This course includes a multiple-choice test at the end of

Title	Hours	Level	Description
			each section. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Green Building Technology for Home Inspectors	2	Fundamental	This presentation applies to the application of green building technology for house construction and housing components. It will give you a brief overview of how they work and how they are applied including installation and components. We'll talk about the history and the background of green technology, building envelope and modifiers, controlling moisture and temperature, ICFs and SIP-type construction. ICF being insulated concrete forms and SIP being structurally insulated panels, radiant barrier technology, solar, passive and photovoltaic, insulation technology, tankless water heaters, which are all considered green components in the green technology purview.
Green Building with Steel - Part 2: Guidelines for Builders, Trades and Inspectors	2	Intermediate	Green Building is rapidly becoming mainstream. Are you ready to meet the demands? Are you recommending and using steel as a primary structural building material? Do you know steel's level of recyclability and efficiency of assembly. This interactive online course will teach you Green Building using steel, with a focus on Cold-Formed Steel Framing. You'll get what you need to know the key elements that make up steel framing; plus you'll get techniques to fit plumbing and electrical components. This is the second course in the Green Building With Steel series. Additional courses are: Material Attributes, Applications, and LEED Ratings Light Gauge Metal Components for Framing Framing With Steel Studs Insulation and Waterproofing Erecting an Engineered Steel House Commercial Applications
Green Building with Steel - Part 3: Light Gauge Metal Components for Framing	2	Intermediate	The use of steel as a primary structural building material is rapidly becoming mainstream in "Green" Building. It is inherently recyclable and easy to assemble. You can become an expert very quickly. This interactive online course will teach you to use steel in "green" building. You'll learn about structural and non-structural steel walls, steel wall components, details of assembly, steel flooring systems, and fasteners. This is the third course in the Green Building With Steel series. Additional courses are: Material Attributes, Applications, and LEED Ratings Guidelines for Builders, Trades and Inspectors Framing With Steel Studs Insulation and Waterproofing Erecting an Engineered Steel House Commercial Applications
Green Building with Steel - Part 4: Framing With Steel Studs	3	Intermediate	It makes more sense than ever to use steel as a primary structural building material. It is inherently recyclable and efficient to assemble. That makes it your best choice for sustainable building material. In no time you can be the local expert in green building with steel. This interactive online course gives you Green Building with a particular focus on framing with steel studs using Cold Formed Steel (CFS) and the various methods of building exterior and interior frames. This is the fourth course in the Green Building With Steel series. Additional courses are: Material Attributes, Manufacturing, Applications and LEED Ratings Guidelines for Builders, Trades

Title	Hours	Level	Description
			and Inspectors Light Gauge Metal Components for Framing Insulation and Waterproofing Erecting an Engineered Steel House Commercial Applications. It is helpful to you to take the first three courses in the Green Building With Steel series before beginning this one.
Green Building with Steel - Part 5: Erecting An Engineered Red Iron Steel House	4	Intermediate	Steel as a primary structural building material with its inherently recyclable nature and its efficiency of assembly is the logical and responsible choice for Green Building. You can become an expert in erecting a Red Iron steel frame house and you can learn how to earn the coveted LEED points for your project. This interactive online course provides you with the benefits of building with red iron steel as well as instructions for constructing floors, walls, and roofs. You also get information on secondary framing and finishing. Lastly you receive what you need to qualify for LEED certification. Other courses in this Green Building With Steel series provide additional information on the application and technical aspects of Steel Design and Construction. Material Attributes, Applications and LEED Ratings Guidelines for Builders, Trades and Inspectors Light Gauge Metal Components for Framing, Framing With Steel Studs.
Green Building: Commercial High Performance Guidelines Part 1	5	Intermediate	What is a high performance "green" commercial building? Why build one? This interactive on-line course answers those questions and much more. This course is Part One of a 2-part course that gives you the methodologies to plan, design, and build high performance, "green" commercial buildings. You'll get guidelines and processes to apply specifically to commercial and municipal construction. You'll start with the basics of sustainability and progress through designing new construction or renovating existing structures.
Green Building: Commercial High Performance Guidelines Part 2	4	Intermediate	Do you know the new methodologies that form the underpinnings of high performance commercial and municipal buildings? This course will give them to you. This is the second installment of a two-part series in designing high performance "green" commercial buildings. This online, interactive course gives you the principles and practices for designing new buildings and redesigning existing frameworks. You'll learn to maximize operational energy savings; improve comfort, health, and safety of occupants and visitors; and limit detrimental effects on the environment. We recommend you complete Commercial Green Building High Performance Guidelines - Part One before you begin this course.
Green Design: Biophilia and the Human Affinity for Nature	3	Fundamental	If you love life and the living world, you're experiencing biophilia. There's a new facet to design that is based on the biophilia hypothesis. It's called biophilic design. Incorporating this concept will enrich your designs, reconnect us with nature, and improve the wellbeing of the natural world and the human population. In this interactive online course you'll get the research supporting this concept, design strategies that you can use in your work, and case studies.
Green Design: Brownfield Redevelopment (RV-10900)	1	Intermediate	Brownfield is used to describe land that is abandoned or underused out of concern that the land is contaminated. There are a variety of estimates that claim there are anywhere from 450,000 brownfields to over 5 million acres of abandoned properties throughout the US alone. These properties are sited in every metropolitan city in the U.S. as well as in rural America creating major urban infill opportunities. This interactive online course gives you a better understanding of what brownfield is, where it came from, where it still exists and with the help of USGBC and LEED, the multitude of Federal, State and local initiatives that surround brownfield redevelopment.

Title	Hours	Level	Description
Green Design: Economics of Green Building	2	Intermediate	In this course we will present an in-depth study of the perceived and actual costs associated with green building. You will get an overview of the federal, state, and local tax credits available; life cycle cost analysis; and business incentives to go green. We will also review a couple of case studies.
Green Design: Introduction to High Performance Building Design (Based on LEED v4)	3	Fundamental	There is consensus among the majority of scientists that the climate of the earth is changing in the direction of higher temperatures and that some of the change is anthropomorphic (caused by human activity). This course is intended to address that portion of the human contribution to climate change that is related to energy use in buildings. In this course, we will look at the ways buildings use energy and how buildings can be designed for high energy performance. It is important that architects and designers understand and are aware of the resources and methods available for improving building designs in the future. A major piece to understanding sustainable building design is also understanding the requirements of the Energy and Atmosphere category of LEED v4 Building Design and Construction (BD+C).
Green Design: Introduction to Indoor Environmental Air Quality (Based on LEED v4)	2	Fundamental	There is consensus among the majority of scientists that the climate of the earth is changing in the direction of higher temperatures and that some of the change is anthropomorphic (caused by human activity). This course is intended to address that portion of the human contribution to climate change that is related to energy use in buildings. At the conclusion of the course, you should be able to understand the ways buildings use energy and how buildings can be designed for high-energy performance. You should be aware of activities and plans for improving building designs in the future. You will have an understanding of the requirements of the Energy and Atmosphere category of LEED v4 Building Design and Construction (BD+C).
Green Design: Introduction to Sustainability and Measurement Systems (Based on LEED v4)	1	Fundamental	In this course, we will discuss the concept of sustainability and the need for ways to measure the sustainability of a building design. In addition, we will describe the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED®) Version 4 for Building Design and Construction (BD+C), Neighborhood Development (ND), Homes (H), Building Operation and Maintenance (O&M), and Interior Design and Construction (ID+C) rating systems and the goals each strives to achieve. We will also outline for a prospective candidate the process of becoming a LEED Accredited Professional and lastly we'll compare other rating systems to the USGBC system.
Green Design: Introduction to Sustainable Design Materials and Resources (Based on LEED v4)	2	Fundamental	This course provides an introduction to the study of those materials and techniques that are both ecologically efficient and ecologically effective. After completing the course, you should have an understanding of: Characteristics of sustainable materials The concepts of life cycle, embodied energy, and embodied carbon are introduced The benefits of using sustainable materials Environmental, economic, social, cultural, and aesthetic opportunities are discussed Selecting a sustainable material selected Techniques, databases, and organizations are introduced

Title	Hours	Level	Description
			Using sustainable material,. design for building and material reuse, construction waste management, and Leadership in Energy and Environmental Design (LEED) Materials and Resources (MR) credits are discussed.
Green Design: Introduction to Sustainable Sites (Based on LEED v4)	1	Fundamental	This course provides students with the conceptual foundation necessary for exploring many aspects of environmentally progressive site design. Aspects of site sustainability covered in the course include water, solar environment, natural ventilation, transportation, and civic patterns. Each is considered at a variety of scales ranging from the individual parcel to the neighborhood and placed within larger regional and global contexts. In this way, students are equipped to immediately begin making ecologically informed decisions about the site design of their projects, while simultaneously preparing themselves for further, more detailed study of various issues related to site sustainability. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Green Design: Introduction to Sustainable Water Systems (Based on LEED v4)	2	Fundamental	The goal of this online interactive course is to introduce you to a perspective on development and design practices that help professionals support communities in managing and sustaining use of local water resources. It is often said when discussing sustainable practices that people need to think globally and act locally. This is especially true when dealing with water resources. Unlike any other resource, water cycles through the earth's environments at global and continental scales, but each step of that journey serves as a highly valued local resource. This course will discuss a sustainable approach to water use and management in buildings, sites, and campuses. It systematically introduces key concepts that help practitioners understand the larger watershed and community water systems that local development practices impact, and the cultural, social, economic, and health benefits communities derive from earth's water systems. This course also introduces the consequences of conflicts between current development practices and these water systems and emerging developments practices that work better with, and have a lower-impact on, watershed systems. Brief overviews of LEED-BD+C v4.0 credits that contribute to improved water quality, reduced water use, management of local stormwater and groundwater resources are included to help orient professionals to practices they may wish to learn more about. Lastly, the author provides some examples of how strategies introduced in the lesson can contribute to and express the natural, cultural, social, and aesthetic character of places.
Green Design: Sustainability and Historic Preservation	6	Intermediate	Do you think of historic preservation when you think of sustainability? You should. Reuse and rehabilitate existing buildings as part of your overall sustainability goals. You'll save money, generate revenue, and make beautiful, long-lasting investments in the future. This interactive online course illustrates the metrics commonly applied to sustainable design but with an eye towards the reuse of buildings individually and in commercial and residential districts. In particular, we will show you how to read the built environment and pick out the precedents that led to contemporary practices like transit-oriented design, new urbanism, and smart growth.

Title	Hours	Level	Description
Green Design: Sustainable Daylighting Design (Based on LEED v4)	1	Intermediate	Daylighting can be one of the most difficult “tools” in the lighting designer's toolbar. Adding sustainability into the mix carries its own considerations and obstacles. But you can become a master at sustainable daylighting design. In this course, we will concentrate on pragmatic daylight design and how sustainable daylighting elements can be used efficiently in lighting design projects. You will get instruction in and see examples of daylighting designs that are functional, beautiful, and worthy of LEED credits.
Green Design: The Ethics of Green Design	1	Fundamental	Green design is an evolutionary process—every day designers, engineers, academics and other innovators continue to expand the constellation of green design materials and techniques. No set of professional standards could ever be exhaustive enough to deal with every conceivable scenario. Therefore, a holistic ethical understanding of green design is necessary, as is an ability to embrace the constant change inherent to the industry. This course will cover ethical concepts and codified professional ethical standards as they relate to green design, as well as topical environmental and group functionality issues.
Green Infrastructure 1: Introduction to High Performance Guidelines	2	Intermediate	Infrastructure is the complex, interdependent system that supports our way of life. You can take advantage of a wide range of opportunities to build and re-build a “Green” Infrastructure. This interactive online course gives you the facts about why "Green" is cost effective, healthy and visually appealing. In this course you will find current examples of successful Green applications as well as principles and practices that you can use to develop your own comprehensive plans. This course is the first of an eight-course series on Green Infrastructure that provides a template for design and implementation of Green Building concepts applicable to cities and municipalities. It is recommended that you take this course prior to the other courses in the series: Green Infrastructure 2: Best Practices for Site Assessment Green Infrastructure 3: Best Practices for Streetscape Green Infrastructure 4: Best Practices for Pavement Green Infrastructure 5: Best Practices for Utilities Green Infrastructure 6: Best Practices for Stormwater Management Green Infrastructure 7: Best Practices for Landscape Green Infrastructure 8: Best Practices for Construction Practices Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Green Infrastructure 2: Best Practices for Site Assessment	1	Intermediate	This course is one of an eight-course series on Green Infrastructure that provides a template for design and implementation of Green Building concepts applicable to cities and municipalities. This interactive online course is the second in the series and gives you the information and action items for assessing sites and identifying opportunities to implement Best Management Practices (BMPs) in “Green” planning, design and construction. Topics covered are: Soil testing Hydrologic and hydraulic analysis Vegetation assessment, preservation, and transplantation Invasive species evaluation The other courses included in the "Green Building for Infrastructure" series are: Green Infrastructure 1: Introduction to High Performance Guidelines Green Infrastructure 3: Best Practices for Streetscape Green Infrastructure 4: Best Practices for Pavement Green Infrastructure 5: Best Practices for Utilities Green Infrastructure 6: Best Practices for Stormwater Management

Title	Hours	Level	Description
			Green Infrastructure 7: Best Practices for Landscape Green Infrastructure 8: Best Practices for Construction Practices
Green Infrastructure 3: Best Practices for Streetscape	2	Intermediate	Infrastructure is the complex, interdependent system that supports our way of life. You can take advantage of a wide range of opportunities to build and re-build a "Green" Infrastructure - if you have the right template. This course is one of an eight-course series on Green Infrastructure that provides a template for design and implementation of Green Building concepts applicable to cities and municipalities. This 2-hour interactive online course gives you the information and action items for assessing sites and identifying opportunities to implement Best Management Practices (BMPs) in “Green” planning, design and construction. Topics covered are: Working with community groups Attractive Streetscapes safe for pedestrians and vehicles Improvements that promote good health in cities Upgrades that are cost-effective and sustainable Changes that provide for increased security. The other courses included in the "Green Building for Infrastructure" series are: Green Infrastructure 1: Introduction to High Performance Guidelines Green Infrastructure 2: Best Practices for Site Assessment Green Infrastructure 4: Best Practices for Pavement Green Infrastructure 5: Best Practices for Utilities Green Infrastructure 6: Best Practices for Stormwater Management Green Infrastructure 7: Best Practices for Landscape Green Infrastructure 8: Best Practices for Construction Practices
Green Infrastructure 4: Best Practices for Pavement	3	Intermediate	This course is one of an eight-course series on Green Infrastructure that provides a template for design and implementation of Green Building concepts as they apply to cities and municipalities. This 3-hourinteractive online course gives you the information and action items to assess sites and identify opportunities to use Best Management Practices (BMPs) in “Green” planning, design and construction. You'll get: Pavement lifecycle Pervious vs. impervious pavement Albedo or Reflectivity of pavement Pavement materials A materials program Material applications The other courses included in the "Green Building for Infrastructure" series are: Green Infrastructure 1: Introduction to High Performance Guidelines Green Infrastructure 2: Best Practices for Site Assessment Green Infrastructure 3: Best Practices for Streetscape Green Infrastructure 5: Best Practices for Utilities Green Infrastructure 6: Best Practices for Stormwater Management Green Infrastructure 7: Best Practices for Landscape Green Infrastructure 8: Best Practices for Construction Practices It is recommended that you take the Introduction course before taking the Best Practices courses.

Title	Hours	Level	Description
Green Infrastructure 5: Best Practices for Utilities	1	Intermediate	This course is one of an eight-course series on Green Infrastructure that provides a template for design and implementation of Green Building concepts applicable to cities and municipalities. This interactive online course gives you the information and action items for assessing sites and identifying opportunities to implement Best Management Practices (BMPs) in “Green” planning, design and construction. You'll get: Mechanisms to affect right-of-way construction by private utilities Technology to minimize pavement damage and degradation Upgrades to utility installation and maintenance The other courses included in the "Green Building for Infrastructure" series are: Green Infrastructure 1: Introduction to High Performance Guidelines Green Infrastructure 2: Best Practices for Site Assessment Green Infrastructure 3: Best Practices for Streetscape Green Infrastructure 4: Best Practices for Pavement Green Infrastructure 6: Best Practices for Stormwater Management Green Infrastructure 7: Best Practices for Landscape Green Infrastructure 8: Best Practices for Construction Practices It is recommended that you take the Introduction course before taking the Best Practices courses. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Green Infrastructure 6: Best Practices for Stormwater Management	3	Intermediate	This course is the sixth of an eight-course series on Green Infrastructure that provides a template for design and implementation of Green Building concepts as they apply to cities and municipalities. This 3-hour interactive online course gives you the information and action items to assess sites and identify opportunities to use Best Management Practices (BMPs) in “Green” planning, design and construction. You'll get: Integrated stormwater management planning Water pollution prevention Construction runoff prevention Surface pretreatments for filtering runoff Catch basin inserts and water quality inlets Detention and Infiltration structures Constructed wetlands The other courses included in the "Green Building for Infrastructure" series are: Green Infrastructure 1: Introduction to High Performance Guidelines Green Infrastructure 2: Best Practices for Site Assessment Green Infrastructure 3: Best Practices for Streetscape Green Infrastructure 4: Best Practices for Pavement Green Infrastructure 5: Best Practices for Utilities Green Infrastructure 7: Best Practices for Landscape Green Infrastructure 8: Best Practices for Construction Practices It is recommended that you take the Introduction course before taking the Best Practices courses.

Title	Hours	Level	Description
Green Infrastructure 7: Best Practices for Landscape	3	Intermediate	This course is seventh in an eight-course series on Green Infrastructure that provides a template for design and implementation of Green Building concepts as they apply to cities and municipalities. This 3-hour interactive online course gives you the information and action items to assess sites and identify opportunities to use Best Management Practices (BMPs) in “Green” planning, design and construction. You'll get: Citywide landscape planning Maintaining and enhancing biodiversity and ecology Landscapes capable of high rates of stormwater absorption, infiltration, and treatment Tree planting for quantity, density and diversity Turfgrass reduction Plant selection Designing water-efficient landscapes Pest Management The other courses included in the "Green Building for Infrastructure" series are: Green Infrastructure 1: Introduction to High Performance Guidelines Green Infrastructure 2: Best Practices for Site Assessment Green Infrastructure 3: Best Practices for Streetscape Green Infrastructure 4: Best Practices for Pavement Green Infrastructure 5: Best Practices for Utilities Green Infrastructure 6: Best Practices for Stormwater Management Green Infrastructure 8: Best Practices for Construction Practices It is recommended that you take the Introduction course before taking the Best Practices courses.
Green Infrastructure 8: Best Practices For Construction	1	Intermediate	This course is the last in an eight-course series on Green Infrastructure that provides a template for design and implementation of Green Building concepts as they apply to cities and municipalities. This 1-hour interactive online course gives you the information and action items to assess sites and identify opportunities to use Best Management Practices (BMPs) in “Green” planning, design and construction. You'll get: Site Protection Plan development Protecting water sources and planted areas Developing waste management and recycling plans Minimizing construction and equipment impacts The other courses included in the "Green Building for Infrastructure" series are: Green Infrastructure 1: Introduction to High Performance Guidelines Green Infrastructure 2: Best Practices for Site Assessment Green Infrastructure 3: Best Practices for Streetscape Green Infrastructure 4: Best Practices for Pavement Green Infrastructure 5: Best Practices for Utilities Green Infrastructure 6: Best Practices for Stormwater Management Green Infrastructure 7: Best Practices for Landscape It is recommended that you take the Introduction course before taking the Best Practices courses.

Title	Hours	Level	Description
Green Landscape Design: Reducing the Urban Heat Island Effect	2	Fundamental	As the earth's average temperature increases, cities, which are often significantly warmer than the surrounding landscapes (the urban heat island effect), will be faced with higher energy needs, increased pollution and degradation of air quality. The world is becoming more and more urban - it is estimated that within 50 years 80% of the world's population will live in urban areas. This interactive online course will address how we can mitigate the heat island effect so our urban cities remain healthy, economically viable places to live.
Green Landscape Design: Water Conservation in the Landscape	2	Fundamental	Were you aware that an efficient and effective irrigation system can reduce wasted water and save money? Current technology provides easy solutions to keep irrigation systems fine-tuned and make it easy to adjust remotely. This interactive online course will focus on the tenets of water conservation in landscaping including appropriate plant selection, irrigation planning and design principles, efficient irrigation technologies, and others. Case studies of community conservation programs and site-specific approaches are also featured.
Green Street Retrofit	2	Fundamental	How do you define a "green street"? This interactive, online course tells the story of street renovations implementing Low Impact Development design strategies. Retrofitting conventional streets into "green streets" provides stormwater treatment to remove pollutants from stormwater runoff and when feasible allowed to infiltrate as recharge. Monitoring of stormwater runoff volumes and pollutant loads can be conducted to demonstrate the effectiveness of the retrofit projects. Converted green streets also allow for educational potential to raise awareness about stormwater pollution (and solutions). This course will focus on the many environmentally friendly green infrastructure initiatives in Chicago, Illinois.
Green Streets	2	Intermediate	Can you design and execute a "green" street project? A green street is an integral part of the “green infrastructure” within an urban community. How expert are you in stormwater management, mitigation of urban heat island effect and improvement of urban air quality? This interactive online course gives you the concept of green street design to remedy the social, environmental, and safety issues associated with standard street design. You'll learn how to design green streets to: Reduce the amount of water that is collected and piped directly to streams and rivers Ensure the street has the least impact on the surrounding environment Help ensure the safety of the pedestrian or bicyclist on the street Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Green Urban Design	2	Intermediate	Urban design theory is the livability and sense of urban place. "Green urban design" incorporates sustainability and environmental stewardship in urban design decisions. This interactive online course gives you fundamental urban design principles and green urban design approaches. Specifically, we'll discuss green urban design details that you can apply to your projects: Green street design Parking approaches Alternate transportation options Storm water considerations Landscaping and irrigation Site elements.

Title	Hours	Level	Description
Guide to the FEMA Elevation Certificate V2	2	Intermediate	The Elevation Certificate is an important administrative tool of the National Flood Insurance Program (NFIP). It is to be used to provide elevation information necessary to ensure compliance with community floodplain management ordinances, to determine the proper insurance premium rate, and to support a request for a Letter of Map Amendment or Revision (LOMA or LOMR-F). This interactive online course will provide a comprehensive overview of the FEMA elevation certificate and instructions for how to complete one. You will get the information you need and you will have opportunities to practice filling in samples.
Handling, Placing and Finishing Concrete	2	Fundamental	This course is an overview of the proper methods and procedures for transporting, placing and finishing concrete. The material covers transporting, forms, placement tips, concrete conveying devices, and curing concrete, as well as precautions for hot and cold weather concreting. It briefly discusses some problems associated with improper construction practices that can result in cracking, scaling and other defects in the finished structure.
Hazardous Waste Essentials	1	Intermediate	Are you confused by all of the jargon and acronyms used regarding hazardous waste and remediation? What do you know about the latest real or perceived threats to groundwater or air quality? Do you want to learn whether your neighbor's stash of trash and rusted drums is merely annoying or legally hazardous? This interactive online course covers the origins of hazardous waste and the legislation set in place by the U.S. government and other global entities to mitigate risk and encourage pollution prevention.
Hazardous Waste: Treatment	1	Intermediate	Hazardous waste can exist in liquid, solid or slurry forms. It may originate in a current manufacturing process or from clean-up of an abandoned site. This course will review the background and design considerations for different methods of treating hazardous waste.
HAZWOPER: Operations	1	Intermediate	OSHA has established several levels of training under the umbrella of HAZWOPER (Hazardous Waste Operations and Emergency Response). HAZWOPER training is required for personnel that may potentially be exposed to hazardous materials and for those involved in spill cleanup operations. OSHA defines HAZWOPER through their General Industry Regulation Title 29, section 1910.120, also known as 29 CFR 1910.20. This regulation defines several operations where HAZWOPER training is required. The Operations portion of the HAZWOPER training will cover the following: Levels of training which must be completed Emergency plans and hazardous waste informational sources Responses to various hazardous waste sources Medical surveillance programs Site monitoring, engineering controls and work practices Personal Protective Equipment (PPE)
Health Effects Caused by Mold	1	Fundamental	In the past twenty years, great progress has been made to understand the effects that mold has on human health. This course will provide a basic but clear understanding of what types of mold are dangerous, to what groups of people, and the factors that increase the negative impact on humans.

Title	Hours	Level	Description
Heavy Construction Equipment Basics - Earthmoving & Excavating	3	Intermediate	Contractors do many types of construction activities that require many different types, sizes and groupings of equipment. Most new construction projects are connected to the earth by some type of foundation system. Utilities are located underground so they are less obtrusive and not in the way. Building sites must drain away from the structure and divert the water to a safe place. All of these activities require excavating and earthmoving. The focus of this 3-hour interactive online course is "big iron" used for excavating and earthmoving. Discussion is intended to be basic. Content is not intended to be comprehensive. Discussion focuses on the basic principles for heavy equipment selection, grouping and simple costing. Earthmoving equipment discussed includes bulldozers, front-end loaders, motor graders, scrapers, and dump trucks. Excavating equipment discussed includes excavators, backhoes and trenchers. A short test must be completed after each section. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Health Effects Caused by Mold	1	Fundamental	The course today includes information regarding the fungal health effects, how the mold impacts our bodies. The information is up-to-date and related to some of the latest studies, not just from the United States, but from Canada and around the world. Today's course is designed to provide you with a basic understanding of what mold exposures can do to people, how dangerous it might be, and even focus on some of the specific reactions that individuals can suffer based on exposure to fungal materials.
Heavy Construction Equipment Basics - Lifting	2	Intermediate	Vertical construction requires building a structure up or away from the surface of the earth. The work requires heavy construction equipment for moving workers, materials and other equipment onto the structure as it is built. Hoisting or lifting loads is an integral part of this construction. How it is to be done must be incorporated into the construction strategy and how much it will cost must be included in the budget. Choosing the right lifting equipment and rigging is mandatory for safe vertical construction. Content included in this 2-hour online interactive course is intended to be basic. Discussion focuses on basic principles for lifting equipment selection, capabilities and uses. This course includes a test at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Henderson et al - A Dave Gibson Metes and Bounds Case	2	Intermediate	This 2-hour interactive online course presents ONE interesting land boundary case that is particularly instructional as to the proper application of the principles of boundary location for METES AND BOUNDS parcels. It introduces many of the principles of boundary surveying in a systematic fashion. The problem statement will suggest alternate approaches, principles, and solutions. You must solve the case according to what you think is the proper application of survey principle. You will then compare your solution with DAVE GIBSON'S 'best practices' solution which incorporates the correct application of boundary location

Title	Hours	Level	Description
			principles. Defense for the 'best practices' solution will be given for consideration and further learning by the attendee. If you love to discuss tough boundary location situations, then you will love this case and learn something new. You will also learn other viewpoints for your consideration. The beginner can benefit from the instruction they give as much as the experienced practitioner. This course is a portion of the longer 6-hour course titled 'Dave Gibson's All Star Metes and Bounds Boundary Cases' also offered on RedVector.com. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
HEPA High Efficiency Filters	1	Fundamental	This webcast covers essential information regarding HEPA high efficiency filters and their importance in HVAC air handling systems. The course will include technical information about HEPA filters, as well as how HEPAs are constructed, tested, and maintained. We will also cover documentation regarding testing and maintenance of this important HVAC system component.
High Performance Landscapes: Protecting and Restoring Soil Health in Urban Landscapes	2	Intermediate	Healthy soils are the foundation of a sustainable high performance landscape. Traditional design and construction practices often undermine the ability of soils to provide ecosystem services such as stormwater management, optimal plant growth, nutrient cycling, pollutant removal and water conservation. New thinking in the way we build and manage our soils is required for the future health and well-being of humanity. The importance of soils and its many ecosystem services has become more widely recognized and is now a component of green building certification systems such as LEED and SITES. Professionals who understand the basic principles of soil science and its relevance to landscape performance are better equipped to assist projects in achieving economic and environmental benefits. This interactive online course will provide an overview of soil science specific to the landscape design and construction industry, as well as the information needed to improve the overall performance of the site through strategic soil preservation and restoration practices.
Highway Engineering: Contracts and Supervision	1	Intermediate	Good highways are so interwoven with every phase of our daily activities that it is almost impossible to imagine what life would be like without them. Practically all highway construction projects in the United States are public works, which are constructed with public funds. The agency authorizing this construction may be a federal, state, municipal, or county governmental unit, but the greatest number of highway construction projects today are authorized through the various state highway agencies. More than 95 percent of the construction done under state highway supervision is done by contract. The remaining 5 percent is done by the state's own forces organized and equipped to do this work. This 1-hour interactive online course covers the procedure generally followed by most state highway agencies in preparing contractual documents and in supervising construction. The course reviews unit pricing, the bid process, documentation, subcontracting, prequalification, state and federal agreements, bidding mechanics, unbalanced bids and construction supervision. This is the seventh course in a series on highway engineering.

Title	Hours	Level	Description
			Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Highway Engineering: Highway Drainage and Surveys	4	Intermediate	Good highways are so interwoven with every phase of our daily activities that it is almost impossible to imagine what life would be like without them. One of the most important considerations in locating and designing rural highways and city streets is providing adequate drainage. Adequate and economic drainage is absolutely essential for the protection of the investment made in a highway structure and for safeguarding the lives of the persons who use it. This 4-hour interactive online course discusses some of the fundamental concepts of highway and street drainage. Surface drainage in essentially rural areas is discussed in considerable detail; accompanying this is a discussion of measures for the prevention of erosion of shoulders, sideslopes, and side ditches. Considerable space is devoted to the location, design, and construction of culverts. Material is also presented relative to subdrainage, and the course concludes with a brief discussion of drainage in municipal areas. This is the sixth course in a series on highway engineering. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Highway Engineering: Part 1 - Highway Materials, Maintenance and Rehabilitation	8	Intermediate	Good highways are so interwoven with every phase of our daily activities that it is almost impossible to imagine what life would be like without them. Each year in the United States, enormous quantities of construction materials are used for improvements to the public roadway system. Such projects require annually over 590 million tons of aggregates, 11 million tons of bituminous materials, and 19 million tons of cement, as well as vast quantities of steel, lumber, explosives, and petroleum products. This 8-hour interactive online course is the first half of the eighth course in a series on highway engineering. This course describes some of the physical characteristics and quality control tests for soils, aggregates, bituminous materials, and portland cement. Detailed material specifications and tests for these and other highway construction materials have been published by the American Association of State Highway and Transportation Officials.
Highway Engineering: Part 2 - Highway Materials, Maintenance and Rehabilitation	8	Intermediate	Good highways are so interwoven with every phase of our daily activities that it is almost impossible to imagine what life would be like without them. Good highways are so interwoven with every phase of our daily activities that it is almost impossible to imagine what life would be like without them. Each year in the United States, enormous quantities of construction materials are used for improvements to the public roadway system. Such projects require annually over 590 million tons of aggregates, 11 million tons of bituminous materials, and 19 million tons of cement, as well as vast quantities of steel, lumber, explosives, and petroleum products. This 8-hour interactive online course is the second half of the eighth course in a series on highway engineering. This course covers high-type pavements, concrete pavements, maintenance and rehabilitation.

Title	Hours	Level	Description
Highway Rumble Strips	1	Fundamental	Rumble strips are a common safety feature incorporated into new roadway designs. This 1-hour interactive online course contains information on state-of-the-practice for the design and installation of shoulder rumble strips and provides guidelines for their use on appropriate rural segments of the National Highway System (NHS). The text of the course is taken from the Federal Highway Administration's Technical Advisory on rumble strips. This course includes a multiple-choice test at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Historic Preservation: An Introduction	1	Fundamental	Historic Preservation is the identification, protection and enhancement of historic resources or features. This 1-hour interactive online course covers not only the general underpinnings of the preservation and rehabilitation process, it also outlines the specifics on how to inspect and work with specific materials. Historic structures originate from a wide variety of time periods and areas. Consequently, there are a large variety of different materials examined in this course. ATTN: This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying 1 hour of credit toward the required continuing education.
Historic Preservation: Concrete and Terra-Cotta	1	Fundamental	Terra-cotta and concrete construction have created some of the world's most distinctive and historically significant structures. Unfortunately, many early concrete and terra-cotta buildings are threatened by deterioration. Effective protection and maintenance are the keys to the durability of these materials-many can be saved through preservation projects involving sensitive repair and replacement. This 1-hour interactive online course outlines the historic background of concrete and terra-cotta, the causes of their deterioration, methods to effectively inspect and analyze their current state as well as techniques of maintenance, repair and replacement. ATTN: This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying 1 hour of credit toward the required continuing education.
Historic Preservation: Energy Conservation	1	Fundamental	With the dwindling supply of energy resources and new efficiency demands placed on the existing building stock, many owners of historic buildings and their architects are assessing the ability of these buildings to conserve energy with an eye to improving thermal performance. This 1-hour interactive online course has been developed to assist those persons attempting energy conservation measures and weatherization improvements such as adding insulation and storm windows or caulking of exterior building joints. In historic buildings, many measures can result in the inappropriate alteration of important architectural features, or, perhaps even worse, cause serious damage to the historic building materials through unwanted chemical reactions or moisture caused deterioration. This brief recommends measures that will achieve the greatest energy savings with the least alteration to the historic buildings, while using materials that do not cause damage and that represent sound economic investments.

Title	Hours	Level	Description
			ATTN: This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying 1 hour of credit toward the required continuing education.
Historic Preservation: Exterior Additions and Substitutions	1	Fundamental	The Secretary of the Interior's Standards for Rehabilitation require that "deteriorated architectural features be repaired rather than replaced wherever possible. In the event that replacement is necessary, the new material should match the material being replaced in composition, design, color, texture, and other visual properties." This 1-hour interactive online course discusses the importance of maintaining historic character and illustrates how and when substitute materials may be used to match the appearance and general properties of the historic material without damaging the historic resource. ATTN: This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying 1 hour of credit toward the required continuing education.
Historic Preservation: Rehabilitating Interiors	1	Fundamental	While the exterior of a building may be its most prominent visible aspect, or its "public face," its interior can be even more important in conveying the building's history and development over time. This 1-hour interactive online course has been developed to assist building owners and architects in identifying and evaluating those elements of a building's interior that contribute to its historic character, and in planning for the preservation of those elements in the process of rehabilitation. The information covered applies to all building types and styles, from 18th century churches to 20th century office buildings. The course discusses historic interior paints and addresses a variety of materials and features: plaster walls and ceilings; wooden doors, molding, and trim; and metal items such as radiators and railings. It provides background information about some of the types of paint which were used in the past, discusses the more common causes and effects of interior paint failure, and explains the principal factors guiding decisions about repainting, including what level of paint investigation may be appropriate.
Historic Preservation: Roofing for Historic Buildings	2	Fundamental	No matter how decorative the patterning or how compelling the form, the roof is a highly vulnerable element of a shelter that will inevitably fail. A poor roof will permit the accelerated deterioration of historic building materials-masonry, wood, plaster, paint-and will cause general disintegration of the basic structure. This 2-hour interactive online course covers the historic character of a building, describes how to examine and record the existing roof, considers historic craftsmanship and gives detailed instructions on how to properly research, stabilize, repair and replace historic roofs. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Hurricane Damage Investigations - Wind vs. Water	2	Intermediate	In the aftermath of a hurricane, being able to determine wind damage vs. water damage is very important. This interactive online course will describe a methodology based on engineering principles and coastal science to determine the extent of damage to coastal buildings impacted by storm surge and high winds, based on wind field analysis matched to storm surge inundation and wave heights. This course provides an engineering investigative method that helps the engineer be the real expert when it comes to determining losses from damaging coastal storms.
Hurricane Damage: Wind vs. Water Determination	1	Fundamental	In many areas, the insurance industry offers expensive insurance against damage by wind and separate expensive insurance against damage from flooding (FEMA offers inexpensive insurance against flood damage). When a person purchases a home, the mortgage company invariably wants its investment covered by a homeowner's policy. A typical homeowner's policy includes insurance for damage done by wind; however, as the typical home is not imperiled by flooding, a policy does not include insurance from damage due to flood waters. Thus the problem faced by the inspector when a hurricane hits. Was the damage caused by the wind or the water? The author of this course spent 15 months covering the damage caused by hurricanes Katrina and Rita in the Gulf and created this 1-hour online course to educate those who are in that predicament due to the loss of their home or business, and those who are providing assistance to the insurance companies. This course takes a look at three specific scenarios of structure damage from the 2005 Gulf Hurricanes and provides numerous photographic examples. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Hurricane Mitigation Techniques and Inspection	2	Fundamental	This course will help you better understand what the insurance industry is looking for when a Wind Mitigation Form is submitted, especially as it pertains to the High Velocity Hurricane Zone of Miami, Dade, and Broward counties. We will learn how to identify window and door labels for protection; how to evaluate and categorize roof configurations and determine a roof's geometry; and how to point out the only acceptable secondary water resistance (SWR) products for a roof.
HVAC Acoustics	3	Fundamental	What is that sound? Is the HVAC system really that loud? How can I solve this problem? This interactive online course presents critical information regarding HVAC Acoustics that will be useful for designers, engineers, facilities maintenance and operations personnel. Important information presented includes fundamentals of sound, noise reducing materials, sound ratings, noise control for fans and other key HVAC system components. This course will serve as an important reference for people involved in HVAC systems and acoustics.
HVAC Design	1	Fundamental	This interactive webcast covers essential design information related to HVAC systems. Typical HVAC equipment and systems are covered, including key control concepts that provide reliable system operation. This course will be comprehensive in nature, reviewing most common types of air handling systems utilized today.

