

Engineering Professional
Development
Course Catalog
2006

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Civil Engineering

Asphalt Pavement Preservation & Rehabilitation – V00B

The objective of this course is to assist an engineer in the development of the most reliable and cost-effective rehabilitation alternatives for asphalt pavements. The abilities of the engineer required to preserve the existing pavement system are much different than those required to originally design the system. They need to have an understanding of what caused the distress they are seeing and what steps can be taken to correct them. The course is broken into two units: pavement management concepts and pavement rehabilitation procedures. The first unit will address pavement management concepts at the project level which will include an overview of pavement management, pavement structural and condition assessment, distress mechanisms for Hot Mix Asphalt and project evaluation. The second unit provides information on pavement rehabilitation through pavement maintenance techniques, surface rehabilitation procedures, recycling of asphalt pavements, and asphalt overlays.

Instructor: Mr. Douglas Hanson

Course # V00B

Format: DVD-R or VHS videotape with supporting print materials

Length: 5 hours (0.5 CEUs or 5 PDHs or 5 CPCs)

Fee: Individual \$240 / Organization \$725

Concrete Basics: Commercial Slab on Grade – V04E

Concrete slabs on grade are integral to almost all commercial construction projects. This course, the second in a series on construction of concrete slabs on grade, examines the construction a high quality commercial slab on grade from the viewpoints of the contractor, the architect, the owner, the concrete subcontractor and the engineer. Using video footage of the construction of a slab on grade for large convention center, the authors examine items such as pre-pour meeting, sub-grade preparation, and placing and finishing operations.

Instructors: Mr. Michael Hein and Mr. Steven Williams

Course # V04E

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Concrete Basics: Residential Slab on Grade – V99P

Concrete slab on grade is the single most common structural element used in the building industry today. This course, first of a series on concrete construction and design, examines the construction of high quality residential slabs on grade from the viewpoints of the contractor and engineer. Videotape and computer modeling are used extensively as an elaborate residential driveway is planned, modeled, constructed and finished. Planning is covered in detail. Various methods of preventing and limiting cracking are examined in depth.

Instructors: Mr. Michael Hein and Mr. Steven Williams

Course # V99P

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$429

Design and Construction of a Concrete Frame Building – V01B

This program explores the interaction between engineering design and the techniques of modern construction for a four-story continuous concrete frame hospital. Specific emphasis is placed on the viewpoint of the constructor, along with a pictorial history of the construction of structural components. Among the topics covered are retaining walls, drilled piers and footings, columns, beams, walls, and slabs. In addition to construction issues, an approximate engineering analysis in conjunction with a conceptual review of the structural behavior of each component is presented. Presenters make generous use of physical and digital models to enhance visualization.

Instructors: Mr. Michael Hein and Mr. Steven Williams

Course # V01B

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$899

Design of Composite Beams Using LRFD – V02E

Fundamentals of cross section analysis and design of composite steel and concrete beams using the American Institute of Steel Construction (AISC) Load and Resistance Factor Design (LRFD) Specification for Structural Steel Buildings are covered. The course emphasizes specification requirements and fundamental calculations of moment capacity and cross section rigidity at various levels of composite action. These concepts are essentials for spot checks for design aids and verification of computer program output. A thorough understanding of fundamentals also generally shortens the design process and leads to more efficient choices of materials and structural configurations. A basic background in structural analysis and design is assumed. Prior training in the use of LRFD is not required.

Instructor: Dr. J. Michael Stallings

Course # V02E

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$899

Design of Structural Steel Members Using LRFD – V04B

Fundamentals of design of structural steel members using the American Institute of Steel Construction's Load and Resistance Factor Design (LRFD) Specification for Structural Steel Buildings (1999) are covered. The course emphasizes a limit states view of the design process. An explanation of the common failure modes, or limit states, for which members must be designed and how the LRFD Specification addresses these limit states is the focus of the course. Analysis and design examples are used to illustrate the concepts. A fundamental background in structural analysis and design is assumed. This course is excellent for engineers seeking a review of the basic principles of steel design and for experienced structural designers who have not started using the LRFD Specification in daily practice. Specific topics covered include the design of tension members, compression members, and beams.