Title	Hours	Level	Description
HVAC Distribution	1	Fundamental	This interactive webcast covers common design principles for HVAC distribution systems. We will review these distribution systems based on the various types of HVAC systems where they are used. The various HVAC operating concepts will also be reviewed and how they affect the design of the distribution system.
HVAC HEPA Filters	1	Fundamental	HVAC HEPA filters are used and valued in many, if not all, industries. You will want to use them to promote the healthiest environments for families, employees, and customers of clients. This 1-hour interactive online course provides a general knowledge of the industrial, pharmaceutical and medical applications. Topics covered include filter construction, filter testing and maintenance, and documentation methods and forms.
HVAC System Fans	3	Fundamental	Centrifugal or Axial? Do you know how to select the best fan for your project? This interactive online course presents critical information regarding HVAC fans, motors and controls that will be useful for designers, engineers, facilities maintenance and operations personnel. Important information presented includes fan fundamentals, various types of fans, performance curves, fan vibration and sound, as well as drive motors and VFD drive systems. This course will serve as an important reference for people involved in HVAC fans design, selection, and installation, as well as operations.
Hydraulic Design of Storm Sewers	2	Advanced	Storm sewers are the hidden workhorse of our infrastructure. They are designed to ensure our urbanized communities remain dry and maintain safety during extreme events. For this reason, it is important that storm sewers are designed with special detail and care. This interactive online course will discuss the design of storm sewer systems and its two core theories, the conservation of mass and energy. A sample spreadsheet will be provided as part of the course to help practitioners in the design of storm sewers.
IICRC 7-Hour Mold Health Effects and Science Program	7	Fundamental	This program covers how mold growth can affect the health and safety of building occupants. The program also gives a little bit of a scientific background of mold. This program has 5 lessons with a test at the end of each lesson which must be passed with a score of 70% or better to move on to the next lesson. The 5 lessons are: Lesson 1: More Than Mold -Health Effects Associated With Mold and Water Damage Lesson 2: Health Effects Caused by Mold Lesson 3: Mold Safety and Health Lesson 4: The Science of Mold Lesson 5: Mold Sampling
Impacts of the 2010 ADA Guidelines	2	Intermediate	The 2010 ADA Standards for Accessible Design became requirement as of March 15, 2012. Are you ready to implement them? You can quickly become familiar with the most important changes and the clarifications that are included in this most recent release. In this Webcast, we will discuss definitions and history of the ADA. Give you details of the updates, alterations, and clarifications. You'll also get explanations of the importance of compliance and the implications for non-compliance. ATTN: The content in this course generally addresses requirements from the American with Disabilities Act (ADA) that is adopted with amendments in the 2015 Minnesota State Building Code in Minnesota Rules Chapter 1341. For

Title	Hours	Level	Description
			specific requirements in the 2015 Minnesota Accessibility Code, please reference the following link: https://codes.iccsafe.org/content/MAC2015/toc
Impairment Recognition and Response Training for Supervisors	0.17	Fundamental	This course is intended for supervisors to assist you in understanding an impaired worker, how to recognize an impaired worker, and proper response if you believe one of your workers is impaired.
Increasing Building Energy Efficiencies: Policies and Practice	2	Fundamental	While LEED and Sustainable Design dominated the industry landscape in the 2000's, the last several years have witnessed a pivot to specific improvements in resources, specifically in the areas of water and energy use and efficiency. That bar has been raised through increasingly stringent standards in ASHRAE 90.1-2010 and 189.1-2011, as well as Federal mandates increasing in stringency from EPAct05 through EISA 07, Executive Order 13423, EO 13423 & EO 13514, and most recently 10 CFR 433: Energy Efficiency Design Standards for new Federal Commercial Buildings.
Indiana Engineers' Laws & Rules	2	Fundamental	In today's business world, it is easy to become so wrapped up in your everyday work that you forget some of the basic rules and regulations that govern your profession. This course reviews the essential information contained in Indiana Code, Title 25, Article 31: Professional Engineers, Indiana Code, Title 25, Article 1, Chapter 11: Professional Licensing Standards of Practice, and Indiana Administrative Code, Title 864: General Requirements. By reexamining these laws and rules on a regular basis, you will stay abreast of changes and amendments to the codes that govern Indiana engineers.
Infrastructure 101: Repairing Pandora's Box	1	Fundamental	What will you find when you open a manhole for repair? For most engineers and utility managers their first introduction to infrastructure "management" is an emergency call for a manhole collapse or similar catastrophic failure. In part, they can be prepared for this by understanding the root causes of failure and the appropriate types of repair and replacement necessary and by having an appropriate plan of action in place. Preventative and remedial plans require the same level of detail and understanding to avoid recurrence and "busted" budgets. A manhole repair need not be Pandora's box. In this interactive online course, we will discuss different approaches to infrastructure management, including various materials used in the rehabilitation of manholes. Alternative strategies used to improve safety, reduce public health or environmental risks, and reduce costs will also be covered.
Inland Wetland Restoration	2	Intermediate	Design professionals are often expected to understand the fundamentals of wetland creation and restoration. Today numerous projects are coupled with wetland creation or restoration permitting conditions. Fulfilling these conditions is no easy task, given that a project must meet certain criteria for success-for instance, a 75% success rate for plantings after two or three growing seasons. Further, the disquieting fact is that more than 50% of created or restored wetlands nationwide fail within a few years. New wetlands may be subject to massive plant die-off, invasions by unintended or non-native plants and insects, or are planted with incorrect species (usually as the result of poor monitoring during initial construction). Other factors can impact them as well. This interactive online course covers the basic parameters required for all successful inland wetland creation. It introduces a sample report of a proposed restoration project and discusses how to approach a problem site. Finally, it

Title	Hours	Level	Description
			wraps up with a look at the obvious pitfalls and the critical tools necessary to design a successful wetland. This course is a supplement to “A Wetland Primer for Design Professionals” and “Advanced Wetlands Primer: Field Evaluation & Permitting” by the same author.
Innovative Heat Pump Technology	1	Fundamental	Heat pumps have improved and evolved considerably since gaining acceptance as home heating systems in the 1970's. These air source heat pumps provided single zone heating in climates with mild winter temperatures. Today there are water source heat pumps, variable refrigerant flow heat pumps, and multi-zone heat pumps. Today's heat pump has improved efficiency and operates at lower outside air temperatures. This interactive online course will examine the latest heat pump technologies and the multitude of applications for this flexible and efficient technology.
Inspecting for & Filling Out the 4-Point Form	1	Fundamental	In this course you will learn about the Four Point form where you will learn how to examine four points of a building; the electrical system, the plumbing system, the heating system, and the roofing system. Why do we need a 4-point form filled out? According to insurance underwriter actuaries, these four systems have been statistically expensive to repair or replace. There are statistics showing how the 4-point inspection has saved underwriters substantial dollar amounts. Why should we care? Well, because 80 percent of the population lives in a home that is more than 20-years-old, and if you don't live in one of these homes today, you will eventually as your house grows older. That said, the insurance industry is becoming more proactive when it comes to insuring a home against issues that will cost them money. The boundaries are getting tighter, and the deductibles are getting higher.
Interior Lighting for Designers: Daylight and Filament Sources	1	Fundamental	Available daylight is considered because its use in interiors greatly reduces the power consumed by electric lighting. In addition, light from the sun and sky and views to the exterior significantly enhance the quality of the interior environment and our satisfaction with it. Only at this point, after these considerations are carefully assessed and preliminary design decisions made, are you ready to select the electric light source(s) appropriate for each particular interior environment. In this interactive online course, two light sources are presented in their approximate order of introduction to the marketplace. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Interior Lighting for Designers: Design Factors	2	Fundamental	This interactive online course begins with a thorough understanding of the human visual system: how the eye and brain work together to create our perception of the world around us. Much in the way you select background music to support the activities and environment of a room—classical music, jazz, or indie rock, for example. This course will describe how you establish the lighting composition to create a supporting psychological environment. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Interior Lighting for Designers: Interior Illuminations	4	Fundamental	Almost all electric sources generate light in a distribution poorly suited to architectural lighting. Methods of optical control of the primary light source are discussed in this course. This interactive online course will show you how to select the specific luminaires that will achieve your desired objectives from the

Title	Hours	Level	Description
			wide range of available products in the marketplace. You will be able to create the lighting design and the lighting layout that communicates it. This course will define “sustainable design” as one of the cornerstones of effective lighting practice and list the maximum benefits to the occupants. Finally, this course will show how construction documents are produced to contain the designer's complete written and drawn plans and specifications to communicate with the utmost clarity all of the information required by the installing contractor to deliver the designer's intent.
Interior Lighting for Designers: Low- and High-Intensity Discharge Sources	1	Fundamental	In electric discharge lamps, light is produced by the passage of an electric current through a vapor or gas rather than through a tungsten wire as in incandescent lamps. The light production by discharge sources is more efficient than the electric heating method used in filament lamps. Discharge lamps used in architectural lighting are more efficient and have a longer life. This interactive online course will introduce you to the functionality of fluorescent lamps as well as the differences and uses of mercury vapor, high-pressure sodium, and metal halide lamps. We will cover the potential drawbacks of low-pressure sodium lamps and discuss how the selection of phosphors affects lamp color. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Interior Lighting for Designers: Solid-State Lighting and Auxiliary Equipment	1	Fundamental	This interactive online course begins with an introduction to solid-state lighting, or more commonly referred to as LEDs or OLEDs, and continues on to explore their uses, design, construction, and function. We will also take a look at the advantages and disadvantages of LEDs. In the second half of this course, we will take a look at the auxiliary equipment that is needed to supply the current and/or voltage to solid-state lights and other types of indoor lighting. We will look specifically at the three main categories of auxiliary equipment. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2015. All rights reserved.
International Building Code & More: About the Codes	2	Fundamental	A variety of codes regulate the design and construction of buildings and building interiors. In addition, there are a large number of standards and federal regulations that play a major role. The most nationally recognized codes, laws, and standards organizations are described in this chapter. Most of them are referenced and discussed throughout this book as they pertain to the interior of a building; and they are summarized in a checklist at the end of this course. While reading about each of these codes, standards, and regulations, keep in mind that not all of them will be enforced by every code jurisdiction. The jurisdiction chooses which code publications to use and the edition of each publication. For example, a jurisdiction could decide to adopt the 2009 edition of the International Building Code (IBC) or continue to use the 2006 edition, or a jurisdiction could decide to adopt the NFPA® 101, Life Safety Code, as a stand-alone document or to be used in conjunction with a building code. The jurisdiction could also make a variety of local amendments that add or delete clauses from a code. Knowing which codes are being enforced is necessary in order to research codes for a particular project. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2011 All rights reserved.

Title	Hours	Level	Description
International Building Code & More: Code Officials and Code Processes	1	Fundamental	This course concentrates on the code process as a whole. It introduces the different types of code officials and the various steps that should be taken for a smooth approval of a design. It also discusses how to document the code information effectively and how performance and sustainability requirements need to be incorporated from the beginning of a project. An important thing to remember is that the interior of a building must be designed in conjunction with the codes, standards, and federal regulations required in that jurisdiction. The designer must apply the various code requirements properly and work in conjunction with the code official. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2011 All rights reserved.
International Building Code & More: Construction Types and Building Sizes	1	Fundamental	Construction types are very important at the time a building is being constructed. Structural engineers and architects must be thoroughly familiar with them to determine the construction systems and materials that can be used throughout a building—both exterior and interior. There are several considerations that go into choosing a structural system and a construction type, including building size and height, intended occupancy classification, affordability, and sustainability. Construction types become a consideration on interior projects as well. When working on an interior project that requires the reconfiguring of building elements, such as relocating walls, making changes to floor or ceiling conditions, or adding a ramp, it is important to be familiar with the different types of construction to determine what changes can be made to the existing building. This course includes a basic discussion of construction types, building heights, and floor areas as required by the codes. It includes how they are typically used for new construction and how they can affect an interior project. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2011. All rights reserved.
International Building Code & More: Family Residences, Existing Structures and Historic Buildings	1	Fundamental	This course reviews the similarities and differences in the building codes for family residences and existing and/or historic buildings. The building codes consider residential occupancies to be single-family residences and duplexes. Family residences do not have as many interior-related regulations as other buildings, but a number of interior codes and standards are still required. Codes will apply to interior projects in existing buildings and historic buildings the same way they do for a new building most of the time. This course explores the four categories that define an existing structure and the two additional conditions that identify an historic building. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2011. All rights reserved.
International Building Code & More: Finish and Furniture Selection	2	Intermediate	This course will begin by explaining the various types of finishes and furnishings as defined by the codes and then go on to describe the various finish and furniture standards and tests and their results. Afterwards, we will go over code requirements and sustainability and accessibility requires related to finishes and furniture. We will conclude this course by reviewing a checklist which will assist you with any project that requires finish and/or furniture selection. John Wiley & Sons, Inc. Copyright © 2011 All rights reserved.
International Building Code & More: Fire Protection Systems	2	Fundamental	Fire and smoke are the primary threats to the safety of the occupants in a building. Fire and smoke can travel quickly both horizontally and vertically unless special efforts are made to prevent this from happening. The use of rated assemblies in this passive system of fire protection is considered the first step in controlling the spread of smoke and fire.

Title	Hours	Level	Description
			This course will discuss the active fire-protection system and its components, which include detection, alarm, and extinguishing systems, and will provide a fire protection checklist at the end of this course. The overall aim of the fire-protection system is to detect a fire in a building or space, warn the occupants, and suppress the fire until the fire department arrives. If that fire can be detected quickly, occupants have more time to exit the building safely and with less panic. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2011. All rights reserved.
International Building Code & More: Means of Egress	3	Fundamental	The first half of the course concentrates on explaining the components of the means of egress. The second half of the course discusses how to determine the required quantities, sizes, and locations of the parts of the means of egress. Accessibility requirements are also discussed throughout the course and a means of egress checklist is provided at the end of the course. John Wiley & Sons, Inc. Copyright © 2011 All rights reserved.
International Building Code (IBC) - Assembly Spaces	3	Fundamental	This course will address the 2012 International Building Code® (IBC®) requirements applicable to the design and construction of assembly spaces. It will address the differences between the various Group A occupancies and how assembly uses may also fit within the business or educational occupancy classifications. The course will also cover the unique aspects of the code related to assembly uses including the ICC 300 Standard for Bleachers, Folding and Telescopic Seating, and Grandstands, and the special egress provisions of Section 1028. International Fire Code® (IFC®) provisions related to places of assembly such as requirements for a fire watch, limitations on open flames, combustibles and finishes will also be addressed. Developed in Partnership with the International Code Council®.
International Building Code (IBC) - Care Facilities Provisions	3	Fundamental	This course addresses provisions in the 2012 International Building Code® and referenced standards relating to the design and construction of care facilities. It focuses on the specific decision making needed to apply the provisions appropriately by highlighting the differences this building classification poses. Developed in Partnership with the International Code Council®.
International Building Code Significant Changes to 2012 Edition	3	Fundamental	The purpose of this course is to cover the significant changes in the 2012 code and look at the differences between the 2009 and the 2012 codes to understand exactly how it affects enforcement requirements, how the provision may apply differently than it was applied under the 2009 code and how it might also affect the design requirements. Developed in Partnership with the International Code Council®
International Snapshot on Sustainable Infrastructure	2	Fundamental	The scientific community overwhelmingly agrees that global warming and changing climate patterns will become more disruptive and have detrimental impacts on essential sectors of our society. These changes, such as extreme weather events, rising temperatures, flooding and droughts, all significantly impact our infrastructure. We are faced with simultaneous threats of aging infrastructure, damage from a changing climate, lack of funding and political paralysis. So how do we respond? Looking around the world, who is taking action now and leading innovations on tackling the challenges of creating sustainable infrastructure systems. The aim of this course is to present a snapshot of this complex dilemma.

Title	Hours	Level	Description
Interviewing the Right Way	0.5	Fundamental	There is nothing more important in the hiring process than the interview. The interview is an exchange of information between the candidate and the interviewer. It provides the candidate with the opportunity to sell him/herself, and management with the opportunity to sell the position and the organization. The importance of selecting the BEST person for a position cannot be overemphasized. The interview provides an opportunity for you to brand your company in the eyes of the potential employee, and to determine if the candidate is the right fit. The interview is a crucial process, that if done correctly, will ultimately help move your business forward. But if done incorrectly, could be very damaging to your company. This interactive, online course will discuss the employment interview. It will cover the different types of interviews, and planning strategies to help you conduct successful interviews. This course will illustrate steps for conducting an interview and provide examples of types of evaluations to use so you can choose the best person for the position.
Interviewing the Right Way & Managing the Millennial (RV-PGM145)	1	Fundamental	The first module of this program will discuss the employment interview. It will cover the different types of interviews, and planning strategies to help you conduct successful interviews. This course will illustrate steps for conducting an interview and provide examples of types of evaluations to use so you can choose the best person for the position. The second interactive module discusses how millennials are different from other generations when it comes to their views on careers, success and professional growth. You'll learn coaching and managing tips to help make sure recognition is fair and consistent. You'll also learn how to leverage modern technology to increase engagement, and how to make work challenging, engaging, and fun.
Introduction to ASHRAE 189.1-2011: Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings	3	Fundamental	This three-hour, introductory course will introduce participants to the ASHRAE 189.1-2011 standard. The stated intent for the creation of this standard is to specify and provide minimum requirements for the location, design, construction, and operation and maintenance (O&M) of high-performance green buildings. This course will cover the fundamental requirements of the standard; explain how these requirements are met; outline challenges presented by the various components of this standard; and present the relationship of the 189.1 standard with other current standards (e.g., ASHRAE 55, ASHRAE 62.1, ASHREA 90.1) and criterion (e.g., LEED).
Introduction to Net Zero Buildings	2	Fundamental	Gaining particular momentum in the design and construction industry is the notion of Net Zero buildings. For many in the design and construction industry Net Zero is a lofty goal, and one not usually realized. This interactive webcast will focus on the concept of Net Zero, which has several variations of what the term means in practice. We will look at the practicality and marketability of a Net Zero building that uses no more energy than it generates. We will conclude with discussion of the world-wide application of Net Zero building.
Introduction to Rain Gardens	2	Fundamental	Rain gardens have become very popular, with good reason. You can create landscapes that add beauty, wildlife habitat, and interest to an area - while helping manage storm water more sustainably. You can use them to meet LID (Low Impact Development) requirements. This interactive online course will teach you how to significantly reduce the impacts of development and also aid in improving storm water quality.

Title	Hours	Level	Description
Introduction to Sustainable Design and Construction Using Green Globes	1	Fundamental	What's the oldest sustainability rating system for buildings? It isn't LEED*! The roots of Green Globes go back before 1990 to the Building Research Establishment Environmental Assessment Method (BREEAM) developed in the United Kingdom. From there it expanded to Canada and thence to the U.S. It offers an online alternative and perhaps less expensive way to a certified sustainable building. This course provides an introduction to sustainable building design and construction and to the Green Globes system. It compares Green Globes and the U.S. GBC's LEED rating system. It also describes the path for professionals to become trained assessors.*LEED is an acronym for Leadership in Energy and Environmental Design and is a registered trademark of the U.S. Green Building Council (USGBC).
Introduction to Sustainable Roof Technologies	2	Fundamental	Roofs account for one of the largest areas of imperviousness on a site. Impermeable roofs impact storm water quality and quantity, air quality, the urban heat island effect, and the energy needs of the building. This interactive webcast focuses on how we can potentially rethink how we build our roofs to ensure energy efficient buildings, harness energy from the sun to help us reduce our reliance on fossil fuels (nonrenewable energy), manage storm water as a resource, increase air and water quality, and reduce greenhouse gas emissions. We will provide an introduction to the fundamentals of sustainable roof technologies including vegetative roofs, photovoltaic roof applications, cool reflective approaches, recycled or bio-based content roofs, or some combination thereof. Focus of learning includes the benefits and limitations of sustainable roofs and the potential of technological advancements in sustainable roof design. We will conclude with creative applications and site selection and placement considerations of sustainable roofs.
Introduction to the ISI Envision Rating System	1	Fundamental	The Institute for Sustainability's Envision rating system for civil infrastructure is quickly being adopted by public agencies for use in ranking organizational projects according to sustainable principles recognition and fulfillment during the design and planning stages. The Envision rating system is backed by three major national organizations responsible for the vast majority of US civil infrastructure: APWA (American Public Works Association), ACEC (American Council of Engineering Companies) and ASCE (American Society of Civil Engineers). This puts it squarely in the mainstream of thinking within the engineering community about future infrastructure needs. Envision is a relatively new initiative, but early indications are that it will gain wide acceptance as the national standard for assessing sustainability attained on civil infrastructure projects. T his interactive online course will introduce you to the Envision Rating system and how it can help you organize your project in the sustainability realm. This course also lists the requirements on how to become an accredited Envision Sustainability Professional, Verifier, Trainer, or ISI member.

Title	Hours	Level	Description
Introduction to Wetlands	2	Fundamental	Did you know that most all activities that impact wetlands are regulated? This interactive webcast will provide a basic understanding of wetland ecology, types, functions and management. We will discuss the economic, environmental, and social importance of wetlands. This course emphasizes wetland ecology, wildlife needs, enhancement of wetland functions, wetland determination, design and implementation, management, and monitoring considerations. This webcast includes a discussion of both the history of and recent changes to federal wetland laws and regulations. We will present an overview of the current issues and regulatory aspects of wetlands including discussion of the Clean Water Act (Section 401 and Section 404). This basic course will benefit developers, engineer, project managers, contractors, planners, land use officials and architects.
Irrigation Practices for Commercial and Residential Sites	2	Intermediate	This Webcast is a full-spectrum discussion of irrigation practices. We'll start with history, discuss fundamentals, move on to proper design, and finish with alternative approaches to traditional irrigation methods. You'll receive valuable information on effective, efficient irrigation methodology for all residential and commercial needs.
IT Pro to Manager: 01-Managing the Development of Technical Professionals	1	Intermediate	In LearnSmart's Managing the Development for Technical Professionals video training, technical professionals will learn the skills to survive and thrive in the workplace. Students will also gain a better understanding of what it takes to develop organizational skills, such as time management, performance management, and stress management.
IT Pro to Manager: 02-Successful Communication and Process Management Skills	1	Intermediate	In LearnSmart's Successful Communication and Process Management Skills video training, new and future managers will gain a clear understand of just how important clear lines of communication are -- with both employees and superiors. In addition, students will see how easy it can be to become overwhelmed, with so much to do in what never seems like enough time. By concentrating on effective time management, these individuals can avoid much of the stress and pressure that comes with a new position.
IT Pro to Manager: 03-Developing Leadership and Transitioning into Management	1	Intermediate	In LearnSmart's Developing Leadership and Transitioning into Management video training, you will learn that management isn't always so much about leading, as it is about pointing the way. It is your duty to point the way by instructing, giving feedback and sharing your experience. This course looks at leadership roles, styles and behaviors, showing how to build the strengths of your team and overcome personality differences, as well as conflict.
Laboratory Safety (BBLASA0CEN)	1	Intermediate	This course looks at the hazards that are found within the laboratory and some ways to protect lab workers from those hazards. Also included is an overview of the OSHA Lab Standard, the elements of a Chemical Hygiene Plan, and some of the basic rules of good chemical hygiene. Chemical storage requirements and some general procedures to follow in case of an emergency are also covered. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Ladder Safety	0.5	Intermediate	How much training have you had to use, store, and maintain a ladder properly to prevent falls and injuries? Working on ladders is a necessary part of most jobs in construction, maritime, and general industry. However, the use and care of ladders are not always as easy as it appears for the worker. Training is necessary to know the tolerances of the ladder, its safety features, and how to use the ladder. There have been many reported deaths and serious injuries from improper ladder use such as falls, electrocutions, and slips. This interactive online course will give you the information needed to be aware of the hazards related to ladders and best practices for using ladders.
Land Development Projects: Design of Infrastructure	1	Fundamental	Land Development projects shape our communities and in many occasions create them. The primary goal of this interactive, online course is to assist planners, architects, engineers and contractors in developing a framework for optimizing infrastructure design that supports land development projects using guidelines from AASHTO, Urban Land Institute, Ten State Standards and other public and private organizations. The diversity of land development projects mirror our needs as a society. Even though they can be classified as commercial, residential, industrial, professional, institutional or governmental in nature they still need to be sustained by the same type of civil infrastructure. As our cities expand and population densities increase our infrastructure network has had to increase and adapt to serve our growing needs. This increase in capacity requirements has made ever more important the need to have efficient infrastructure designs.
Land Development Projects: Developing Feasibility Studies	2	Fundamental	Land Development projects are widely diverse and require a thorough knowledge of local regulations, physical site characteristics, and features surrounding the subject property. This interactive online course will teach you about different types of Land Development projects and their respective operational needs. You will learn about local, state and federal development regulations for projects within the U.S. The primary goals of this course are to familiarize planners, architects, engineers and contractors on key basic steps for developing feasibility studies that follow guidelines from the Urban Land Institute, National Home Builder's Association and other public and private organizations.
Land Development Projects: Grading and Drainage Design	1	Fundamental	Land development projects cover a wide range of needs for our communities, thus they have a wide range of configurations. Earthwork is one of the key construction costs for land development, thus an efficient grading design is an integral part of the site civil design. Grading is also tied in directly into several other components of the site civil design such as drainage, transportation, sanitary sewer and building finished floor elevation. In addition, the grading design needs to be sensitive to the end-users of the project. The primary goal of this interactive online course is to assist planners, architects, engineers and contractors in understanding the key components of an efficient grading design using guidelines from AASHTO, Urban Land Institute, National Home Builder's Association and other public and private organizations.

Title	Hours	Level	Description
Landfill Gas Collection and Treatment Systems	3	Fundamental	Over two hundred million tons of garbage are generated in the US every year. Over 97% of this garbage ends up in landfills. This garbage decomposes, potentially releasing harmful gases to the environment. Without landfill gas collection and treatment systems, the effect of these releases would be severe. This interactive, online course provides an introduction to the theory of landfill gas collection and treatment systems and presents practical parameters that can be utilized to develop detailed system designs.
Lead Contamination of Public Water Systems	1	Fundamental	Lead contamination of drinking water is a major topic of concern across the country, particularly in areas with aging lead pipes. Lead contamination in Flint, Michigan; Washington, DC; and Newark, New Jersey, has focused attention on America's decaying pipes. At least $384 billion of improvements are needed to maintain and replace essential parts of the country's water infrastructure to through 2030, according to the US Environmental Protection Agency. While these improvements are underway, treatment technologies can be utilized to significantly limit the migration of lead into the potable water supply. This interactive online course will describe these technologies and opportunities for implementation.
Lead Safety in Construction: Keeping You Safe and Compliant	1	Fundamental	Lead exposure is a major health issue. Exposure to lead can cause brain damage, paralysis, kidney disease and even death however, there are many methods to protect workers from exposure. In this one-hour interactive course, we will discuss these and other acute and chronic symptoms. We'll discuss how lead is used in construction and identify the workers that are the most vulnerable to these risks. You'll be introduced to OSHA's Lead Standard on the responsibility of employers and how it's designed to protect workers. Finally, we'll go over the methods to reduce exposure to lead, including engineering controls as well as the proper protection for workers such as the use of personal protective equipment.
Leak Detection for Roofs	1	Fundamental	Leak detection is an important job. Utilization of both scientific and artful techniques enables you to detect a leak in the least time with the least work. To do this, you must first understand the roof system that you are looking at, and know all its components and their function. This 1-hour interactive online course details specific techniques of detecting leaks in various waterproofing media, with an endeavor to give the professional practical and usable techniques that they can employ in the course of handling this important job. This course includes a test at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
LEED v4 - Certified Buildings Under the O&M and BD+C Categories	1	Fundamental	This webcast will provide essential information regarding latest updates for LEED certification - LEED v4. It's critical to stay current with this green building rating system that has revolutionized how we design, construct, operate, and maintain buildings and communities. LEED has created a complete industry dedicated to energy savings and efficiency. As a result of viewing this webcast, you will have a better understanding of the core areas of LEED certification, and how the program helps meet full performance potential with existing buildings.

Title	Hours	Level	Description
LEED v4 - Operations and Maintenance	2	Fundamental	Did you know that Leadership in Energy and Environmental Design or LEED Version 4 is now officially adopted by the United States Green Building Council (USGBC)? Since the first LEED Rating System launch, sustainable design and the idea of sustainable design has gone from a catchphrase to actually a prerequisite on how we build, maintain, and operate our buildings. The goal of sustainable development is to create healthy environments through things like responsible planning, design, construction, operation, and maintenance of those buildings. The heart of the sustainable building movement is the USGBC LEED Green Building Rating System for buildings. This course specifically covers LEED for Operations and Maintenance and focuses on the ongoing operations and maintenance of existing commercial and institutional buildings.
LEED v4 and Data Center Construction	2	Fundamental	Although the two aspects of this topic - Data Centers and Green Design - seem almost antithetical to each other, a properly designed data center makes good use of sustainable design. With a limited amount of incremental effort, sustainable design efforts can be paired with a good working knowledge of LEED to provide a LEED certified critical facility environment.
LEED v4 and the Future of Green	1	Intermediate	The US Green Building Council has just unveiled its 4th version of the LEED certification standards known as LEEDv4. In this course, we will focus on the differences between LEED v4 and its predecessor, LEED 2009. The course will cover the reasoning behind the new update as well as describe new credit categories and the changes that are to be implemented per individual credit. The course goes on to examine LEED v4 technical content and point distribution. The overall objective of the course is to take a comprehensive look at LEED v4 standards of New Construction relative to previous LEED versions and come away with a good working knowledge of its new project criterions and its impact on the future of sustainable new construction.
LEED v4 for Commercial Office Buildings	1	Fundamental	This interactive course reviews the significant changes in the new LEED-NC v4 Rating System that impact commercial office building types. In this course, we will discuss the credits that provide the biggest "bang for your buck". Real life relational stories are included to help reinforce some of the concepts and actions.
LEED v4 for Existing Buildings: Operation & Maintenance (EBOM)	2	Fundamental	This course is going to focus on LEED EB (Existing Buildings - Operations & Maintenance). This course will provide you with essential knowledge about LEED, which is an objective, unbiased, 3rd party green building rating standard. The acronym LEED stands for Leadership in Energy and Environmental Design. LEED was introduced as the standard developed by the United States Green Building Council, or USGBC, upon its founding in 1993. Since then, LEED has grown enormously, USGBC has also introduced the GBCI, or Green Building Certification Institute, which is responsible for accrediting personnel with the LEED-AP designation, for certifying buildings, at the LEED Certified, Silver, Gold, or Platinum levels, and for interpreting criteria, updating information, and generally ensuring day-to-day operations for the LEED system. We will be discussing the LEED Rating Paths, of which there are several, the intent of which has been to create as many specifically tailored and appropriate

Title	Hours	Level	Description
			options as are reasonable to allow for ease of guidance and certification in the building design, construction, and operations processes. We'll review the variously available tools and resources that exist to support the efforts of project teams as they seek LEED certification, and of course we will delve significantly into our main focus, which is LEED EBOM, or Existing Buildings Operations & Maintenance.
LEED v4 for Healthcare Facilities	1	Fundamental	This course reviews the greatest changes in the new LEED-NC v4 Rating System that would impact healthcare projects and what credits provide the biggest "bang for the buck". Real-life relational stories are included to help reinforce some of the concepts and actions.
LEED v4 for Hospitality Projects	1	Intermediate	This course reviews the greatest changes in the new LEED v4 Rating System that would impact that hospitality projects and what credits provide the biggest "bang for the buck". Real-life relational stories are included to help reinforce some of the concepts and actions. We'll also review when the NC Rating System should be used or when the project is more aligned with the CI Rating System.
LEED v4 for Interior Design + Construction	1	Fundamental	Green buildings, when operated as intended, improve working environments, promote higher productivity, reduce energy and resource costs, and prevent system failures. This interactive course discusses the importance of a facility that has been designed and built as not only “green” with energy efficiency and water consumption technologies but also allows us to breathe easy, give us views of nature and daylight, and makes us healthier. LEED for Interior Design and Construction (LEED ID+C) enables project teams who may not have control over whole building operations to develop indoor spaces that are more comfortable for users and more mindful of our resources.
LEED v4 for New Construction Projects	2	Fundamental	This course will describe how to navigate the new credits and prerequisites under the new version of LEED. It will address the changes from LEED 2009 in each credit category and how they will affect new projects registering under Version 4.
LEED v4 for Retail Projects	1	Intermediate	This course reviews the greatest changes in the new LEED v4 Rating System that would impact retail projects and what credits provide the biggest "bang for the buck". Real-life relational stories are included to help reinforce some of the concepts and actions. We'll also review when the NC Rating System should be used or when the project is more aligned with the CI Rating System.
LEED v4 for School Buildings	1	Fundamental	In this course, we'll review some of the changes in the new LEED-NC v4 Rating System that impact schools (K-12) and what credits provide the biggest "bang for the buck". We'll also review which educational facilities apply to the Schools Rating System found in the Building Design + Construction platform.
LEED v4: Building Design and Construction	1	Fundamental	Are you aware that Leadership in Energy and Environmental Design, or LEED Version 4 is now officially adopted by the United States Green Building Council? The goal of sustainable development is to create healthy environments through environmentally responsible planning, design, construction, operation, and maintenance. The heart of the sustainable building movement is the USGBC LEED Green Building Rating System for buildings. This course specifically today covers the LEED for Building Design and Construction, known commonly as LEED BD + C. This course discusses the

Title	Hours	Level	Description
			background of the LEED BD + C credit rating system and covers recent changes to the system, including the addition of new market sectors, simplified LEED credit submittal requirements, step-by-step reference guide materials with videos and tutorials, and a more intuitive technology platform. Other recent changes include the focus on outcomes to aid in building management, as well as the addition of new impact categories
LEED v4: Neighborhood Development	1	Fundamental	The goal of this course is to describe Leadership in Energy and Environmental Design (LEED) for Neighborhood Development Rating System (LEED ND) and discuss recent updates to the system. LEED ND integrates the principles of smart growth, new urbanism, and green building into environmentally, socially, and economically responsible neighborhood planning. This course covers each LEED ND credit category which focuses on where communities/neighborhoods are built, how they are designed, and how they ultimately perform. The course will conclude by defining the credentialing path for professionals -- from the credentialing processes and continuing education requirements, through the LEED ND AP exam preparation and test completion. Understanding of both LEED credentialing for professionals and the LEED credit categories for projects are essential to the future of all green building projects.
LEED v4: Residential Homes	1	Fundamental	The goal of this course is to describe Leadership in Energy and Environmental Design (LEED) for Homes Rating System and discuss recent updates to the system. LEED for Homes is a voluntary rating system that promotes the design and construction of high-performance green homes. This presentation discusses the basics of the LEED for Homes Rating System, including major proposed updates to the v.4 rating system and how it applies to single / multi family, low/mid/high rise, new and rehabbed homes and residential buildings, apartments, developments and dorms. Understanding of both LEED credentialing for professionals and the LEED credit categories for projects are essential for all green building projects.
LEED: Water Efficiency	1	Intermediate	What do you know about getting LEED certified in Water Efficiency? This course introduces you to the LEED Rating Systems - Water Efficiency and Innovation and Design Sections. This webcast gives you an overview of the rating system, the prerequisite for Water Use Reduction and descriptions of the available credits.
LID Technologies	2	Fundamental	A low-impact development (LID) design approach is defined as a combination of hydrologically functional site design with pollution prevention measures to compensate for land development impacts on hydrology and water quality. This course will provide an overview and introduction into the philosophy, objectives, various design approaches, economic and environmental benefits, and management practices of low-impact development. Specifically, course will demonstrate how to develop land and maintain the predevelopment hydrologic regime by using current structural and nonstructural storm water management technological approaches.
Lighting Controls Essentials	2	Intermediate	Did you know that project managers who recognize and comprehend lighting controls can communicate more effectively with their engineer? Lighting control increases comfort, improves health and fosters function. Modern lighting control systems are heavily electronic in nature and have great versatility and a

Title	Hours	Level	Description
			variety of functions. This interactive online course covers the "big picture" of lighting controls: what they are, how they look, what they do, and how to apply them in construction projects. You will see examples of relays and contactors you may come in contact with. This course also presents ladder diagrams with explanations as well as lighting control panels.
Liquefied Natural Gas (LNG): Emerging Issues in the LNG Industry	1	Intermediate	In this online interactive course, we provide an overview of some of the key emerging issues in the LNG industry including whether North America will become a major LNG exporter, the potential impact of the Panama Canal expansion project on LNG trade, the growing role of floating LNG (FLNG), the potential influence of the Gas Exporting Countries Forum (GECF) to act as a "Gas OPEC," and the emergence of LNG as a shipping and vehicle fuel to aid in emission reduction efforts around the world.
Liquefied Natural Gas (LNG): Evolution of LNG Markets & Primary Demand Regions	2	Intermediate	The first ever US-UK shipment of LNG in 1959 on the Methane Pioneer demonstrated that large quantities of LNG could be transported safely across the ocean and opened up the possibility of transporting large volumes of natural gas from otherwise stranded fields to distant destinations based on consumer demand. This interactive online course will discuss the evolution of LNG markets, including the history of LNG and an overview of the three major LNG Markets - Asia-Pacific LNG market, the European LNG market, and the North American/Atlantic Basin LNG market, which includes North America, South America and Latin America.
Liquefied Natural Gas (LNG): Global LNG Demand & Emerging Demand Markets	1	Intermediate	Until the late 1990s, LNG was a niche industry operating mostly in the Asia-Pacific region. As the world entered the 21st century, however, global demand for LNG surged in a “perfect storm” created by the industrial and commercial boom around the world that resulted in an ever-growing appetite for all energy resources. Between 2000 and 2008, the LNG industry entered a period of rapid growth with huge increases in supply coming from a growing number of LNG producing countries. However, between 2008 and 2009, the world endured the “worst recession since the Second World War” with demand for all energy dropping significantly. In 2010, as global economies appeared to be emerging from the recession, global natural gas demand resumed its long-term upward trajectory with the IEA projecting that natural gas will be the only fossil fuel for which demand is higher in 2035 than in 2008. While the ultimate wildcard for all natural gas demand is the pace and strength of the global economic recovery, the long term outlook for natural gas and LNG remands strong. In this interactive online course, we will identify LNG demand drivers. We will examine existing and emerging Asia-Pacific and European importers, and discuss the reasons behind the increased LNG demand in Latin America. We will also consider the “natural gas puzzle” faced by the Middle East/North African region. Lastly, we will investigate the market trends causing the U.S. to shift from LNG importer to LNG exporter.
Liquefied Natural Gas (LNG): Global LNG Projects & Players	2	Intermediate	How well versed are you in the Liquefied Natural Gas (LNG) industry? Do you know where and how much is produced? In this interactive online course, we will examine the specifics of the global LNG mega projects in Qatar and Australia, and also discuss new players and projects in countries such as Russia, Peru, Yemen, and Papua New Guinea.

Title	Hours	Level	Description
Liquefied Natural Gas (LNG): Global LNG Supply	1	Intermediate	Although worldwide natural gas resources are sufficient to meet projected increases in demand, almost half of the world's proved natural gas reserves are found in just three countries: Russia, Iran and Qatar. With the world's largest proved natural gas reserves, the Middle East and Africa are expected to account for 72 percent of the increase in natural gas exports by 2030, mainly to supply Europe and North America, although Australia is also emerging as a key LNG exporter and also potentially the US and Canada. Understanding where new LNG supply will come from is one of the critical aspects of understanding the dynamics of the global LNG industry. This interactive online course provides a description and overview of key LNG supply projects around the world, discusses the impact these projects will have on the LNG global market, and identifies some of the challenges that may be faced by new projects.
Liquefied Natural Gas (LNG): Globalization of LNG	1	Intermediate	The growth in LNG trade over the past few years has led many to question whether the LNG markets have become “globalized” and whether LNG could ever trade as a global commodity. This interactive online course discusses the increased globalization of LNG markets and whether LNG could someday trade as a global commodity. The growth of LNG trade will be examined as well as the traditional oil-linked pricing structure for LNG. Recent pricing issues and the growing spot and short-term LNG market will also be discussed.
Liquefied Natural Gas (LNG): Natural Gas & LNG in the 21st Century	1	Intermediate	Policy makers around the globe continue to grapple with issues related to energy security, energy affordability, and an expected increase in demand for all energy sources. At the same time, concerns about global climate change and reducing greenhouse gas emissions remain in focus as the world struggles to define the path to a sustainable energy future. Since natural gas is an abundant, affordable, and clean-burning fuel, many countries around the world are increasingly looking to natural gas to play a key role in powering the future. The prospects for natural gas are so promising that the International Energy Agency (IEA) has suggested that the 21st century could be the “Golden Age of Gas” with demand for natural gas projected to increase by more than 50 percent from 2010 levels and account for over 25 percent of the world's energy supply mix by 2035. This interactive online course explores the growing role of LNG as the “glue” linking global gas markets and identifies the key opportunities and challenges for the LNG industry in the context of a number of competing drivers, including economic development, energy security, and climate change.
Liquefied Natural Gas (LNG): Safety & Environmental Sustainability of LNG	1	Intermediate	Do you have a solution to meet an ever-growing energy demand around the world? Many governments are looking to Liquefied Natural Gas. Not everyone agrees the LNG is the best answer. They claim there are serious safety and environmental impacts that negate the benefits of LNG as a fuel. In this interactive online course, we analyze how LNG can play a role in a sustainable energy future. Specifically, we will focus on the safety issues and environmental issues that accompany the use of LNG.

Title	Hours	Level	Description
Liquefied Natural Gas (LNG): The Impact of Shale Gas on Global Gas Markets	1	Intermediate	The tremendous boom in US shale gas has been a “game changer” all over the world. What do you predict for the future? This online interactive course will discuss shale gas. We will describe the markets as well as importing and exporting liquefied natural gas worldwide. We will focus most on North America.
Liquefied Natural Gas (LNG): The LNG Value Chain	1	Intermediate	The LNG value chain comprises a complex set of activities, all of which are capital intensive and require specialized knowledge in order to execute successfully. This interactive online course discusses the main stages of the LNG value chain - liquefaction, shipping and regasification and identifies the technologies used in these processes. Various LNG project structures and some basics of LNG measurement will be covered as well. The information in this course on the LNG value chain is designed to provide you with the foundation to develop a successful LNG project.
Liquefied Natural Gas (LNG): The Role of Shale Gas in the Golden Age of Gas	1	Intermediate	How much do you know about shale gas? Since the development of unconventional gas resources is different and more challenging than conventional resource development, a basic understanding of the different types of gas reservoirs is helpful in order to appreciate the difficulties involved in extracting natural gas from certain types of reservoirs. In this interactive online course we will discuss the shale gas revolution, it's production, and the technologies used to unlock it from shale.
Lot 21 -- A Dave Gibson Lot and Block Case	2	Intermediate	This 2-hour online course presents ONE interesting land boundary case that is particularly instructional as to the proper application of the principles of boundary location for LOT AND BLOCK parcels. It introduces many of the principles of boundary surveying in a systematic fashion. The problem statement will suggest alternate approaches, principles, and solutions. You must solve the case according to what you think is the proper application of survey principle. You will then compare your solution with DAVE GIBSON’S 'best practices' solution which incorporates the correct application of boundary location principles. Defense for the 'best practices' solution will be given for consideration and further learning by the attendee. If you love to discuss tough boundary location situations, then you will love this case and learn something new. You will also learn other viewpoints for your consideration. The beginner can benefit from the instruction they give as much as the experienced practitioner. This course makes up a portion of the larger 6-hour course titled 'Dave Gibson’s All Star Lot and Block Boundary Cases' also offered on RedVector.com. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Making Humor Work at Work	1	Intermediate	Being able to laugh and have fun in the workplace is a benefit to employees, their supervisors, and their companies. In addition to being just plain old fun, laughter is good for business. Studies show that employees who love to laugh are more creative and more productive. They make better decisions. And they get along better with their co-workers. LearnSmart's Making Humor Work at Work video training course shows workers how to problem-solve, defuse resistance to change, disarm anger, and improve and increase memory through the effective use of humor on the job.

Title	Hours	Level	Description
Making the Flood Zone Determination	3	Fundamental	Mention the words “flood zone determination company” to a floodplain manager, surveyor or engineer involved with floodplain management, and you are likely to hear a variety of questions about how and why flood zone determination companies make the decisions they do. This 3-hour online course reviews the research process used by these determination companies, gives you a hand at making determinations with the same information that map researchers use and provides information on the association that links the companies who do 90 percent of the determinations nationwide. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Management 101: 01-Introduction to Management	1	Intermediate	You will learn about the different responsibilities you have as a manager such as project manager, coach, and leader and the duties you'll have to perform. To be successful, you'll have to establish your authority and make good decisions by following the seven-step decision-making process. Discover how to schedule time for personal development, and to analyze tasks you and your team must complete using the important/urgent matrix. Additionally, you'll also consider how your employees learn, and consider how to respond to drivers and resistors to change. Overall, you will be better equipped as a new manager.
Management 101: 02-Leading and Communicating as a Manager	1	Intermediate	Aside from adapting to a new role with increased responsibilities, new managers must learn to be leaders and explore how to communicate effectively with employees, fellow managers, and senior executives. To train in these areas, you will learn the five primary leadership roles that managers serve in business. Then, you'll go through discussions about leading teams concentrating on how to lead them, about how to know when your team is being effective, and about the different stages of team development. Next, you'll look at effective delegation. You'll also examine Maslow's hierarchy and consider how that relates to an individual's performance and behavior. Finally, you'll study how communication works and principles for chairing a meeting.
Management 101: 03-Making an Impact as a Manager	1	Intermediate	Making an Impact as a Manager is designed to help new managers lead their employees and companies on to bigger and better things. Understand corporate strategy and identify exactly what it does; and find explanations on how to use a SWOT analysis to shape the company's culture. You will discover the importance of doing a STEP analysis to provide a framework for addressing obstacles, as well as go through discussions on the ways to improve operations and the three E's to examine performance. You'll also learn about different methods of conflict resolution, and when to use them. Additionally, you'll walk through the three-step process of a control loop and how to meet the needs of various. Finally, you'll gain 10 tips for improving employee commitment, empowerment, and retention to formulate an excellent team through which you can increase efficiency and impact.

Title	Hours	Level	Description
Management 101: 04-Taking Control as a Manager	1	Intermediate	Taking Control as a Manager is designed to help new managers understand how to relate to fellow managers and other employees and how to deal with the pressures that come with the position. You will look at the seven aspects of management to invest in and different things you can do as a new manager to help win your team over; discuss performance management and using budget as a tool of control; go through the steps you can take to help employees overcome their insecurities and feel more comfortable on the job; and understand the common causes of managerial stress and strategies to overcome them. You will also learn the best practices to maintain control of your department.
Managing a Millennial	0.5	Fundamental	Millennials are the generation born between 1980 and 1994 who have been given a reputation that says they have an inborn distrust of hierarchy and bureaucracy, and are prone to job-hopping. But is this reputation actually true? To manage your Millennial employees, you must understand the group and how they compare to other generations before them. How to manage and motivate what some call the “trophy generation” is a hot topic of conversation and a concern for many businesses and managers. The good news is that millennials are like most people, they aim to have a job where they are valued, make an impact and develop their skills, all while being interested in what they do and being fairly paid for their effort. They want a secure job, but they aren't looking to make one job their life's work. This interactive, online course will discuss how millennials are different from other generations when it comes to their views on careers, success and professional growth. You'll learn coaching and managing tips to help make sure recognition is fair and consistent. You'll also learn how to leverage modern technology to increase engagement, and how to make work challenging, engaging, and fun.
Managing Contractors and Temporary Employees	3.25	Intermediate	In LearnSmart's Managing Contractors and Temporary Employees Video Training, you'll learn how contractors and temps -- a common part of today's business landscape -- offer managers a variety of unique solutions, but also an assortment of unique challenges and questions. Knowing how to incorporate these dedicated professionals into your strategic plan can go a long way toward maximizing their effectiveness, and that of your department.
Managing Generation X	1	Intermediate	You have probably heard the term “Generation X” used in many different arenas. Who are they? What are their characteristics? What impact are they having on the workforce? Understanding the needs of Generation X employees is essential to effectively motivating and communicating with this important workforce. This 1-hour interactive online course examines the different characteristics of Generation X relative to other generations present in the workplace and offers effective strategies to bring out the best in this vital group of workers.
Managing Technical Professionals	2.75	Intermediate	In LearnSmart's Managing Technical Professionals video training, managers are given a thorough overview of how to effectively lead technical professionals. You will cover material on the high-tech business environment to how to establish and maintain credibility. You will find discussions on how to keep technical professionals motivated. And how, when inspired, these dedicated individuals will help support a company’s strategic objectives. But to do this, they need assistance from managers in identifying their career goals. Overall, You'll learn how to assist your organization and the technical professionals you manage in reaching and exceeding their goals.

Title	Hours	Level	Description
Material Science: Properties of Metals	2	Fundamental	This 2-hour interactive online course is designed to assist nuclear facility operating contractors in providing operators, maintenance personnel, and technical staff with the necessary fundamentals training to ensure a basic understanding of the properties of metals. Since almost all processes that take place in a nuclear facility involve the use of specialized metals, a basic knowledge of material science is important because it enables contractor personnel to understand why a material was selected for a certain application within their facility. This knowledge will help personnel more fully understand the impact that their actions may have on the safe and reliable operation of facility components and systems.
Material Science: Structures of Metals	1	Fundamental	This 1-hour online interactive course is designed to assist nuclear facility operating contractors in providing operators, maintenance personnel, and technical staff with the necessary fundamentals training to ensure a basic understanding of the structure and properties of metals. Since almost all processes that take place in a nuclear facility involve the use of specialized metals, a basic knowledge of material science is important because it enables contractor personnel to understand why a material was selected for a certain application within their facility. This knowledge will help personnel more fully understand the impact that their actions may have on the safe and reliable operation of facility components and systems.
Membrane Filtration - Part 1: Process, Products & Materials	1	Advanced	It has taken 35 years to develop sufficiently good and inexpensive membranes to treat a variety of liquids, including waste water. However, there is still a long way to go before it is generally known how to engineer and operate membrane plants. Membrane filters are used in the dairy industry, the pulp and paper industry and for high purity water. This 1-hour online course is the first of several courses on the subject of membrane filtration. The course covers an introduction to the subject, including membrane processes, products, materials and limitations. The course is based on a handbook prepared by one of the leading suppliers of membrane filtration equipment. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Membrane Filtration - Part 2: System Components & Pumps	1	Advanced	It has taken 35 years to develop sufficiently good and inexpensive membranes to treat a variety of liquids, including waste water. However, there is still a long way to go before it is generally known how to engineer and operate membrane plants. Membrane filters are used in the dairy industry, the pulp and paper industry and for high purity water. This 1-hour interactive online course is the second of several courses on the subject of membrane filtration. The course covers system components, including heat exchangers, valves, pressure gauges, flowmeters, tanks and pipes. It also covers pump types and pump selection because without a pump, there is no membrane filtration system. This course is based on a handbook prepared by one of the leading suppliers of membrane filtration equipment. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Membrane Filtration - Part 3: Plant Functions and Pretreatment Methods	1	Advanced	It has taken 35 years to develop sufficiently good and inexpensive membranes to treat a variety of liquids, including wastewater. However, there is still a long way to go before it is generally known how to engineer and operate membrane plants. Membrane filters are used in the dairy industry, the pulp and paper industry and for high-purity water. This course is the third of several courses on the subject of membrane filtration. This 1-hour interactive online course covers single-pass and multi-stage plant design; plant functions including start, stop and flush; and pretreatment methods and strategies. The course is based on a handbook prepared by one of the leading suppliers of membrane filtration equipment. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Membrane Filtration - Part 4: Cleaning, Measuring, Controls and Pumps	1	Advanced	It has taken 35 years to develop sufficiently good and inexpensive membranes to treat a variety of liquids, including wastewater. However, there is still a long way to go before it is generally known how to engineer and operate membrane plants. Membrane filters are used in the dairy industry, the pulp and paper industry and for high-purity water. This course is the fourth in a series of several courses on the subject of membrane filtration. The 1-hour online course covers water supply and drains, chemicals for cleaning, sterilization, measuring devices, common control loops and control of pumps. The course is based on a handbook prepared by one of the leading suppliers of membrane filtration equipment. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Metes & Bounds Surveys: An Essential Review	1	Fundamental	This course reviews the definition of metes and bounds land descriptions, looks at the origin of metes and bounds and discusses known problems with this ancient method of describing land for the purpose of conveyance. It defines where metes and bounds is still practiced in North America. The course compares Public Land Survey System (PLSS) surveys to metes and bounds surveys. It discusses the principles and applications of junior-senior rights as encountered in metes and bounds states. The course also looks at so-called quasi metes and bounds descriptions. The emphasis of this course is on gaining a thorough understanding of metes and bounds—an often poorly understood concept—and its proper application. Pitfalls and liability are discussed, along with strategies to avoid the temptation to rely too heavily on the literal use of bearings and distances in metes and bounds descriptions.
Microgrid Essentials	1	Fundamental	Microgrids aim to reduce costs and increase reliability for the users. They may be the latest buzzword in energy efficiency discussions, but understanding them and where they can be implemented can be daunting. This course aims to enlighten those who own, operate, and benefit from microgrids as well as complexities and challenges.

Title	Hours	Level	Description
Microgrids and the City	1	Intermediate	Is your municipality prepared for a loss of power for days, or even weeks? The use of backup generators is really a short-term solution that only addresses one aspect of loss of power - what about the rest? Wireless communications? Clean water? Gasoline/diesel? Medicines? A holistic approach to energy from up front and ongoing efficiency, minimizing demand, and designing, building, and operating long-term outage solutions is within the grasp of all municipalities. This presentation will examine energy resiliency resources and provide two case-study examples of the application of those resources.
Minimum Standards and Practices for Florida Mold Assessors and Remediators	2	Fundamental	This two-hour recorded presentation is an overview of the Minimum Standards and Practices for Mold Assessors and Mold Remediators as specified in the State of Florida's Rules 61-31.701 and 61-31.702, regulations for Mold Related Services. This course is not limited to mold inspectors and mold remediators. Others that will find this course useful include property owners performing their own mold inspections/mold removal, architects, general contractors and other professionals that find themselves involved in a mold assessment or mold remediation project as part of their normal scope of work, even though they are not holding themselves out for hire as a "mold assessor" or "mold remediator. "Due to the amount of material in Florida's Standards and Practices Rule to be covered in this course, this course assumes you have some basic knowledge of the material.
Minimum Technical Standards for Georgia Land Surveyors	1	Advanced	This 1-hour interactive online course reviews technical standards for property surveys set by the Georgia State Board of Registration for Professional Engineers and Land Surveyors. The technical standards were established to assure the public that proper and adequate surveys, maps, plats and writings are executed in connection with property. This course covers standards involving land titles and location, horizontal and vertical measurements, monuments, coordinates and triangulation, maps and plats, and violation. This course includes a multiple-choice quiz at the end. This course includes a multiple-choice quiz to test your understanding of the material. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Minimum Technical Standards for Louisiana Land Surveyors (2-hours)	2	Advanced	This 2-hour online course reviews the Louisiana Professional Engineering and Land Surveying Board's Minimum Standards for Property Boundary Surveys. The standards were adopted to ensure that surveys are performed in accordance with acceptable procedures. This course covers working definitions, as well as standards concerning classification of surveys, monuments, research and investigation, field procedures, and plats and maps. This course also covers minimum standard detail requirements for ALTA/ACSM land title surveys. This course includes a test at the end of each section. This course is also available in a 4-hour version on RedVector.com. The 4-hour version covers much of the same information and should not be taken in addition to this 2-hour course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Minimum Technical Standards for Louisiana Land Surveyors (4-hours)	4	Advanced	This 4-hour online course reviews the Louisiana Professional Engineering and Land Surveying Board's Minimum Standards for Property Boundary Surveys. The standards were adopted to ensure that surveys are performed in accordance with acceptable procedures. This course covers working definitions, as well as standards concerning classification of surveys, monuments, research and investigation, field procedures, and plats and maps. This course also covers minimum standard detail requirements for ALTA/ACSM land title surveys. This course includes a test at the end of each section. This course is also available in a 2-hour version on RedVector.com. The 2-hour version covers much of the same information and should not be taken in addition to this 4-hour course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Mississippi Standards of Practice for Surveying	1	Fundamental	The Minimum Standards of Land Surveying applied to all survey plats performed in Mississippi from 1991 to June 30, 2005 (Rule 21). On July 1, 2005, new standards became effective, the Standards of Practice (revised Rule 21). A third revision of Rule 21 became effective on August 1, 2015 and required a new checklist. A fourth revision of Rule 21 became effective on April 15, 2017, however the changes were minor and did not require any update to the checklist.
Modern Environmental Laws	3	Fundamental	There are a series of federal laws and Executive Orders since 2005 that have reinforced the federal government's commitment to energy conservation and environmental sustainability, including the Energy Policy Act of 2005 (EPAct) Executive Order 13423, Energy Independence and Security Act of 2007 (EISA), and Executive Order 13514. This webcast will discuss the mandates outlined in these federal laws and executive orders that require NetZero energy for all new federal construction and alterations by 2030 and a reduction of water consumption of 20% by FY 2020. The course also includes new greenhouse gas (GHG) emissions management requirements, expanded water reduction requirements for federal agencies, and address waste diversion, local planning, sustainable buildings, environmental management, and electronics stewardship.
Modern Shale Gas Development	3	Intermediate	The course provides an overview of modern shale gas development, as well as a summary of federal, state, and local regulations applicable to the natural gas production industry, and describes environmental considerations related to shale gas development. It describes the importance of shale gas in meeting the future energy needs of the United States including its role in alternative energy strategies and reducing greenhouse gas (GHG) emissions. The course is intended to serve as a technical summary document, including geologic information on the shale gas basins in the U.S. and the methods of shale gas development. By providing an overview of the regulatory framework and the environmental considerations associated with shale gas development, it will also help facilitate the minimization and mitigation of adverse environmental impacts. By so doing, the course can serve as an instrument to facilitate informed public discussions.

Title	Hours	Level	Description
Mold Basics	1	Fundamental	Mold can grow on virtually any organic material as long as moisture and oxygen are present. There are molds that grow on wood, paper, carpet, food, and insulation. Because mold eats or digests what it is growing on, it can damage a building and its furnishings. If left unchecked, mold eventually can cause structural damage to building materials. This course provides an overview of mold. This course also contains research on mold and provides an overview on some of the potential health effects related to mold exposure.
Mold Contractors' Standard of Care	1	Fundamental	In the absence of a common regulation, the mold remediation industry is expected to follow the “Standard of Care”. Who defines what that is? Where can it be found? Who is the enforcer? This course answers those questions, making clear how each contractor can live up to those expectations with each project while reducing their risk of legal exposure.
Mold Documentation and Report Preparation	1	Fundamental	This course on environmental sampling for mold examines the reasons for testing, the choices available, and the correct methods to collectively provide meaningful and accurate information to the remediation team. A combination of both science and art in the field and lab, you will learn how to sort through those sampling and analysis options and confidently describe why they are the best alternatives for each project.
Mold Remediation	1	Fundamental	Buildings inevitably get wet, both inside and out, and they must be allowed to dry or mold will grow in them. This course provides an overview of mold remediation. We will review guidelines on cleaning and remediation methods for clean water damage. We will also cover some possible situations and useful methods or techniques for remediation.
Mold Remediation Equipment	1	Fundamental	The key to efficiently and effectively completing remediation projects is knowing what equipment to use for the task, how to use it, and take care of it. This course will allow you to quickly learn from our practical experience and broad exposure to select the equipment, power tools, hand tools, and supplies that best fit your team and project list.
Mold Reporting for Mold Assessment and Mold Remediation Projects	3	Fundamental	This course was developed to help assessors and remediators who are trying to comply with requirements in Florida's new law and regulation, specifically rule 61-31.701. Minimum Standards and Practices for Mold Assessors, and Florida's rule 61-31.702. Minimum Standards and Practices for Mold Remediators. These rules require that certain reports are to be written by mold assessors and mold remediators over the course of the assessment and remediation. While the rule specifies certain information that must be in these reports, the rule does not specify the format, or give you examples on how to write these reports. This course was created to fill that gap.
Mold Safety and Health	1	Fundamental	Workplace safety and health for the remediation contractor is much more than just another policy. It's about people and profit. This course will help you understand the unique concerns of this industry and how to turn hassle into habit. From hazard communication and project documentation to practical on-site safety tips, this course will prepare you to lead your team toward a practice of better and safer projects.

Title	Hours	Level	Description
Mold Sampling	1	Fundamental	This course on environmental sampling for mold examines the reasons for testing, the choices available, and the correct methods to collectively provide meaningful and accurate information to the remediation team. A combination of both science and art in the field and lab, you will learn how to sort through those sampling and analysis options and confidently describe why they are the best alternatives for each project.
Montana 4-hour 2017 NEC Changes: Program 1	4	Intermediate	This 4-hour program is formatted in 3 lessons. Each lesson has a test which must be passed with a minimum score of 70% and a survey which must be completed before proceeding to the next lesson. The lessons are listed below: 2017 NEC Changes: A New Process and Five New Articles (RV-11104) 2017 NEC Changes: General Requirements (RV-11105) 2017 NEC Changes: Branch Circuit, Feeder and Services (RV-11106) Lesson 1: The National Fire Protection Association (NFPA) used a new process for considering changes to the 2017 National Electrical Code (NEC). The NEC revision process will be briefly discussed. Additionally, the 2017 NEC will have five new articles covering Fixed Resistance and Electrode Industrial Process Heating Equipment, Large-Scale Photovoltaic (PV) Electric Supply Stations, Energy Storage Systems, Stand-Alone Systems, and Direct Current Microgrids. Lesson 2: The second lesson covers Chapter 1 of the 2017 National Electrical Code (NEC)and contains definitions and general requirements for electrical installations. Several definitions were added, revised or relocated in the 2017 NEC. New and revised requirements for equipment installation, labeling, certification and working space will also be discussed. Lesson 3: In the last lesson chapter 2 is discussed. Chapter 2 of the 2017 National Electrical Code (NEC) contains requirements for wiring of grounded conductors, branch, feeder and service conductors. Several changes were made for branch circuit conductors, feeder conductors and service conductors in Articles 210, 215, and 230, and, as always, they are some of the biggest in the entire Code.
Montana 4-hour 2017 NEC Changes: Program 2	4	Intermediate	This 4-hour program is presented in 4 lessons. Each lesson has a test which must be passed with a minimum score of 70% and a survey which must be completed before proceeding to the next lesson. The lessons are listed below: 2017 NEC Changes: Overcurrent Protection and Grounding & Bonding (RV-11107) 2017 NEC Changes: Enclosures and Boxes (RV-11108) 2017 NEC Changes: Hazardous Locations (RV-11112) 2017 NEC Changes: Special Occupancies (RV-11113) Lesson 1: The first lesson covers Article 240 and 250 of the National Electrical Code (NEC) and the requirements for overcurrent protection and for grounding and bonding. Changes include the addition of arc energy reduction requirements for fuses, additional options for the grounding of separately derived systems, changes to the allowed and prohibited types of grounding electrodes, recognizing new options for intersystem bonding, clarifying the rules for parallel conductors, and others. Lesson 2: Chapter 3 of the NEC contains requirements for wiring methods, enclosures and boxes. Notable changes that include the addition of a new

Title	Hours	Level	Description
			column in Table 312.6(A), new box fill requirements for barriers in boxes, clarifying the rules for cables entering enclosures, and new rules for separable attachment fittings. Lesson 3: Chapter 5 of the 2017 National Electrical Code (NEC) also contains requirements for special occupancies. Notable changes include the relocation of fourteen definitions to Article 100, a surprising new allowance for wiring methods in Class I locations, underground wiring changes for commercial garages and fuel dispensing locations, and new fuel storage classification requirements.
Montana Electrician 4-hour Industry Related Program 1	4	Intermediate	This 4-hour program is presented in 2 lessons. Each lesson has a test which must be passed with a minimum score of 70% and a survey which must be completed before proceeding to the next lesson. The lessons are listed below: Lesson 1: Safety: Electrical Part One - Hazardous Location, Clearances & Safety Practice (RV-10743) Welcome to this 2-hour interactive online course that is the first of a two-part series which introduces you to many workplace situations that require you to work safely with electricity. You'll learn how and why electricity can be dangerous. You'll also learn about various methods used for protection. Safety begins with the careful installation of electrical components by means of approved wiring methods. You should use safety procedures and practices that insulate you from electricity's power anytime you work with or near electrical equipment or components. Specifically, Part One looks at: Fundamentals of electricity & associated hazards Using proper materials and components Equipment grounding Lesson 2: Safety: Electrical Part Two - Hazardous Location, Clearances & Safety Practice (RV-10744) This 2-hour online course is the second of a two-part series which introduces you to many workplace situations that require you to work safely with electricity.
More Than Mold - Health Effects Associated With Mold and Water Damage	3	Fundamental	Mold is probably one of the most common pollutants responsible for building-related illnesses. It's certainly the one with the highest profile. This course is designed to teach you everything practical you might need to know about what is required for mold to grow, how mold spreads, and how mold might affect the health of occupants in a building and the workers that clean mold up. This course will debunk some myths about toxic mold and tell you some things about mold you may not have heard before. It's more than mold. As you will understand after taking this course, health symptoms associated with mold exposure are often due to a complex and poorly understood mixture of agents other than or in addition to mold. This course goes into detail regarding the types of mold that grow indoors and the allergens, irritants and mycotoxins associated with mold growth. This course covers other things to be aware of when trying to develop an exposure assessment or remediation protocol regarding mold and the presence of water damage. This course is helpful for anyone in the mold assessment or mold remediation business and for those suffering in sick buildings or buildings affected with mold or water damage that wants to better understand how damp conditions might be effecting their health.

Title	Hours	Level	Description
			This course is helpful for anyone in the mold assessment or mold remediation business and for those suffering in sick buildings or buildings affected with mold or water damage that wants to better understand how damp conditions might be effecting their health.
Movement Joints in Brick Masonry	1	Fundamental	Brick masonry is one of the most durable exterior building materials in use around the world. It is a preferred product in most climate areas, from subtropical to near arctic, and for buildings from simple residences to monumental international architecture. When Mies van der Rohe proclaimed “God is in the details,” he may very well have been thinking of masonry construction. Masonry's long-term success depends on designers and installers understanding the physics of masonry movement and the time-tested methods of accommodating that movement. This need is particularly important in commercial and institutional buildings due to their more rigid structural construction and the size of their walls. This 1-hour online interactive course discusses a number of different causes of brick movement and the methods that can be used to accommodate this movement.
Multigeneration Management: 01-Workforce Generations	1	Intermediate	At no other time in U.S. history has the workforce been as generationally diverse as it is currently, comprising four distinct age demographics across numerous ethnic and racial lines the Silent Generation, Baby Boomers, Generation X, and Generation Next. Workforce Generations will teach you about generational behavior in the workplace and how you can leverage the talents and skills of all four generational workforces to boost the motivation, morale, and job performance of everyone in your organization. Additionally, this course is the first course in the Workforce Generations series dedicated to understanding each generation represented in the workplace.
Multigeneration Management: 02-Leading Silents and Boomers	1.5	Intermediate	For todays managers, it is essential to understand the unique needs and work habits of the companies elder statesmen the Silent Generation and baby boomers. In this course, you will look at the characteristics of, historical impacts on, and learning styles of both the Silent Generation and baby boomers. You will learn how best to interact with these generations as a means of developing business relationships, the importance of integrating older generations with other employees, and what the future may hold for these knowledgeable and vital contributors to Americas workforce. You will focus on the generational mix between the Silent Generation and the Baby Boomer Generation, as well as the attributes and attitudes that each generation brings into the workplace. This is the second course of the Workforce Generation series, which contains courses dedicated to understanding each generations different behaviors, attitudes, and priorities.
Multigeneration Management: 03-Multi-Generational Leadership (GenX and Next)	1.25	Intermediate	Now that virtually every business has gone digital, we are even more reliant upon those who grew up with the technology, and can use it to do more better and faster than we ever thought imaginable. In this course, you will see how best to work with Generations X and Next, to establish a workplace environment that is conducive to bringing out the best that they have to offer. In many ways, you have access to tomorrows experts today, and that is an opportunity that should not go to waste. This is course 3 in the Workforce Generations series.

Title	Hours	Level	Description
Multigeneration Management: 04-Cross-Generational Teams	1	Intermediate	Cross-generational teams, or those made up of members of different generations, have a unique set of benefits and challenges. Ultimately, as the manager, it is up to you to help ensure that team members are able to work together effectively. In Cross-Generational Teams, you will learn that the characteristics of cross-generational teams parallel the attributes and attitudes of their individual team members: the Silents, Baby Boomers, Gen Xers, and Gen Nexters. In the Workforce Generations series dedicated to understanding each generations different behaviors, attitudes, and priorities; this is the fourth course.
Multigeneration Management: 05-Developing Generations	1	Intermediate	When you understand the basic distinctions of the workforce generations comprising your employed staff, you can begin reaping the benefits by putting that knowledge to good use. It only takes a little conscientious effort to bridge generational gaps before you start experiencing positive results. Developing Generations will show you the benefits of understanding and appreciating the generational mix, as well as the attributes and attitudes that each generation brings into the workplace. In the Workforce Generations series dedicated to understanding each generations different behaviors, attitudes, and priorities; this is the final course.
Multistage Centrifugal Pump Maintenance	1	Advanced	Centrifugal pumps are among the most common types of pumps used in industrial facilities. A centrifugal pump has a rotating impeller that circulates fluid within a casing and directs it to an outlet, or discharge, pipe. A singlestage centrifugal pump has a single impeller and develops relatively low discharge pressures. A multistage centrifugal pump has two or more impellers and develops relatively higher discharge pressures. Although multistage centrifugal pumps are generally larger and more complicated than single-stage pumps, they operate under the same basic principles. This course describes the general operation of multistage centrifugal pumps and explains how to identify problems with these units. The disassembly and reassembly of two types of multistage centrifugal pumps are also covered.
Nanotechnology and Sustainability	1	Intermediate	Are you ready for your world to change due to the contributions of nanotechnology? You can be confident in your understanding of nanotechnology, its impacts, and its relationship to sustainability. You can reap the benefits for yourself and your clients. This webcast gives you the potential that nanotechnology, specifically nano-products, brings to sustainability. Topics include new energy creation and storage opportunities, improved product durability, water quality improvement, pollution mitigation, as well as benefits and potential dangers of nanotechnology.
Natural Gas Systems - Sizing and Design Consideration	1	Intermediate	What is that yellow pipe for? Do you know how to size a natural gas system? Natural gas piping systems are in use in virtually every commercial building. Natural gas is used for comfort heating, cooking, laundry, water heaters, fireplaces, even decorative lighting and fire pits. The proper design and installation of natural gas systems is essential for not only the efficient operation of appliances but also the safety and health of building occupants. This interactive online course will take an in-depth look at a number of considerations that must be addressed before design can begin including: Knowing the applicable codes Knowing the requirements of the natural gas utility supplier Venting requirements Pipe identification and labeling requirements Pipe support requirements

Title	Hours	Level	Description
			Gas meter clearances for windows, air intakes and electrical equipment Sizing methods to use Selection of piping material
NC Electrician 2017 NEC Changes: Appliances, Equipment and Special Equipment	2	Intermediate	This two-part course discusses the 2017 NEC changes regarding appliances and equipment as well as special equipment. Part I 2017 NEC Changes: Appliances and Equipment Chapter 4 of the 2017 National Electrical Code contains requirements for appliances and equipment. Several changes were made in Article 400 for flexible cords and flexible cables, 408 for panelboards, 422 for appliances, 440 for air conditioning and refrigerating equipment, and others. In this interactive, online course, we will discuss some notable changes including new rules for service panelboards, new listing requirements for appliances, new requirements for marking the available fault current, and a new equipment grounding conductor requirement for some air-conditioners. Part II 2017 NEC Changes: Special Equipment Do you keep up with changes to code? In this interactive online course we cover Chapter 6 of the 2017 National Electrical Code (NEC) and the changes it contains for special equipment requirements. Several changes were made in the articles for special equipment, including signs, electric vehicle charging systems and swimming pools. Notable changes include new requirements for signs with retrofitted illumination systems and changes to wiring methods for swimming pools and similar installations.
NC Electrician 2017 NEC Changes: Conductors, Wiring Methods, Receptacles and Switches	2	Intermediate	This two-part course discusses the 2017 NEC changes regarding conductors and wiring methods as well as receptacles and switches. Part I 2017 NEC Changes: Conductors and Wiring Methods Chapter 3 of the 2017 National Electrical Code contains requirements for conductor sizing and wiring methods. Several changes were made in Article 310 and the articles covering cable and raceway wiring methods [320-399]. In this interactive, online course, we will discuss several changes in Chapter 3 including 310.15(A)(2) Selection of Ampacity, 310.15(B)(3)(c) Raceways and Cables Exposed to Sunlight on Rooftops, and 310.15(B)(7) Single-Phase Dwelling Unit and Feeder Service Conductors. Part II 2017 NEC Changes: Receptacles and Switches (RV-11110)How important to you are the changes in the 2017 NEC codes for receptacles and switches? In this interactive online course you will get the updates to Chapter 4 of the 2017 NEC, which contains the rules for equipment, including switches and receptacles. Several changes were made in Article 404 for switches and in 406 for receptacles.
Negativity in the Workplace	1.28	Intermediate	In LearnSmart's Negativity in the Workplace Video Training, you'll learn how negativity serves as an enormous obstacle toward a team's success -- and how this feeling manifests itself in your employees' actions and attitudes. As a supervisor, it is up to you to help prevent negativity from spreading. By dealing with it head-on, and not waiting until it becomes a bigger problem, you put yourself in a better position to avoid a potentially devastating outcome.
NFPA 70E® - 2018 Updates	1	Intermediate	Have you reviewed the recent changes from NFPA 70E® 2018? Electrical safety is essential for all businesses and industries and there are many companies that need assistance and guidance in keeping their workers safe. This interactive online course will cover the most recent updates and changes from NFPA 70E® 2018 as well as offer some education on what we need to be doing to stay compliant from an electrical safety perspective as it relates to

Title	Hours	Level	Description
			these new updates. Upon completion, you will walk away with a much better understanding of what can be done to reach electrical compliance.
North Carolina 2-hour 2017 NEC Changes: A New Process and Five New Articles and General Requirements	2	Intermediate	This 2-hour program is presented in two lessons: Lesson 1: 2017 NEC Changes: A New Process and Five New Articles (RV-11104) The National Fire Protection Association (NFPA) used a new process for considering changes to the 2017 National Electrical Code (NEC). The NEC revision process will be briefly discussed. Additionally, the 2017 NEC will have five new articles covering Fixed Resistance and Electrode Industrial Process Heating Equipment, Large-Scale Photovoltaic (PV) Electric Supply Stations, Energy Storage Systems, Stand-Alone Systems, and Direct Current Microgrids. Lesson 2: 2017 NEC Changes: General Requirements (RV-11105) Chapter 1 of the 2017 National Electrical Code (NEC) contains definitions and general requirements for electrical installations. Several definitions were added, revised or relocated in the 2017 NEC. New and revised requirements for equipment installation, labeling, certification and working space will also be discussed.
North Carolina 2-hour 2017 NEC Changes: Hazardous Locations and Special Occupancies	2	Intermediate	This interactive online course is presented in two lessons: Lesson 1: 2017 NEC Changes: Hazardous Locations (RV-11112) Chapter 5 of the 2017 National Electrical Code (NEC) contains requirements for special occupancies. In this online interactive course, we will review several changes that were made in Articles 500 through 516 for hazardous locations. Notable changes include the relocation of fourteen definitions to Article 100, a surprising new allowance for wiring methods in Class I locations, underground wiring changes for commercial garages and fuel dispensing locations, and new fuel storage classification requirements Lesson 2: 2017 NEC Changes: Special Occupancies (RV-11113) The National Electrical Code (NEC) standards govern the installation of electrical wiring and equipment. Incorrect wiring procedures could result in loss of life and property. Keeping up with the latest changes to the NEC is critical to ensuring safe electrical wiring practices. Chapter 5 of the 2017 National Electrical Code (NEC) contains the requirements for special occupancies. This interactive online course will teach you about several changes that were made in the articles for special occupancies, including health care facilities and RV parks as well as marinas and boatyards. Notable changes include new allowable wiring methods and equipment for health care facilities, revised receptacle requirements at RV parks, and more restrictive ground fault protection and signage requirements at marinas and boatyards.
North Carolina 2-hour 2017 NEC Changes: Overcurrent Protection, Grounding & Bonding, and Enclosure Boxes	2	Intermediate	This interactive online course is presented in two lessons: Lesson 1: 2017 NEC Changes: Overcurrent Protection and Grounding & Bonding (RV-11107) Article 240 and 250 of the National Electrical Code (NEC) contain the requirements for overcurrent protection and for grounding and bonding. Several changes were made in Articles 240 and 250. Notable changes include the addition of arc energy reduction requirements for fuses, more options for the grounding of separately derived systems, changes to the

Title	Hours	Level	Description
			allowed and prohibited types of grounding electrodes, recognizing new options for intersystem bonding, clarifying the rules for parallel conductors, and others. Lesson 2: 2017 NEC Changes: Enclosures and Boxes (RV-11108) Chapter 3 of the 2017 National Electrical Code (NEC) contains requirements for wiring methods, enclosures and boxes. Several changes were made in Articles 312 and 314. In this interactive online course we discuss notable changes that include the addition of a new column in Table 312.6(A), new box fill requirements for barriers in boxes, clarifying the rules for cables entering enclosures, and new rules for separable attachment fittings.
North Carolina Electrician 2020 NEC Changes: 2-hour Program #1	2	Intermediate	This is a two-part course which covers the 2020 NEC Changes. Part One covers the changes in Articles 242 and 250 of the National Electrical Code®. The new article 242 contains the requirements for overvoltage, or surge, protection. Article 250 covers the grounding and bonding of systems and equipment. Notable changes include the creation of Article 242 and deletion of Article 280 and 285, a new section addressing the bonding of equipment on the line side of the service, specific requirements for aluminum conductors, limiting the role of rebar in the grounding electrode system, fixing an error about the sizing of bonding jumpers, reducing the identification requirements for equipment ground conductors, and providing relief for the sizing of equipment grounding conductors in certain applications. Part Two covers the changes in Articles 300, 310, 311, 312, and 314 of the National Electrical Code®. Article 300 contains general requirements for wiring methods. Article 310 covers conductors rated 2,000V and less. New Article 311 covers conductors rated more than 2,000V. Article 312 covers cabinets, cutout boxes, and meter socket enclosures. Article 314 covers outlet, device, pull, and junction boxes; conduit bodies; fittings; and handhole enclosures. Notable changes include clarifying which fittings may be concealed, harmonizing building code and electrical code rules for stair enclosures, a complete rewrite of Article 310, a new article 311, specific rules for cable trays and enclosures used together, and major changes for boxes in the ceilings of dwelling units.
North Carolina Electrician 2020 NEC Changes: 2-hour Program #2	2	Intermediate	This is a two-part course which covers the 2020 NEC Changes. Part One covers the changes in the Chapter 3 wiring method articles of the NEC, namely Articles 320 through 392 (AC cable through cable trays). Notable changes include new rules for cables in thermal insulation, a new article (337) for Type P cable, clarifying the different types of service entrance cables, clarifying the rules for stainless steel raceways and fittings, and addressing cable trays that utilize flanged openings. Part Two of this course covers the changes in Articles 404, 406, 408, and 410 of the National Electrical Code®. Articles 404 and 406 contain the requirements for switches and receptacles. Article 408 covers panelboards, switchboards, and switchgear. Article 410 covers luminaires, lampholders, and lamps. Notable changes include updating the rules for switches, including listing requirements, new prohibited locations for receptacles, expansion of tamper-resistant receptacle requirements, new marking requirements for panelboards, switchboards, and switchgear, and addressing the unique needs of horticultural lighting.

Title	Hours	Level	Description
North Carolina Electrician 2020 NEC Changes: 2-hour Program #3	2	Intermediate	This is a two-part course which covers the 2020 NEC Changes. Part One of this course covers the changes in Articles 411, 422, 424, 430, 440, 445, 450 and 480 of the National Electrical Code®. Article 411 contains the requirements for low voltage lighting. Article 422 covers appliances. Article 424 covers fixed electric space-heating equipment. Article 430 covers motors and their controllers. Article 314 covers air-conditioning and refrigeration equipment. Article 445 contains the requirements for generators. Article 450 covers transformers. Article 480 covers storage batteries. Notable changes include expanding the GFCI requirements for specific appliances, addressing new overload protection options for certain motors, new listing requirements for generators, and added disconnecting means requirements for generators and batteries. Part Two of this course covers the changes in Articles 700, 702, 706, 725, 770 and Chapter 8 of the National Electrical Code®. Article 700 contains the requirements for emergency systems. Article 701 covers optional standby systems. Article 706 covers energy storage systems. Article 725 covers Class 1, 2, and 3 remote-control, signaling, and power-limited circuits. Chapter 8 covers communications systems. Notable changes include clarification of the requirements for transfer equipment, reduced requirements for unit equipment used for emergency lighting, several new requirements for energy storage systems, and the consolidation of several rules in Chapter 8.
North Carolina Mapping Requirements	1	Advanced	In order to safeguard life, health, and property, and to promote the public welfare, the practice of engineering and the practice of land surveying in North Carolina are subject to regulation. This one-hour interactive online course covers North Carolina's mapping requirements, also known as NCSG 47-30. This standard relates to the practice of surveying and mapping. A short quiz follows. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
North Carolina: Home Inspector Program	4	Fundamental	This course is formatted in 2 lessons to meet the North Carolina course requirement. The two lessons include: Lesson 1: Decks, Stairs, Rails for Home Inspectors. This lesson we'll cover the design and construction of the decks, stairs, and rails from the home inspector's point of view. Lesson 2: Green Building Technology for Home Inspectors. This lesson applies to the application of green building technology for house construction and housing components. It will give you a brief overview of how they work and how they are applied including installation and components.
North Carolina: Mold Basics and Health Effects Associated with Mold	4	Fundamental	This course is formatted in 2 lessons to meet the North Carolina course requirement. The two lessons include: Lesson 1: Mold Basics This lesson provides an overview of mold and provides an overview on some of the potential health effects related to mold exposure. Lesson 2: More Than Mold - Health Effects Associated With Mold and Water Damage This lesson is helpful for anyone in the mold assessment or mold remediation business and for those suffering in sick buildings or buildings

Title	Hours	Level	Description
			affected with mold or water damage that wants to better understand how damp conditions might be effecting their health
North Carolina: Mold Sampling, Safety and Health Program	2	Fundamental	This course is formatted in 2 lessons to meet the North Carolina course requirement. The two lessons include: Lesson 1: Mold Sampling This lesson on environmental sampling for mold examines the reasons for testing, the choices available, and the correct methods to collectively provide meaningful and accurate information to the remediation team. Lesson 2: Mold Safety and Health This lesson will help you understand the unique concerns of this industry and how to turn hassle into habit. From hazard communication and project documentation to practical on-site safety tips, this course will prepare you to lead your team toward a practice of better and safer projects.
Oklahoma 6 Hour 2020 NEC Changes Program #1	6	Advanced	This 6-hour course consists of five segments. Segment one reviews various wiring and protection related changes to the 2020 NEC. Included is a review of requirements associated with arc fault protection, receptacle locations, feeders, load calculations, and overcurrent protection. The second segment covers the changes in Articles 242 and 250 of the National Electrical Code. The new article 242 contains the requirements for overvoltage, or surge, protection. Article 250 covers the grounding and bonding of systems and equipment. Articles 300, 310, 311, 312, and 314 of the National Electrical Code are covered in segment 3. Article 300 contains general requirements for wiring methods. Article 310 covers conductors rated 2,000V and less. New Article 311 covers conductors rated more than 2,000V. Article 312 covers cabinets, cutout boxes, and meter socket enclosures. Article 314 covers outlet, device, pull, and junction boxes; conduit bodies; fittings; and handhole enclosures. The fourth segment covers the changes in the Chapter 3 wiring method articles of the NEC, namely Articles 320 through 392 (AC cable through cable trays). Notable changes include new rules for cables in thermal insulation, a new article (337) for Type P cable, clarifying the different types of service entrance cables, clarifying the rules for stainless steel raceways and fittings, and addressing cable trays that utilize flanged openings. The final segment covers the changes in Articles 411, 422, 424, 430, 440, 445, 450 and 480 of the National Electrical Code®. Article 411 contains the requirements for low voltage lighting. Article 422 covers appliances. Article 424 covers fixed electric space-heating equipment. Article 430 covers motors and their controllers. Article 314 covers air-conditioning and refrigeration equipment. Article 445 contains the requirements for generators. Article 450 covers transformers. Article 480 covers storage
Oklahoma 6 Hour 2020 NEC Changes Program #2	6	Advanced	The course consists of five segments. Segment one briefly discusses the 2020 implementation of the National Fire Protection Association® (NFPA®) new revision process for considering changes to the National Electrical Code® (NEC®). You will be introduced to the 2020 NEC new articles covering Overvoltage Protection, Medium Voltage (MV) Cable, and Type P Cable. Segment two walks you through some of the most recent changes concerning this live safety device, as well as review other changes associated with branch

Title	Hours	Level	Description
			circuits. We will address changes to Chapter 2 Wiring and Protection, noting updates to Articles 100, 200, and 210. Articles 404, 406, 408, and 410 of the National Electrical Code are covered in segment three. Articles 404 and 406 contain the requirements for switches and receptacles. Article 408 covers panelboards, switchboards, and switchgear. Article 410 covers luminaires, lampholders, and lamps. Segment four covers the changes in Articles 700, 702, 706, 725, 770 and Chapter 8 of the National Electrical Code®. Article 700 contains the requirements for emergency systems. Article 701 covers optional standby systems. Article 706 covers energy storage systems. Article 725 covers Class 1, 2, and 3 remote-control, signaling, and power-limited circuits. Chapter 8 covers communications systems. The final segment is designed to give you an overview of Article 690 Solar Photovoltaic Systems, and Article 705, Interconnected Electrical Power Production Sources of the 2020 National Electrical Code® (NEC®). Notable changes in the articles for photovoltaic systems and interconnected electric power production sources include changes to PV overcurrent protection, disconnecting means, and language for interconnection of electric power production sources.
OK Roofing Contractor 4-hour Program #2	4	Intermediate	Slips, trips, and falls constitute the majority of general industry accidents, second only to motor vehicle accidents. Part One of this 3-part interactive course details the OSHA standard in a practical format with easy-to-implement solutions to provide a workplace that is free from hazards to better protect the workplace and reduce unnecessary costs. Part Two gives you the information needed to be aware of the hazards related to ladders and best practices for using ladders. Part Three covers an introduction into these materials and products used with them, including fasteners, insulation materials, adhesives, and fabrics. Additional RedVector.com courses are available on design considerations. This course includes a test at the end.
OK Roofing Contractor: Introduction to Sustainable Technologies and Roofing Materials - Concrete Tiles	4	Intermediate	Part One will provide an introduction to the fundamentals of sustainable roof technologies including vegetative roofs, photovoltaic roof applications, cool reflective approaches, recycled or bio-based content roofs, or some combination thereof. Focus of learning includes the benefits and limitations of sustainable roofs and the potential of technological advancements in sustainable roof design. Concrete tile is one of the most durable roofing materials available. Part Two of this online course covers a variety of topics related to concrete tile roofs, such as underlayment requirements, valley metals and fasteners. It also covers some of the advantages of tile roofs including thermal advantages, seismic advantages and resistance to hail.
Operator Responsibilities: Plant Production and Safety	0.5	Intermediate	The primary responsibility of a plant operator is to ensure that a unit functions safely and efficiently. To fulfill that responsibility an operator must be able to perform different types of duties under a variety of operating conditions. In this interactive online course, we'll focus on operator responsibilities related to plant production and we'll examine some safety responsibilities and regulations that

Title	Hours	Level	Description
			apply to various operating conditions. We'll also examine some safety permits and regulations that operators must be familiar with.
Oregon 2017 NEC Changes: A New Process and 5 New Articles and General Requirements	2	Intermediate	This interactive online course is presented in two modules. Lesson 1: 2017 NEC Changes: A New Process and Five New Articles (RV-11104). The National Fire Protection Association (NFPA) used a new process for considering changes to the 2017 National Electrical Code (NEC). The NEC revision process will be briefly discussed. Additionally, the 2017 NEC will have five new articles covering Fixed Resistance and Electrode Industrial Process Heating Equipment, Large-Scale Photovoltaic (PV) Electric Supply Stations, Energy Storage Systems, Stand-Alone Systems, and Direct Current Microgrids. Lesson 2: 2017 NEC Changes: General Requirements (RV-11105). Chapter 1 of the 2017 National Electrical Code (NEC) contains definitions and general requirements for electrical installations. Several definitions were added, revised or relocated in the 2017 NEC. New and revised requirements for equipment installation, labeling, certification and working space will also be discussed.
Oregon 2017 NEC Changes: Hazardous Locations and Special Occupancies	2	Intermediate	This interactive online course is presented in two modules: Lesson 1: 2017 NEC Changes: Hazardous Locations (RV-11112). Chapter 5 of the 2017 National Electrical Code (NEC) contains requirements for special occupancies. In this online interactive course, we will review several changes that were made in Articles 500 through 516 for hazardous locations. Notable changes include the relocation of fourteen definitions to Article 100, a surprising new allowance for wiring methods in Class I locations, underground wiring changes for commercial garages and fuel dispensing locations, and new fuel storage classification requirements. Lesson 2: 2017 NEC Changes: Special Occupancies (RV-11113). The National Electrical Code (NEC) standards govern the installation of electrical wiring and equipment. Incorrect wiring procedures could result in loss of life and property. Keeping up with the latest changes to the NEC is critical to ensuring safe electrical wiring practices. Chapter 5 of the 2017 National Electrical Code (NEC) contains the requirements for special occupancies. This interactive online course will teach you about several changes that were made in the articles for special occupancies, including health care facilities and RV parks as well as marinas and boatyards. Notable changes include new allowable wiring methods and equipment for health care facilities, revised receptacle requirements at RV parks, and more restrictive ground fault protection and signage requirements at marinas and boatyards.
Oregon 2017 NEC Changes: Overcurrent Protection, Grounding & Bonding, and Enclosure Boxes	2	Intermediate	This interactive online course is presented in two modules: Lesson 1: 2017 NEC Changes: Overcurrent Protection and Grounding & Bonding (RV-11107). Article 240 and 250 of the National Electrical Code (NEC) contain the requirements for overcurrent protection and for grounding and bonding. Several changes were made in Articles 240 and 250. Notable changes include the addition of arc energy reduction requirements for fuses, more options for the grounding of separately derived systems, changes to the allowed and prohibited types of grounding electrodes, recognizing new options for intersystem bonding, clarifying the rules for parallel conductors, and others. Lesson 2: 2017 NEC Changes: Enclosures and Boxes (RV-11108). Chapter 3 of the 2017 National Electrical Code (NEC) contains requirements for wiring