Instructor: Dr. J. Michael Stallings

Course # V04B

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$918

Designing Modern Timber Bridges – V01E

Timber bridges have been used throughout history. However, with new advances in engineered wood products and preservative treatments, modern timber bridges are still a viable alternative for many highway and off-highway construction applications.

This course begins with a presentation of the different types of timber bridge superstructures in use today. Then, the course quickly reviews the basics of wood as an engineering material and the different types of structural wood products, wood mechanical connections, and preservative treatments. Design procedures for wood construction are also reviewed. The course focuses on the design of two main types of timber bridge superstructures: 1) those composed of longitudinal girders with transverse decks and, 2) those composed of longitudinal decks. The course covers the use of sawn lumber and glued-laminated timbers in both of these main superstructure types. The course concludes with a discussion of issues related to timber bridge inspection, maintenance, and rehabilitation.

We encourage you to obtain a copy of the publication from the USDA Forest Service entitled "Timber Bridges: Design, Construction, Inspection, and Maintenance". Call them at 304-285-1591 or order from their web site, www.fs.fed.us/na/wit/. Order publication 02-0001. If you are unfamiliar with design procedures for wood construction, we encourage you to complete the other courses on Designing with Wood.

Instructor: Dr. Steven E. Taylor

Course # V01E

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$899

Designing With Wood: Three Parts

This series, sold in three parts, is designed to offer something for both the engineer with little knowledge of wood design as well as the experienced engineer needing to update their knowledge of wood design procedures. It begins with a coverage of wood as a construction material, an introduction to the design procedures for wood, and coverage of special types of wood structures. The second part of the series focuses on using the National Design Specification for Wood Construction (NDS), which uses the traditional allowable stress design (ASD) format. The series is completed by an in-depth look at the new LRFD procedures for wood design. Extensive design examples will be covered for both the ASD and LRFD sections. We encourage you to obtain a copy of the NDS or the LRFD Manual for Engineered Wood Construction from the American Forest and Paper Association prior to viewing the tapes. Call 800-890-7732 for ordering information.

Part One – The Basics of Designing with Wood – V99A

Introduction: overview of course and examples of different wood structures. Wood as an Engineering Material: engineering characteristics of solid wood products, structural composite lumber, and panel products. Intro to Wood Design: review of current design formats - ASD and LRFD. Special topics: specifying and using metal-plate connected trusses, timber bridges, and post-frame buildings.

Instructor: Dr. Steven E. Taylor

Course # V99A

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$429

Part Two – Allowable Stress Design for Wood Construction – V99B

Overview of 1997 Edition of the NDS and its Supplement. Design Procedures for Components: fundamentals, design of members in tension, compression, bending, combined stress, and bearing. Component Design Examples. Design Procedures for Connections: fundamentals, bolts, lag screws, nails, wood screws, and other connectors. Connection Design Examples.

Instructor: Dr. Steven E. Taylor

Course # V99B

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$429

Part Three – Load and Resistance Factor Design for Wood Construction – V99C

Overview of 1996 Edition of the LRFD Manual for Engineered Wood Construction and its Supplements. Design Procedures for Components: fundamentals, design of members in tension, compression, bending, bending and axial stress, and bearing. Component Design Examples. Design Procedures for Connections: fundamentals, bolts, lag screws, nails, wood screws, etc. Connection Design Examples. Structural Panel Design Procedures: shear walls and diaphragm design procedures.

Instructor: Dr. Steven E. Taylor

Course # V99C

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$429

Erosion Control Using Geosynthetics – V96M

Become more environmentally aware! Learn how to reduce surface water pollution from soil runoff by using geosynthetics. This course will introduce you to the history and applications of geosynthetics. You will also be exposed to factors influencing erosion such as rainfall, soil type and vegetation. Surface stream bank and coastal erosion control measures using geosynthetics also are covered.