Title	Hours	Level	Description
			methods, enclosures and boxes. Several changes were made in Articles 312 and 314. In this interactive online course we discuss notable changes that include the addition of a new column in Table 312.6(A), new box fill requirements for barriers in boxes, clarifying the rules for cables entering enclosures, and new rules for separable attachment fittings.
Oregon Electrician 2017 NEC Changes: Appliances and Equipment - Special Equipment	2	Fundamental	This two-part course discusses the 2017 NEC changes regarding appliances and equipment as well as special equipment. Part I 2017 NEC Changes: Appliances and Equipment Chapter 4 of the 2017 National Electrical Code contains requirements for appliances and equipment. Several changes were made in Article 400 for flexible cords and flexible cables, 408 for panelboards, 422 for appliances, 440 for air conditioning and refrigerating equipment, and others. In this interactive, online course, we will discuss some notable changes including new rules for service panelboards, new listing requirements for appliances, new requirements for marking the available fault current, and a new equipment grounding conductor requirement for some air-conditioners. Part II 2017 NEC Changes: Special Equipment Do you keep up with changes to code? In this interactive online course we cover Chapter 6 of the 2017 National Electrical Code (NEC) and the changes it contains for special equipment requirements. Several changes were made in the articles for special equipment, including signs, electric vehicle charging systems and swimming pools. Notable changes include new requirements for signs with retrofitted illumination systems and changes to wiring methods for swimming pools and similar installations.
Oregon Electrician 2017 NEC Changes: Conductors and Wiring Methods - Receptacles and Switches	2	Fundamental	This two-part course discusses the 2017 NEC changes regarding conductors and wiring methods as well as receptacles and switches. Part I 2017 NEC Changes: Conductors and Wiring Methods. Chapter 3 of the 2017 National Electrical Code contains requirements for conductor sizing and wiring methods. Several changes were made in Article 310 and the articles covering cable and raceway wiring methods [320-399]. In this interactive, online course, we will discuss several changes in Chapter 3 including 310.15(A)(2) Selection of Ampacity, 310.15(B)(3)(c) Raceways and Cables Exposed to Sunlight on Rooftops, and 310.15(B)(7) Single-Phase Dwelling Unit and Feeder Service Conductors. Part II 2017 NEC Changes: Receptacles and Switches (RV-11110). How important to you are the changes in the 2017 NEC codes for receptacles and switches? In this interactive online course you will get the updates to Chapter 4 of the 2017 NEC, which contains the rules for equipment, including switches and receptacles. Several changes were made in Article 404 for switches and in 406 for receptacles.
Oregon Electrician 2020 NEC Changes: 2-hour Program #1	2	Intermediate	This is a two-part course which covers the 2020 NEC Changes. Part One covers the changes in Articles 242 and 250 of the National Electrical Code®. The new article 242 contains the requirements for overvoltage, or surge, protection. Article 250 covers the grounding and bonding of systems and equipment. Notable changes include the creation of Article 242 and deletion of Article 280 and 285, a new section addressing the bonding of equipment on the line side of the service, specific requirements for aluminum conductors, limiting

Title	Hours	Level	Description
			the role of rebar in the grounding electrode system, fixing an error about the sizing of bonding jumpers, reducing the identification requirements for equipment ground conductors, and providing relief for the sizing of equipment grounding conductors in certain applications. Part Two covers the changes in Articles 300, 310, 311, 312, and 314 of the National Electrical Code®. Article 300 contains general requirements for wiring methods. Article 310 covers conductors rated 2,000V and less. New Article 311 covers conductors rated more than 2,000V. Article 312 covers cabinets, cutout boxes, and meter socket enclosures. Article 314 covers outlet, device, pull, and junction boxes; conduit bodies; fittings; and handhole enclosures. Notable changes include clarifying which fittings may be concealed, harmonizing building code and electrical code rules for stair enclosures, a complete rewrite of Article 310, a new article 311, specific rules for cable trays and enclosures used together, and major changes for boxes in the ceilings of dwelling units.
Oregon Electrician 2020 NEC Changes: 2-hour Program #2	2	Intermediate	This is a two-part course which covers the 2020 NEC Changes. Part One covers the changes in the Chapter 3 wiring method articles of the NEC, namely Articles 320 through 392 (AC cable through cable trays). Notable changes include new rules for cables in thermal insulation, a new article (337) for Type P cable, clarifying the different types of service entrance cables, clarifying the rules for stainless steel raceways and fittings, and addressing cable trays that utilize flanged openings. Part Two of this course covers the changes in Articles 404, 406, 408, and 410 of the National Electrical Code®. Articles 404 and 406 contain the requirements for switches and receptacles. Article 408 covers panelboards, switchboards, and switchgear. Article 410 covers luminaires, lampholders, and lamps. Notable changes include updating the rules for switches, including listing requirements, new prohibited locations for receptacles, expansion of tamper-resistant receptacle requirements, new marking requirements for panelboards, switchboards, and switchgear, and addressing the unique needs of horticultural lighting.
Oregon Electrician 2020 NEC Changes: 2-hour Program #3	2	Intermediate	This is a two-part course which covers the 2020 NEC Changes. Part One of this course covers the changes in Articles 411, 422, 424, 430, 440, 445, 450 and 480 of the National Electrical Code®. Article 411 contains the requirements for low voltage lighting. Article 422 covers appliances. Article 424 covers fixed electric space-heating equipment. Article 430 covers motors and their controllers. Article 314 covers air-conditioning and refrigeration equipment. Article 445 contains the requirements for generators. Article 450 covers transformers. Article 480 covers storage batteries. Notable changes include expanding the GFCI requirements for specific appliances, addressing new overload protection options for certain motors, new listing requirements for generators, and added disconnecting means requirements for generators and batteries. Part Two of this course covers the changes in Articles 700, 702, 706, 725, 770 and Chapter 8 of the National Electrical Code®. Article 700 contains the requirements for emergency systems. Article 701 covers optional standby systems. Article 706 covers energy storage systems. Article 725 covers Class 1, 2, and 3 remote-control, signaling, and power-limited circuits. Chapter 8 covers communications systems. Notable changes include clarification of the requirements for transfer equipment, reduced requirements for unit equipment used for emergency lighting, several new requirements for energy storage systems, and the consolidation of several rules in Chapter 8.

Title	Hours	Level	Description
OSHA Pressure Vessel Chemical Cracking	1	Fundamental	A pressure vessel is a storage tank or vessel that has been designed to operate at pressures above 15 p.s.i.g. Recent inspections of pressure vessels have shown that there are a considerable number of cracked and damaged vessels in workplaces. Cracked and damaged vessels can result in leakage or rupture failures. Potential health and safety hazards of leaking vessels include poisonings, suffocations, fires, and explosion hazards. Rupture failures can be much more catastrophic and can cause considerable damage to life and property. The safe design, installation, operation, and maintenance of pressure vessels in accordance with the appropriate codes and standards are essential to worker safety and health. This 1-hour interactive online course is based on Section IV: Chapter 3 of the U.S. Department of Labor Occupational Safety & Health Administration (OSHA) Technical Manual, Pressure Vessel Guidelines. This course focuses on pressure vessels and low-pressure storage tanks used in process, pulp and paper, petroleum refining, and petrochemical industries for water treatment systems of boilers and steam generation. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
OSHA Safety: Drilling	4	Fundamental	The oil and gas industry employs hundreds of thousands of people and is a vital component of the national economy. Worker safety and health are important to this industry and it is essential to be aware of potential hazards present in the workplace. This 4-hour interactive online course discusses OSHA standards and directives that dictate OSHA safety procedures for oil and gas well drilling. This course also identifies common hazards and possible solutions to reduce incidents that could lead to injuries or fatalities.
OSHA Safety: Introduction to Powered Industrial Trucks	1	Fundamental	Approximately 100 fatalities and 36,340 serious injuries in general industry and construction occur annually due to powered industrial truck-related accidents. With such staggering statistics, an employer is morally and legally obligated to take every safety precaution possible when dealing with powered industrial trucks. This 1-hour interactive online course focuses not only on the new OSHA standards for properly training employees to operate industrial trucks, but also the rules and regulations that must be followed to safely operate an array of work-oriented vehicles.
OSHA Underground Construction	4	Intermediate	This interactive online course is a brief review of Government Regulations regarding Underground Construction, Caissons, Cofferdams and Compressed Air as posted under Subpart S, Part One926, from OSHA's Safety and Health Regulations for Construction. The course is broken into sections: Underground Construction Part I Underground Construction Part II Caissons & Cofferdams Compressed Air After reading over the OSHA material, a brief multiple-choice quiz follows each section. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Overcurrent Protection I - Short Circuit Calculations	3	Fundamental	This 3-hour interactive online course reviews the principles of electric systems during faulted conditions and how short circuit currents are calculated in both three-phase and single-phase systems. Since short circuits have such damaging impacts on an electric system, the magnitude of the expected faults currents and their impact on the components in the circuit must be understood. The simplified analytical procedures presented in this course will allow the user to quickly determine the expected level of fault currents in an electric system. These procedures are generally considered adequate for most applications of 600-volts or less. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Overcurrent Protection II - Coordination	3	Advanced	This 3-hour interactive online course reviews the principles of operation and coordination of electric system equipment during faulted conditions. Since short circuits have such damaging impacts on electrical equipment, their impact on the components in the circuit must be understood. The purpose of this course is to explain how the various protective devices react to faulted conditions and how to select the appropriate devices to ensure proper coordination. The theory of operation of protective devices is reviewed as well as how to properly coordinate the devices for selective coordination. Various electrical devices are reviewed including fuses, current limiting fuses, circuit breakers, transformers, conductors, busways, and motor controllers. This course reviews the principles of electrical equipment operation and coordination on an electric system during faulted conditions. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Palm Court - A Dave Gibson Lot and Block Case	2	Intermediate	This 2-hour interactive online course presents ONE interesting land boundary case that is particularly instructional as to the proper application of the principles of boundary location for LOT AND BLOCK parcels. It introduces many of the principles of boundary surveying in a systematic fashion. The problem statement will suggest alternate approaches, principles, and solutions. You must solve the case according to what you think is the proper application of survey principle. You will then compare your solution with DAVE GIBSON'S 'best practices' solution which incorporates the correct application of boundary location principles. Defense for the 'best practices' solution will be given for consideration and further learning by the attendee. If you love to discuss tough boundary location situations, then you will love this case and learn something new. You will also learn other viewpoints for your consideration. The beginner can benefit from the instruction they give as much as the experienced practitioner. This course is a portion of the longer 6-hour course titled 'Dave Gibson's All Star Lot and Block Boundary Cases' also offered on RedVector.com. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Palm Harbor - A Dave Gibson Lot and Block Case	2	Intermediate	This 2-hour interactive online course presents ONE interesting land boundary case that is particularly instructional as to the proper application of the principles of boundary location for LOT AND BLOCK parcels. It introduces many of the principles of boundary surveying in a systematic fashion. The problem statement will suggest alternate approaches, principles, and solutions. You must solve the case according to what you think is the proper application of survey principle. You will then compare your solution with DAVE GIBSON'S 'best practices' solution which incorporates the correct application of boundary location principles. Defense for the 'best practices' solution will be given for consideration and further learning by the attendee. If you love to discuss tough boundary location situations, then you will love this case and learn something new. You will also learn other viewpoints for your consideration. The beginner can benefit from the instruction they give as much as the experienced practitioner. This course is a portion of the larger 6-hour course titled 'Dave Gibson's All Star Lot and Block Boundary Cases' also offered on RedVector.com. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Parking Lot Design: Elements of Design	2	Advanced	This course presents the economic analysis and structural design of parking lots. This course will introduce participants to economic, technical and engineering-related aspects of parking lots. Topics covered include an introduction to the types of parking lot pavements and engineering economic analysis of parking lots and parking lot pavements. This is followed by the structural design of flexible pavement systems and the structural design of Portland cement concrete pavement systems for parking lots. This course will enable practitioners to gain a thorough insight into the fundamentals of the economic analysis and structural design of parking lots. Examples, sample calculations, and practical cases are included throughout this course.
Parking Lot Design: Essentials	2	Intermediate	This training presents the fundamentals of the planning and design of parking facilities. This course will introduce participants to parking users, parking facilities, and common parking terminology. The characteristics of parking users are presented in detail, followed by a discussion on the different types and classifications of parking and parking facilities. A review of parking configurations and the geometry of parking are then presented. The factors that are considered in developing efficient parking layouts are discussed in detail. This course concludes with a discussion on factors relating to parking accommodations and accessible parking spaces for users whose needs are met by regulations outlined in the Americans with Disabilities Act. This course will enable practitioners to gain a better understanding of the analysis and design of parking facilities. Examples and practical cases are included throughout this course.
Parking Lot Design: Parking Studies	2	Intermediate	This course will introduce participants to the fundamental concepts of parking, and the types of parking and parking facilities. The metrics used in the analysis of parking facilities are presented in detail, followed by a discussion on the impacts of shared parking in mixed-use developments. This is followed by a detailed presentation on the prediction and analysis of queues and how they

Title	Hours	Level	Description
			impact parking facilities as well as the adjoining street network. The factors that are considered in developing safe and efficient access to parking facilities are presented in detail. This course concludes with a discussion on the types of parking studies and the specific parking-related problems they are designed to address. This course will enable practitioners to gain a better and thorough understanding of the analysis of parking facilities. Examples and practical cases are included throughout this course.
Past, Present and Future of Building Energy Codes and DOE Appliance Mandates	2	Intermediate	National, state, and even local energy codes have continued to change, requiring increasing energy conservation standards. ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers) Standard 90.1 and International Energy Conservation model energy code have been increasing the energy conservation standard every three years. The Department of Energy (DOE) has mandated energy conservation standards for residential central air conditioners and heat pumps since 1992. These codes mandates have increased over time and will continue to do so. Commercial and residential construction techniques have changed dramatically over the past 20 years. This interactive online course will review the state of current mandates and standards and describe the future requirements of the model energy codes and DOE mandates.
Performance Management: 01-Preventing Performance Problems	1	Intermediate	The most effective method for managing performance problems is preventing them. As a manager, its important that you have the knowledge and tools used to prevent performance problems. To start out You'll concentrate on how to successfully hire people that will contribute to your organization's skill set. Another preventative measure covered is how to establish performance expectations. Communication is a key tool to effectively set performance expectations. You'll also spend time learning about the best ways to give performance feedback. All in all, the topics covered will help you take a closer look at the dynamics of the employee-manager relationship, and gain insight on different ways to avoid performance problems in your staff. Begin your training with the first course of the Problem Performance Management series.
Performance Management: 02-Identifying Performance Problems and Causes	1	Intermediate	Regardless of how effective you are in establishing practices that prevent performance problems, you will at some point run into performance problems. Performance problems will happen. The best response is to immediately take corrective action before the problem escalates. Learn about the different types of performance problems and their causes. Then you will discover the difference between conduct problems and performance problems. Because they are different in nature, the same techniques are not applied to handle conduct problems as those that are used to resolve performance problems. You'll also explore the role that personality plays in performance problems. You'll be able to tackle performance problems head on using the knowledge accumulated here. This is the second course in the Problem Performance Management series.
Performance Management: 03-Feedback and Counseling	1	Intermediate	The most important tool a supervisor can use in addressing performance problems is feedback and counseling. Counseling can be used to get to the root of why employees are unable to meet performance expectations. Another tool that will assist you is a Performance Improvement Plan. Learn how to use these tools to effectively address performance problems and improve workplace performance.

Title	Hours	Level	Description
			You will also go through presentations that will help you hone your managerial, supervisory, coaching, and teaching techniques. You will also concentrate on how to isolate and address problems that are exclusive to individual tasks, sets of tasks, and individuals. Each of these topics makes up the third course of the Problem Performance Management series.
Performance Management: 04-Effectively Disciplining Problem Performance	1	Intermediate	Delve into the final course of the Problem Performance Management series. Disciplining employees is the final phase in addressing performance issues. You will spend studying the elements of an effective disciplinary policy, the role of warnings, and steps taken to formally discipline an employee. You'll also look at the impact of mishandling discipline, particularly the implications it has on the employee-manager relationship. After taking disciplinary action, there are additional options to consider as manager including termination, Discipline Without Punishment, and performance change.
Personal Protective Equipment For Mold Remediation Contractors and Consultants	1	Fundamental	From head to toe, the correct personal protective equipment is no accident. It is a series of informed choices to protect hands, lungs, eyes, clothes, skin, and feet from the potential health effects of the work environment. This course is designed to inform remediation contractors and consultants of the requirements and numerous options available to help their team remain safe and healthy while in a hazardous work environment.
Petroleum and Natural Gas: Mud Logging Sensors and Modern EDR Systems	1	Intermediate	Technology advances with the passage of time. The existence of portable and digital processors provides proof of this advancement in technology. There is a rising demand for enhanced equipment such as geo-pressure control and administration, contributing to the need for an additional degree of drilling machinery monitoring or observing, mud circulation pressure, volume, and flow ratio sensors. This course discusses drilling data monitoring and drilling data analysis, the types of recorders used to monitor, rotary system management and circulating system management, and properties of mud.
Petroleum Drilling Technology	1	Intermediate	This course is designed to convey the oil and gas drilling aspects to the construction professionals. Drilling operations have a sensitive and critical importance as it deals with very high pressure, temperature and extreme natural conditions. Drilling fluids are composed of such chemicals which are dangerous for human health if they are not handled properly. So for a new person in this field, it is essential to have sound theoretical knowledge about it before getting started practically. Its importance in this regard is undeniable. In the oil and gas industry, safety is the first preference. If a person possesses superficial knowledge and understanding of oil and gas, he/she may not be recommended for any field work.
Petroleum Engineering: Liquid Process Piping - General Piping Design	2	Fundamental	Liquid process piping systems are used in many different industries to convey liquids to, from and between pumping, storage and treatment units. Proper design and construction of liquid process piping is necessary to ensure the integrity of a piping system during its service lifetime. This 2-hour interactive online course is the second in a series on general piping design including materials of construction, design pressure, sizing, stress analysis, flange, gaskets, and bolting materials, pipe identification, piping supports, and testing and flushing. Familiarity with the standards and recommendations for design of pressure piping will prepare the designer to make informed decisions throughout the design process.

Title	Hours	Level	Description
Petroleum Engineering: Liquid Process Piping - Introduction and Design Strategy	1	Fundamental	Liquid process piping systems are used in many different industries to convey liquids to, from and between pumping, storage and treatment units. Proper design and construction of liquid process piping is necessary to ensure the integrity of a piping system during its service lifetime. This 1-hour interactive online course is an introduction to the design strategy of liquid process piping including piping design analysis, specifications, drawings, bases of design, loading conditions, and piping layout. Familiarity with the standards and recommendations for design of pressure piping will prepare the designer to make informed decisions throughout the design process.
Petroleum Instrumentation and Measurement	2	Fundamental	This course is designed to convey the basics of oil and gas instrumentation and measurement (primarily downstream) to the construction professionals and learners. Oil and gas operations have a sensitive and critical importance as it deals with very high pressure, temperature and extreme natural conditions. So for a new person in this field, it is essential to have sound theoretical knowledge about measurement instruments and measuring techniques before getting started practically. Its importance in this regard is undeniable. In the oil and gas industry, safety is the first preference. If a person possesses superficial knowledge and understanding of equipment and instruments, he/she may not be recommended for any field work. This course is important to impart basic knowledge of process variables measuring instruments and their measuring techniques which we use in oil and gas downstream. It also conveys the knowledge of process control automation and control valves.
Petroleum Refining Processes and Related Health and Safety Considerations	3	Fundamental	The petroleum refining industry is one of the largest sources of greenhouse gases among all manufacturing sectors in the US economy. Along with the environmental impacts of their operations, refiners face complex regulatory issues involving their products. The nature and chemistry of different major refinery products or by-products and their effects on human health and the surrounding environment makes it imperative for regulatory agencies like the EPA to impose heavy regulations on the petroleum refining industry in comparison to other industries in the US. It is important that the practitioners associated with the petroleum refining industry know about the operations in the refining process, the nature of the major products and by-products from the refining industry, the chemicals used in the process, and the overall impacts of the refining process and products on human health and safety to meet the ever increasing regulatory requirements of this industry. This course aims to fulfill these requirements by discussing the basic chemicals, processes, products and environmental impacts involved in refining petroleum.
Phasors and AC Circuit Analysis	2	Fundamental	This course will build a foundation of skills you can use to become familiar with concepts involved with fault load and load flow studies, along with arc flash analysis in electrical power distribution systems. This course is also an ideal refresher course for electrical engineers preparing for the PE Exam (ECE - Power). Basic concepts covered in this course include: The sinusoidal forcing functions and phasor notation Phasor relationships for resistors, inductors, capacitors and the concept of impedance Analysis of single and poly-phase electric circuits Power in single-phase and balanced three-phase circuits Per-unit quantities and changing the base of per-unit quantities

Title	Hours	Level	Description
Phytotechnologies: Using Plants to Clean Up	3	Fundamental	Phytotechnologies are a set of techniques that make use of plants to achieve environmental goals. This course will highlight the advantages and limitations of phytotechnology—whereby plants uptake and remove contaminants. We will also cover the cost-effective, natural cleanup methods that have a growing role in the following areas: remediation of environmental contaminants, eco-restoration, engineered wetland systems, and biofuels. The course will conclude with a discussion of current scientific case studies.
Pier and Beam Foundation Design	2	Advanced	This course will provide technical information important in the design of pier and beam foundation systems. The design process will focus on how to apply wind and flood loads to these foundation systems using ASCE 7-10, ASCE 24, the Wood Frame Construction Manual and the International Building Codes. The use of the masonry code will also be covered. An example is included that uses elements of each of the important references. Design methods for these foundations are not covered in most structural engineering programs at the university level and have not been found in any practice journals. While the design wind loads are frequently determined for buildings, the distribution of these loads to the foundation and supporting soil and the inclusion of flood loads are important and crucial elements of the design process.
Pipes and Valves: Basic Pipefitting Skills	2	Advanced	Basic Pipefitting Skills is a course designed to familiarize participants with basic techniques for determining piping configurations and dimensions, measuring and cutting pipe, and correctly installing pipe and fittings. After completing this course, participants should be able to identify common piping and fittings, use blueprints and other drawings to determine piping configurations, measure and cut pipe, and install piping and fittings that are plumb, level, and square.
Pipes and Valves: Calculating Offsets	2	Advanced	Calculating Offsets is designed to familiarize participants with methods for calculating dimensions and angles for piping offsets. After completing this course, participants should be able to use right triangles and basic formulas to calculate fitting angles, complementary angles, and Offset, Run, and Travel dimensions for various offsets.
Pipes and Valves: Installing Flanges, Copper, and Plastic Pipe	2	Advanced	Installing Flanges, Copper, and Plastic Pipe is a course designed to familiarize participants with basic techniques for correctly installing steel flanges, copper tubing, and plastic pipe. After completing this course, participants should be able to correctly install various types of steel flanges, calculate fitting take-off for copper fittings, solder copper fittings to copper tubing, calculate fitting take-off for plastic fittings, and join plastic pipe and fittings using the solvent cement method.
Pipes and Valves: Installing Pipe Hangers and Supports	2	Advanced	Installing Pipe Hangers and Supports is a course designed to familiarize participants with basic techniques for correctly installing pipe hangers and supports. After completing this course, participants should be able to explain how pipe hangers and supports handle piping movement, install various types of pipe hangers and beam attachments, install various types of pipe supports, and install wedge-type and drop-in concrete anchors.
Pipes and Valves: Installing Screw and Welded Pipe	2	Advanced	Installing Screw and Welded Pipe is a course designed to familiarize participants with basic techniques for correctly installing screw and welded pipe and fittings. After completing this course, participants should be able to perform job planning and material verification; determine fitting take-off for screw,

Title	Hours	Level	Description
			socket-weld, and butt-weld piping; and correctly assemble screw, socket-weld, and butt-weld piping.
Pipes and Valves: Pipes and Pipe Fittings	2	Advanced	This course is designed to familiarize participants with common types of pipes, pipe joints, and pipe fittings, and to provide general guidelines for working with pipes. After completing this course, participants should be able to identify common materials used to make pipes, and explain how pipes are identified and sized. They should also be able to identify common types of pipe joints and pipe fittings, and describe procedures for calculating pipe lengths, cutting pipe, and threading pipe.
Pipes and Valves: Special Calculations	2	Advanced	Special Calculations is designed to familiarize participants with methods for calculating parallel offsets, areas, volumes, and liquid pressures. After completing this course, participants should be able to use right triangles and basic formulas to calculate parallel offsets using the equal spread method and the unequal spread method. They should also be able to use formulas to calculate areas, volumes, and liquid pressures.
Pipes and Valves: Valve Maintenance	2	Advanced	This course is designed to familiarize participants with the basic procedures for performing routine maintenance on a valve and for performing a valve overhaul. After completing this course, participants should be able to describe tasks involved in preparing for valve maintenance and explain how to adjust and replace valve packing. They should also be able to describe how to disassemble a valve, inspect its parts, perform maintenance on it, and reassemble it.
Pipes and Valves: Valve Types and Operation	2	Advanced	This course is designed to familiarize participants with the basic components and operation of valves commonly found in industrial sites. After completing this course, participants should be able to explain how valves can be classified, describe the parts and operation of various types of valves, and describe how valves can be operated.
Plan Review Techniques for Infrastructure Projects	2	Intermediate	Infrastructure projects take an immense amount of planning - drawings and specifications, design and construction teams, and communication. You can be the effective coordinator of a successful project if you know the right plan review techniques and use them expertly. This interactive online course teaches you those techniques and gives you the checklists you can start using right away to achieve your goals in completing an infrastructure project you can be proud of.
Plumbing Using PVC Pipe	1	Fundamental	There are numerous different types of PVC pipe, some of which are acceptable for use inside buildings and some which are acceptable only outside buildings. PVC pipe is common for drains and vent pipes, but less common for pressure pipe within buildings. This course will discuss the various types of PVC pipes that are available and where they may be used, provide information on proper installation procedures, and discuss the fittings that can be used to connect PVC to other pipe materials.

Title	Hours	Level	Description
Positive Displacement Pump Maintenance Basics	1	Advanced	The purpose of this course is to reinforce understanding of positive displacement pumps. These pumps are used in industrial facilities to move many different types of fluids. To keep these pumps working properly, maintenance personnel need to know how they work and how to perform maintenance on them. At the completion of this course, participants will be able to identify the types and operation of positive displacement pumps, describe overhaul preparations, and perform cleaning, inspection, and assembly procedures.
Post Disaster Recovery and Reconstruction	2	Intermediate	Post-disaster redevelopment is essential to create (or recreate) a disaster-resilient community. In this Webcast, we will provide you with disaster recovery information. You will get strategies for economic rebound, housing recovery, health and social services, infrastructure, land use, and environmental restoration.
Power of an Energy Audit	2	Fundamental	An energy audit is often the first step in energy consumption reduction. This interactive webcast will introduce green building professionals to the importance of conducting an energy audit to assess energy use and measures to implement for energy conservation. We will discuss the four levels of analysis, including benchmarking, walk-through audit, detailed/general energy audit, and investment-grade audit. This course will also focus on how auditing can help identify cost-saving opportunities and prioritize improvements. An energy audit is an inexpensive yet powerful way to reduce costs and improve performance. Energy audits also are an important step to help meet greenhouse gas reduction goals. Finally, we will focus on the competitive positioning of energy auditing by touting successes and attracting and engaging more customers.
Power Transmission & Distribution - Basic Equipment and Terminology	1	Fundamental	This course covers basic information regarding the transmission and distribution of electric power, including components of transmission lines, transformers and switchgear, substations and electric power distribution systems. General information related to electric service loads is covered, as well as operational aspects and costs involved in transmitting and distributing electric power. The future of electric power transmission is also discussed, providing some thoughts on what trends may be seen in coming years. Note: This course offers subtitles in Brazilian Portuguese and Spanish.
Power Transmission and Distribution	1	Fundamental	This webcast covers transmission and distribution of electric power, including components of transmission lines, transformers, switchgear, substations, and electric power distribution systems. General information related to electric service loads is covered, as well as operational aspects and costs involved in transmitting and distributing electric power.
Prestressed and Reinforced Concrete: Choosing the Best Method for Your Project	1	Intermediate	Reinforced? Prestressed? Post-Tensioned? Some precast concrete is prestressed and reinforced, but not all reinforced concrete is prestressed. Which construction method can I perform at the job site? Which one will need to be manufactured and delivered to my project? Confused? Let's clear up the differences between prestressed and reinforced concrete and how the two can work in tandem. All concrete looks pretty much the same on the outside, but inside, concrete contains steel that has been designed using years of extensive engineering and construction experience. In this interactive, online course, we will peer inside and see what reinforcing steel and prestressing strand can do

Title	Hours	Level	Description
			for a structure. This course will focus on reinforced concrete and stressed (pre and post) concrete. Each type will be covered in depth.
Preventing Mold Growth	1	Fundamental	Preventing fungal growth begins with the building design and follows all the way through responding to a water intrusion event. This course will provide some basic science to help understand how mold happens. It will also provide examples of recommended building materials, their assembly, and building systems that both invite and avert mold growth.
Pricing as a Professional	2	Intermediate	This will not be a course in accounting. It will not rely on technical terms. It will be a common-sensical look at pricing with a keen eye to being practical and usable, using experienced-based methods. This 2-hour interactive online course provides an in-depth look at the elements of pricing that you as a contractor must consider if you are to operate on a successful professional level. Though the more prevalent common standard pricing considerations will be touched upon, the primary thrust of this course is to also consider the full panoply of pricing factors, including subjective and judgemental elements, that you must be aware of and use, if you are to be successful. This is a practical look, from an experienced contractors point of view, of often overlooked, but nevertheless important elements, that strongly influence your bottom line, and, perhaps, your ultimate success as a contractor. This course is written from the point of view of a contractor, but it contains information useful to many different professionals who deal with pricing issues. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Principles of At-Risk Construction Management	1	Fundamental	What is CMAR? How should you choose the right construction manager for your project? This interactive online course will provide an overview of at-risk Construction Management (sometimes called CMAR and CM/GC). After reviewing how this system was created in the early 1980s, we will examine some of the key structural, procurement and contractual components of the process. We will also review some of the unique legal issues associated with this process (e.g., liability for value engineering, subcontractor non-performance).
Principles of Design-Build	1	Fundamental	This one-hour course will provide an overview of design-build. It will begin with an historical perspective, and then move into the key structural, procurement and contractual components of the process. Possible major legal issues will be presented as well.
Principles of Professional Construction Management	1	Fundamental	What is professional construction management? What services does a professional construction manager perform? This interactive online course will provide an overview of professional construction management, including program management. It will examine the structural, procurement and contractual components of the process, as well as some of the unique legal issues that are associated with this process (e.g., liability for safety, schedule and cost overruns to trade contractors).

Title	Hours	Level	Description
Priority of Calls in Boundary Resolution	1	Intermediate	Retracement surveyors encounter conflicting boundary evidence in the field almost every day, and it is the task of the surveyor to resolve these inconsistencies. Following in the footsteps of previous surveyors is challenging. This course teaches surveyors how the long-established priority of calls is used to weigh boundary evidence. You'll learn how certain types of evidence is considered more reliable--and legally defendable--than others. You will be presented with court decisions governing boundary resolution, and then review case studies that reflect real-world situations.
Project Management Essentials	2	Fundamental	Are you a successful project manager? Do you know the criteria to prove it? This interactive online Project Management Essentials course provides you an in-depth look at the critical skills and capabilities for Project Management success. We begin by delving into the evolution and history of modern Project Management and how the foundation was established for today's key project elements and life cycle phases. We include the human element of Project Management and how to plan, manage, and control the project and resources to exceed customer expectations.
Project Risk Management	2	Intermediate	This 2-hour interactive online course introduces the concept and principles of project risk management - risk identification, risk quantification, risk response development and risk control. It is prepared specifically for architects, engineers and contractors. Many real-life examples are provided to demonstrate the process and importance of risk identification and quantification - the most important steps of risk management. There is a multiple-choice quiz included at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Project Team Management	1	Intermediate	This 1-hour online course introduces the concept and principles of project team management - the concept of team, conflict resolution, team building cycle and management's roles. It is prepared specifically for architects, engineers and contractors. Team-building is one of the key elements for the high productivity of any organization. There is a test included at the end of this course.Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Protecting and Restoring Habitat in Urban Ecosystems	3	Intermediate	Ecosystems provide humanity with the products and services needed to sustain a high quality of life on this planet. Unfortunately, urban development and mechanical disturbance destroy or damage over 400 square miles of ecosystems every year in the United States alone (Johnson, Brown, Loveland, & Theobald, 2005). However, with thoughtful preservation and restoration, living systems can be integrated into our built environments and can continue to provide services such as clean air, clean water, climate regulation, wildlife habitat, and improved human health and well-being. This interactive online course will help you understand how the design and management of habitat in urban areas affects the services it provides to the community. It will discuss the processes that drive the development of ecosystems and how these processes can be used to restore and manage nature in urban settings. The course will cover strategies for habitat mitigation. It will also discuss the components of restoration and Integrated Pest

Title	Hours	Level	Description
			Management plans. Lastly, the course will describe strategies for achieving community understanding and support for urban habitat conservation.
Protecting People Against Terrorist Attacks: Chemical, Biological, and Radiological (CBR) Threat Protection	1	Intermediate	As contaminated air infiltrates a safe room, the level of protection to the occupants diminishes which can result in injury or death. This interactive online course teaches you how to add CBR protection capability to a shelter or safe room. You will learn about the design of shelters and how they are used to protect against chemical, biological, and radiological, and explosive (CBRE) attacks. Fallout shelters that are designed to protect against the effects of a nuclear weapon attack are not addressed in this course. This course will guide you through the process of designing a shelter to protect against CBRE attacks. The intent of this course is not to mandate the construction of shelters for CBRE events, but rather to provide design guidance for professionals who wish to design and build such shelters.
Protecting People Against Terrorist Attacks: Design Considerations for Safe Rooms and Shelters	1	Fundamental	The fact that data for manmade threats are scarce and that the magnitude and recurrence of terrorist attacks are unpredictable makes the determination of a particular threat for any specific site or building difficult and largely subjective. This interactive online course teaches you about potential manmade threats and design considerations for shelters. You will learn about explosive threats and chemical, biological, and radiological (CBR) attacks and the level of protection needed for shelters to protect people against terrorist attacks.
Protecting People Against Terrorist Attacks: Structural Design Criteria	2	Intermediate	There is no way to effectively know the size of an explosive threat. Different types of explosive materials are classified as High Energy and Low Energy and these different classifications greatly influence the damage potential of a detonation. This interactive online course will teach you about explosive threat parameters and measures needed to protect shelters from blast effects. You will learn about structural systems and building envelope elements for new and existing shelters. You will also learn about protective design measures for the defined building types and design guidance and retrofit issues. The purpose of this course is to offer comprehensive information on how to improve the resistance of shelters when exposed to blast events.
Protecting Water Systems Through Backflow Prevention	1	Intermediate	Property owners may turn to Registered Architects or Professional Engineers to determine whether or not a property requires a backflow prevention device. According to the EPA there are approximately 155,000 public water systems in the United States. It is the responsibility of these public water utilities to provide safe drinking water to over 90 percent of the United States. Water main breaks and firefighting efforts among other events can cause a condition called backsiphonage or backflow. This creates a condition where non-potable water from a building can contaminate the public water supply system. Anyone associated with the design, construction, maintenance of water systems needs to be aware of the potential for backflow and understand how to prevent it. In this interactive, online course, we will discuss the difference between back pressure and back siphoning, and the conditions where each occur. We will learn how to select the appropriate backflow device given the potential hazard and describe how backflow devices operate. Upon completing this course you will be able to recognize examples of potential backflow situations and how to prevent backsiphonage and/or backpressure. You will also be able to differentiate types of backflow preventers and the importance of regular testing and maintenance.

Title	Hours	Level	Description
Protecting Your Communications System from Transients and Surges	1	Intermediate	Lightning and power surges cause millions of dollars in damage each year. In this webcast you will learn how to use surge protection and proper grounding methods to improve reliability of communications network and reduce damage to equipment.
Protecting Your Team Against Workplace Violence	1	Fundamental	Workplace violence can occur at or outside the workplace and can range from threats and verbal abuse to physical assaults and homicide, one of the leading causes of job-related deaths. It can occur at any time and be perpetrated by anyone you may come in contact with at work. However it manifests itself, workplace violence is a growing concern for employers and employees nationwide. This interactive, online course will present the factors that contribute to violence in the workplace and how to spot problem behavior and prevent violent incidents.
Pumping Stations - Pumps, Motors and Electrical Systems	2	Advanced	Pumping stations are necessary where large amounts of water must be transported through a piped distribution system. Knowing the characteristics of piping and valve materials will allow you to optimize the hydraulic design of your pumping stations. This interactive online course will teach you about the different water distribution station pump classifications. You will also learn about pump designs and motor types. Additionally, you will learn about the electrical systems of pumping stations.
Pumps: Fundamentals of Centrifugal Types	2	Advanced	This course is designed to introduce participants to the fundamental operating principles of single-stage and multistage centrifugal pumps. After completing this course, participants should be able to describe the general operating principles of a centrifugal pump. Specifically, they should be able to describe the differences between radial, axial, and mixed flow pumps; describe the basic operation of a vertically mounted pump; and describe the basic operation of a multistage pump. Participants should also be able to describe various types of impellers used in centrifugal pumps and to describe the purpose and the basic operation of a mechanical seal flush system.
Pumps: Multistage Centrifugal	2	Advanced	This course is designed to familiarize participants with the basic operation, disassembly, and reassembly of a typical multistage centrifugal pump. After completing this course, participants should be able to describe the components and operation of a multistage centrifugal pump and explain how this kind of pump can be disassembled and reassembled when necessary.
Pumps: Operation of Centrifugal Types	2	Advanced	This course is designed to familiarize participants with the basic operation of centrifugal pumps. After completing this course, participants should be able to describe techniques for priming a centrifugal pump and explain general procedures for starting and shutting down a pump. They should also be able to describe some general checks that may be made on an operating pump and describe operator concerns related to air binding and vapor binding in a centrifugal pump.
Pumps: Performance and Inspection	2	Advanced	This course is designed to introduce participants to factors that affect the performance of pumps and some of the symptoms of improper pump operation. After completing this course, participants should be able to identify and explain the relationship between various factors that affect pump performance, and they should be able to explain how pump performance can be evaluated. They should also be able to identify symptoms of some common pump problems and

Title	Hours	Level	Description
			explain how to check a pump for signs of problems such as leaks and cavitations.
Pumps: Reciprocating Positive Displacement Types	2	Advanced	This course is designed to familiarize participants with the basic parts and operation of several types of reciprocating positive displacement pumps. After completing this course, participants should be able to describe the general operation of the following types of pumps: single-acting piston pumps, single-acting plunger pumps, double-acting piston pumps, duplex piston pumps, motor-driven diaphragm pumps, and air-operated diaphragm pumps. Participants should also be able to describe a general procedure for starting up and shutting down a typical reciprocating pump, and they should be able to explain the function and operation of a relief valve.
Pumps: Rotary Positive Displacement Types	2	Advanced	This course is designed to familiarize participants with the basic parts and operation of several types of rotary positive displacement pumps. After completing this course, participants should be able to describe the general operation of the following types of pumps: screw pumps, gear pumps, lobe pumps, vane pumps, and tubing pumps. They should also be able to describe a general procedure for starting up and shutting down a typical rotary pump, and they should be able to explain the function and operation of a relief valve.
PVC Pipe - Which type should I use?	1	Advanced	Poly vinyl chloride (PVC) pipe is used for many applications, including water lines, sewer lines, irrigation, and storm drainage. There are many different types and classes of PVC pipe, made for many different applications. There are many more similarities in PVC than there are differences, but it is important for engineers and architects that use these products to understand the differences. This 1-hour interactive online course is intended to shine some light on the use of products such as SDR 35, C 900 and Schedule 40 pipe. This course is not intended to be an endorsement of PVC for all applications but rather to provide the student with better information upon which to base a design decision. Some of the tables used in this course must be displayed using Microsoft Word. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Reducing Risk: Preparing to be an Expert Witness in a Deposition and Trial	1	Fundamental	In the litigious atmosphere of today, professionals are often asked to be expert witnesses in civil suits, or to simply provide services for mediations and forensic investigations. In this interactive online course, you will learn what to expect when asked to participate in legal processes or forensic investigations, how to prepare, and how to minimize your business' exposure to possible legal actions. We will discuss ethical conduct and the role of the expert witness as a non-advocate. We'll explore what is expected behavior throughout the process, how to handle oneself under pressure, and how to prepare for mediations, deposition and trial. Additionally, this course will outline how to conduct yourself as an expert witness during depositions and trials representing yourself as a competent witness who is in control, reputable, believable, and most of all, an unbiased knowledgeable witness.