Instructor: Dr. David J. Elton

Course # V96M

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$369

Hot Mix Asphalt Mix Design – V98H

A discussion of the new Superpave mix design method is provided. Topics covered include: Historic development of Asphalt Grading Systems; Superpave Binder tests; Superpave Binder grading and specifications; Physical properties of aggregates; Superpave Aggregate gradation specifications; History of mix design; Hot mix asphalt volumetric properties; Superpave mix design: Gyratory Compaction; and Superpave mix design: Selection of Optimum AC content.

Instructors: Dr. Ray Brown, Mr. Douglas Hanson, Mr. Ken Kandhal, and Dr. Mary Stroup-Gardiner

Course # V98H

Format: DVD-R or VHS videotape with supporting print materials

Length: 10 hours (1 CEUs or 10 PDHs or 10 CPCs)

Fee: Individual \$480 / Organization \$1,199

Hot Mix Asphalt Pavement Construction – V98G

Information is provided on plant production, placement, and compaction of Hot Mix Asphalt. Construction methods, specifications, and quality control procedures are discussed. Topics covered include: plant operation; placement and compaction; statistical specifications; and Quality Control / Quality Assurance testing.

Instructor: Dr. Ray Brown

Course # V98G

Format: DVD-R or VHS videotape with supporting print materials

Length: 5 hours (0.5 CEUs or 5 PDHs or 5 CPCs)

Fee: Individual \$240 / Organization \$579

Landfill: Basics of Design and Operation – V04L

This 6 hour course covers the technical issues of siting, designing, operating and closing municipal solid waste landfills. Elements of geosynthetics design for landfill lining systems, drainage systems, and covers are reviewed along with the environmental regulations that dictate much of this practice.

The Civil Engineering profession is heavily involved in environmental issues, including solid waste disposal in municipal solid waste (MSW) landfills. MSW accounts for about 50% of the billable hours in geotechnical engineering consulting practice.

Increasing training and awareness is needed to prepare the nation to adequately and safely deal with society's waste products. While recycling accounts for an ever-increasing amount of waste recovery, landfilling remains the premier method of disposing of waste.

Instructor: Dr. David J. Elton

Course # V04L

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$918

Reinforced Concrete Design: Part I – Flexural Members – V04C

Fundamentals of design of reinforced concrete flexural members are covered. Focus is on design by the American Concrete Institute's Building Code Requirements for Structural Concrete 318-02 (ACI 318-02). Fundamental behavior of flexural members and the necessary design checks are presented. New code requirements related to load factors and combinations are described along with the new requirements for the use of net tensile strain in checking ductility and determining the resistance factor for flexure. Examples of analysis and design of beams and one-way slabs are used to illustrate the concepts. A fundamental background in structural analysis and design is assumed.

This course is designed for engineers seeking a review of basic principles of reinforced concrete design. Engineers who only occasionally design miscellaneous flexural members will find the course of particular value. Topics include materials, loads and load combinations, flexure of singly reinforced cross sections, T-beams, beams with compression reinforcement, shear, one-way slabs, and anchorage and development of tension reinforcement.

Instructor: Dr. J. Michael Stallings

Course # V04C

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$918

Reinforced Concrete Design: Part II – Columns – V04D

Focus is on design of reinforced concrete columns using the American Concrete Institute's *Building Code Requirements for Structural Concrete 318-05* (ACI 318-05). Fundamentals necessary for understanding and verifying the output of typical design software and design aids are emphasized. Specific topics include: an introduction to strength design, behavior of tied and spirally reinforced columns, construction of axial load and moment interaction diagrams, strength reduction factors, use of interaction diagrams in design, shear resistance, biaxial bending, and an introduction to slenderness effects.

Instructor: Dr. J. Michael Stallings

Course # V04D

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

The Role of Engineers and Surveyors in Geographic Information Systems – V06G

This course should be of interest to those who practice surveying but also those who work in the civil engineering field, including county engineers, city engineers, public works officials, transportation engineers, DOT personnel, federal employees, contractors and consultants.

The first part of this course looks at the terminology and definitions of a Geographic Information System (GIS). The process of how to design a system, and how to capture information from both existing records and new spatial data is covered. The course contains a short overview of the most popular software and hardware.

The second part of this course deals with the planning, design, implementation and uses of a GIS. The map projection and coordinate systems used to design a system will be identified. Topics addressed include data capture for the base mapping, aerial mapping, digital orthophotos, remote sensing, and GPS equipment. All the latest photo capture equipment such as Light Detection and Ranging (LIDAR) and digital aerial cameras will be described.

The third part of the seminar will deal with the National Spatial Reference System/Readjustment of North American Datum (NAD) 83. You can stand on the sidelines or you can get involved in this technology, the choice is yours.

Instructor: Mr. Milton Denny

Course #: V06G

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$918

Shallow Foundation Design Series: Two Parts

This two-part video series consists of Geotechnical Aspects of Shallow Foundation Design and Structural Design of Spread Footings. The series provides a well-rounded review of the design of shallow foundations by addressing the geotechnical and structural issues. The combination of topics is a natural for practicing engineers and has been well received in live seminars for several years. Viewing the set is recommended, but the parts are independent and may be viewed as separate courses.

Part One – Geotechnical Aspects of Shallow Foundations Design – V04H

Most structures are on shallow foundations. The foundations must withstand the structure's weight without moving. This course explains in straightforward terms the soils aspects of shallow design. Site investigation, soil properties, strength of soils, bearing capacity, and compressibility of soils are examined with the particular points of interest to shall foundations. This course covers the elements of each so the user gains understanding of the importance of each, and how to perform each step.

Instructor: Dr. David J. Elton

Course # V04H

Format: DVD-R or VHS videotape or DVD-R with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Part Two – Structural Design of Spread Footing – V04J

Design of reinforced concrete spread footings is the focus of this course. Fundamental assumptions for determining the soil pressure distribution under footings are presented along with commonly used formulas. Structural design of footings to comply with Building Code Requirements for Structural Concrete (ACI 318-02) is addressed. Individual topics include: loads, load factors, load combinations, resistance factors, materials, flexure, shear, reinforcement details, development length, and embedment reinforcement. Brief comparisons are made to illustrate the primary differences between footing design by ACI 318-02 and the previous version ACI 318-99.

Instructor: Dr. J. Michael Stallings

Course # V04J

Format: DVD-R or VHS videotape or DVD-R with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Soil Basics for Engineers – V00G

This course acquaints you with the basics of how soil behaves and how it is used in design and construction. Application is emphasized over theory. The course is intended for those who must interface with soils engineers, but may not be doing the engineering. The course will teach how soils are identified, classified and tested. Fundamentals of earthwork practices for walls, foundations and fills are covered, focusing on situations that can cause trouble. Basic ways to improve bad soils are covered. Problems caused by water are covered in all areas. This course will teach you how to talk to soils engineers by covering the basic terms and practices of soils engineering. This course is suitable for engineers, municipal officials, architects, inspectors, sales engineers, lab managers, building officials, and contractors.

Instructor: Dr. David J. Elton

Course # V00G

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$879

Soils for Pavements – V06H

This practical course describes each important element of the soils aspects of road engineering for paved and unpaved roads. Topics: What causes problems, the soil inputs to pavement designs, soil exploration for roads, soil stabilization, construction with soils, incl. QC/QA, fixes for soil-related pavement problems and more. This course will give you a working knowledge of soil behavior, and the basics of geotechnical engineering for design of roads and pavements. What types of soils work best, which to avoid, and how to read soil reports are covered. The course prepares you to continue your own study of soil characteristics and parameters necessary for design in accordance with AASHTO and NCHRP guidelines. This course is useful for engineers, technicians, managers, public works professionals, and those who perform or review pavement designs. It is very practical. If it's been awhile since you've attended a soils or foundation course, or if you're need a refresher or update, this practical course is for you.