Title	Hours	Level	Description
Rehabilitation of Water Distribution Systems: Current Technologies	1	Advanced	The average age of water distribution systems within the U.S. is between 50 to 100 years. This is right at the design life cycle of many systems, thus local water agencies are investing more and more in the rehabilitation of existing water distribution systems instead of the construction of new systems. This interactive online course will go through the most current technologies to rehabilitate water distribution systems. At the end of this course Contractors, Engineers, Water System Operators and Architects will be able to identify technologies that are used to repair, rehabilitate and replace aging water distribution systems.
Rehabilitation of Water Distribution Systems: Designing Renewal Projects	1	Advanced	The average age of water distribution systems within the U.S. is between 50 to 100 years. This is right at the design life cycle of many systems, thus local water agencies are investing more and more in the rehabilitation of existing water distribution systems instead of the construction of new systems. This interactive online course will go through some of the key technical guidelines and standards for designing rehabilitation projects within the US. Some of these guidelines include AWWA, ANSI, ASTM and ASME standards. At the end of this course Contractors, Engineers, Water System Operators and Architects will be able to determine applicable design and QA/QC guidelines for common water distribution rehabilitation methods.
Rehabilitation of Water Distribution Systems: Selecting Rehab Methods	1	Advanced	The average age of water distribution systems within the U.S. is between 50 to 100 years. This is right at the design life cycle of many systems, thus local water agencies are investing more and more in the rehabilitation of existing water distribution systems instead of the construction of new systems. This interactive online course will go through the overall items that need to be considered when selecting a method to rehabilitate a water distribution system. At the end of this course Contractors, Engineers, Water System Operators and Architects will be able to select applicable technologies to be used to repair, rehabilitate and replace aging water distribution systems.
Reinforced Concrete Tilt-Up Panels	1	Intermediate	The term tilt-up panel is almost self-descriptive. This method of construction has been utilized through history, but only relatively recently have the advantages become economically viable. A combination of labor savings, speed of construction, and good finish quality, has made tilt-up panels more competitive. The following course will explain the tilt-up panel method of construction, itemize some of the current advantages of this construction method, and give an example of the design of a typical warehouse-type building constructed of tilt-up walls.
Reinforced Masonry Design	2	Intermediate	What is reinforced masonry? Reinforced masonry is often used for building foundations and exterior walls, for resistance to earthquake and wind loads, and where compressive resistance to loads is required. Where unreinforced masonry has some limited uses, reinforced masonry can be used in most building applications under most loading conditions. Masonry design is rarely taught in college design courses so practitioners must research how to use this material in design. This interactive online course will focus on reinforced masonry design and how the use of this design method is employed everyday for buildings, foundations, and retaining walls. This course is intended to close the knowledge gap and provide a background in the use of this material for design.

Title	Hours	Level	Description
Reliability Engineering Essentials	1	Advanced	This course is intended to present the essentials of reliability and a practical approach to its calculation and improvement. Participants will be able to apply basic concepts related to reliability to work on system improvements, calculate maintenance (preventive and predictive), and define warranty periods. We will be looking not only at the definition of reliability, but also other related measurements and systems configurations, as they are found in the real world.
Report Writing for Home Inspectors	1	Fundamental	Report writing is an essential element of the home inspection process and it is important that these reports accurately communicate the findings of a home inspection. A well-written report will result in satisfied customers, more referrals, and most importantly, will help keep the inspector out of court and ward off any potential lawsuits. This course will teach home inspectors how to effectively write and communicate the findings of a home inspection in a written report. This course will help the home inspector in choosing the best report writing format, key words to use in the report, and how to protect the inspector from possible legal action.
Residential Green Building: Design, Construction, and Accreditation	4	Fundamental	Green Building is rapidly becoming mainstream, mostly due to increasing environmental concerns, a desire to develop healthier structures, and increasing regulation from the permitting authorities. This 4-hour interactive online course starts by debunking many green building myths and then moves into a comprehensive discussion of its elements. The course takes a close look at green building in relation to many aspects of design and construction including issues dealing with sites, landscaping, foundations, frames, exterior finishes, plumbing, appliances, insulation, ventilation, windows, finishes, and flooring. The course wraps up with information on testing, certification, and accreditation, including a look at the LEED program and the NAHB Green Home Certification Program. ATTN: This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying 4-hours of credit toward the required continuing education.
Residential Green Remodeling: Design, Construction, and Certification	4	Fundamental	This course will introduce residential construction professionals to green building and renovation strategies, practices, and materials. In addition to its positive environmental impacts, green building ultimately results in a healthier and a more affordable home for clients. If a program is implemented effectively, it's also good for the residential remodeler's financial bottom line. The green building and remodeling market continues to grow, providing great opportunities for building professionals to develop and expand their businesses. This course provides a comprehensive discussion of the unique aspects of green remodeling with a focus on building evaluation, deconstruction, handling of hazardous waste, materials recycling and reuse, energy conservation, indoor air quality, use of environmentally safe products, design principles, system planning and construction best practices. The course also provides an overview of green building certification programs, green building professional accreditation programs, and incentives available from government agencies and utilities.

Title	Hours	Level	Description
			ATTN: This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying 4-hours of credit toward the required continuing education.
Residential Safety Essentials	1	Fundamental	As you may or may not know, the top four causes of construction fatalities are Falls, Struck-By, Caught-in/between and Electrocutions. These hazards are ever present in the residential home building process and you are not exempt from these many dangers. This interactive online course will cover various safety topics and will explore how the lack of adherence to these standards are risk factors to the top four construction hazards. Please note that this course is for the express purpose of training workers on residential construction sites only.
Retaining Wall Design - Part 1	2	Intermediate	This 2-hour online course is Part One of a two-part course for analyzing and designing cantilever-type retaining wall structures. The purpose of these walls is to hold back or support soil banks, and other storage materials such as coal, gravel, etc. at a higher elevation on one side of the wall than the other side. Part One involves the description of retaining walls, a review of the soil mechanics necessary to calculate the forces acting on the wall, and resisting the movement of this structure. Further, this course describes the procedure for evaluating the stability of the retaining wall. The body of this course is presented in a word document format which you must download. This course includes a multiple-choice test at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Retaining Wall Design - Part 2	2	Intermediate	This 2-hour online course is Part Two of a two-part series on analyzing and designing cantilever-type retaining wall structures. The purpose of these walls is to hold back or support soil banks, and other storage materials such as coal, gravel, etc. at a higher elevation on one side of the wall than the other side. Part One described the process of determining the stability of this type of structure, while this part is involved with determining the internal forces and stresses of the cantilever retaining structure and selecting sizes and spacing of steel reinforcing and dimensions of a reinforced concrete cantilever retaining wall. Appropriate sections and equations of the American Concrete Institute's ACI318 (latest edition) will be referenced in the design process. Due to the extensive amount of math used in this course, it is presented in a Word document format which must be downloaded by the student. There is a test at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Rewarding Peak Performers	1.5	Intermediate	Successful companies are built upon good ideas, and the people who turn those ideas into products and processes. In order for those companies to remain successful, they must make sure that they retain the people who helped them rise to the top of their industry. Rewarding Peak Performers gives managers the tools they need to not only keep their own talented people, but to reach out and find others who can add to the business's bottom line.

Title	Hours	Level	Description
Rigging: Basic Lifting	2	Intermediate	This course is designed to familiarize participants with the proper use of devices designed to lift and move loads. After completing this course, participants should be able to describe how to use a simple block and tackle, a compound block and tackle, a hoist, a jack, a winch, a turnbuckle, and a load leveler. They should also be able to describe the effects of sling angles and hitch patterns on a slings lifting ability.
Rigging: Ladders and Scaffolds	2	Intermediate	This course is designed to familiarize participants with various types of ladders and scaffolds that enable personnel to work at elevated heights. After completing this course, participants should be able to describe how to select the proper ladder for a job and then use the ladder safely. They should also be able to describe general safety precautions associated with using scaffolds and the basic operation and use of various types of fixed scaffolds and powered scaffolds.
Riprap Design	3	Advanced	This 3-hour interactive online course provides procedures for the design of riprap revetments to be used as channel bank protection and channel linings on larger streams and rivers (i.e., having design discharges generally greater than 50 cfs). Procedures are also presented for riprap protection at bridge piers and abutments. The emphasis in this course is on the design of rock riprap revetments. Other portions of the course cover the recognition of erosion potential, and erosion mechanisms, and riprap failure modes. It includes several design examples of use of the procedures. The course is based on current guidance from the Federal Highway Administration. It will be necessary to download the pdf file from the FHWA website to view some of the figures and charts referenced in this course, and to view the photographs. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Rivers vs. Lozeau - A Dave Gibson Public Lands - Related Case	2	Intermediate	This 2-hour online course presents ONE interesting land boundary case that is particularly instructional as to the proper application of the principles of boundary location for PUBLIC LANDS-RELATED parcels. It introduces many of the principles of boundary surveying in a systematic fashion. The problem statement will suggest alternate approaches, principles, and solutions. You must solve the case according to what you think is the proper application of survey principle. You will then compare your solution with DAVE GIBSON'S 'best practices' solution which incorporates the correct application of boundary location principles. Defense for the 'best practices' solution will be given for consideration and further learning by the attendee. If you love to discuss tough boundary location situations, then you will love this case and learn something new. You will also learn other viewpoints for your consideration. The beginner can benefit from the instruction they give as much as the experienced practitioner. This course is a portion of the larger 6-hour course titled 'Dave Gibson's All Star Public Lands-Related Cases' also offered on RedVector.com. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Roofing - Flexible Membrane Edge Design	2	Advanced	Flexible membrane roofing materials are one of the more common types of roofing materials and probably the most common type for commercial structures. One of the important design considerations for a roof is the wind loading and the most critical area for wind loading is the edge of the roofing system. This 2-hour interactive online course provides a design guide for edge systems used with low-sloped flexible membrane roofing systems. Another RedVector.com course is available on materials used for flexible membrane roofing and additional courses are available on other design considerations. This course includes a test at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Roofing - Flexible Membrane Wind Load Design	2	Advanced	Flexible membrane roofing materials are one of the more common types of roofing materials and probably the most common type for commercial structures. One of the important design considerations for a roof is the wind loading. This 2-hour interactive online course provides a design guide for low sloped flexible membrane roofing systems. It also includes several design examples that go through the entire design process for wind loading. This course includes a test at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Roofing Materials - Asphalt Shingles	2	Intermediate	One of the most commonly used materials available for roofs is asphalt shingles. This 2-hour interactive online course covers a variety of topics related to asphalt shingles, such as underlayment requirements, ventilation and potential problems with shingles. Asphalt shingles are very common on residential roofs in much of the United States and are also used on smaller commercial buildings. Because they are so common, proper use, specification and design of asphalt shingle roofs are often overlooked. This course will provide guidance for designers of new asphalt shingle roofs and some guidance on replacement requirements for existing roofs. There is a test included at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Roofing Materials - Concrete Tiles	2	Intermediate	Concrete tile is one of the most durable roofing materials available. This 2-hour interactive online course covers a variety of topics related to concrete tile roofs, such as underlayment requirements, valley metals and fasteners. It also covers some of the advantages of tile roofs including thermal advantages, seismic advantages and resistance to hail. This course includes a test at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Roofing Materials - Flexible Membranes	3	Intermediate	Flexible membrane roofing materials are one of the more common types of roofing materials and probably the most common type for commercial structures. The materials used for membrane roofs include thermoset materials, thermoplastic materials and modified bitumen materials. This 3-hour interactive online course covers an introduction into these materials and products used with them, including fasteners, insulation materials, adhesives and fabrics. Additional RedVector.com courses are available on design considerations. This course includes a test at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Runoff Analysis using the SCS Method - Part 1	3	Intermediate	This 3-hour interactive online course presents the basics of the SCS Method of determining runoff, using Technical Release No. 55 (TR 55), "Urban Hydrology for Small Watersheds." While the Soil Conservation Service (SCS) has changed their name to the Natural Resources Conservation Service (NRCS), this method is still commonly called the SCS Method, rather than the NRCS Method. The SCS Method is a very commonly used method to determine runoff from smaller drainage basins. The document was released in 1986 and, while it has not been updated to include the common use of personal computers, many of the techniques included are easily adaptable to spreadsheet programs. This course is the first of a two-part course series that provides all of the SCS Method included in TR 55. Part One covers the first four chapters of TR 55, which include the Introduction, Estimating Runoff, Time of Concentration and Travel Time and the Graphical Peak Discharge Method. Part Two covers chapter 5 and 6, which include the Tabular Hydrograph Method and Storage Volume for Detention Basins. The SCS Method is a relatively straightforward method that can be applied in many cases. Unlike many hydrologic techniques, it is a method that produces results that can be duplicated by others without great difficulty. The text of the course is taken from TR 55. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Runoff Analysis using the SCS Method - Part 2	2	Advanced	This 2-hour interactive online course presents the basics of the SCS Method of determining runoff, using Technical Release No. 55 (TR 55), "Urban Hydrology for Small Watersheds." While the Soil Conservation Service (SCS) has changed their name to the Natural Resources Conservation Service (NRCS), this method is still commonly called the SCS Method, rather than the NRCS Method. The SCS Method is a very commonly used method to determine runoff from smaller drainage basins. The document was released in 1986 and, while it has not been updated to include the common use of personal computers, many of the techniques included are easily adaptable to spreadsheet programs. This course is the second of a two-part course that provides all of the SCS Methods included in TR 55.

Title	Hours	Level	Description
			Part One covers the first four chapters of TR 55, which include the Introduction, Estimating Runoff, Time of Concentration and Travel Time and the Graphical Peak Discharge Method. Part Two covers chapters 5 and 6, which include the Tabular Hydrograph Method and Storage Volume for Detention Basins. The SCS Method is a relatively straightforward method that can be applied in many cases. Unlike many hydrologic techniques, it is a method that produces results that can be duplicated by others without great difficulty. A number of computer programs are available that use the SCS Method. However, use of these programs without an understanding of the assumptions and limitations of the method can result in substantial errors. The text of the course is taken from TR 55. There will be a test included at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Safe Work Permits	1	Intermediate	This course summarizes the various components of the Safe Work Permit process that should be used within a facility or organization for work being performed by construction and maintenance contractors and employees. The Safe Work Permit process is based around a written form and is a communication tool used to inform employees of safety requirements. Maintenance and construction-type activities can then be coordinated with appropriate personnel within the facility to help avoid safety concerns and potential conflicts. The Safe Work Permit can be critical for the success of a site safety program and can be applied to a variety of facilities, including manufacturing facilities, construction sites, etc.
Safety Management	1	Intermediate	Managing safety is not just something that happens - it should be managed just as quality, productivity and customer-relations are managed. Senior management establishes the overall culture at every facility. This course will review the four major elements to achieve a world-class safety and health program at your facility.
Safety: Electrical Part 1 - Fundamentals, Materials & Equipment Grounding	2	Intermediate	Welcome to this 2-hour interactive online course that is the first of a two-part series which introduces you to many workplace situations that require you to work safely with electricity. You'll learn how and why electricity can be dangerous. You'll also learn about various methods used for protection. Safety begins with the careful installation of electrical components by means of approved wiring methods. You should use safety procedures and practices that insulate you from electricity's power anytime you work with or near electrical equipment or components. Specifically, Part One looks at: Fundamentals of electricity & associated hazards Using proper materials and components Equipment grounding

Title	Hours	Level	Description
Safety: Electrical Part 2 - Hazardous Location, Clearances & Safety Practice (RV-10744)	2	Intermediate	This 2-hour online course is the second of a two-part series which introduces you to many workplace situations that require you to work safely with electricity. You'll learn how and why electricity can be dangerous. You'll also learn about various methods used for protection. Safety begins with the careful installation of electrical components by means of approved wiring methods. You should use safety procedures and practices that insulate you from electricity's power anytime you work with or near electrical equipment or components. Specifically, Part Two looks at: Hazardous locations Safe working clearances Safety practices
Safety: Working with Chemicals	3	Intermediate	This 3-hour interactive online course deals with the safe use of chemicals in the workplace. The two primary causes of chemical accidents are the misuse of chemicals and the improper disposal of chemical wastes. Understanding the hazards that chemicals can create is the first step in protecting yourself (and those around you) from harm. The main goal of this course is to provide you with sound, practical knowledge about chemical use and disposal, both in the workplace and at home. You'll learn how to recognize common chemical hazards and how to deal with them. You'll learn how to perform a job analysis to look for potential chemical dangers in your daily tasks. Finally, you'll learn how to take precautions to avoid chemical accidents and make your job as safe as possible. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Seawalls and Boat Docks for Home Inspectors	2	Fundamental	In this course we will cover the inspection of seawalls, boat docks and boatlifts, as well as davits. We will also take a look at the materials used for construction, both used in the old days as well as what's currently being done or new. I'll show you photos of well-constructed and maintained seawalls, as well as pictures of the problems I've encountered while inspecting properties. We will review the anatomy of a seawall, a boat dock, and boatlifts. And I'll give you inspection tips from my experience as we go through the course.
Seismic - Wood Diaphragm Design for Out of Plane Wall Anchorage	1	Intermediate	This course will explain the design and detailing of subdiaphragms for a flexible roof system using ASCE 7-10 Section 12.11 Structural Walls and Their Anchorage. Many low-rise buildings are constructed with heavy walls of masonry or concrete and light wood roofs or floors. During an earthquake the light roof framing must stabilize the heavy walls as those walls move out of plane. IBC 2012 and ASCE 7-10 require that the roofs and floors be designed to transfer the out of plane wall forces through the diaphragm using the subdiaphragm concept. This course will show you how to develop the demand on the diaphragm, calculate the capacity of the framing members and detail the members to achieve this load transfer.
Seismic Diaphragm Demands	1	Intermediate	This course will cover the development of the seismic diaphragm forces based on the IBC 2012 and ASCE 7-10 using ASCE 7-10 Section 12.10. The demand on a diaphragm during a seismic event is not well understood. Using the Equivalent Lateral Force, this course will review the forces on the diaphragms and compare them to the story forces.

Title	Hours	Level	Description
Seismic Equivalent Lateral Force Base Shear	1	Fundamental	This course will cover the development of the equivalent seismic force based on IBC 2012 and ASCE 7-10 using ASCE 7-10 Section 12.8. The development of seismic forces using the Equivalent Lateral Force Procedure equation V=Cs * W will be explained through the terms of Newton's 2nd Law. The course will define the forces generated during an earthquake and how those forces travel through the building to the ground.
Selection, Specification and Installation of Safety and Security Barriers and Bollards	1	Intermediate	The use of a vehicle by terrorists to attack crowds is on the rise. In 2016, more people in Europe and the United States were injured or killed by vehicle attacks than by shootings and bombings combined. The Storefront Safety Council notes that commercial buildings are struck 60 times per day, resulting in over 4,000 serious injuries and as many as 500 deaths. The use of bollards and barriers in high security applications is well known. This interactive online course will teach professionals the Why and Where and How of using bollards and barriers to protect people and property, and give design parameters that account for vehicle weights and speeds, approach vectors, penetration levels and more. The course will give numerous examples, will teach about ASTM standards F2656 and F3016 for the testing of bollards and barriers, and discuss recent code changes and legal and other trends as pertaining to providing effective protection and security to the public by specifying the correct product, installed in the correct way, and tested to the correct standard of performance.
Septic System Design	1	Intermediate	Septic is from the Greek “septikos,” meaning to putrefy. Most commonly this word is used to describe a system for sewage treatment and disposal or septic systems. Sewage treatment uses anaerobic decomposition to break down organic matter. When sewage or waste is generated it can be processed in a municipal water treatment plant or several types of land treatment systems. Even with the urban or suburban sprawl that has occurred in the recent decades, some residential and commercial properties are still located in areas that are not on the municipal sewer grid. These places tend to use onsite sanitary sewer treatment for its waste. This 1-hour interactive online course places its focus on treating sewage with an onsite septic system. An example problem is given to provide the student with more direction in septic system design. The concentration of this course is designing on-site septic systems using a septic tank and infiltrator trenches in the leachfields. Items discussed include sizing septic tanks, percolation tests, sizing infiltration chamber, the environmental health effects of sewage and much more. By the time you reach the end of this course, you should be armed with all the knowledge and skills to design basic on-site septic systems and to further your study in this important field.
Set-Up of Engineering Controls for Mold Remediation Projects	1	Fundamental	This course will help the project leader better plan and lead remediation projects, making more efficient use of technicians, equipment, barriers and supplies. Using numerous examples of good and bad engineering controls, we will lead you to a better understanding of how you can creatively arrange and maintain isolated work enclosures to the success of the project and health of the occupant.

Title	Hours	Level	Description
Simple 300x100 Parcel - A Dave Gibson Metes and Bounds Case	2	Intermediate	This 2-hour interactive online course presents ONE interesting land boundary case that is particularly instructional as to the proper application of the principles of boundary location for METES AND BOUNDS parcels. It introduces many of the principles of boundary surveying in a systematic fashion. The problem statement will suggest alternate approaches, principles, and solutions. You must solve the case according to what you think is the proper application of survey principle. You will then compare your solution with DAVE GIBSON'S 'best practices' solution which incorporates the correct application of boundary location principles. Defense for the 'best practices' solution will be given for consideration and further learning by the attendee. If you love to discuss tough boundary location situations, then you will love this case and learn something new. You will also learn other viewpoints for your consideration. The beginner can benefit from the instruction they give as much as the experienced practitioner. This course is a portion of the longer 6-hour course titled 'Dave Gibson's All Star Metes and Bounds Boundary Cases' also offered on RedVector.com. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Site Engineering for Landscape Architects: Contours, Forms, Interpolation, and Slope	1	Intermediate	A clear understanding of what a contour represents is fundamental to the grading design process. Technically defined, a contour is an imaginary line that connects all points of equal elevation above or below a fixed reference plane or datum. This datum may be mean sea level or a locally established benchmark. A contour line is the graphic representation of a contour on a plan or map. In order to make informed design decisions as well as to execute construction drawings accurately, landscape architects require topographic data for all site development projects. This course discusses the concept of contour lines and delineates a baseline of common contour signatures. The course expands on these concepts with explanations of interpolation and slope formulas and examples of their applications. This course also introduces the basic mathematical equations associated with plotting and manipulating contour lines. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Site Engineering for Landscape Architects: Design and Layout	1	Intermediate	When planning landscaping projects, it's important to understand that grading IS design. Grading and site design are two highly related and dependent processes, and to achieve an appropriate final project, both must be integrated at the outset of a project. A change in grade must be purposeful, whether for functional or aesthetic reasons. In this course, we will cover the role of site engineering in the aesthetic, perceptual, spatial, and environmental considerations of a design. We will examine the categories of aesthetics: geomorphic, architectonic, sculptural, and naturalistic. We'll explain the uses of four types of perception. We will also discuss methods and practices associated with developing the layout plan. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.

Title	Hours	Level	Description
Site Engineering for Landscape Architects: Designing and Sizing Storm Water Management Systems	1	Intermediate	The purpose of managing runoff is to ameliorate safety and health hazards, including flooding and property damage, stagnation, earth slides, and reduced soil-bearing capacity; to increase the usability of areas through the elimination of unwanted water; to provide better growing conditions for plants by increasing soil aeration and reducing soil saturation; and to prevent erosion by reducing the rate of flow and volume of runoff. There are a variety of management techniques that may be used to control storm water runoff. The purpose and environmental conditions will influence the selection of appropriate techniques. This course will discuss storm water management, soil erosion, and the design and sizing of management systems, with particular emphasis on the Rational, Modified Rational, and TR55 Natural Resources Conservation Service methodologies. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Site Engineering for Landscape Architects: Determining Rates and Volumes of Storm Runoff	1	Intermediate	To design and size storm water management devices, such as grassed swales, drainage pipes, and detention storage ponds, it is first necessary to estimate the rates and volumes of runoff that must be handled. The science of hydrology, which deals with precipitation and runoff, includes a number of models that help predict the runoff to be used as input to the design procedures. This course discusses the Rational method and Modified Rational method for designing and sizing of management systems, and provides examples of how these methods may be applied. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Site Engineering for Landscape Architects: Estimating Runoff Rates, Volumes, and Required Detention Storage	1	Intermediate	The USDA NRCS, formerly known as the Soil Conservation Service (SCS), has developed a methodology for determining runoff rates and volumes. In this course we will cover rainfall patterns; the procedures of TR55 including computing runoff, hydrologic soil groups, and discharge method; and estimating detention storage volume. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Site Engineering for Landscape Architects: Grading	2	Intermediate	A clear understanding of what grading represents is fundamental to the grading design process. In this course we will compare environmental and functional restraints. You will get information and instruction on design problems of both types of elements, slope formula, and storm runoff. We'll also cover methods for grading terraces, the grading process phases, and the grading plan. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Site Engineering for Landscape Architects: Horizontal and Vertical Road Alignment	1	Intermediate	The purpose of this course is to present the basic engineering necessary to lay out roads and drives in the landscape. In order to create safe, enjoyable, and easily maneuverable vehicular circulation, roads must be engineered in both the horizontal and vertical planes. In this course you will receive information, examples with solutions, and opportunities to test your retention of the material presented. We will review basic components of road alignment and definitions of circular curve elements. You will get step-by-step processes and road alignment procedure. We will examine various approaches to design and practice making calculations using proven formulas. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.

Title	Hours	Level	Description
Site Engineering for Landscape Architects: Soils in Construction and Earthwork	1	Intermediate	Soil structure and composition need to be considered in many aspects of site development. This course focuses on the use of soil as a construction material and provides an overview of how physical and engineering properties vary with soil type. We will cover definitions, soil characteristics, soil classifications systems, geotextile types and applications, and earthwork grading activities. We'll also give you examples of the computation of cut-and-fill volumes. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Site Engineering for Landscape Architects: Storm Water Management and Control	1	Intermediate	The acts of grading and controlling and managing storm water runoff are inextricably linked. Almost all site development projects result in the remolding and sculpting of the earth's surface as well as changes in surface character. These changes may significantly alter storm runoff patterns in terms of rates, volumes, and direction. Landscape architects and site planners must understand the consequences if these changes are to be effected in a safe, appropriate, and ecologically sensitive manner. This course provides an introduction to basic management principles and techniques, as well as potential problems caused by storm water runoff. The proper design of any management system requires an interdisciplinary approach, including professional expertise in ecology, engineering, hydrology, and landscape architecture. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Site Engineering for Landscape Architects: Storm Water Management System Components	1	Intermediate	In this course we will introduce a range of tools that may be employed singly or in combination on a single site to manage storm water. We will review the traditional storm water management system components and the principles and techniques. We will cover infiltration systems and detention systems. You'll get discussions of rainwater harvesting and constructed wetlands. We'll also explain the unifying concept of using planted structures or other landscape interventions to decentralize storm water management and minimize the need for extensive pipe and drain structures. You'll also get three case studies to analyze. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2013. All rights reserved.
Site Planning and Design	4	Intermediate	Buildings, houses, parking lots and garages - private and commercial structures were once natural, blank slates that were planned, designed, and molded into what they are today. This 4-hour interactive online course covers all aspects in the design and planning of sites. Based on the Department of the Army's Technical Manual, Site Planning and Design, several areas are covered including site reconnaissance, the placement of utilities, grading the site, placement of buildings, and sight distance. This course provides the knowledge to design an efficient and economical site that works in harmony with the natural conditions of the area. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Site Utility Design: Commercial Buildings	2	Intermediate	This 2-hour interactive online course provides general information and design guidelines regarding utility services to buildings including domestic water, fire protection, sanitary sewer, storm sewer, and natural gas. These utility services are covered with a typical small commercial building project as the reference. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Small Scale and Micro Scale Wind Applications	2	Intermediate	Exactly how can we harness the power in wind? Do you need a giant wind turbine? This interactive online course provides an overview of wind technology at a much smaller scale. Topics covered include small scale and micro scale wind technologies, including applications, estimating wind turbine production, and siting considerations. We will also detail the process for installing small wind turbines and small wind system components and explore the newest research focused on micro (nano) wind technology.
Smart Business Writing: 4 Stages to Writing Your Best	1	Intermediate	Some people thinks that in the grand sceheme of things, excellence in writing isn't all that important as long as you get the General idea across. But the sentence above is a perfect illustration of why that simply isn't true: Did it make you wary to see that the first sentence of a course intended to teach you writing tips was full of errors? Good writing gives you and your ideas authority, visibility, and stature. Bad writing, on the other hand, can make readers question your credibility and/or expertise, can be costly to a business, and can even damage the career of the writer. Inefficient, unclear, misleading, irrelevant, sloppy or deceptive written communication costs companies across the board billions each year. This course will help you improve your skills and avoid careless errors by focusing on four stages of writing: preparing, planning, drafting, and editing (revising and finalizing).
Smart Business Writing: Emails & Technical Proposals (RV-PGM139)	1	Intermediate	This interactive online course is presented in two modules: How to Write Powerful & Persuasive Emails Tackling the Technical Proposal This course covers the need to capture your reader's attention immediately and then hold it by arranging the details in a logical sequence, and helps you avoid common pitfalls like a careless subject line and lax grammar and style conventions. The second lesson discusses writing business and technical proposals and focuses on the Pyramid writing method as a foundation for written communication. Using the Pyramid method means you create a solid writing foundation and then build from the ground up - which is key to effective communication and a more credible and convincing proposal. The clearly defined parts of a pyramid make proposals easier for writers to write and, as a result, far easier for the readers to read.
Smart Business Writing: Short, Sweet and To-the-Point Reports	1	Intermediate	If the skills you'd acquired by the time you wrote your last book report for school aren't cutting it for you in the business world, this course can teach you what you need to know. Almost every professional has to write a short report at some point in his or her career, and despite the fact that it doesn't have to be “long,” it can still be daunting - especially if you don't like writing. This interactive online course will teach you to use the simple and extremely effective Pyramid method of writing to create the most common types of reports professionals will be faced with in their careers.

Title	Hours	Level	Description
Smart Business Writing: Writing Effective Emails	0.5	Intermediate	In today's business world, email is often the preferred means of exchanging information, yet many organizations overlook this very important form of business communication. So much of our daily social and business interactions occur over the Internet that it is very easy to take such an important means of communication for granted. Because of the preference for email interaction over other forms of communication, utilizing email in a professional and efficient manner is vital for success. This course discusses ways to make this most important means of communication effective and efficient so you can produce stellar emails that grab your reader's attention. Tips for structuring emails will be presented, as well as knowledge about proper professional email tone and language.
Smart Certificate: A Comprehensive Sales Program	3	Fundamental	In this comprehensive sales certificate you'll get everything you need so you can start making sales fast. You'll learn how to approach cold calls, create winning phone scripts, how to identify qualified prospects and most importantly how to close the sale. Additionally you'll get a course on B2B sales as well as a course on the complete sales cycle. Whether you are a seasoned pro or a budding sales superstar this comprehensive sales certificate has everything you need to start selling today. The courses contained in the certificate are: Smart Sales 1: Understanding the Psychology of Sales Smart Sales 2: Naming the Decision Maker & Setting Appointments Smart Sales 3: Holding Appointments & Advancing the Sale Smart Sales 4: Dealing with Objections & Closing the Sale Smart Sales 5: Business-to-Business Sales Smart Sales 6: The Sales Cycle
Smart Customer Service 3: Effective Verbal and Nonverbal Communication	1	Intermediate	Communication is the give and take exchange of information; therefore, effective verbal and nonverbal skills are crucial to understanding your customers completely. In the previous course in this series, you learned about listening for understanding, or the taking of information. In this course you will learn how to give information effectively by speaking well and using your nonverbal signals to enhance your message. This interactive online course is designed to help you improve your communication skills when you are the sender of the message, whether you handle customers face-to-face or by telephone.
Smart Customer Service: Courtesies, Attitude, Ethics and Listening for Understanding	1	Fundamental	This two-part course discusses Smart Customer Service. Part One is designed to help you understand how to present yourself well at all times. You'll learn how to conduct yourself in first impression situations, speak and act courteously at all times, maintain a positive attitude, and act ethically and fairly with every customer you meet. Part Two is designed to help you improve your listening skills so that you will be able to interact well with all your customers, whether you handle them face-to-face or by telephone.
Smart Customer Service: Courtesies, Listening for Understanding for Successful Customer Interaction (RV-PGM140)	1	Intermediate	This interactive online course is presented in three modules: Courtesies, Attitude, and Ethics Listening for Understanding 3 Steps to Successful Customer Interaction You will learn how to combine the basics of customer service, how to conduct yourself in first impression situations, speak and act courteously at all times,

Title	Hours	Level	Description
			maintain a positive attitude, and act ethically and fairly with every customer you meet. It will also help you improve your listening skills, and teach you to complete every customer interaction successfully, whether you handle customers in-person, by phone, over the Internet, or through self-service options.
Smart Finances: Creating a Budget that Works for You	1	Intermediate	A budget can be a very effective financial tool. If used correctly, it can help you determine where your finances are, and forecast where they need to be. With the economy chugging slowly toward recovery, it's important to get a handle on your spending so you can make the best choices when allocating your money. A good budget plan is one that makes sense to you, and one that YOU KNOW you will be able to maintain. This interactive online course will help you take a step towards doing just that. By discussing best practice methods and methodologies that have proven fruitful for many formerly harried individuals, you will learn tested strategies for establishing and maintaining a budget that works for you.
Smart Health: Best Practices to Help You Quit Smoking	3	Intermediate	According to the Centers for Disease Control and Prevention, cigarette smoking accounts for approximately 443,000 deaths every year in the United States—roughly one out of every five people. It is the leading cause of preventable death among Americans, yet an estimated 46 million U.S. adults continue to smoke, and an alarming number of young adults and teens are following suit. Quitting smoking is the single best thing you can do to protect and improve your health and the health of those around you, and those who are able to quit greatly reduce their risk for heart disease, stroke, cancer and other tobacco-related health illnesses. Although quitting isn't easy, it is possible with the right combination of knowledge, support, and aids/medications. This interactive online course provides the latest in evidence-based research on proven practices and coping strategies to help you quit smoking. All the information is presented in an easy-to-follow format that will walk you through the key elements you need to quit smoking forever.
Smart Health: Child Nutrition - How to Avoid/Prevent Childhood Obesity	1	Intermediate	Childhood obesity is alive and real. In fact, it is triple the rate from just one generation ago. While there are several causes of obesity in today's youth, the possibilities for prevention are literally endless! By teaching your child how to make healthier food choices and encouraging active play (yes, play!), you can help him or her grow into a fit and healthy adult. What a gift!
Smart Health: Drinking Responsibly	1	Intermediate	Drinking responsibly has a number of benefits, such as stress reduction, enhanced mood and improved mental health, the experience of pleasure, increased creativity, social benefits, and positive effects on quality of life. Your ability to drink responsibly depends on genetics, age at which you started drinking, culture, family environment, and mental health. This interactive course provides you with tips for drinking responsibly, as well as what drinking responsibly involves, and does not involve.
Smart Health: Eating Right	1	Intermediate	In a world of fad diets, quick fixes and fast food, eating right and staying healthy can be a real challenge. The goal of this course is to give you all the tools you need to get all the good nutrition your body requires to maintain a lifetime of health and wellness. If you want to shed unwanted pounds, you can use these guidelines to reduce your caloric intake, increase your activity and reduce your consumption of fat and sodium in the process.

Title	Hours	Level	Description
Smart Health: HIPAA Privacy Standards for Everyone	1	Fundamental	We all have personal health information, and many of us are responsible for the health and personal information of others. Most of us agree that information should be private and therefore, protected. The HIPAA Privacy Standards were created for that purpose. Criminal charges can be brought against anyone in healthcare who is not in compliance. You can be knowledgeable and better protected by being familiar with these standards. This interactive course gives you definitions and ways to recognize non-compliance. We'll discuss how to protect private health information and we'll give you examples of situations you could face and how to handle them correctly.
Smart Health: Managing Your Cholesterol and Blood Pressure	1	Intermediate	Are you one of the 1 in 3 adults suffering from high blood pressure or high cholesterol? If left untreated, both can cause serious harm to your health—including heart disease and stroke! Did you know there are simple, painless steps you can put into practice today to improve your numbers? The power to achieve a healthier body is in your hands!
Smart Health: Physical Fitness - Choosing an Exercise Plan That's Right for You	1	Intermediate	Every time you turn around it seems that there is a new fad, diet, or piece of exercise equipment on the market. With so many things to choose from, how do you know where to begin? The goal of this course is to introduce you to the basics of exercise, and provide you with a program that will help you take that first step toward fitness. We will look at the physical and mental benefits of excise, and discuss how to create a successful exercise program that you can use to get started.
Smart Health: Proper Posture and Breathing	1	Intermediate	Poor posture, typically defined as having excessive curvatures of the spine, slumped shoulders and a forward projecting chin, are common ailments in today's society. Improper posture inhibits proper breathing patterns by limiting the room the diaphragm has to push down into the abdomen to make room for the lungs. And breathing is one of the basic requirements of life; it is the first thing we do when we are born and the last thing upon death. Each minute, the average person breathes 12 times, inhaling oxygen and exhaling carbon dioxide. These processes are controlled by the autonomic nervous system and unless you are actively listening to or watching for breathing, you are essentially unaware of it.
Smart Health: Sleeping - How to Ensure You Are Well-Rested & Energized	1	Intermediate	Do you take sleep for granted? Many of us can fall asleep quickly anywhere while others struggle. If you want information about proven tools for getting the rest you need, this is the course that will supply your wish list. You will get foundational information, myth busters, and facts. You will also receive tools and methods from experts to use in your individualized solution for a good night's sleep.
Smart Health: Yoga & Meditation - Finding your Inner Chi	1	Intermediate	Yoga is a form of exercise that can be used to reduce stress in our lives. Benefits include improving posture, learning better breathing and relaxation techniques, and balancing the "Chi" using exercise. In this course, you will learn ways of finding stillness, the 7 chakras, and the meditation techniques associated with each.

Title	Hours	Level	Description
SMART Instrumentation in Biological and Chemical Treatment	1	Advanced	What is SMART instrumentation? The definition and implementation of "SMART Instrumentation" has evolved over the past five or six decades to its present state where we can literally and figuratively put cruise control on a bicycle; however, it does not ride itself. Proper implementation of a monitoring and control scheme for even a very small system can generate terabytes of useful information per year, all of it meaningless unless correlated, analyzed, trended, structured, and most importantly, acted upon. In this interactive online course, we will discuss the quality and performance specifics, operational reliability, environmental safeguards, and safety risks for control and monitoring systems using SMART instrumentation. We will also cover the reduced costs that can be obtained using SMART instrumentation.
Smart Leadership: Leaders, Model the Way (RV-PGM141)	3	Intermediate	This interactive online course is presented in two modules: Smart Leadership: What Leaders Do Smart Leadership: Model the Way Introducing the five practices of exemplary leadership - model the way, inspire a shared vision, challenge the process, enable others to act, and encourage the heart. It sets the stage and uses actual case examples from real people who have achieved remarkable success. Finding your voice and serving as a role model for your constituents is critical to becoming an authentic leader. If you can't find your voice, you'll end up with a vocabulary that belongs to someone else, mouthing words that were written by some speechwriter, or mimicking the language of some other leader who's nothing like you.
Smart Leadership: Leadership Qualities (PGM142)	3	Intermediate	This interactive online course is presented in two modules: Smart Leadership: Inspire a Shared Vision Smart Leadership: Encourage the Heart “Inspire a Shared Vision,” will help you learn to communicate your vision clearly and enlist others in making this dream a reality. In “Encourage the Heart.” you'll learn the best ways to recognize the contributions of others and reward those that deserve the appreciation. You'll take a close look at the theory that high expectations lead to high performance, and why you should set the bar higher as a result. When these positive expectations yield results, leaders then celebrate the values and victories in their organizations.
Smart Management: Methods for Motivating and Mentoring Your Team	2	Intermediate	Without a skilled captain to steer it safely to harbor, a ship is as good as lost at sea. The same can be said of the business world—without the right people at its helm, a firm is left to flounder on an uncharted course, one that may very well send it drifting into the dismal abyss of financial ruin. Arguably then, it stands to reason that employees are the most important resource within a company. After all, they are the vital crew members who will allow you, the captain, to navigate the corporate boat to safe harbor (i.e., profitability). This interactive online course covers the importance of mentoring employees along with methods that can be used to motivate. Several case studies are introduced to give specific examples of how this information can be put to use with employees and leaders of an organization. This course is intended to review and reinforce motivational and mentoring concepts that you may have used or evaluated in your profession. If you are starting a career as a manager, hopefully some of these concepts will provoke thought about how to motivate or mentor peers or employees in your company.

Title	Hours	Level	Description
Smart Management: Business Essentials	2	Intermediate	You know that reality TV show where they drop a bunch of folks on an island in the middle of nowhere and see if they can last 39 days without going all Lord of the Flies? Surviving today's corporate jungle is a lot like that. So what's the secret to achieving success without losing your sanity? Here's a hint: Learn the lingo. This eye-opening SmartTeam course is a must for all business professionals—beginning with an overview of essential business terms and concepts, and outlining the key differences between a satisfied and an engaged workforce. It includes proven techniques for promoting teamwork and overcoming common hurdles in personnel management, as well as mastering the essential principles of customer care and service. The bottom line? At the end of the work day, it's not just one person that makes a difference. It's every member of a company working together toward a common goal. Smart Management: Business Essentials is the first step toward achieving that goal and surviving the daily grind.
Smart Management: Coaching for Better Performance	1	Intermediate	There's no doubt about it. The workplace has changed drastically over the past two decades. In the past, leading an organization meant managing, directing or supervising. The individual in charge was known as "The Boss" and was responsible for directing all activities and making all decisions. Today's employees, however, do not respond well to bosses. They expect to be treated as full members of a team. Therefore, many managers today find themselves in the somewhat uncomfortable position of being a "coach." Unfortunately, they are typically lacking in the knowledge and skills to master their new role. This 1-hour online interactive course is designed to help you become a coach in the very best sense of the word. This course stresses the need for good coaching skills and provides practical suggestions for confronting poor performance by using a Performance Improvement Plan.
Smart Management: Data Security	1	Intermediate	Data security is the protection of information and mechanisms employed to provide assurance that data will remain secure. A data security system includes resources, people, hardware, software, and the infrastructure supporting data protections. This interactive online course discusses the different aspects of data security, including categorization of data and data types, data management, and user and organization responsibility for maintaining data security. Data within an organization is an essential part of how the organization does business, makes profits, acquires its place in industry, and retains employees to perform the work. Determining the level of data sensitivity and structuring a data security system around those needs is imperative for the success of an organization and the security of organizational information.
Smart Management: Discrimination in the Workplace for Managers	1	Intermediate	As agents of their employers, managers need a basic understanding of employment discrimination laws and how they apply in the workplace. There are a variety of both federal and state laws prohibiting certain types of workplace discrimination. The concepts of discrimination, harassment and diversity are all related to the goal of creating a workplace environment where differences among employees are respected and valued. However, there are fine distinctions among the terms. In this interactive course, you will learn how they relate to one another from both a practical and legal perspective. You will also learn about the categories protected from discrimination, types of reasonable accommodations, and best practices to avoid workplace discrimination.

Title	Hours	Level	Description
Smart Management: Effective Performance Review Practices	2	Intermediate	Studies show that well over 90% of organizations engage in a formal employee Performance Review (or Appraisal) Process, but the practice is highly varied between companies - and sometimes within a single company - in both the way it is conducted and its effectiveness. In fact, Performance Review is often dreaded by both managers and employees. One reason is that managers often lack skill in objectively evaluating and providing useful feedback to employees. The purpose of this interactive online course is to equip managers to engage in effective employee performance reviews that will help employees understand and maximize their performance. We will also show how employees can best participate in the process. When done effectively, the Performance Review will have a positive impact on the motivation and performance of employees and their managers and will benefit the entire company.
Smart Management: Equal Employment Opportunity and Diversity for Managers	1	Intermediate	As agents of an organization, managers need to not only be aware of all applicable employment discrimination laws, but they also must know how to manage diverse employees in varied workplace scenarios. The purpose of this course is to educate managers about equal employment opportunity and diversity practices. In this interactive course, you will learn the basics of federal anti-discrimination laws, the barriers to workplace diversity, and the best practices associated with diversifying your workforce.
Smart Management: Getting the Most out of a Multigenerational Workforce	1	Intermediate	Times have changed—and so has the workplace. Unlike just a few decades ago, today there are multiple generations of workers at the office, each with their own unique characteristics and expectations. As a manager, it is up to you to find a way to engage and motivate your workers in order to promote success, and the first step is finding out who they are and what makes them “tick”. This eye-opening course describes in detail the characteristics of the four main groups in today's multigenerational workplace: Traditionalists, Baby Boomers, Generation X and Generation Y. It includes information about their work ethic, work styles, loyalties, and their views on work and the family, and it takes a look at the challenges each generation faces with regard to the current recession. Management practices will also be presented that encourage each generation to fully invest in getting the job done not just “well” but “with excellence”.
Smart Management: Hiring the Right Talent - Customer Service	1	Intermediate	Hiring the right talent can make a difference between success and failure in your organization. There are major financial, morale and business growth implications when you don't bring on customer focused people. Hiring top talent is both an art and science. In this SmartTeam course, we will focus on best practices and bottom-line evidence that will show you how to hire the best talent. Although this course will be focusing on hiring for a customer service position, the concepts and techniques can be applied to any position.
Smart Management: Hiring the Right Talent - Sales	1	Intermediate	Hiring the right talent can make a difference between success and failure in your organization. There are major financial, morale and business growth implications when you don't bring on customer focused people. Hiring top talent is both an art and science. In this SmartTeam course, we will focus on best practices and bottom-line evidence that will show you how to hire the best talent. Although this course will be focusing on hiring for a customer service position, the concepts and techniques can be applied to any position.

Title	Hours	Level	Description
Smart Management: How to Handle Workplace Challenges	1	Intermediate	Regardless of how much effort an organization puts into creating an efficient and respectful work environment, challenging circumstances always arise. Rather than perceiving these problematic situations as a reflection of a personal or organizational failure, it is more effective to focus on establishing and following clear guidelines to resolve problems and appropriately handle workplace challenges. Whether your organization is currently facing a serious problem, or is seeking to put policies and procedures in place for the future, this interactive online course will guide you in handling the different challenges your organization might face. Instances for intervention including hostile behavior, substance abuse, and criminal activity will be discussed, as well as prevention and mitigation strategies for violation of workplace policies. While the types of challenges encountered in the workplace are too diverse to be discussed in one manual, this interactive online course will cover common types of problematic work situations most employers are likely to encounter. **This course is intended for managers in policy-making roles.
Smart Management: Key Skills for Managing & Coaching Your Team	0.5	Intermediate	Whether you are a newly promoted supervisor or an experienced manager, you know managing people is a big responsibility. It requires a special skill set. This course will help you develop the skills you need to be successful and to develop successful employees. This interactive online course teaches you how to coach employees through feedback, mentoring, and counseling. The touchy subjects of corrective counseling and employee discipline are covered as well as the methods of planning, conducting, and benefiting from employee meetings. You will find a template for time management for your work and personal life. The course concludes with a motivational and highly informative section, “Take Care of Yourself.”
Smart Management: Lawful Hiring Practices	1	Intermediate	The objective of this course is to help employers and hiring managers in companies be aware of the liability and responsibility they carry in regards to hiring employees. By knowing what is acceptable and unacceptable, companies can be protected from litigation. With a history of wrongdoing against employees, the United States has enacted laws to protect the worker with some of the strictest labor laws in the world. This means that the burden of proof is on the company, not the employee, making the company much more susceptible to legal repercussions. In this course, you will learn about protected classes, diversity, recruiting challenges, employment verification, and legal do's and don'ts.
Smart Management: Lawful Termination Practices	0.5	Intermediate	There comes a time for every manager when they are faced with the need to terminate an employee. The difficulty comes with ensuring that the company is in a position that prevents any liability on their part for that termination. Unfortunately in today's legal climate, wrongful termination suits are the number one labor lawsuit brought before the courts. The judicial system sees many of these cases, especially when economies experience a downturn and employees struggle to keep their jobs. This interactive online course outlines the criteria for legal termination, and explains how to ensure your company is prepared. Proper procedures need to be in place, and managers need to be knowledgeable of employment laws and the consequences for wrongful termination.

Title	Hours	Level	Description
Smart Management: SMART Goals - Setting Effective Targets for Success	1	Intermediate	Learning how to set effective and relevant goals is the first step in achieving success in any field—goals serve as roadmaps to the future. Just as you wouldn't go on a trip without a clear understanding of where you're heading, setting out on your professional journey without a plan is not likely to give you the results you desire. This interactive, online course discusses how to set goals using the SMART goal template (specific, measurable, achievable, relevant, time bound), and provides tools to help you get where you want to go in your personal or professional life. The purpose of this course is to aid you in selecting appropriate, attainable goals to give you the best chance of success.
Smart Management: Successfully Transitioning from Team Member to Manager	1	Intermediate	Successful transition and successful leadership depends on identifying effective strategies for building a team around you as leader and manager. This interactive online course focuses upon the challenges and key strategies for transition from the position of team member to the role of team leader. During this course, we will explore key theories of career development and transition within the corporate environment, as well as theories about team dynamics and the role of leaders. We will also discuss challenges related to the transition from team member to team leader, and strategic and tactical solutions for successful transition within a corporate team. Career development plans, including how to create them, modify them, and apply them to different career scenarios will also be discussed.
Smart Management: The Art & Science of Delegation	1	Intermediate	Many think delegation is a way to load others with work, hopefully relieving themselves of both some work and, possibly, some responsibility. But that's a narrow and negative perspective on delegation that seldom leads to increased productivity or profitability. The true purpose of delegation is to get more accomplished in less time through the effective utilization of the talent and resources available. Used correctly, delegation allows us to work constantly on our business rather than merely working in it. It tells us when others can do needed activities, faster, cheaper, and better than we can ourselves. The mastery of delegation is the highest form of personal leverage and the ultimate time management tool. It multiplies the number of projects we can effectively work on at once, and also shortens the time between concept and delivery of the product or service to the client or market. This 1-hour interactive online course defines delegation, explains its benefits, and guides the student through the process of delegating tasks and projects.
Smart Mental Health: Core Values and Finding a Purpose in Life	1	Intermediate	If you ever felt uncomfortable in a relationship or out of place in your company but didn't know why, it could be that the person or the corporation has core values that are different from yours. If this situation sounds familiar, or if you'd like to know more about values and how to get clearer on your life's purpose, then this is the course for you. We will guide you to define your core values and your life's purpose, and explore practical ways to create a personal and professional life in harmony with the inner you.
Smart Mental Health: Goal Setting and Visualization Techniques	1	Intermediate	Goal setting is the foundation of all successful endeavors. When we set a goal, what we are really doing is defining the roadmap of our life. With each goal we set, we establish the path we wish to take towards our objectives.

Title	Hours	Level	Description
Smart Mental Health: Happiness is a Choice - Keys to Living a Joyful Life	1	Intermediate	This course will take us on a journey through five core areas of our human experience: the physical, the psychological, the spiritual, the social, and the occupational elements of being human that make up our lives. In each area we will learn about a tried and true pathway leading to greater happiness. For each of these pathways, we will offer tips and tools to help implement strategies to build happy and contented lives.
Smart Mental Health: Keys to Successful Parenting	1	Intermediate	Understanding the common pitfalls of parenting, how to provide constructive discipline, and how to develop a healthy relationship with your child are just a few ways to identify areas for connection and improvement. This course is intended to help you as parents not only define your role and style, but to improve upon problem areas. You will be able to identify with the content and then think about how you can apply it to your own experience. Most parents recognize that this role can be a challenging one and that those who serve in it are often a work in progress. Identifying areas for improvement and understanding what it takes to raise successful children is pivotal. You will get examples to consider what you can do to be more helpful to your children, create a loving and nurturing environment, and help their development in the most effective way possible.
Smart Mental Health: Managing Anger and Emotions	1	Intermediate	The modern workplace is often thought of as a strictly professional, rational, logical environment. Cooperation is key—personal opinions and emotions must be put aside in the name of teamwork, which may be easier said than done! No one can expect to connect with fellow colleagues the way they do their own friends or family members. One crossed word or bad mood can damage corporate relations, sometimes irreparably. The uncertainty of the business environment of today, and resulting stress that follows only adds to the pressure workers feel in performing their level best. Feeling overworked and overwhelmed is natural in the workplace, especially when it comes to dealing with change. The purpose of this course is to illustrate ways you can overcome the emotional barriers you may face in the workplace. This course will guide you through various exercises and give you tips to help you manage your emotions at work so you can perform to the best of your abilities.
Smart Mental Health: Reducing Stress and Anxiety	1	Intermediate	Stress is our body's way of responding to physical, emotional, or mental demands. Although typically associated with negative circumstances, stress can be caused by both good and bad experiences. Our bodies react to stress by releasing chemicals into the blood to give us energy and strength to handle the situation. This evolutionary reaction can be a good thing when stress is caused by real physical danger; however, this survival response can wreak havoc if it builds up without a proper outlet. This interactive online course discusses signs and symptoms of stress, and explains the physical and emotional effects of built up stress, such as pain and anxiety. The course also describes stress management techniques, treatment options, and lifestyle changes to help alleviate stress.
Smart Quality: Building Quality Awareness	1	Fundamental	You expect quality from your vendors and your customers expect quality from you and your organization. In this SmartTeam course we will familiarize you, regardless of your level in your organization, with the meaning of quality, how it is critical, and how to begin to put it into motion in all of your work.

Title	Hours	Level	Description
Smart Sales 1: Understanding the Psychology of Sales	0.5	Fundamental	Welcome to Part One of this six-part course designed to help you develop professional sales skills. This course is designed to quickly give you the basic skills, knowledge, and methods you need to start selling fast. Whether you're in retail, technology, manufacturing, or services you'll discover how to start selling like a top professional sales person.
Smart Sales 2: Identifying the Decision Maker & Setting Appointments	0.5	Fundamental	Welcome to Part Two of this six-part course designed to help you develop professional sales skills. This course is designed to quickly give you the basic skills, knowledge, and methods you need to start selling fast. Whether you're in retail, technology, manufacturing, or services you'll discover how to start selling like a top professional sales person.
Smart Sales 3: Securing Appointments & Advancing the Sale	0.5	Fundamental	Welcome to Part Three of this six-part course designed to help you develop professional sales skills. This course is designed to quickly give you the basic skills, knowledge, and methods you need to start selling fast. Whether you're in retail, technology, manufacturing, or services you'll discover how to start selling like a top professional sales person.
Smart Sales 4: Overcoming Objections & Closing the Sale	0.5	Fundamental	Welcome to Part Four of this six-part course designed to help you develop professional sales skills. This course is designed to quickly give you the basic skills, knowledge, and methods you need to start selling fast. Whether you're in retail, technology, manufacturing, or services you'll discover how to start selling like a top professional sales person.
Smart Sales 5: Business-to-Business Sales	0.5	Fundamental	Welcome to part Five of this six-part course designed to help you develop professional sales skills. This course is designed to quickly give you the basic skills, knowledge, and methods you need to start selling fast. Whether you're in retail, technology, manufacturing, or services you'll discover how to start selling like a top professional sales person.
Smart Sales 6: The Sales Cycle	0.5	Fundamental	Welcome to last part of this six-part course designed to help you develop professional sales skills. This course is designed to quickly give you the basic skills, knowledge, and methods you need to start selling fast. Whether you're in retail, technology, manufacturing, or services you'll discover how to start selling like a top professional sales person.
Smart Sales: Advanced Tele-Prospecting - Closing the Call	0.5	Fundamental	Never has so much been written or talked about in prospecting and selling as closing or asking for the sale. Quite frankly, closing is easy and simple. In this eighth course in a 10-part series, you will learn how to implement an effective consultative process that will help you successfully close the call. The purpose of this course is to provide you with simple and effective techniques to move the sale forward and achieve your sales objective.
Smart Sales: Advanced Tele-Prospecting - Creating Opening Statements	0.5	Fundamental	Without a doubt, the opening statement is the most important part of your tele-prospecting call. This third course in a 10-part series helps you develop an effective opening statement that will get more prospects to stop and listen. This course provides you with a process by which to develop an effective opening statement, including templates that you can use as models for those opening statements. By immediately gaining the attention and interest of the decision maker, you will quickly get your foot in the door so you can meet and exceed your sales objectives.

Title	Hours	Level	Description
Smart Sales: Advanced Tele-Prospecting - Dealing With Dismissive Objections	0.5	Fundamental	One of the most significant components of tele-prospecting is handling knee jerk objections. Decision makers may not want to be bothered, so objections may be tossed out at the beginning of the call to get you off the phone. If you aren't prepared to field these questions effectively, your opportunities to set appointments and sell will be greatly diminished. The purpose of this fifth course in a 10-part series is to help you overcome objections and continue the sales dialogue so that you can achieve your sales objective.
Smart Sales: Advanced Tele-Prospecting - Follow-up Strategies and Tactics	0.5	Fundamental	In many ways, the follow-up call is far more significant than the cold call. This is where value is created, where trust is further established with your prospect, and ultimately, where the rationale for buying is formed. Despite the importance of the follow-up, many tele-prospectors lack skill in this arena. In this ninth course in a 10-part series, we will discuss follow-up strategies and tactics to master the art of follow-up and close more sales. The goal of this course is to provide you with a follow-up strategy to help continue the sales cycle and ultimately close the sale.
Smart Sales: Advanced Tele-Prospecting - Getting Past Gatekeepers	0.5	Fundamental	The key to successful tele-prospecting is getting through to as many decision makers as possible. Unfortunately, human and electronic gatekeepers are often used by the decision maker to screen your calls. The purpose of this course is to provide you with strategies and tactics to get past these gatekeepers so you can reach your target and achieve your goals. This second course in the 10-part series covers a variety of methods and techniques that you can test, employ and master to improve your efficiency and effectiveness.
Smart Sales: Advanced Tele-Prospecting - Handling Smokescreen and Authentic Objections	0.5	Fundamental	Objections come in all shapes and sizes and some are easier to distinguish than others. While many objections are clear cut indicators of disinterest, others may be more vague and harder to discern. In this seventh course in a 10-part series, we will look at how to recognize and handle ambiguous objections effectively. The purpose of this course is to provide you with various tactics to help understand and manage both smokescreen and authentic objections, ultimately giving you greater confidence in dealing with your prospects and moving the sales cycle forward.
Smart Sales: Advanced Tele-Prospecting - Overview and Pre-Call Planning	0.5	Fundamental	This first course in a 10-part series introduces you to the process of tele-prospecting and shows you how to begin using this method to effectively and efficiently mine for prospective clients. This questions-based, consultative approach to tele-prospecting is designed to get the client involved to determine needs, or potential needs. This course is for anyone who uses the telephone to qualify prospects, generate leads, set up appointments, or sell direct. The overall goal of this training series is to provide you with tips, tactics, and processes to maximize your tele-prospecting potential, and increase your success at prospecting by making you more effective on the phone. In short, it is to make you a better prospector and salesperson.
Smart Sales: Advanced Tele-Prospecting - Presenting an Offer	0.5	Fundamental	Your offer, or sales message, is your opportunity to present your solution to the prospect and ultimately close the deal. To be effective, your message must be compelling and intriguing, and it must provide a reason for the prospect to take the next step. This sixth course in a 10-part series discusses how to present an effective offer or sales message. The purpose of this course is to provide you with the skills and techniques to craft and deliver a persuasive sales message that motivates prospects to take action.

Title	Hours	Level	Description
Smart Sales: Advanced Tele-Prospecting - Qualification and Questioning	0.5	Fundamental	Effective questioning is at the very heart of the advanced tele-prospecting process — it is what separates tele-selling from tele-marketing. Effective questioning is what creates a quality lead, a good appointment, or a very good sale. This fourth course in a 10-part series discusses how to use questioning to identify needs, build rapport, and advance the selling process. The purpose of this course is to provide you with specific skills and techniques so you will question more effectively over the phone.
Smart Sales: Advanced Tele-Prospecting - Using Email in the Tele-Prospecting Process	0.5	Fundamental	There is little doubt that email is one of the primary methods of communicating with a decision maker, so it makes sense to have an email component in your tele-prospecting approach to the marketplace. The trick is to develop a good email that cuts through the clutter so it will be read and remembered by your prospect. This final course in a 10-part series discusses how to sell more by integrating email into your tele-prospecting process. The purpose of this course is to provide you with specific strategies and tactics on how to use email and voice follow-up effectively, while also providing you with email templates you can use to craft your own personal email message.
Smart Time Management: 7 Steps to Regaining Control of Your Day	1	Fundamental	Feeling out of control and overwhelmed by everything you need to accomplish each day? No matter how hectic your schedule appears, you can regain control of your day and increase your daily productive time. How? Effective time management is your tool to design success at work and at home. This interactive online course details a complete, integrated time management system. This system contains just seven steps, which will assist you in developing an effective and efficient method for allocating time and regaining control of your life. In addition to honing your prioritization skills, you will also learn how best to use your reclaimed time and how to periodically reassess your time management process so you can maintain control of your day.
Smart Time Management: The 80/20 Rule for Making Every Minute Count	1	Fundamental	In 1897, Italian Economist Vilfredo Pareto found that 20 percent of any given population, of any country during any time period, accounted for 80 percent of the wealth. This pattern is repeated in many aspects of life, not just wealth. The 80/20 Rule as applied to time management reveals that there is generally a significant imbalance between our efforts and our results. Instead of there being a one-to-one relationship between effort and result, it turns out that 20 percent of our efforts produce 80 percent of the results. Conversely, the other 80 percent of our efforts produce only 20 percent of the results. This 1-hour interactive online course from SmartTeam explores how we can channel our time and effort to get the greatest results with the least amount of effort and stress. It focuses on your individual abilities, and teaches an entrepreneurial time management approach together with creative use of the 80/20 Rule. In other words, it will help you prioritize so that you do most often the things you are best at and enjoy the most. You will learn to strive for excellence in a few things, rather than achieving mediocre performance in many.
Smart Workplaces: Code of Conduct - Ethics Education & Social Media Guidelines	2	Intermediate	At last - a code of conduct educational program that addresses business and organizational ethics that has teeth but doesn't bite! While you probably know that having a code of conduct is necessary for your business, you may not know the best ways to impart the rules and make sure they are followed by staff - and you may not know the consequences if they don't. A good code of conduct clearly communicates your company's values and imparts knowledge employees can use to make tough calls with confidence in the gray areas of

Title	Hours	Level	Description
			business. This training presents interactive scenarios and activities that challenge employees to apply company values to ethical dilemmas and to resolve issues. But just having a code of conduct isn't enough. You need to track and measure the training's success to optimize your legal protection! This course does nothing less than let you ensure that your workforce understands and has electronically agreed to the company's expectations and standards for appropriate conduct. Its deployment company-wide can help you in the event of a lawsuit by demonstrating that the company took measures to prevent an environment that allowed any form of discrimination.
Smart Workplaces: Designing Safe Workspaces & Preventing Injury	1	Fundamental	Common workplace health and safety issues can take a toll on staff and the company budget, but it doesn't have to be that way. Many of the problems workers encounter on the job are preventable if steps are taken to avoid injuries before they happen. This online course explores methods used to design safe workspaces and examines work-related Musculoskeletal Disorders (MSDs), which are a leading cause of injury in the workplace. You'll also learn specific ergonomically correct techniques for heavy lifting, setting up a computer station and more.
Smart Workplaces: Optimizing LinkedIn for Sales Prospecting and Business Networking (ST-0146)	0.25	Fundamental	Social networking has become a common part of people's personal and professional lives. Although different social networking tools may be used for different purposes, LinkedIn is specifically designed to connect professionals with one another to make them more productive and successful. The purpose of this course is to show you how you can improve your sales prospecting and business networking through the use of LinkedIn, the most popular business-oriented social networking site on the internet. With an ever-growing membership currently in the millions, LinkedIn can help sales professionals: Build and maintain a broader network of trusted professionals Generate leads Learn about other companies and their hierarchies Leverage powerful tools to find and reach the right people Tap into the knowledge of their network, and Discover new opportunities. This course will explore each of these points and also reveal common mistakes to avoid when using LinkedIn.
Smart Workplaces: Preparing for a Pandemic Flu Outbreak	1	Intermediate	What if a third of our employees could not come to work because they were sick - or were caring for sick family members? What if the companies that we rely on to do business - suppliers, staffing companies, even banking - could not take care of our business due to flu absences in their own companies? An outbreak of influenza can cripple a business's productivity if a large percentage of its employees are infected all at once. As the threat of a pandemic flu increases, business managers and HR professionals should take steps now to create and implement a pandemic influenza response plan. If done properly, an influenza response plan can help businesses reduce the risk of a large percentage of absenteeism and maintain crucial operations, as influenza is more widely transmitted. This course will explain the latest CDC and Occupational Safety and Health Administration guidelines, as well as provide checklists and sample communications to help business and HR professionals assemble a pandemic influenza response plan. The training provided in this course will help employers to determine how to avoid adverse effects on other entities in their supply chains while also reducing transmission among staff.

Title	Hours	Level	Description
Smart Workplaces: Putting Your People First - Personnel Administration	2	Fundamental	The most important resource available to any organization is people. Organizations are made of people, and an organization cannot fulfill its intended mission without good employees. These employees need effective leadership to accomplish organizational goals and objectives. A good leader knows how to hire and keep good employees by following the rules and regulations that govern employment. This interactive online course will discuss several personnel issues of interest to all organizations. Whether you have 10 employees or 200 employees, just about every issue discussed in this SmartTeam course will, in some way, apply to your business. Issues discussed in this course include: Personnel Administration (Management and Leadership, Hiring and Firing Practices, and Employee Manual/Handbook) Sexual Harassment Equal Employment Opportunity (EEO) Drug-free Workplace The Americans with Disabilities Act of 1990 (Including 2008 amendments)
Smart Workplaces: Responsible Social Media for Team Members	0.5	Fundamental	It has become increasingly clear that social media is not just a fad. It is instead, not only a massive change in the way we socialize with others in a personal setting, but also the biggest shift in how we conduct business since the arrival of the Internet. Social media is quickly altering every aspect of corporate operations, such as hiring practices, training, marketing, and even risk management. The purpose of this course is to introduce you to social media, explore how we use social media personally vs. social media use in a business setting, how its use continues to evolve in the workplace, the benefits of social media, and of course the risks it can present to you personally and to companies.
Smart Workplaces: Understanding the Family Medical Leave Act (FMLA) (ST-0158)	0.5	Fundamental	There are times when life situations demand attention and people must take time away from work. An individual may be diagnosed with a serious health condition, welcome a new child into the family, or become a caregiver for a family member, so it is good to know what options are available if it becomes necessary to take a leave of absence. The Family Medical Act (FMLA) allows employees take reasonable unpaid leave for certain family and medical reasons so they can attend to the needs of family while also balancing work responsibilities. The purpose of FMLA is to accommodate the needs of employers and employees while minimizing the potential for employment discrimination on the basis of gender, and promoting equal opportunity employment for men and women.
Smart Workplaces: Webinars - Conducting a Web-based Presentation (ST-0145)	0.5	Fundamental	Delivering a successful presentation over the web is absolutely achievable. The key is knowing the rules and the tools that will facilitate the accomplishment of your goals. The purpose of this course is to help you successfully deliver dynamic and engaging web-based presentations. This will begin with a clear understanding of what a web-based presentation is and how it differs from other web-based activities, like web meetings and conference calls. Then, we'll explore common terminology related to conducting a web-based presentation as well as the various web tools available for the delivery of those presentations. To help you with the design, preparation, and delivery of your presentations, we'll also explore tips and tricks for engaging your audience, and how to prepare for the unexpected.

Title	Hours	Level	Description
Soils and Foundations: The Low Down on Dirt	2	Intermediate	Soils issues and ineffective water management methods create serious problems with foundation systems and structures. Understanding the core soil problems faced in the construction industry and methods to overcome them allow you to avoid the associated issues. This interactive online course will teach you about some of the most common issues found with soils and how to overcome them. You will also learn about ICC codes that govern site inspections. Additionally, you will learn about geotech reports and best practices when assessing soil conditions.
Solar Panels for Home Inspectors	2	Fundamental	This course applies to the application and evaluation of solar panels for water heaters, pools and spas, and photovoltaic cells. It will give you a brief overview of how they work and how they are evaluated, including installation and components. We will discuss the different kinds of solar panels found and how they connect to various system components. We will also identify potential and common problem areas with these panels, typically system defects. Terms for intelligent report writing will be part of this class, and how electricity is generated will also be explained.
Space Planning: Design Fundamentals	2	Fundamental	The search for beauty probably begins with the story of mankind itself, yet undertaking the design of an office or departmental interior today can be a daunting task. Any decisions we make concerning layout, color, wallpaper, flooring, furnishings or lighting could have a lasting effect on an organization and its people. It is not surprising, therefore, that as space planners and designers, we shoulder a heavy burden of responsibility; we owe it to our clients to give them the best possible solutions that fulfill their needs. This 2-hour interactive online course should be used as a basis to create a space that is both functional and aesthetically pleasing. This course of Design Fundamentals is broken into three sections: Functional & Aesthetic Aspects Design Principles Elements of Interior Design This course contains downloadable PDF files which require Adobe Acrobat. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Space Planning: Design Methodology	2	Fundamental	Today's contemporary office environment is often a sophisticated and intricate ecosystem of many interrelated elements and sub-systems, in which various individuals occupy space. These individuals have special needs, and the diligent space planner is required to address these needs. This 2-hour interactive online course should be used as a basis to recognize such influencing factors as evolving computer and communications technologies, psychosocial elements of the workplace and planning for future expansion and growth. This course of Design Methodology is broken into five sections: Programming Phase: Creating the Brief or Program Schematic Design Phase: Concept Development Design Development Construction Document & Bidding (Tendering) Phases Contract Administration: Execution & Supervision Phase Feedback and Post-occupancy Evaluation & Additional Services

Title	Hours	Level	Description
			This course contains downloadable PDF files which require Adobe Acrobat. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Space Planning: Furniture and Furnishings	2	Intermediate	The workforce is changing under the onslaught of modern technology, and with it the office landscape. As we settle into the information age, the increase in population of white-collar workers continues to outpace that of other segments of the labor force. The higher level of training required for these upper-level positions has manifested itself in an increase in employee absenteeism and turnover. This is beginning to pose serious financial and productivity problems to the corporate world. This 2-hour interactive online course should be used as a basis to plan a workplace environment that will facilitate greater interaction between people and their support facilities. This course of Furniture and Furnishing is broken into six sections: Main Furniture Styles The State of the Furniture Industry Today: Part I The State of the Furniture Industry Today: Part II Fabrics & Fabric Selection Recent History - The Leap Forward Flooring & Wall Treatments This course contains downloadable PDF files which require Adobe Acrobat. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Space Planning: History and Overview	3	Fundamental	In attempting to study the early historical development and evolution of space planning and interior design, one needs to simultaneously draw upon and understand the interrelationships of other elements and disciplines, such as architecture and the decorative arts. This also includes ornamentation and furniture, which historically followed the development of architecture. This 3-hour interactive online course should be used as a basis for a better understanding of the lines of development and evolution that led to the current status of our own development, and to correct our myopic vision regarding our design inheritance. This course of History and Overview is broken into five sections: Space Planning, Furniture, and Design in Antiquity Greece & Rome Middle Ages & The Renaissance The Baroque and Rococo & Neoclassic Period and 19th Century Revival Styles Recent History - The Leap Forward This course contains downloadable PDF files which require Adobe Acrobat. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Space Planning: Security Issues	1	Fundamental	In today's built environment, security has taken on a new meaning. Terrorism as well as natural disasters usually strike with little or no warning. Terrorism in particular is now a recognized international phenomenon against which governments need to institute protective measures. It is hardly surprising that in the wake of the gruesome 1995 Oklahoma City bombing and the September 11, 2001 terrorist attacks on the World Trade Center and the Pentagon, the issue of security in office buildings took on a new imperative. This 1-hour interactive online course should be used as a basis to balance society's need for security with traditional and psychological values and spiritual needs. This course of Security Issues is broken into two sections: Types of Security Threats, Defining Security Needs and the Role of the Space Planner & Methods for Improving Safety and Security Egress Planning and Emergency Management, The Parking Problem, New GSA & Legal and Liability Issues This course contains downloadable PDF files which require Adobe Acrobat. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Steam System Basics & Performance Improvements	2	Fundamental	There are three principal forms of energy used in industrial processes: electricity, direct-fired heat, and steam. Steam provides process heating, pressure control, mechanical drive, and component separation, and, is a source of water for many process reactions. Steam has many performance advantages that make it an indispensable means of delivering energy. This 2-hour interactive online course describes the basic steam system components, outlines opportunities for energy and performance improvements, and discusses the benefits of a systems approach in identifying and implementing these improvement opportunities. This course is based on the Department of Energy's Improving Steam System Performance: A Sourcebook for Industry. The first section of the course describes steam systems using four basic parts: generation, distribution, end use, and recovery. It is recommended for users unfamiliar with the basics of steam systems, or for users seeking a refresher, a brief discussion of the terms, relationships, and important system design considerations is provided. The second section discusses important factors that should be considered when industrial facilities seek to improve steam system performance and to lower operating costs. This section also provides an overview of the financial considerations related to steam system improvements. Additionally, this section discusses several resources and tools developed through the U. S. Department of Energy's (DOE) Best Practices Steam activities to identify and assess steam system improvement opportunities. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Steam Turbine Power	1	Intermediate	Do you know how the steam turbine is such a vast improvement over the reciprocating steam engine? This 1-hour interactive, online course describes the basic principles of steam turbines. Vector diagrams are used to explain the dynamics involved in impulse and reaction turbine stages. Several pictorial presentations are included, which clearly illustrate the various stages and turbine configurations. Also, classifications by stage design, steam supply and exhaust conditions, casing and shaft arrangement, direction of steam flow, and numbers of exhaust stages are presented and described.
Stefanic et al - A Dave Gibson Metes and Bounds Case	2	Intermediate	This 2-hour interactive online course presents ONE interesting land boundary case that is particularly instructional as to the proper application of the principles of boundary location for METES AND BOUNDS parcels. It introduces many of the principles of boundary surveying in a systematic fashion. The problem statement will suggest alternate approaches, principles, and solutions. You must solve the case according to what you think is the proper application of survey principle. You will then compare your solution with DAVE GIBSON'S 'best practices' solution which incorporates the correct application of boundary location principles. Defense for the 'best practices' solution will be given for consideration and further learning by the attendee. If you love to discuss tough boundary location situations, then you will love this case and learn something new. You will also learn other viewpoints for your consideration. The beginner can benefit from the instruction they give as much as the experienced practitioner. This course is a portion of the longer 6-hour course titled 'Dave Gibson's All Star Metes and Bounds Boundary Cases' also offered on RedVector.com. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Stormwater Discharges from Construction Activities	2	Advanced	Stormwater discharge from construction activities can have a significant impact on the water quality of rivers, lakes, and coastal waters with pollutants like sediment, debris, and chemicals. Stormwater discharges from construction activities that impact one or more acres are regulated under the National Pollutant Discharge Elimination System (NPDES) stormwater program. This two-hour course discusses the importance of stormwater controls on construction sites as well as a detailed look at specific construction-related pollutants. This course also provides participants with an overview of the new NPDES 2012 Construction General Permit (CGP), which is an update to 2008 CGP. In order to implement the new Effluent Limitations Guidelines and New Source Performance Standards for Construction and Development point sources (C&D rule), construction site operators must meet new restrictions on erosion and sediment control, pollution prevention, and stabilization.
Stormwater Harvesting: A Green Concept	3	Intermediate	Everyone can't stop talking about ways to "reduce our footprint" on our planet. Engineers have a unique opportunity to aid in this effort when designing a project and one of those ways is through stormwater harvesting. Historically, stormwater has been collected as quickly as possible and conveyed away from the site. However, with harvesting stormwater, you collect and store the water on the project site, infiltrating as much of the water as possible. This allows the post-development conditions to more closely mimic the pre-development

Title	Hours	Level	Description
			conditions, reduces the size of downstream structures, and treats stormwater as a resource to be utilized rather than a problem to be removed. It reduces the hydrologic impact of urbanization. This interactive online course takes a close look at the concept of stormwater harvesting. It describes a process for evaluating site characteristics and developing integrated designs in which water harvesting enhances site efficiency, sustainability, and aesthetics. The course includes reviews of design examples for a subdivision, a commercial site, a public building, and public rights-of-way.
Stormwater Management: Low Impact Development (LID)	3	Intermediate	Several innovative design alternatives such as bioretention, on-lot treatment, porous pavement and green roofs have been developed in an effort to help combat the significant stormwater problems produced by traditional development methods. A number of these methods fall into the category “Low Impact Development (LID)” which focuses on water resource and natural resource protection. This 3-hour interactive online course describes a number of the LID methods that have been proposed. It includes information on applicability, design considerations, limitations, maintenance considerations and pollutant removal effectiveness of these methods. The course is based on guidance provided by the US EPA.
Stress & Change Management for Design and Construction Professionals	4	Fundamental	Stress can be defined as a chronic imbalance of the autonomic nervous system (ANS). This 4-hour interactive online course discusses the dangerous effects of stress and how to control stress through a Stress Management and Relaxation Training Program (SMART). This course is divided into three parts, providing the student with a background study of stress, reasons why it is a problem and practical tested information and techniques concerning stress. These techniques can improve the quality and, very likely, the length of your life. There will be a test included at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Structural Design Philosophies ASD & LRFD	1	Intermediate	Structural engineering design philosophy is based on determining the demand on an element and designing that element with the capacity to withstand that demand. There are two basic approaches to developing the demand; LRFD (Load Resistance Factored Design) and ASD (Allowable Stress Design). Historically, design of different materials (wood, steel, concrete and masonry) has used either ASD or LRFD. This interactive, online course will look at the origins of the two approaches, discuss traditional uses of ASD and LRFD and their safety implications. We will also investigate the differing load combinations as defined in the International Building Code®. Understanding these approaches is an essential element of a life safe design process.
Structural Insulated Panels (SIPs)	1	Intermediate	Structural Insulated Panels (SIPs) are a new sustainable structural panelized building material that can be used for roofs, floors, and wall panels. This course will examine various uses and structural limitations on the materials. An exploration of code requirements and constructability will be included. Design examples will illustrate cost-effective approaches to incorporating this new sustainable material. ATTN: This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying 1 hour of credit toward the required continuing education.

Title	Hours	Level	Description
Structural Masonry Materials	1	Intermediate	Did you know that masonry design is rarely taught in college design courses? Practitioners must research how to use this material. This interactive online course will focus on masonry materials, their structural properties and how these masonry is used in everyday designs for buildings, foundations, and landscaping. We will also discuss how masonry is often used for building foundations and exterior walls, for fire separation walls on building interiors and used in landscaped and terraced exterior walls. This course is intended to close the knowledge gap and provide a background in the use of masonry materials in design.
Structural Steel - An Introduction	1	Fundamental	Are you faced with a project that requires an understanding of structural steel? Do you know the standard steel shapes and how they are connected to erect a building? What is that ASTM specification on the Mill Cert and how does it apply to steel selection? When should you choose structural steel over other materials? This course introduces the student to the basic fundamentals of structural steel.
Stucco in Home Building for Home Inspectors	2	Fundamental	This presentation applies to the application of stucco and bath on exterior walls and ceilings only. We will cover the different types of Stucco applications, such as on wood frame and concrete block houses and with EIFS applications. You will learn how to properly install metal lath and identify potential problem areas in installation. We'll show you critical areas to investigate and not only what to report, but how to report it. Examples of issues and defects will be presented.
Successful Hiring	1.25	Intermediate	Successful Hiring will show you the guidelines and procedures that will dramatically increase your percentage of successful hires. This course will provide you with an understanding of the key steps you should follow in the hiring process; what factors you should take into account when hiring someone; how to pre-screen potential hires; what you legally can and cannot do when hiring an employee; how to advertise for the position; and how to conduct a meaningful interview.
Successful Negotiation	1	Intermediate	One of the more valuable skills to have in life and in business is the ability to negotiate effectively. After all, a successful negotiator can generate valuable returns and preserve relationships in the process. In Successful Negotiation, you'll get a comprehensive overview of how to be an effective negotiator. You'll learn that negotiation is not all about defeating your competitors, but rather that negotiation is about reaching a mutually beneficial solution that keeps everyone happy. This course contains all the essentials you need to become the best negotiator you can be in both your professional and personal life.
Successful Termination	1.25	Intermediate	Designed specifically for managers to teach them how to handle those potentially awkward times when it becomes necessary to pink slip someone. More importantly, managers are provided with a number of helpful suggestions for meting out employee discipline. When the process is followed, it gives the employee multiple opportunities to stop or correct the improper behavior that would otherwise lead to termination and that way, everybody wins. If termination is inevitable, managers need to understand the legal concepts and terminology connected with termination to apply actions that will lead to rightful termination. Study all the ins and outs to successfully terminate an employee.

Title	Hours	Level	Description
Surge Protection	2	Intermediate	Power surges are a serious ongoing problem causing major damage in the U.S. including losses of data. The solution is surge protection. You can be a successful provider of that solution. First, you need to know what a surge is, what causes it, and the best technology to protect against it. This webcast will teach you about surges so that you can understand what you are dealing with. This course will also introduce you to the types of protection available as well as installation recommendations.
Surveying Essentials	1	Fundamental	Where was that property line? Do you see the marker? Surveying is used to produce precise descriptions, such as surveys and maps, of surface features of the Earth. Surveying essentials can be useful for engineers, architects, and contractors. This interactive online course covers the basics of surveying and basic principles used in land surveying, establishment of property lines, positioning of buildings, roads, pipelines, etc. Surveying terminology as well as routine calculations and techniques for making field notes are covered in this course. This course is primarily for those not acquainted with surveying and is intended to provide you with an awareness of surveying essentials.
Surveying Riparian and Littoral (Water-Related) Boundaries	1	Intermediate	Imagine if the boundary you surveyed was constantly moving. Ambulatory water boundaries - boundaries that are subject to change due to the nature of riparian or littoral action - present some of the most difficult and time-intensive property location issues that a surveyor may encounter. In this interactive online course, you will learn about shoreline changes, the effects of inland accretion or reliction, erosion or inundation changes and the effects of avulsion (the process of sudden detachment or addition of land), navigability, and how these actions may affect property boundaries. You will also review the basic principles of boundary law that apply to riparian surveys.
Sustainable Building Technology	2	Intermediate	This course covers key essentials in sustainable building technology, primarily in the areas of lighting, hvac, and plumbing. Sustainable technology and design seeks to reduce negative impacts on the environment, and the health and comfort of building occupants, thereby improving building performance. The basic objectives of sustainability are to reduce consumption of non-renewable resources, minimize waste, and create healthy, productive environments. Design and construction of buildings and related infrastructure create major direct and indirect impacts on the environment.
Sustainable Design: Eco-efficiency of Roofing Insulation Systems	1	Fundamental	This 1-hour interactive online course explores several popular roofing insulation systems - Expanded polystyrene (EPS), Polyisocyanurate (Polyiso), Extruded polystyrene (XPS), and Sprayed Polyurethane Foam (SPF) - and discusses the influences each one has on sustainable design. It is divided into the following sections: Sustainable Development Insulation Systems Technical Aspects Environmental and Economic Aspects Appendix The course begins with an introduction to sustainable development, compares different plastic insulation systems, then follows up with some technical points on each system. Lastly, eco-efficiency analysis is explained and the environmental and economic aspects of each system are discussed.

Title	Hours	Level	Description
Sustainable Sites Initiative and the SITES® Rating System	2	Fundamental	How are you planning on the development of your next site? Have you planned on how you can maintain a healthy ecosystem on your site? This interactive online course introduces course participants to the Sustainable Sites Initiative (SITES®), which is an interdisciplinary effort and framework for the SITES® Rating System based on the concept of ecosystem services, or the benefits that people enjoy from healthy natural systems promoting sustainable land development and management practices. This course includes a discussion of the history and participating entities of the SITES effort. This course will also provide an in-depth study of SITES® Rating System national guidelines and performance benchmarks for soils, hydrology, vegetation, human health and well-being and materials selection for sustainable land design, construction and maintenance practices. This course will conclude with case studies of certified sites fostering resiliency, ecosystem services, human health, materials, soils/vegetation, and water.
Sustainable Solutions: Air Pollution	2	Fundamental	Welcome to the course Sustainable Solutions: Air Pollution. In this course we will explore the relationship between air pollution and site development. Major pollutant sources and their impacts will be discussed along with strategies for reducing embodied energy and creating favorable microclimates that benefit the site and surrounding area. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2012. All rights reserved.
Sustainable Solutions: Human Health and Well-Being	1	Fundamental	This course emphasizes the importance of using site design to increase physical activity within a community and provides strategies for doing so. It addresses the subject of maintaining positive mental health through the integration of natural landscapes. Strategies for implementing opportunities for social interaction among adults and spontaneous play among children are also discussed. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2012. All rights reserved.
Sustainable Solutions: Invasive Species	1	Fundamental	A foundational principle of an ecological education is the notion of a species' native status. The idea has to do with where a species evolved and was able to establish without the aid of humans. At the other end of the spectrum, an invasive species is defined as one that is nonnative to a particular ecosystem and whose introduction into that system causes or is likely to cause economic or environmental harm or harm to human health. In this course, we will learn about explore the characteristics of an invasive species and cover methods of how to control and prevent invasive species, such as encouraging high-diversity plant communities, limiting habitat fragmentation, maintaining a healthy disturbance, minimizing resource input, and utilizing an Integrated Pest Management (IPM) plan. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2012. All rights reserved.
Sustainable Solutions: Loss of Biodiversity	1	Fundamental	Biodiversity refers to the richness and distribution of species living in a given area. This course will deal with strategies to effectively mitigate negative impacts to habitat and to restore damaged or degraded natural systems on-site. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2012. All rights reserved.

Title	Hours	Level	Description
Sustainable Solutions: Urban Flooding and Water Pollution	1	Fundamental	As the U.S. was discovered and populated, people located their families and businesses near water. Living near water brings many opportunities and some inconveniences. In this course, we will review some basics about flooding and water pollution as well as explore some specifics about these catastrophes and the sustainable solutions we can employ to prevent them. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2012. All rights reserved.
Sustainable Solutions: Water Shortages	1	Fundamental	Over the next forty years, the global population is expected to increase from 6 billion to an estimated 9 billion, yet the world's water supply is constant. Only 3 percent of the global water supply is fresh; the majority of it is locked in ice or stored deep in the earth, making its extraction very expensive. The remaining 97 percent is found in the oceans and is too salty for human consumption, irrigation, and industrial uses. Water from the oceans can be processed; however, desalination is an energy-intensive practice. In this course, we will explore site strategies for reducing water waste and recharging groundwater supplies. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2012. All rights reserved.
Sustainable Urban Design: High Speed Rail	1	Intermediate	High Speed Rail is an increasingly popular means of rapid passenger transit, capable of speeds up to 250 miles per hour. As demand for more efficient, eco-friendly means of mass transit increases, so does the appeal of high speed rail as a more prominent means of travel in the United States. This 1-hour webcast discusses key concepts of High Speed Rail and compares it with other popular modes of transportation.
Swimming Pools: Coordination of Architects & Pool Design Professionals	1	Fundamental	Whether for recreation, training, or therapy, swimming pools can have a multitude of designs. No matter how large or small, how complex or simple, the construction of the swimming pool will entail: Civil design, grading, drainage, parking and utility extension Mechanical designs for heater venting, waste water discharge, and sometimes heating and air conditioning for a natatorium Safe ventilation of mechanical spaces Landscape construction for planters, lighting, decking, walkways, fencing and irrigation Structural designs for supporting foundations including piers Geotechnical concerns for soil stabilization and high water table Architectural designs for restrooms, concessions, offices and support buildings and ADA access to the site This 1-hour online course considers how the construction of swimming pool and aquatic features involves almost all the other building trades on the architectural/engineering design team; therefore, it is essential that the design team members know how to coordinate their own plans, lest "holes" develop in the construction documents. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Swimming Pools: Coordination of Contractors	1	Fundamental	Whether for recreation, training, or therapy, swimming pools can have a multitude of designs. No matter how large or small, how complex or simple, the construction of the swimming pool will entail: Civil design, grading, drainage, parking and utility extension Mechanical designs for heater venting, waste water discharge, and sometimes heating and air conditioning for a natatorium Safe ventilation of mechanical spaces Landscape construction for planters, lighting, decking, walkways, fencing and irrigation Structural designs for supporting foundations including piers Geotechnical concerns for soil stabilization and high water table Architectural designs for restrooms, concessions, offices and support buildings and ADA access to the site This 1-hour online course considers how the construction of swimming pool and aquatic features involves almost all the other building trades on the architectural/engineering design team; therefore, it is essential that the design team members know how to coordinate their own plans, lest "holes" develop in the construction documents. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Swimming Pools: Coordination of Contractors & Building Trade Professionals	1	Fundamental	Whether for recreation, training, or therapy, swimming pools can have a multitude of designs. No matter how large or small, how complex or simple, the design and construction of the swimming pool will entail: Civil design, grading, drainage, parking and utility extension Mechanical designs for heater venting, waste water discharge, and sometimes heating and air conditioning for a natatorium Safe ventilation of mechanical spaces Landscape construction for planters, lighting, decking, walkways, fencing and irrigation Structural designs for supporting foundations including piers Geotechnical concerns for soil stabilization and high water table Architectural designs for restrooms, concessions, offices and support buildings and ADA access to the site This 1-hour online course considers how the construction of swimming pool and aquatic features involves almost all the other building trades on the architectural/engineering design team; therefore, it is essential the design team members know how to coordinate their own plans lest "holes" develop in the construction documents. A separate course, Coordination of Architects & Pool Design Professionals, has been prepared for coordination with the Architect. This course will be directed to the other design professionals, primarily engineers and landscape architects, on the design team. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Swimming Pools: Coordination of Engineers & Pool Design Professionals	1	Fundamental	Whether for recreation, training, or therapy, swimming pools can have a multitude of designs. No matter how large or small, how complex or simple, the design and construction of the swimming pool will entail: Civil design, grading, drainage, parking and utility extension Mechanical designs for heater venting, waste water discharge, and sometimes heating and air conditioning for a natatorium Safe ventilation of mechanical spaces Landscape construction for planters, lighting, decking, walkways, fencing and irrigation Structural designs for supporting foundations including piers Geotechnical concerns for soil stabilization and high water table Architectural designs for restrooms, concessions, offices and support buildings and ADA access to the site This 1-hour online course considers how the construction of swimming pool and aquatic features involves almost all the other building trades on the architectural/engineering design team; therefore, it is essential the design team members know how to coordinate their own plans lest "holes" develop in the construction documents. A separate course, Coordination of Architects & Pool Design Professionals, has been prepared for coordination with the Architect. This course will be directed to the other design professionals, primarily engineers and landscape architects, on the design team. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Swimming Pools: Introduction to Aquatic Design & Construction	2	Fundamental	Most architects, landscape architects, civil and mechanical engineers, construction managers, general contractors and their clients only have infrequent encounters with projects containing swimming pools or other aquatic features. College undergraduate and graduate level studies rarely address the subject of swimming pools at all. As a result, most designers and builders have never had to develop the necessary resources in-house for design and construction, and have sometimes relied upon less than reliable sources of information during their project programming. This 2-hour online course will provide the design team members with an overview of the specialized language of pools, and an improved understanding of the problems encountered in aquatic design. Later courses in this series will develop design criteria, coordination issues, and construction methods. This initial course is intended to expand the knowledge-base for non-aquatic designers and improve their communications with aquatics specialists who only occasionally join the rest of the design team. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Swimming Pools: Mechanical and Hydraulic System Design	2	Fundamental	This 2-hour online course is intended to provide the engineer with basic understanding of hydraulic systems design for swimming pools. Our design process will be cumulative, combining the physical elements of pool design, the regulations governing swimming pools, and engineering criteria all into one process. As they say, you don't want to know how sausage is made! While the engineer may recognize the simple formulae used, he or she may not be familiar with how swimming pools work in the first place. It is the expressed objective of this course to remedy that lack of information and put all that stuff learned in engineering school to work designing pools that are not only fun but safe. Prerequisite. Prior to taking this course students should have a passable knowledge of basic and applied fluid mechanics at the college level and/or extensive field experience in the installation and operation of closed-loop pumping systems. The course is not a masters thesis in mechanics, dynamics or thermodynamics. It is a straight forward application of basic fluid mechanics to an everyday problem. If you are looking for superior academic analysis, formula derivation and integral calculus, you're living out a recurring nightmare of mine and are in the wrong classroom! Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Texas Air Conditioning and Refrigeration Contractors Administrative Rules - Title 16, Chapter 75	1	Fundamental	This informative interactive online course explores the state's administrative rules for Air Conditioning and Refrigeration (ACR) Contractors under Title 16, Administrative Code, Chapter75, administered by the Texas Department of Licensing and Regulation. As an ACR contractor in Texas, you studied the laws and rules to pass your licensing examination. One aspect of these laws and rules is that you must take a one-hour course each year to stay up to date and maintain your license. ACR Contractors are professionals and should always act in an appropriate and professional manner. Knowledge of the most current laws and rules for this profession will enable contractors to perform their work to the best of their ability. The State of Texas has passed laws that provide the minimum specifications for required actions. This course satisfies the continuing education requirement of the TDLR for one hour of training on the rules and regulations for contractors as part of the overall continuing education requirement. Contractors should not only include these standards in everyday actions, but actively strive to exceed them whenever possible.
Texas Air Conditioning and Refrigeration Contractors Occupations Code - Chapter 1302	1	Fundamental	ACR Contractors are considered to be professionals and should always act in an appropriate and professional manner. Knowledge of the most current laws and rules for this profession will enable contractors to perform their work to the best of their ability. The State of Texas has passed laws that provide the minimum specifications for required actions. This informative interactive online course explores the state's requirements for Air Conditioning and Refrigeration (ACR) Contractors, discussing the Occupations Code, Chapter 1302, administered by the Texas Department of Licensing and Regulation. Contractors should not only include these standards in every day actions, but actively strive to exceed them whenever possible.

Title	Hours	Level	Description
Texas Electrician 4-hour CE Program #5	4	Intermediate	This is a four-part interactive course. Part One covers the most recent updates and changes from NFPA 70E® 2018 as well as offers some education on what we need to be doing to stay compliant from an electrical safety perspective as it relates to these new updates. Part Two - For each renewal, an electrical apprentice, electrical sign apprentice, journeyman electrician, master electrician, journeyman sign electrician, master sign electrician, residential wireman, journeyman lineman or maintenance electrician must complete four hours of continuing education. One of those hours must contain training on state law and rules that regulate the conduct of licensees. This course will fulfill that requirement. Part Three covers the changes in Articles 242 and 250 of the National Electrical Code®. Notable changes include the creation of Article 242 and deletion of Article 280 and 285, a new section addressing the bonding of equipment on the line side of the service, specific requirements for aluminum conductors, limiting the role of rebar in the grounding electrode system, fixing an error about the sizing of bonding jumpers, reducing the identification requirements for equipment ground conductors, and providing relief for the sizing of equipment grounding conductors in certain applications. Part Four covers the changes in Articles 300, 310, 311, 312, and 314 of the National Electrical Code®. Notable changes include clarifying which fittings may be concealed, harmonizing building code and electrical code rules for stair enclosures, a complete rewrite of Article 310, a new article 311, specific rules for cable trays and enclosures used together, and major changes for boxes in the ceilings of dwelling units.
Texas Electrician 4-hour CE Program #6	4	Intermediate	This is a four-part interactive course. Part One covers the most recent updates and changes from NFPA 70E® 2018 as well as offer some education on what we need to be doing to stay compliant from an electrical safety perspective as it relates to these new updates. Part Two - For each renewal, an electrical apprentice, electrical sign apprentice, journeyman electrician, master electrician, journeyman sign electrician, master sign electrician, residential wireman, journeyman lineman or maintenance electrician must complete four hours of continuing education. One of those hours must contain training on state law and rules that regulate the conduct of licensees. This course will fulfill that requirement. The third portion of this interactive online course covers the changes in the Chapter 3 wiring method articles of the NEC, namely Articles 320 through 392 (AC cable through cable trays). The fourth portion covers the changes in Articles 404, 406, 408, and 410 of the National Electrical Code®. Notable changes include updating the rules for switches, including listing requirements, new prohibited locations for receptacles, expansion of tamper-resistant receptacle requirements, new marking requirements for panelboards, switchboards, and switchgear, and addressing the unique needs of horticultural lighting.
Texas Electrician 4-hour CE Program #7	4	Intermediate	This is a four-part interactive course. Part One covers the most recent updates and changes from NFPA 70E® 2018 as well as offer some education on what we need to be doing to stay compliant from an electrical safety perspective as it relates to these new updates.

Title	Hours	Level	Description
			Part Two - For each renewal, an electrical apprentice, electrical sign apprentice, journeyman electrician, master electrician, journeyman sign electrician, master sign electrician, residential wireman, journeyman lineman or maintenance electrician must complete four hours of continuing education. One of those hours must contain training on state law and rules that regulate the conduct of licensees. This course will fulfill that requirement. Part Three covers the changes in Articles 411, 422, 424, 430, 440, 445, 450 and 480 of the National Electrical Code®. Notable changes include expanding the GFCI requirements for specific appliances, addressing new overload protection options for certain motors, new listing requirements for generators, and added disconnecting means requirements for generators and batteries. Part Four covers the changes in Articles 700, 702, 706, 725, 770 and Chapter 8 of the National Electrical Code®. Notable changes include clarification of the requirements for transfer equipment, reduced requirements for unit equipment used for emergency lighting, several new requirements for energy storage systems, and the consolidation of several rules in Chapter 8.
Texas Electrician 4-hour CE Program #8	4	Intermediate	This is a four-part interactive course. Part One of this course provides an overview of many of the changes in the 2021 edition of NFPA 70E. Some of the notable changes include a reorganization of Article 110, new allowance for training, clarifications on who can use test equipment, lockout and tagout revisions, new tasks in the arc flash risk assessment, clarifications to the PPE requirements, new provisions for capacitors, and a lot of updated material in the annexes -- new calculations in IEEE-1584, and even a new annex for working with capacitors. For each renewal, an electrical apprentice, electrical sign apprentice, journeyman electrician, master electrician, journeyman sign electrician, master sign electrician, residential wireman, journeyman lineman or maintenance electrician must complete four hours of continuing education. One of those hours must contain training on state law and rules that regulate the conduct of licensees. Part Two of this course will fulfill that requirement. Part Three of this course will briefly discuss the 2020 implementation of the National Fire Protection Association's (NFPA)® new revision process for considering changes to the National Electrical Code (NEC)®. You will be introduced to the 2020 NEC® new articles covering Overvoltage Protection, Medium Voltage (MV) Cable, and Type P Cable. We'll show you how and where the NFPA® has reorganized and relocated articles to expand on Manufactured Buildings and Relocatable Structures. Additionally, we'll review the two articles that were merged into one to cover Marinas, Boatyards, Floating Buildings and Commercial and Noncommercial Docking Facilities. And finally, we'll summarize the changes made to Article 800 General Requirements for Communications Systems. Part Four covers the changes in Articles 600 through 695 of the National Electrical Code®, other than Articles 690 and 691 (PV systems). Notable changes include increasing the requirement for selective coordination for elevators; multiple changes addressing electric vehicles used as a power source; further restrictions on underfloor wiring in ITE rooms; listing, inspection, and GFCI protection requirements for pools and bodies of water, and reduced protection requirements for fire pump wiring.

Title	Hours	Level	Description
Texas Electrician 4-hour CE Program #9	4	Intermediate	This is a three-part interactive course. Part 1 of this course provides an overview of many of the changes in the 2021 edition of NFPA 70E. Some of the notable changes include a reorganization of Article 110, new allowance for training, clarifications on who can use test equipment, lockout and tagout revisions, new tasks in the arc flash risk assessment, clarifications to the PPE requirements, new provisions for capacitors, and a lot of updated material in the annexes -- new calculations in IEEE-1584, and even a new annex for working with capacitors. For each renewal, an electrical apprentice, electrical sign apprentice, journeyman electrician, master electrician, journeyman sign electrician, master sign electrician, residential wireman, journeyman lineman or maintenance electrician must complete four hours of continuing education. One of those hours must contain training on state law and rules that regulate the conduct of licensees. Part Two of this course will fulfill that requirement. The final part of this course will review various wiring and protection-related changes to the 2020 NEC. Included will be a review of requirements associated with arc fault protection, receptacle locations, feeders, load calculations, services, overcurrent protection, and reconditioned equipment. Reconditioned equipment requirements are completely new to the NEC and will place a new emphasis on maintaining equipment. Some changes related to load calculations will have a drastic effect on services sizes. With that in mind, let's not delay and move into our analysis of changes related to the 2020 edition of the National Electrical Code.
Texas Land Surveyors: Texas Administrative Code Rules, Title 22, Part 29	4	Intermediate	Land Surveyors are considered to be professionals and should always act in an appropriate and professional manner. Knowledge of the most current laws and rules for this profession will enable contractors to perform their work to the best of their ability. The State of Texas has passed laws that provide the minimum specifications for required actions. This informative interactive online course explores the state's requirements for Land Surveyors, discussing Title 22, Part Two9 of the Texas Administrative Code (Act), administered by the Texas Department of Licensing and Regulation. Land Surveyors should not only include these standards in everyday actions, but actively strive to exceed them whenever possible.
Texas State Laws & Rules for A/C & Refrigeration Contractors: 16 Texas Administrative Code, Chapter 75	1	Fundamental	ACR Contractors are considered to be professionals and should always act in an appropriate and professional manner. Knowledge of the most current laws and rules for this profession will enable contractors to perform their work to the best of their ability. The State of Texas has passed laws that provide the minimum specifications for required actions. This informative interactive online course explores the state's requirements for Air Conditioning and Refrigeration (ACR) Contractors under Title 16, Administrative Code, Chapter 75, administered by the Texas Department of Licensing and Regulation. Contractors should not only include these standards in every day actions, but actively strive to exceed them whenever possible.

Title	Hours	Level	Description
Texas State Laws & Rules for A/C & Refrigeration Contractors: Title 8, Chapter 1302	1	Fundamental	ACR Contractors are considered to be professionals and should always act in an appropriate and professional manner. Knowledge of the most current laws and rules for this profession will enable contractors to perform their work to the best of their ability. The State of Texas has passed laws that provide the minimum specifications for required actions. This informative interactive online course explores the state's requirements for Air Conditioning and Refrigeration (ACR) Contractors, discussing Title 8, Occupations Code, Chapter 1302, administered by the Texas Department of Licensing and Regulation. Contractors should not only include these standards in every day actions, but actively strive to exceed them whenever possible.
The Change Process	2.5	Intermediate	In LearnSmart's Change Process video training you will learn about where meaningful organizational change begins, as well as the important role that employees and managerial staff play in the success of the transition process. In this course you'll learn about the various behavioral styles that influence the planning and progression of change: thinking, social, personal and more. You will also learn how to control, manage and integrate healthy change initiatives with minimal conflict through empathy, listening skills and celebrating short-term successes. This course will further provide you with strategies on defining job roles, setting performance standards, gathering feedback and building teamwork. With the information, learning tools and management approaches offered here, you will recognize that change should not be a stumbling block for employee relations, but an invitation to bring out the best in their forward thinking and yours.
The Importance of the International Building Code (IBC) in the Design and Construction of Safe Buildings	3	Fundamental	This three-hour webcast gives participants an introduction to the International Building Code (IBC), which is a model building code developed by the International Code Council® (ICC). The IBC Codes provide minimum safeguards for people with regard to building safety. Focus will be on the importance of the code in regard to fire prevention, ingress/egress, and structural stability. Discussions will also include additional codes (e.g., International Plumbing Code) that when referenced by the IBC are adopted, as well. This webcast distills the IBC down to relevant code sections, chapters, and working examples that illustrate fundamental code concepts.
The Petroleum Industry - Crude Oil Classification and Benchmarks	1	Fundamental	Fluctuations in the price of oil triggered the debate regarding the level of world oil reserves, and the capacity to meet future energy demand has taken on a new impetus. This has led to reinvestigation of the methods of crude oil classification and classification of reserves. For the purpose of the course, we'll define petroleum as a naturally occurring mixture of hydrocarbons, generally in a liquid state (that may also include compounds of sulfur, nitrogen, oxygen, metals, and other elements) which occurs in sedimentary rock deposits throughout the world. However, the definition of petroleum-associated materials has been varied, unsystematic, diverse, and often archaic. It is only recently that some attempt has been made to define these materials in a meaningful manner. Thus, it is not surprising that attempts to classify petroleum have also evolved. In this course we will review these methods and present them to you for further consideration in terms of pricing strategies. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2011. All rights reserved.

Title	Hours	Level	Description
The Petroleum Industry - Exploration, Recovery, and Transportation	2	Fundamental	This course will give a non-technical explanation of the technical aspects of oil exploration and recovery; but the information in this course is intended for the technical and non-technical person alike. We'll explore the different operations for exploration and recovery of crude oil and other sources of energy, such as tar sand. We'll also examine the different methods of transportation used to transport varying amounts of oil. This course will also touch upon how the exploration, recovery, and transportation oil affect oil economics, including prices, supply, and demand.
The Petroleum Industry - History, Terminology, and Culture	2	Fundamental	When you think of crude oil, the first thing that probably comes to your mind is the black liquid that is pumped out of a reservoir. Or you might be thinking of the liquid you pump into your car, which you notice is a bit more expensive than it was a decade or even a week ago. The definition of crude oil is confusing and variable and has been made even more confusing by the introduction of other terms that add little, if anything to petroleum definitions and terminology. Actually, until the mid-1800s, this vast untapped wealth lay mostly hidden below the surface of the earth. Some oil naturally seeped to the earth's surface and formed shallow pools that were used as a source of medicinal liquids, illuminating oil, and, after evaporation of the volatile components, as a caulking for boats and a building mastic. For centuries, demand was limited but better refining techniques and surging demand for kerosene and lubricants in the late 19th century changed this. Today, crude oil is the major source of fuel used by people today. In this course, we will go back to petroleum's verbal roots, through its initial uses to its role in society today and the major oil companies that distribute it.
The Petroleum Industry - Oil Supply	1	Fundamental	In this course we will cover conventional and non-conventional oil sources, especially the impact of heavy oil and tar sand bitumen. We will also cover past and present technological, economic, and geopolitical factors of oil. These will be viewed in light of the expectance of peak oil, which is the peaking and subsequent decline of the production rate of oil, and the knowledge that oil is a limited resource.
The Petroleum Industry - Origins and Occurrence of Oil	1	Fundamental	In this course we will discuss the formation of oil and review the theories of its origin. You will get comprehensive information about oil reservoirs including their structure, oil accumulation, as well as distribution, migration and transformation of reservoir fluids. We will cover classification and evaluation of reservoirs and estimation of fuel reserves. We will also review fuel reserves focusing on quality, quantity, patterns, and benefits. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2011. All rights reserved.
The Petroleum Industry - The Crude Oil Market	2	Fundamental	Petroleum economics is the field that studies human utilization of petroleum resources and the consequences of that utilization. In the simplest scientific terminology, petroleum use allows the production of energy. In this course we will discuss the factors and pricing strategies that determine oil prices, the transportation of oil from the producer to the consumer, and the structure of the crude oil market and global consumption of oil.
The Petroleum Industry - The Future	1	Fundamental	Crude oil is the major source of fuel used in the modern world, and the crude oil sector is the largest and most dominant economic sector of business in the United States. The United States has come not only to rely on crude oil but the nation is also addicted to crude oil. Cures for this addiction are possible, such

Title	Hours	Level	Description
			as a reduction in the amount of oil required for daily life, but will take time and are unlikely to succeed in the near term. This course discusses the future of the petroleum industry and illustrates how the increasing demand for energy affects both crude oil resources and production of alternative fuels.
The Principles and Implications of the International Energy Conservation Code (IECC) v2012	2	Fundamental	Green building and sustainable design are hot topics in the building design and construction industry. Beyond the hype, though there is a real advantage to employing many of the tactics espoused by these strategies, chief among these advantages is the ability to save money while saving the environment. Many standards have been written in an attempt to codify these green approaches. ASHRAE has put out their 189.1 standard, and industry personnel are very familiar with LEED. Another entity that is pushing the boundaries of green and sustainable design is the IECC - International Energy Conservation Code. In this course we will explore the tenets and nuances of that standard.
The Risk of Misclassification of Employees & Essentials of I-9 Compliance (RV-PGM144)	1	Fundamental	In the first module of this interactive, online program, we will define the term independent contractor. We will describe tests used to classify workers as independent contractors, such as behavior controls, financial controls, and the actual working relationship, and we will discuss examples of independent contractors. The second module of this program will discuss valuable information on how to complete Form I-9, an important document used for employment eligibility verification. The Form I-9 is a valuable and easy-to-use tool. The use of Form I-9 helps protect jobs for authorized workers, and ensure a legal workforce.
The Science of Mold	1	Fundamental	Mold is found throughout nature and is critical to the success of the food chain in forests and low land areas. Yet, if mold shows up in your home interior, it is usually a sign that something is wrong. If not dealt with correctly, mold will become a problem for the human inhabitants. This course will introduce you to the fundamentals of what good and bad mold is, and why it should be respected but not feared. It will also provide the building blocks for a more complete understanding of what it takes for fungal growth and some simple steps toward safely remediating it from the indoor environment.
The Sustainable Site Design Process	1	Fundamental	Sustainable site design is a creative and analytical process of information gathering, investigation, and composition that utilizes art and science to connect natural and built systems in a mutually beneficial way. Design outcomes are not inherently sustainable and should not be assumed just because a site is made up of vegetation, soil, and other natural components. Like all successful aspects of a project, sustainability must be intentional and nurtured. By infusing sustainability into all aspects of the design, it becomes an interwoven and inseparable component that is vital to the project's overall success. Traditional design processes and team interactions do not always support sustainable outcomes. To help overcome this issue, this course will cover an integrated design process designers can use which encourages the collaborative efforts of a project team and the utilization of the technical expertise of other professions to broaden the team's awareness of the range of possible design solutions. Posted by arrangement with John Wiley & Sons, Inc. Copyright © 2012. All rights reserved.

Title	Hours	Level	Description
The Ultimate Project Manager, Chapter 01: Today's Project Manager	2	Intermediate	Project management in the design industry is changing at a furious pace. Projects are increasing in complexity, and project managers in design firms are confronting an overwhelming volume of project information. Project teams are expanding and becoming more integrated as the walls between design and construction disintegrate. New communication and technology tools are allowing project teams to become more mobile and more global. New software solutions and project delivery methods are transforming the ways that projects are managed, designed, and built. On top of it all, clients are demanding even faster timelines and stricter adherence to budgets. With design firms and project managers operating on an entirely new playing field from just a few years ago, PSMJ has revised The Ultimate Project Management course series to guide you through the A/E industry's new project management landscape. In the first course of this series, we will take an in-depth look at what it means to be a project manager in today's high-stress, fast paced business climate. We will examine the duties and responsibilities of a typical project manager and review the traits that make them successful. We will explore the resources and elements that should be included in a project management training program.
The Ultimate Project Manager, Chapter 02: Marketing And Proposals	1	Intermediate	Project managers are also proposal managers. In this course you will learn to treat the proposal process as a project. We will cover selecting quality clients using a client pre-proposal evaluation form. You'll get instruction in making the "go/no go" decision reasons to turn down a project. We'll show you how to manage the proposal just like a project through use of proposal manager's checklists. You'll learn how to prepare for the first proposal meeting, choose support staff, meet with clients during the proposal phase, and define scope of services. We'll pull together the entire proposal and identify the difference between good and bad proposals, and how to avoid proposal pitfalls. You'll also learn how to improve your presentations and complete a post-award analysis.
The Ultimate Project Manager, Chapter 03: The Contract Agreement	2	Intermediate	This third course in the The Ultimate Project Management series discusses important information regarding contract agreements, and illustrates what project managers need to know to successfully negotiate contracts. We will examine contract basics, including contract sections and appropriate terms, in addition to negotiating rules and ways to manage risk. The purpose of this course is to provide project managers with a solid understanding of contract agreements and tools necessary to negotiate profitable projects.
The Ultimate Project Manager, Chapter 04: The Project Management Plan	1	Intermediate	The purpose of this course is to provide you will the skills required to develop and administer an efficient project management plan. You will learn the major elements and concepts of a project management plan, and how to use those to effectively develop and administer a project management plan that meets your client's needs. Above all, you will understand how effective project management planning can not only help your project succeed, but your business too.
The Ultimate Project Manager, Chapter 05: The Project Schedule	1	Intermediate	Successful projects are achieved for a variety of reasons, but an essential component is the project schedule. The purpose of this course is to not to demonstrate the importance of project schedule, but of an effective project schedule. We'll cover the different purposes for using a project schedule and the different techniques that can be used to build a project schedule. Throughout the course, remember that producing project schedules is not a

Title	Hours	Level	Description
			project itself; instead they are tools to help you successfully achieve your project goals.
The Ultimate Project Manager, Chapter 06: The Project Budget	1	Intermediate	Price, cost, budgets, estimates, fees, revenues, etc.—there always seems to be confusion about these terms. Are they the same thing or different? If they are different, what is the difference? These are some of the questions that we will answer in this course. This course will not attempt to make the project manager into an accountant; however, a basic understanding of these terms is vital to establishing the project budget. Assuming that the PM has completed the planning and scheduling phase, it is now time to align the project budget to the tasks in the project management plan.
The Ultimate Project Manager, Chapter 07: Leading The Project Team	1	Intermediate	The project team is made up of experienced individuals who need to work together toward successful completion of a project. This course gives you, the project manager, the processes, methods, and tools to build and lead your project team. You will get instruction in: Selecting the team Ensuring maximum productivity Maintaining project records Managing design consultants Delegating to and motivating your team.
The Ultimate Project Manager, Chapter 08: Managing Client Relationships	2	Intermediate	In the design industry, business is built around good service...and good service depends on good relationships. This eighth course in The Ultimate Project Manager series discusses the importance of establishing and maintaining good client relationships. Keys to a successful client relationship will be discussed, in addition to ways to create a positive impression and provide a great client experience.
The Ultimate Project Manager, Chapter 09: Developing Effective Communications	1	Intermediate	Effective communication goes a long way in building rapport with your co-workers and clients and informing all project stakeholders involved of a project's direction and progress. The purpose of this course is to teach you about the various communication methods that can be used in your work place. In this course you will learn about the three most common types of communication (i.e., verbal, written, and body language) and how to use communication to send messages, conduct meetings, and monitor a project's progress.
The Ultimate Project Manager, Chapter 10: The Project Startup	1	Intermediate	A successful project is the result of many factors, but a well-organized project manager is one of them. The purpose of this course is to teach you the project management skills that are essential to starting a project off on a positive note. In this course you will learn how to start project meetings with your co-workers and the client and how to record and manage documents and files for others to use in your project manager's notebook.
The Ultimate Project Manager, Chapter 11: Managing Your Time	1	Intermediate	Your time is your most valuable personal asset. It's one of the few things that can't be purchased. By definition there is also a limited amount—no matter who you are, there are only 24-hours in a day. Therefore, how you allocate this limited personal resource will determine your success in both your personal and professional life. In this course, we will take a look at some of the ways that you can better manage your time by examining effective ways to handle meetings, interruptions, and your own schedule.

Title	Hours	Level	Description
The Ultimate Project Manager, Chapter 12: Managing Project Studies And Reports	1	Intermediate	Because many design firms are consulting with clients using studies and reports, rather than designing; you, as a project manager, may find yourself managing project studies and reports. In this course you will get guidance in comparing design and study projects. We'll give you specialized instruction in planning and managing the study project as well as focused direction in the report preparation process. We'll also cover engineering calculations, technical or peer reviews, and final activities including oral presentations.
The Ultimate Project Manager, Chapter 13: Managing Design And Construction Phases	2	Intermediate	Typically, design projects are divided into three phases: preliminary design, production design and bidding, and construction. Each phase requires project planning to maintain control and ensure the project is completed on time and on budget. The purpose of this thirteenth course in The Ultimate Project Manager series is to provide a practical guideline for each phase of production. Design development and required documentation is covered, in addition to the production design process and the project construction phase.
The Ultimate Project Manager, Chapter 14: Managing Project Quality	1	Intermediate	Have you produced projects that did not meet you or your client's expectations, despite having a skilled team and rigid project management plan? This could have been because quality was not accounted for early on in the project. The purpose of this course is to show you methods and tools you can use to implement and improve the quality of your projects. You will learn: How to build quality into your project How to estimate the annual costs of a substandard project to determine the how much you should spend on meeting quality expectations How to work within quality assurance programs and manage the quality control process How to review the quality of your project, allowing you to improve the quality of your project How to prepare for design changes that can unexpectedly show up.
The Ultimate Project Manager, Chapter 15: Managing Project Risks	1	Intermediate	The process of identifying and managing the various types of project risks has become especially important in today's business environment, where all parties jump to legal action as the first step in resolving any dispute. Unfortunately, the design firm, your organization, is in the center of almost every dispute. The purpose of this course is to provide you with the methods and tools you will need to identify, manage, and mitigate risks in your projects. In this course you will learn about three fundamental elements that limit a firm's liability for project risks: Identifying all potential types of risk that could impact the project Assigning the management of each type of risk to the party who is best suited to manage/control the risk Implementing a risk management plan to manage and/or mitigate the risk elements of each risk assigned to the design firm.
The Ultimate Project Manager, Chapter 16: Project Financial Management	1	Intermediate	Every design firm is in the business of providing professional consulting services to its clients. To be successful and remain in this business, however, its projects must be profitable (i.e., the revenue must exceed all costs including overhead and profit expectations). In addition, clients must receive invoices in a timely manner, and your firm must receive payment for the completed work within the time specified in the contract. A PM is assigned to each project, not only to manage the project team and to ensure that the project budget is met, but also to ensure: The client receives invoices for the scope of services Payments are received from the client within the contract payment period The project achieves its “as-sold” financial results with no write-offs

Title	Hours	Level	Description
			In a nutshell, the PM is responsible for the project's financial management in two primary areas: cash flow and profitability. This means the PM must be familiar with the monthly financial reporting cycles and have the ability to plan, track, and evaluate the fiscal performance of a project. He or she must understand how the project's total gross revenue relates to the project direct labor and project expenses, including consultants. Plus, the PM must also understand how the planned and actual project performance contributes to the overall profitability of the firm. In this course we will look at all these responsibilities and concepts in detail.
The Ultimate Project Manager, Chapter 17: Project Management And Design Technology	1	Intermediate	Technology can be the project manager's best friend. In this course we will review some basic concepts of technology systems with extra emphasis on Building Information Modeling (BIM). You'll get instruction in selecting and testing software and using templates and standard forms. We'll examine the latest communications tools and the use of project websites. You'll also receive encouragement in backing up data and creating archives. We'll also touch on making sales presentations using your computer as well as training the design staff in computer technology.
The Ultimate Project Manager, Chapter 18: Monitoring And Controlling The Project	1	Intermediate	The control of the project team and the project are the main responsibilities of a project manager. Because so much of the project accountability is in the hands of the project manager, it is essential that these professionals have the required skills to ensure each project is completed successfully. The purpose of this eighteenth course in The Ultimate Project Manager series is to provide detailed project management duties and responsibilities, including monitoring the progress of the project, tracking and analyzing schedules and budgets, and anticipating problems so they can be avoided.
The Ultimate Project Manager, Chapter 19: Project Closeout	1	Intermediate	Closing out a project can be as difficult, if not more so, than starting a new project. Just like a project which must be carefully and thoroughly planned out, so must the project closeout. The purpose of this course is to guide you through the processes and all considerations that should be accomplished in and that should be considered during project closeout. You will learn: The importance of having a plan for wrapping up a project The different types of analyses and closeouts that need to be completed How to acquire and preserve a knowledge management program How to converse with project stakeholders involved in the project closeout
The Ultimate Project Manager, Chapter 20: Alternative Project Delivery Methods	1	Intermediate	Design-bid-build may still be the dominant method of project delivery in the AEC industry, but its popularity is in decline. Change is taking place in the AEC industry as alternative project delivery methods become a more popular choice, and project managers need to adapt to the changing marketplace. In the twentieth course of this series, we will take a look at the changes and discuss the advantages and risks involved in the selection of alternative project delivery methods.
The Ultimate Project Manager, Chapter 21: A/E Project Management Benchmark Data	1	Intermediate	As a project manager, you will want to keep up with the constantly changing industry practices and compensation. In this course, we will give you the results of surveys so that you will know what's happening in the industry and how your firm compares to your competition. You'll get project manager staffing levels, net revenues per project manager ratio, and direct labor hours per project manager ratio.

Title	Hours	Level	Description
			We'll cover senior project manager and junior project manager compensation. You'll also get project manager time charges, design firm billing rates, contract forms and terms, design fees as a percentage of construction costs, direct project expense, and a section on electronic data processing.
The Ultimate Project Manager, Series Summary: The Short and Sweet Version	1	Intermediate	The accomplished PM is responsible for leading, staffing, and managing all aspects of the project. This includes the work of the entire project team and the work performed by all administrative, engineering, and construction disciplines even if the PM isn't specifically trained in the technical aspects of the other disciplines. It also includes the extremely important aspects of client relations. It is the project manager who is charged with the responsibility to deliver the service to the client. In this course we will touch upon the different phases leading to the foundation of the project and project features the project manager must control for in order to see the project come to a successful close.
The Value of Concentrating Solar Power and Thermal Energy Storage	1	Intermediate	This course examines the value of concentrating solar power (CSP) and thermal energy storage (TES) in four regions in the southwestern United States. The analysis shows that TES can increase the value of CSP by allowing more thermal energy from a CSP plant's solar field to be used, by allowing a CSP plant to accommodate a larger solar field, and by allowing CSP generation to be shifted to hours with higher energy prices. We will look at the sensitivity of CSP value to a number of factors, including the optimization period, price and solar forecasting, ancillary service sales, capacity value and dry cooling of the CSP plant. We will also discuss the value of CSP plants and TES net of capital costs.
The WELL Building Standard	3	Fundamental	How well does your building fit your tenants? Do your employees need a place to walk or work out? This interactive online course introduces the WELL Building Standard and discusses unique "features" (known as “credits” in LEED) to certify projects and gain the credential. We will discuss the application of the WELL standard to a hypothetical case study, conducting a feature-by-feature analysis and comparing the building before and after the standard is applied.
Torts and the Surveyor	1	Fundamental	A tort is defined as a "civil wrong," not simply negligence. Surveyors guilty of a tort may be sued for something as simple as cutting a tree limb or as complex as a re-establishment of a 150-year-old boundary. Surveyors, like all professionals, have liability for their errors. Most surveyors who are sued encounter a lawsuit in the form of a tort action resulting from a claim of negligence. This interactive online course reviews the specific elements considered to comprise a tort, and recommends strategies to reduce professional liability. It also compares the differences between negligence and tort, and underlines that a tort is a more serious charge. Learn about the standard four elements of any tort - duty, breach, cause and damage - and how to reduce your professional liability.
Traffic Control Measures	2	Fundamental	Traffic control uses design and operational strategies to influence the movement, flow, and speed of traffic. You can apply the information and methods you learn in this interactive course to develop new and modify existing transportation infrastructure. The expertise you acquire can add benefit and reduce potential danger in all your projects.

Title	Hours	Level	Description
Transformers I - Electrical Characteristics	1	Advanced	This 1-hour interactive online course is the first part of a series of courses on electric distribution transformers. In this part we will look at the basic electrical characteristics of transformers including how magnetism is used to create a voltage within the transformer. Characteristics such as how a transformer works, how the primary and secondary voltages and currents are related, how to calculate the transformer's regulation and efficiency, as well as the factors contributing to losses within the transformer are reviewed. Diagrams are presented that show the basic construction of a distribution transformer and the course includes a description of the common designs in use today such as shell-form designs, core-form designs, and the various three-phase designs. The course includes a multiple-choice test at the end.
Transformers II - Standards	2	Advanced	This 2-hour interactive online course is the second in a series of courses on electric distribution transformers. In this course, we will review the various methods to classify transformers including cooling methods, protection schemes, and installation types. This course discusses transformer types, including oil-filled and dry types, as well as the different types of transformer oils that are used. Both conventional and CSP transformers are reviewed. Standards, such as the insulation standard, short-circuit withstand, voltage rating identification, and terminal markings, are reviewed. Finally, transformer loading issues and methods to evaluate the cost of operating distribution transformers are discussed. The course includes a multiple-choice test at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Transformers III - Connections	2	Advanced	This 2-hour interactive online course is the third in a series of courses on electric distribution transformers. In this course, we review the application of single-phase transformers in both single-phase installations and three-phase installations. Other factors such as the available fault current at the secondary of a transformer are reviewed as well as how ferroresonance impacts the operation of distribution transformers. The course includes a multiple-choice test at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Transit-Oriented Development	2	Fundamental	This webcast introduces the concept of Transit Oriented Development (TOD), which is a walkable, high-density, compact, mixed-use form of development typically focused within close proximity of a transit station. The course focuses on TOD social, economic, and environmental implications in terms of transit ridership, property values, congestion relief, pollution reduction, community place making, and other aspects of transportation and urban policy. This course also addresses potential negative consequences of TOD including trampling neighborhood character, gentrification, and increasing urban sprawl and concludes with snapshots of successful TOD case studies.

Title	Hours	Level	Description
Transmission and Distribution: Care and Testing of Tools and Equipment	1	Intermediate	For their safety, lineworkers need to know how to inspect and care for the tools and equipment they use every day. Understanding the routine tests that are periodically performed on protective equipment enables lineworkers to have confidence in the equipment. This interactive online course will cover care, inspection, and testing of tools and equipment commonly used in transmission and distribution maintenance work. It will describe the purpose of and procedures for performing dielectric tests, acoustic emissions tests, and visual inspections of various tools and equipment. It will also cover basic guidelines for keeping tools and equipment in safe operating conditions.
Transmission and Distribution: Distribution Line Installation and Removal	1	Intermediate	Sometimes changes are made in the area around a distribution line that make it necessary to relocate or replace a portion of that line. This interactive online course will familiarize you with the general procedures involved in completing a typical distribution line installation and removal. You will learn how to plane an installation and removal job and how to perform the major steps involved in doing the job. You will also learn how to pull and sag lines, parallel a new line with an existing line, remove conductors, and remove equipment.
Transmission and Distribution: Distribution Line Replacement	1	Intermediate	The purpose of this course is to teach how to replace conductors in an existing line with new conductors. The situation described is one that often occurs when it is necessary to increase the size of the conductors in a line. This interactive online course demonstrates how to install the new conductors, parallel them with the existing conductors, and remove the old conductors. The importance of maintaining the proper clearances and the importance of maintaining the integrity of the existing line are explained. Safety is emphasized throughout the course. At the conclusion of this course, participants should be able to plan a replacement job and demonstrate how to perform the major steps involved in doing the job. They should be able to install temporary crossarms, transfer lines, pull and sag new lines, parallel a new line with an existing line, and remove old conductors.
Transmission and Distribution: Focus on Distribution	1	Intermediate	The transmission part of a transmission and distribution system supplies electricity to substations and individual service areas. While the job of the distribution part of a T&D system is to take this electricity and supply it to individual consumers at a voltage they can use; doing this job properly requires the use of a variety of electrical devices and an intricate system of distribution lines. This interactive online course will teach you about the components that make up a typical distribution system. You will learn how to recognize individual components and gain a basic understanding of the jobs they perform.
Transmission and Distribution: Framing Specifications and Basic Construction Diagrams	1	Intermediate	The purpose of this course is to teach participants the kinds of information that can be obtained by reading electrical system diagrams and to illustrate how this information can be used to assist lineworkers who work on electrical systems. Practical examples of how to get information are given throughout the course. At the conclusion of this course, participants should know what kind of information is typically found on construction diagrams, on schematic diagrams, and in specification manuals. They should know how to use all of these references to determine the information necessary to do a job.

Title	Hours	Level	Description
Transmission and Distribution: Introduction to Transmission and Distribution Systems	1	Intermediate	The purpose of this interactive online course is to teach participants how transmission and distribution (T&D) systems generally deliver to customers the power produced by power plants. The course describes how the major components of a T&D system function and how electricity flows through these components on its journey from the power plant to customers. At the conclusion of this course, participants should have a basic understanding of how transmission and distribution systems operate. They should be able to identify the basic components of a transmission and distribution system and explain their functions. They should also be able to describe the flow path from a power plant, through a typical T&D system, to the customer.
Transmission and Distribution: Overhead Distribution Systems	1	Intermediate	The purpose of this interactive online course is to teach the basic layout of overhead distribution systems, to explain how to identify circuits and equipment in the field, and to introduce delta- and wye-connected distribution systems. The basic theory underlying the operation of delta and wye systems is presented, and the differences between them are discussed. At the conclusion of this course, participants should be able to describe the basic layout of an overhead distribution system and identify circuits and equipment in the field. They should understand the basic characteristics of delta and wye systems and should be able to identify delta and wye circuits in the field. They should also understand the importance of identifying whether a system is connected delta or wye before any work is performed.
Transmission and Distribution: Pad-Mounted Transformers and Switchgear	1	Intermediate	The purpose of this interactive online course is to teach the basic principles of operation of pad-mounted transformers and switchgear, the types of equipment that are in common use, and how they are connected. The course also presents the basic principles of pad-mounted transformer and switchgear inspection and troubleshooting and shows an example of how to detect a problem with one leg of a three-phase transformer. At the conclusion of this course, participants should be able to state how pad-mounted transformers and switchgear are used and to describe how they are connected. They should be able to recognize and identify commonly used types of pad-mounted transformers and switchgear. They should also be able to inspect pad-mounted transformers and switchgear, and they should be able to detect a problem with one leg of a three-phase transformer.
Transmission and Distribution: Safety in Underground Line Maintenance	1	Intermediate	Are you familiar with the best practices and PPE for underground line maintenance? This interactive online course covers the basic safety principles and practices applicable to underground line maintenance work. The principles addressed are applicable to work area safety, the use of test equipment to ensure respiratory and electrical safety, and to ensure the structural integrity of underground work sites. At the conclusion of this course, participants should be able to identify some of the hazards found in and around underground work areas. They should be able to recognize and explain methods used to provide a safe work environment. They should also be able to describe the use of personal safety equipment.

Title	Hours	Level	Description
Transmission and Distribution: Service Installation	1	Intermediate	Each service installation job you do will be different because of different site conditions, but the basic installation skills and practices you will learn in this course can be applied no matter what type of service installation job you're doing. This interactive online course will teach you how to install and connect services. You will learn about the different types of connectors available and how service conductors are joined together using some of those connectors. You will also learn how to install single phase, overhead, and underground residential service. Additionally, you will learn how to install three-phase service, and how to replace an existing three-phase service without affecting the customer.
Transmission and Distribution: Substations and Switchyards	1	Intermediate	Electricity affects almost everything we do. Sometimes its impact is so subtle, we don't even realize it's there. Just about everybody depends on it and expects it to be available when it's needed. From the businesses that use electricity to process information to suburban homeowners who rely on electricity for the basic conveniences we've grown accustomed to, to the rural dairy farmer who relies on electricity to operate much of his machinery, our entire country is interlaced with transmission and distribution systems that get electricity to where it's needed when it's needed. The purpose of this interactive online course is to teach the basic safety principles and practices applicable to substation and switchyard maintenance work. The course describes electrical, chemical, and personal hazards that may be encountered in substations and switchyards. A general procedure for responding to imminent dangers and accidents is also presented. At the conclusion of this course, participants should be able to identify hazards in substations and switchyards and explain why safety practices are important. They should be able to recognize hazards and unsafe practices on the job, and they should have a general understanding of how to respond to imminent dangers and accidents.
Transmission and Distribution: Transmission Line Installation	1	Intermediate	The purpose of this interactive online course is to describe and demonstrate an approach to installing a transmission line. This work is not a routine part of a lineworker's job in many locations, but an understanding of the basic approach is useful to individuals who are responsible for maintaining lines. At the conclusion of this course, participants should understand how to plan and set up an installation job, the purpose of guard structures, and how to set them up. They should also know how to pull conductors into place to properly sag and how to clip them permanently to the insulators.
Transmission and Distribution: Transmission Line Safety	1	Intermediate	This course is designed to cover three major areas relating to safety in transmission line work: personal safety, electrical safety, and work site safety. Specific attention is directed to proper clothing and protective equipment; hazards associated with slipping, tripping and falling, and lifting and moving loads; electrical hazards and steps that can be taken to safeguard against them; and how personnel can work safely at the job site, both on the ground and while climbing transmission structures. This interactive online course assumed a familiarity with basic electrical theory and transmission and distribution systems. Participants without this prior training may require additional explanation or instruction.

Title	Hours	Level	Description
Transmission and Distribution: Underground Residential Distribution Systems	1	Intermediate	Recent developments in technology, such as the development of cable and equipment that can be directly buried in the ground have made underground installation of electrical service to residential areas easier than ever. Today, many residential subdivisions have all their utilities installed underground, giving a cleaner, more picturesque look to the neighborhood. This interactive online course is about underground residential distribution systems, also known as URD systems. URD systems are local distribution systems designed primarily to be buried in the ground and serve residential customers. The purpose of this course is to give you a basic understanding of the common types of URD systems, as well as some of the various components that may be used in a URD system. We'll also be looking at some of the ways a URD system can be inspected. Finally, we'll see a demonstration of how a URD system has been set up to allow work to be done on it safely and efficiently.
Transmission and Distribution: Using Line Test Equipment	1	Intermediate	The purpose of this course is to introduce types of line test equipment used in the field to detect voltage, amperage, and resistance; to show how this equipment is used; and to show the kinds of readings that can be expected from this equipment. After completing this course, participants should be able to identify types of line test equipment used in the field. They should have a basic understanding of the use of this equipment; they should know how to determine which instrument to use; and they should be able to demonstrate the use of each meter to take a reading.
Transmission and Distribution: Using Various Types of Electrical Diagrams and Geospatial Information Systems	1	Intermediate	Did you know different types of electrical system diagrams are used to show large portions of an electrical system down to a single structure or even a portion of a structure? The purpose of this course is to teach the basic kinds of information that can be obtained from various types of electrical system diagrams: one-line diagrams, plan-profile diagrams, framing diagrams, and GIS technology. The course shows how these diagrams are read and interpreted and how information can be used to complete an assignment. This interactive online course will show participants what information is typically found on one-line, plan profile, framing diagrams, and GIS applications. They should also be able to interpret diagrams to determine the location of a job site and then plan the best route to the site. In addition, participants should be able to use a framing diagram to determine what materials should be present at a work site and in what quantities.
Transmission and Distribution: Working on Distribution Poles	1	Intermediate	The purpose of this course is to teach the basic principles involved in working safely on distribution. To illustrate these principles, you will be shown some resources available for planning distribution work. This interactive online course will teach you general considerations associated with planning a distribution job. You will also learn how a variety of tools and equipment can be used, including an auxiliary arm. Additionally, you will learn how to replace secondary conductors, move energized conductors, and how to install floating dead-ends.
Transportation Engineering: Highway Capacity	2	Fundamental	Highway accidents result in thousands of deaths a year. Knowing how highway capacity analysis is used in the design of safe and efficient roadway facilities is essential to the health safety and welfare of the general population. This interactive online course will teach you about the fundamental concepts of highway capacity analysis. You will learn about transportation system elements, types of roadway facilities, design vehicles, the concept of level-of-service, traffic volume parameters, and speed parameters and how they are relevant in analyzing the capacity of roadway facilities.

Title	Hours	Level	Description
Transportation Engineering: Introduction to Transportation, Planning, and Funding	2	Fundamental	In the United States, transportation accounts for approximately 17 percent of the gross national product (GNP), and approximately 15 percent of household income is spent on transportation needs; therefore, transportation, which can be defined as the movement of people and goods, is vital to business and life in the U.S. This interactive online course will discuss the structure, administration, planning, and funding of United States highway system. Topics that will be covered include an overview of the structure of the US highway system, the role of State Departments of Transportation, transportation at the local government level, the functional classification of highways, and the funding mechanisms currently in place for transportation at the federal, state, and local government levels. While this is not a Florida-specific course, please be advised that the presenter will be utilizing examples from his experience as a licensed engineer in the state of Florida.
Transportation Engineering: Mass Transportation	2	Intermediate	Mass transportation (or public transportation) is any form or shared-passenger transportation service available for use by the general public. The types (or modes) of mass transportation include airline service, bus (commonly referred to as transit or transit service in the United States), paratransit (van service), light rail (also known as tram), commuter rail, heavy rail, ferries, as well as other modes such as motorized tricycles (often referred to as auto rickshaws) that are common and widely used in mostly developing and emerging economies. New and innovative modes of mass of transportation include Maglev trains. The focus of this interactive online course will be on modes of mass transportation and mass transportation systems common within the United States, in particular transit, paratransit, light rail, commuter rail, and heavy rail.
Transportation Engineering: Traffic Flow Theory	2	Fundamental	This interactive online course presents the fundamentals of traffic flow and queueing theory which form the basis of all traffic analysis. This course presents the relationships among traffic flow, traffic density, and speed which are the primary elements of a traffic stream. These relationships guide engineers in planning, designing, and assessing traffic engineering improvements on highway systems and transportation networks. This course presents analytical methods that are applied in the design of new facilities, and also in evaluating impacts of modifications to existing transportation networks. Specific applications of the fundamental principles presented in this course include analyzing turn lane lengths, evaluating freeway ramp operations, estimating traffic flows at intersections, determining traffic flows at toll booths, and assessing the impacts of bottlenecks and traffic incidents on highway performance. This course presents statistical methods and how they are applied to analyze and manipulate traffic flow data, as well as how they are used to identify deficiencies in transportation systems as well as how they are used to assess traffic operations.
Transporting Hazardous Materials	0.5	Intermediate	Every day, hazardous materials are shipped in this country—materials that could threaten the safety of individuals, property, and the environment. These materials are transported by truck, by train, by air, and by water. Because of the risks posed by transporting hazardous materials, you need to know about the potential dangers and steps you must take to help protect yourself and others against them.

Title	Hours	Level	Description
			In this interactive, online course, we'll cover some general requirements associated with transporting hazardous materials. We'll look at what's meant by the term hazardous materials, and we'll see how these materials are classified. We'll also look at documentation and packaging that must be used when hazardous materials are shipped, and we'll look at labels and placards used to identify hazardous materials.
Trenchless Methods: An Introduction	1	Fundamental	There is a tremendous need to rehabilitate pipes, especially sewer and water lines. In the U.S. alone, there are 1.2 million miles of sewer pipe and approximately 880,000 miles of water distribution pipes. In both cases, the operable life of the infrastructure is 50 to 100 years. The majority of these pipes were laid in the 1940's, after World War II, and most are 50 to 125 years old. Additionally, on-going maintenance is necessary to protect against pipe corrosion, root intrusion, structural failure and other problems. Trenchless technology includes a large family of methods utilized for installing and rehabilitating underground utility systems with minimal surface disruption and destruction resulting from excavation. This 1-hour online course presents an introduction to the most common types of trenchless technology used in the U.S. and provides a real-life example to help you determine the correct technology for the given project. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Understanding Business Ethics	2	Intermediate	In LearnSmart Business Ethics LearnSmart Video Training you'll learn the important principles of ethics as they relate to your business and professional environment. Understanding and practicing ethical behavior plays a critical role in your professional career. Your ethical reputation is important because it sets the tone for how your actions are perceived by colleagues, customers and clients. Ethical behavior can make the difference when you or your company are in line for a new contract or business opportunity. Perhaps more importantly, there are often very strict laws and rules of conduct established by the authorities that you're obligated to follow. When you fail to meet these laws, the consequences can be severe both for you and your employer or company.
Understanding Concrete's Environmental Advantage	1	Fundamental	Environmental concerns are not new to humanity - they date back as long as there is recorded history. Civilizations have had to deal with pollution in many different forms, especially as societies began to grow and cities became more densely populated. The modern-day green movement in the United States can be traced back to the early 1970's with the beginning of the Earth Day movement and the founding of the Environmental Protection Agency, EPA. These efforts have been an attempt to draw attention to the impact humans have on the health and resources of the planet, and the importance of working toward sustainable living and development so future generations can continue to thrive here on earth. This course will take a detailed look at the many environmental advantages of ready-mix concrete and how it is playing a growing role in green building design and construction. Participants will come away with a better understanding of how ready-mix concrete can be used to minimize the environmental impact associated with construction and day-to-day building operations. They will be introduced to the life cycle methodology and shown how ready-mix concrete contributes to earning LEED certification.

Title	Hours	Level	Description
Understanding Construction Claims	2	Intermediate	This 2-hour interactive online course provides a basic overview of the five different types of construction claims that a contractor might have against an owner: Delay, Changed Work, Labor Productivity Loss, Acceleration, and Termination. It defines each type of claim and the subcategories within each, as well as defining the crucial concepts associated with each. It also provides a basic introduction to the various methods for calculating damages related to each type of claim, emphasizing the importance of the project schedule as an evaluation and analysis tool. The course material is supplemented with summaries of actual cases to illustrate how courts and boards rule on the different types of construction claims. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Understanding Fire Sprinkler Drawings and Calculations	1	Intermediate	Do you know what is required for a fire sprinkler system? The required technical fire sprinkler drawings and calculations must be reviewed and approved by the owner's representative; engineer or architect of record; building officials; and fire officials. Many commercial, industrial, and even residential buildings require a fire sprinkler system. This interactive online course will prepare the non-fire protection engineer to thoroughly review and understand complex fire sprinkler drawings to ensure a properly designed and installed system is provided and the health and safety of building occupants is addressed.
Understanding Moisture Intrusion and Its Impact on Mold Growth	1	Fundamental	The basic role of a building is to protect the indoors from the outdoors. That includes water intrusion. Water intrusion can happen in many ways and can have a detrimental effect on the structure and the people within. This course studies the various forms of water intrusion; the physics of how it happens; its effects on building systems and materials; and ways to understand it, avoid it, and remedy it. It also illustrates the impact moisture intrusion has on mold growth, as well as the proliferation of other micro-organisms.
Understanding the Energy Independence and Security Act	3	Fundamental	The Energy Independence and Security Act of 2007 (EISA 2007) established energy management goals and requirements while also amending portions of the National Energy Conservation Policy Act (NECPA). This webcast will discuss the Federal energy management and water conservation requirements in several areas, including: Section 431 - Energy Reduction Goals for Federal Buildings Section 432 - Facility Management/Benchmarking Section 438 - Stormwater Requirements, and other important high performance building requirements This course will also discuss case studies of EISA implementation.
Understanding Workers' Compensation for Employees (V15)	1	Fundamental	What would happen if you were injured in an accident on the job? Who would pay your medical bills and compensate you for time lost from work? In the state of Florida, not all employers are required to provide workers' compensation insurance. Workers need to understand their rights and know if they are covered in the event of a work-related accident.

Title	Hours	Level	Description
			The purpose of this 1-hour interactive online course is to educate employees about their legal rights under workers' compensation. The class explains what workers' compensation insurance is and who needs coverage. It also discusses proper procedures in the event of an accident, and how implemented preventative measures, such as safety awareness and a drug-free workplace program, can reduce the occurrences of work-related incidents and maintain a healthy workforce. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Understanding Workers' Compensation for Employers V14	1	Fundamental	Under federal and Florida State Law, employers have a legal obligation to provide workers' compensation benefits for workers injured on the job. Failure of eligible employers to provide compensation for injured workers may result in lawsuits and heavy fines, so employers need to know their rights and responsibilities. This 1-hour online course explains what workers' compensation insurance is and who needs coverage. It also discusses proper procedures in the event of an accident, and how implemented preventive measures, such as safety awareness and a drug-free workplace program, can reduce the occurrences of work-related incidents and control insurance costs. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Uninterruptible Power Supply (UPS) System Efficiency	1	Fundamental	Uninterruptable Power Supply (UPS) systems are installed to ensure that critical loads are not affected during an outage. However, they have different modes of operation to save energy while still providing the same back-up power. In this interactive online course, we will examine the differences, how they can be measured and show the possibilities of saving energy without risking equipment downtime. Note: This course offers subtitles in Brazilian Portuguese and Spanish.
Unreinforced Masonry Design	2	Intermediate	How is unreinforced masonry used in construction? This interactive online course will focus on unreinforced masonry design and how the use of this design method is employed every day for buildings, foundations, and interior partitions. Unreinforced masonry is often used for building foundations and exterior walls, for fire separation walls on building interiors and used where compressive resistance to loads is required. Masonry design is rarely taught in college design courses so practitioners must research how to use this material in design. This course is intended to close the knowledge gap and provide a background in the use of this material for design.
Unstable, Reactive, and Energetic Compounds	0.5	Intermediate	Chemical reactions are part of our daily lives. From cooking in the kitchen, to driving a car, to handling chemicals at your workplace, these reactions are commonplace. Dangerously reactive liquids and solids can be extremely hazardous. Accidental or uncontrolled chemical reactions are important causes of severe personal injury and property damage. Unstable, Reactive, and Energetic Compounds course will explain the basic terminology relating to chemical hazard classes and reactivity.

Title	Hours	Level	Description
Urban Drainage – Design of Storm Water Detention and Retention Facilities	2	Advanced	This course will cover the information presented in Chapter 8 of the Hydraulic Engineering Circular by examining the procedures for the design of storm water detention and retention facilities in conjunction with highway design. This course provides a comprehensive and practical guide for the design of storm drainage systems associated with transportation facilities. Design guidance is provided for storm drainage systems which collect, convey, and discharge storm water flowing within and along the highway right-of-way. Methods and procedures are given for the hydraulic design of storm drainage systems.
Urban Sprawl Laws	2	Fundamental	The social, environmental, and economic state of our communities, as well as the health of our population, is affected by our urban environment. Historically, the central objective of planning laws and land use regulations was to safeguard negative consequences associated with the built environment. Concern about rapidly developing urban regions has prompted state legislatures to pass planning laws to manage urban development. This interactive online course will focus on traditional growth management regulations and development restrictions employed in the local, regional, and state policy-making arenas. This course will also discuss a new approach heralded by California in Senate Bill 375 that focuses on regulating air quality standards through land development patterns. The types and functions of both traditional and new planning reform laws are the focus of this course.
Use of Steel in Design & Construction	1	Fundamental	This 1-hour interactive online course discusses the use of steel in design and construction, with the primary focus of the design segment relating to design of buildings, and not entailing design of the myriad of other things in modern society that are made from steel. We will start with a look at the methods of manufacturing various types of steel. The resultant physical characteristics of different types of steel will be examined to understand those applications where the use of different steel is recommended. Techniques for proper use and erection of steel in buildings will be discussed, in conjunction with design considerations. There will be a multiple-choice quiz at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Valves: Basic Types and Operation, Part 1	0.5	Advanced	In most industrial facilities, process systems handle many different types of fluids. The flow of these fluids through plant piping systems is controlled by valves. To keep fluids flowing smoothly, operators need to know how valves operate and how to keep them working properly. In this interactive online course, we will discuss the various uses of valves, their parts, and valve connections.
Vermont Land Surveyor 6 Hour CE Program #1	6	Advanced	Don Wilson presents a 3-part, interactive course covering court decisions and interpreting land descriptions. Part One of this course presents four court decisions covering basic issues of surveying including defining what a survey is and dealing with overlapping descriptions. Principles of retracement, original survey, senior-junior conveyancing, apportionment and historical title analysis are discussed and illustrated.

Title	Hours	Level	Description
			Part Two of this course presents five court decisions covering principles of interpretation and construction to be applied to land descriptions. The significance of original land descriptions, ambiguity, references, meanings of words and phrases, and official plats are covered. Some of the court cases included are Harvey v. Inhabitants of Sandwich, 152 N.E. 625, 256 Mass. 379 (1926), Wilson v. DeGenaro, 415 A.2d 1334 (Conn., 1979), Perry v. Buswell, 113 Me. 399 (Maine, 1915), Cragin v. Powell, 128 U.S. 691 (Louisiana, 1888) and Peacher v. Strauss, 47 Miss. 353 (1872). Part Three of this course deals with some of the basic rules of construction for interpreting land descriptions and resolving ambiguities therein. The intent of the parties is the primary requirement, which must be determined from the language of the description viewed in light of the surrounding circumstances at the time.
Vermont Land Surveyor 8 Hour CE Program #3	8	Advanced	Don Wilson presents a 3-part, interactive course covering easements and reversion rights. Part One of this course deals with the basic elements of easements and rights in land, particularly those interest which are less than absolute, or fee simple, ownership. Part Two contains information on the creation, alteration and termination of public highways and other types of roads. Part Three covers reversion rights that occur when an easement is terminated. In order to have a full understanding of the existence of easements and their resulting reversion rights.
Virginia 2017 NEC 3 Hour CE Program #1	3	Intermediate	Chapter 1 of the 2017 National Electrical Code (NEC) contains definitions and general requirements for electrical installations. Several definitions were added, revised or relocated in the 2017 NEC. New and revised requirements for equipment installation, labeling, certification and working space will also be discussed. Chapter 2 of the 2017 National Electrical Code (NEC) contains requirements for wiring of grounded conductors, branch, feeder and service conductors. Several changes were made for branch circuit conductors, feeder conductors and service conductors in Articles 210, 215, and 230, and, as always, they are some of the biggest in the entire Code. Changes include new and revised rules for GFCI and AFCI protection, dwelling unit circuiting and receptacles outlet revisions, fixing the electric service receptacle rule, adding required lighting, adding receptacles in commercial buildings(!), clarifying how to size feeders, and new listing rules for service equipment, and others as well.
Virginia 2017 NEC 3 Hour CE Program #2	3	Intermediate	
Virginia 2017 NEC 3 Hour CE Program #3	3	Intermediate	Part One of this 3-part course covers Chapter 4 of the 2017 NEC which contains the rules for equipment, including switches and receptacles. Several changes were made in Article 404 for switches and in 406 for receptacles.

Title	Hours	Level	Description
			The topics covered in Part Two include 404.2 C, Switches Controlling Lighting Loads. We did a lot of good work in that section. 404.9 B, Grounding of Switches. 404.22, Electronic Lighting Control Switches. 406.2, Definitions. 406.3, Receptacle Ratings and Types. 406.4, General Installation Requirements. 406.5, Receptacle Mounting. 406.6 D, Receptacle Face plates with Night Lights or USB Chargers. 406.9 B for Receptacles in Wet Locations. And finally, 406.12, Tamper Resistant Receptacles. Chapter 5 of the 2017 National Electrical Code (NEC) contains requirements for special occupancies is covered in Part Three of this course. We will review several changes that were made in Articles 500 through 516 for hazardous locations. Notable changes include the relocation of fourteen definitions to Article 100, a surprising new allowance for wiring methods in Class I locations, underground wiring changes for commercial garages and fuel dispensing locations, and new fuel storage classification requirements.
Virginia 2017 NEC 3 Hour CE Program #4	3	Intermediate	Part One of this interactive online course covers The National Electrical Code (NEC) standards that govern the installation of electrical wiring and equipment. Incorrect wiring procedures could result in loss of life and property. Keeping up with the latest changes to the NEC is critical to ensuring safe electrical wiring practices. Chapter 5 of the 2017 National Electrical Code (NEC) contains the requirements for special occupancies. This interactive online course will teach you about several changes that were made in the articles for special occupancies, including health care facilities and RV parks as well as marinas and boatyards. Notable changes include new allowable wiring methods and equipment for health care facilities, revised receptacle requirements at RV parks, and more restrictive ground fault protection and signage requirements at marinas and boatyards. Part Two of this course covers Chapter 6 of the 2017 National Electrical Code (NEC) and the changes it contains for special equipment requirements. Several changes were made in the articles for special equipment, including signs, electric vehicle charging systems and swimming pools. Notable changes include new requirements for signs with retrofitted illumination systems and changes to wiring methods for swimming pools and similar installations. The 3rd part of this course covers proper wiring of electrical systems. Understanding the latest code requirements will ensure safe installation and operation of electrical systems for years to come. Articles 725 through Chapter 8 of the National Electrical Code (NEC) contain requirements for limited energy and communications systems. This interactive online course will teach you about changes made in the articles for remote-control, signaling, and power-limited circuits [725]; communications circuits [800]; and coaxial cables [820]. Notable changes include cable routing assemblies and communications raceways for control circuits, a major change to address fires from limited energy circuits, revisions to requirements for unlisted cables entering buildings, grounding of primary protectors, uses permitted for under-carpet communications wires and cables, and separation requirements for coaxial cables.

Title	Hours	Level	Description
Walkable Communities	1	Intermediate	You can be a leader in the growing trend of communities that support more social interaction, physical fitness, and diminished crime and social problems. You can develop economically and naturally sustainable urban environments that lead to whole, happy, healthy lives for the people who live in them. This webcast gives you the information and tools you'll need to set and reach those goals. You'll learn preferred choices of transportation, street design, and guidelines for developing walkable (non-motorized) communities.
Walking and Working Surfaces	0.5	Intermediate	Slips, trips, and falls constitute the majority of general industry accidents, second only to motor vehicle accidents. They cause 15% of all accidental deaths, and are third only to motor vehicles and violence as a cause of fatalities. The OSHA standards for walking and working surfaces apply to all permanent places of employment, except where only domestic, mining, or agricultural work is performed and if appropriately applied, can reduce lost work time. This interactive online course details the OSHA standard in a practical format with easy-to-implement solutions to provide a workplace that is free from hazards to better protect the workplace and reduce unnecessary costs.
Warning Signs and Labels (BBWSAL0CEN)	1	Intermediate	This course discusses warning signs and labels, including the types of signs and tags, hazardous product labels, and shipping labels. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Washington Electrical Contractor 4-hour program #1	4	Intermediate	This 4-hour course is formatted in 2 lessons. Each lesson has a test which must be passed with a minimum score of 70% and a survey which must be completed before proceeding to the next lesson. The lessons are listed below: Lesson 1: Safety: Electrical Part One - Hazardous Location, Clearances & Safety Practice (RV-10743) Welcome to this 2-hour interactive online course that is the first of a two-part series which introduces you to many workplace situations that require you to work safely with electricity. You'll learn how and why electricity can be dangerous. You'll also learn about various methods used for protection. Safety begins with the careful installation of electrical components by means of approved wiring methods. You should use safety procedures and practices that insulate you from electricity's power anytime you work with or near electrical equipment or components. Specifically, Part One looks at: Fundamentals of electricity & associated hazards Using proper materials and components Equipment grounding Lesson 2: Safety: Electrical Part Two - Hazardous Location, Clearances & Safety Practice (RV-10744) This 2-hour online course is the second of a two-part series which introduces you to many workplace situations that require you to work safely with electricity. You'll learn how and why electricity can be dangerous. You'll also learn about various methods used for protection. Safety begins with the careful installation of electrical components by means of approved wiring methods.

Title	Hours	Level	Description
Washington Electrical Contractors: International Building Code Essentials - Fire and Health Safety	2	Fundamental	Part I of this interactive online course teaches you about the International Building Code and how it's designed to limit the spread of fire inside and outside of buildings. You will learn about active and passive fire protection and the different ways buildings and occupants are protected from fire. Part II discusses Health Safety. For people to be healthy, we must have certain basic things. We need adequate light to work or live in a building. We need fresh air that is free from contaminants. When it is cold, we need to be provided with heat to keep from getting sick. We also need freshwater and sanitary waste facilities.
Wastewater Treatment and Reclamation: Asset or Liability	1	Intermediate	Historically, wastewater treatment started as risk reduction for human health and welfare, migrated to environmental risk reduction, and has now matured into resource recovery and revenue generation. Technology and common practices are in place to treat water as a sustainable resource; we simply can no longer afford to use it once and "throw it in the ocean" nor can we afford the liability of not treating water to our best abilities to protect human health and the environment. In this interactive online course, we will cover specifics, metrics, and detailed examples about recovery of the "water" from wastewater. We discuss how to manage the design of wastewater facilities to reduce environmental, personal, and public health risk from insufficiently treated potable and reuse water supplies. We will also show how to reduce costs in operation of a proper wastewater treatment plant.
Water Industry Hydraulics	1	Intermediate	This interactive online course covers the concepts, calculations, and operational uses of hydraulics in the water industry, and will examine the physics behind certain operations and processes within the water treatment industry. Subjects included in the course are density and specific gravity, pressure and force, head, head loss, pumping rates and pump heads, flow rates, and flow measuring devices. This course will examine each of these concepts in detail and explain their application.
Water Well Design	2	Advanced	Extracting groundwater for use as public water supply, irrigation, or industrial supply presents a challenge to Engineers, Geologists, and Well Drilling Contractors. Water wells must be designed to fit existing natural conditions. Factors including aquifer parameters (location, depth, rock types, and water yield capacity), geology and water quality, are unique to every location. The professional engineer, geologist, and well driller need to be informed of these factors to complete a successful water well construction project. This two-hour interactive online course will introduce you to the necessary steps in a water well design project. Proceeding with researching of local groundwater conditions to obtaining information necessary to locate and plan a well, this course presents techniques for designing a water well. You will learn valuable skills in the phases necessary to implement a well construction project. This course includes a multiple-choice quiz at the end. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.

Title	Hours	Level	Description
Water-Based Fire Suppression Systems	1	Fundamental	With 3,000 deaths and 16,000 injured each year, fire continues to make its mark on society. In addition, about 100 firefighters each year die in the line of duty. Property losses due to fire reach almost $12 billion a year, and most of these deaths and losses are preventable. In this interactive, online course, you will learn the basic, but critical, aspects of water-based fire suppression systems. This course will discuss deluge systems, preaction systems, dry pipe systems, water mist systems, standpipe systems, and fire hydrants. The information you gain from this course will enhance your ability to appreciate the challenges of the fire protection system designer, trying to integrate their system with other disciplines. Utilizing this real-life knowledge will ensure a safe and code compliant project regardless of your contribution to the project.
Wetland Delineation 1: The Basics	2	Fundamental	This 2-hour interactive online course describes technical guidelines and methods using a multi-parametric approach to identify and delineate wetlands for the purposes of Section 404 of the Clean Water Act. This course is based upon the Corps of Engineers Wetland Delineation Manual published in January 1987. Modifications and clarifications have been made to the text in accordance with regulations promulgated since its original release. There will be a multiple-choice quiz at the end of this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Wetland Delineation 2: Methodology	4	Fundamental	This 4-hour interactive online course is a continuation of the US Army Corps of Engineers Wetland Delineation Manual-based, 'Wetland Delineation 1: The Basics' which is a prerequisite for this course. This course begins with material covered in Part IV of the manual. Part IV contains sections on preliminary data gathering, method selection, routine determination procedures, comprehensive determination procedures, methods for determinations in atypical situations, and guidance for wetland determinations in natural situations where the three-parameter approach may not always apply. There will be a multiple-choice quiz at the end of each scenario. The student will also need Adobe Acrobat to download the reference material included in this course. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Wind Design Using ASCE 7-10	3	Intermediate	This course discusses how to use the wind load provisions of ASCE 7-10 Minimum Design Loads for Buildings and Other Structures. The course covers the basics of wind engineering including the atmospheric and aerodynamic effects of wind on buildings. The changes recently adopted for use in ASCE 7-10 will be a prominent part of the material including revised wind speed maps and a building classification system based on risk of a natural hazard to the building or contents, instead of occupancy as used in previous versions of the standard. Several methods for determining wind pressures will be described including those that utilize tabular results. The course will conclude with a couple of worked example problems to illustrate the concepts and use of the ASCE 7 standard.

Title	Hours	Level	Description
Wind Design Using ASCE 7-16	2	Intermediate	Have you kept current with ASCE's building design provisions? This interactive online course will describe the wind design changes that have occurred in ASCE 7-16 and how those changes will affect the practice of wind design when the 2018 building codes are adopted by local jurisdictions or when practitioners begin to use the revised standard.
Winning Proposals 1: Preliminary Steps & Planning Strategies	1	Fundamental	Proposals are the first and most important link to getting in the door with a client. Yet firms spend an average of between $5000 and $9000 per proposal, only 30% of which succeed. It is crucial that your completed proposals stand out in a sea of look-alikes. It is just as important that you determine which proposal opportunities you should chase, and how much time and money to allocate to each opportunity. This online course series on Winning Proposals from PSMJ Resources will help you develop the skills you need to create a strategic, polished proposal - every time. This 1-hour online course is the first chapter of the series and explores the preliminary steps and considerations that should be taken before writing a proposal. It covers RFP answering and review, how marketing plays a role, proposal writing costs, proposal types and opportunity assessment. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Winning Proposals 2: Effective Design & Development	1	Fundamental	Proposals are the first and most important link to getting in the door with a client. Yet firms spend an average of between $5000 and $9000 per proposal, only 30% of which succeed. It is crucial that your completed proposals stand out in a sea of look-alikes. It is just as important that you determine which proposal opportunities you should chase, and how much time and money to allocate to each opportunity. This online course series on Winning proposals from PSMJ Resources will help you develop the skills you need to create a strategic, polished proposal - every time. This 1-hour online course is the second chapter and discusses effective ways to develop proposals that cater to the individual needs of the prospective client. The course looks at proposal analysis, including SWOT and IFBP analysis. It also covers typical client hot buttons, client wants and objections, client interview questions, proposal themes, and managing the proposal team and process. The course wraps up with a look at strategy planning tools including brainstorming, tree diagrams and contingency diagrams. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Winning Proposals 3: Components of a Successful Proposal	1	Fundamental	Proposals are the first and most important link to getting in the door with a client. Yet firms spend an average of between $5000 and $9000 per proposal, only 30% of which succeed. It is crucial that your completed proposals stand out in a sea of look-alikes. It is just as important that you determine which proposal opportunities you should chase, and how much time and money to allocate to each opportunity. This online course series on Winning Proposals from PSMJ Resources will help you develop the skills you need to create a strategic, polished proposal - every time. This 1-hour online course is the third chapter of the series and focuses on the technical elements of a proposal. The course covers important components

Title	Hours	Level	Description
			such as the cover letter, executive summary, resumes, references, and federal forms. It also takes a look at your scope of services and schedule, as well as common errors made in preparing the scope. You'll review helpful information on presenting your schedule and budget, as well as setting your pricing strategy. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Winning Proposals 4 & 5: Final Considerations & Evaluations	1	Fundamental	Proposals are the first and most important link to getting in the door with a client. Yet firms spend an average of between $5000 and $9000 per proposal, only 30% of which succeed. It is crucial that your completed proposals stand out in a sea of look-alikes. It is just as important that you determine which proposal opportunities you should chase, and how much time and money to allocate to each opportunity. This online course series on Winning Proposals from PSMJ Resources will help you develop the skills you need to create a strategic, polished proposal - every time. This 1-hour interactive online course is the fourth and fifth chapters of the series and explores the 'final touches' you should consider for your proposal. The impact of important elements such as font styles, color choices, graphic selections and paper types are discussed. The course also covers packaging your proposal including binding, covers, dividers and paper. You'll also learn what it means to put together a 'Red Team' to critique your proposal. The course wraps up with a look at delivering, debriefing and post-analysis of your proposal. Vector Solutions has a long history of providing industry-specific content for its customers. While this course and its content remain accurate and functional within our systems, the look and feel may not match our more modern offerings.
Wood Design Using the 2012 Wood Frame Construction Manual	3	Intermediate	Knowing the correct wind speed for the area in which you are building a wood frame structure is crucial to the safety of the building's inhabitants. This interactive online course will describe how to use the 2012 version of the American Wood Council's Wood Frame Construction Manual (WFCM). This version incorporates the use of wind speed maps from ASCE 7-10 and the design of both vertical and lateral load paths using the WFCM. There are many nuances to the correct use of this manual and many of these will be covered to help the practitioner correctly use this document that is referenced in the International Building and Residential Codes.
Work Practices of the Mold Remediation Contractor	1	Fundamental	Work practices of the mold remediation contractor are the everyday hands-on methods that ultimately make a project succeed or fail. This course will provide the keys to assessing mold contaminated materials and contents, and assist the remediation professional in the decision making of whether they should be disposed or cleaned, and how to effectively clean them.
Working Effectively with Building Officials and Inspectors	1	Fundamental	Who is an Authority Having Jurisdiction? How should you communicate with them? Anyone associated with building design and construction will eventually interact with a building official or inspector. This includes Fire Marshals, Health Departments, Planning Departments, local gas and electric companies and water and sewer departments. Having a positive and professional relationship will go a long way in creating a cost effective, timely and safe project. This interactive online course will present a number of techniques to use to ensure a productive outcome including knowing the applicable codes, being

Title	Hours	Level	Description
			professional, first impressions, understanding the role of the local AHJ, knowing when to appeal an unfavorable ruling, knowing when to accept an unfavorable ruling, and establishing your credentials.
Worksite Safety 01: OSHA Safety Introduction	1	Fundamental	The Occupational Safety and Health Administration was founded in 1971 to address the rights and responsibilities of employees and employers in the national workplace in a cohesive manner. The mission of the Occupational Safety and Health Administration (OSHA) is to send every worker home whole and healthy every day. Since the agency was established in 1971, workplace fatalities have been cut by 62 percent and occupational injury and illness rates have declined 40 percent. This Introductory course covers a bit of the history and functions of OSHA and how it serves to benefit workers in ways that were unprecedented before its existence. OSHA recommends Outreach Training Program courses as an orientation to occupational safety and health for workers. Workers must receive additional training, when required by OSHA standards, on the specific hazards of their job. Please note: This course is not a part of the OSHA 10 Hour Construction Program.
Worksite Safety 02: OSHA Electrical Safety	2	Fundamental	OSHA's electrical standards were put in place to help minimize deaths and injuries from dangers such as electrocution, burns, electric shock, fires, and explosions. This course examines the main causes of different types of hazards and details precautions for preventing accidents. It looks specifically at the requirements of 29 CFR 1926, Subpart K - which covers the design characteristics of safe systems for use when installing and using electrical systems. OSHA recommends Outreach Training Program courses as an orientation to occupational safety and health for workers. Workers must receive additional training, when required by OSHA standards, on the specific hazards of their job. Please note: This course is not a part of the OSHA 10 Hour Construction Program.
Worksite Safety 03: OSHA Fall Protection	1	Fundamental	Each year, on average, between 150 and 200 workers are killed and more than 100,000 injured because of falls at construction sites. OSHA's construction industry safety standard for fall protection 29 CFR, Subpart M, outlines systems and procedures designed to prevent employees from falling off, onto, or through working levels and to protect employees from being struck by falling objects. Here, we outline the basics and provide some “do's” and “don'ts” for novices and those who need a refresher course. OSHA recommends Outreach Training Program courses as an orientation to occupational safety and health for workers. Workers must receive additional training, when required by OSHA standards, on the specific hazards of their job. Please note: This course is not a part of the OSHA 10 Hour Construction Program.
Worksite Safety 04: OSHA Struck-By & Caught-Between Accidents	1.5	Fundamental	“Struck-by” and “caught-between” accidents are major causes of injuries and fatalities on construction worksites. Struck-by incidents are classified as accidents where workers are hit by swinging booms, falling objects (such as bricks from a scaffold), or flying objects (such as particles flying off an object being drilled or ground by a power tool). Caught-between accidents are often fatal occurrences when a worker is unwittingly caught in the gears of machinery; pinned between a vehicle and a wall, or even caught by the clothing or hair on a moving part and pulled into danger. This interactive online course provides information to assist the learner in the identification, avoidance, and control of these hazards in the workplace. While

Title	Hours	Level	Description
			workers may need additional training based on OSHA standards and the specific hazards of their jobs, RedVector's Worksite Safety courses can help inject entry-level workers with critical knowledge on a variety of OSHA-regulated safety and health topics. OSHA recommends Outreach Training Program courses as an orientation to occupational safety and health for workers. Workers must receive additional training, when required by OSHA standards, on the specific hazards of their job. Please note: This course is not a part of the OSHA 10 Hour Construction Program.
Worksite Safety 05: OSHA Personal Protective Equipment	1	Fundamental	Hazards in your workplace can be sharp edges, falling objects, flying sparks, chemicals, noise, or many other potentially dangerous situations. OSHA requires all employers to protect their employees from workplace hazards, and when they can't control a hazard at its source, they need to provide workers with accoutrements such as hard hats, gloves, respirators, goggles, safety shoes, and other gear to minimize the likelihood of a mishap. T his course covers many common forms of PPE and how to choose it, wear it and care for it. OSHA recommends Outreach Training Program courses as an orientation to occupational safety and health for workers. Workers must receive additional training, when required by OSHA standards, on the specific hazards of their job. Please note: This course is not a part of the OSHA 10 Hour Construction Program.
Worksite Safety 06: OSHA Scaffolds	1	Fundamental	An estimated 2.3 million construction workers, or 65 percent of the construction industry, work on scaffolds frequently. In 1996, when OSHA issued the revised Scaffold Standard for construction, the agency estimated that by protecting these millions of workers from scaffold falls, 4,500 injuries and 50 deaths from scaffold-related accidents would be prevented every year. This course will familiarize you with the facts you need to know to be in compliance with OSHA 1926.451, Subpart L, and keep yourself safe during scaffold work. OSHA recommends Outreach Training Program courses as an orientation to occupational safety and health for workers. Workers must receive additional training, when required by OSHA standards, on the specific hazards of their job. Please note: This course is not a part of the OSHA 10 Hour Construction Program.
Worksite Safety 07: OSHA Cranes & Other Hoists	1	Fundamental	Moving large, heavy loads is critical to the manufacturing and construction industries, but unfortunately, cranes, derricks, hoists, and other lifting devices pose significant safety issues for both their operators and for workers in proximity to them. The rules are complex and often out of date; here, we give OSHA-Subpart N-recommended, ANSI-based tips for safe usage and cover cranes, derricks, hoists, elevators and conveyors. OSHA recommends Outreach Training Program courses as an orientation to occupational safety and health for workers. Workers must receive additional training, when required by OSHA standards, on the specific hazards of their job. Please note: This course is not a part of the OSHA 10 Hour Construction Program.
Worksite Safety 08: OSHA Power Tools and Excavations	1	Fundamental	It might seem silly to think of non-powered hand tools as hazardous, but anyone who's ever hit a finger with the full force of a hammer blow or staple-gunned their hand might beg to differ. Power tools are relatively safe when used properly and well maintained, but an electric shock resulting from a defective or modified device can be deadly.

Title	Hours	Level	Description
			This course will teach you the basics for keeping yourself and your coworkers out of harms way when using tools. OSHA recommends Outreach Training Program courses as an orientation to occupational safety and health for workers. Workers must receive additional training, when required by OSHA standards, on the specific hazards of their job. Please note: This course is not a part of the OSHA 10 Hour Construction Program.
Worksite Safety 09: OSHA Materials Storage	1	Fundamental	The handling and storage of materials used in the construction trade involves diverse operations such as hoisting heavy steel bars with a crane, driving a truck loaded with concrete blocks, manually carrying bags, and stacking drums, lumber or loose bricks. When any of these things are done the wrong way, serious injuries and extensive costs can result. Avoid pitfalls by reading about OSHA's rules in this course. OSHA recommends Outreach Training Program courses as an orientation to occupational safety and health for workers. Workers must receive additional training, when required by OSHA standards, on the specific hazards of their job. Please note: This course is not a part of the OSHA 10 Hour Construction Program.
Worksite Safety 10: OSHA Demolition	1	Fundamental	Demolition is one of the most spectacular - and dangerous - undertakings in the construction industry. A tremendous number of safety precautions are taken and meticulous planning that goes into each such undertaking. This course will familiarize you with some of the basics of safe demolition practices and the attendant OSHA standard. OSHA recommends Outreach Training Program courses as an orientation to occupational safety and health for workers. Workers must receive additional training, when required by OSHA standards, on the specific hazards of their job. Please note: This course is not a part of the OSHA 10 Hour Construction Program.