Instructor: Dr. David J. Elton

Course # V06H

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$918

Stories from the Field: What Engineers Need to Know About Construction – V02A

This is an actual case study done with a panel of professional project engineers, owners and construction engineers with Brasfield & Gorrie, Uzun & Case, and Collins Project Management. While the education of an engineer is heavily laden with mathematical theories and theoretical perspectives, this course deal with the practical matters of practicing engineers. The panel addresses every day problems of contractors, owners, and field engineers. This looks at pertinent jobsite issues that have caused problems between the engineer and the constructor.

Instructors: Mr. Michael Hein and Mr. Steven Williams

Course # V02A

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Storm Water Drainage System Design – V96B

Highway, construction and municipal engineers, site developers and planners will be particularly interested in learning methods for calculating and designing to accommodate storm water runoff. The Rational Method is used for the class examples. The basics of storm water pipe design are discussed. Rules of thumb needed to properly design storm water pipe are presented. The Manning equation is presented for determining the Q vs. diameter relationship for the full flow condition, and partial flow diagrams are utilized for conditions of flow other than full.

Instructor: Dr. S. Rod Jenkins

Course # V96B

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$369

Unpaved Low Volume Road Design, Construction and Maintenance – V04K

This course gives training in all aspects of unpaved roads. Construction procedures, maintenance, erosion control, choice of soils, stream crossings, surface treatments, and more. Emphasis is on cost-effective design and construction. Very practical course. The course is for State DoTs, County Engineers, US/State Forest Service, US/State Parks departments, timber/mining industry engineers, professional engineers, consultants, and contractors.

Instructor: Dr. David J. Elton, P.E. and Gordon Keller, P.E., G.E.

Course # V04K

Format: DVD-R or VHS videotape with supporting print materials and additional CD-ROM

Length: 9 hours (0.9 CEUs or 9 PDHs or 9 CPCs)

Fee: Individual \$432 / Organization \$1377

Structural Engineering

Concrete Basics: Commercial Slab on Grade – V04E

Concrete slabs on grade are integral to almost all commercial construction projects. This course, the second in a series on construction of concrete slabs on grade, examines the construction a high quality commercial slab on grade from the viewpoints of the contractor, the architect, the owner, the concrete subcontractor and the engineer. Using video footage of the construction of a slab on grade for large convention center, the authors examine items such as pre-pour meeting, sub-grade preparation, and placing and finishing operations.

Course # V04E

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Concrete Basics: Residential Slab on Grade – V99P

Concrete slab on grade is the single most common structural element used in the building industry today. This course, first of a series on concrete construction and design, examines the construction of high quality residential slabs on grade from the viewpoints of the contractor and engineer. Videotape and computer modeling are used extensively as an elaborate residential driveway is planned, modeled, constructed and finished. Planning is covered in detail. Various methods of preventing and limiting cracking are examined in depth.

Instructors: Mr. Michael Hein and Mr. Steven Williams

Course # V99P

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$429

Corrosion Prevention and Control – V97C

Following an introduction to the scientific principles used to understand and describe corrosion, the course uses these principles to demonstrate examples of various types of corrosion and present practical methods for minimizing or preventing corrosion. Especially useful to engineers of all types involved with the design, repair and maintenance of structures and equipment.

Instructor: Dr. Jeffrey W. Fergus

Course # V97C

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$369

Design and Construction of a Concrete Frame Building – V01B

This program explores the interaction between engineering design and the techniques of modern construction for a four-story continuous concrete frame hospital. Specific emphasis is placed on the viewpoint of the constructor, along with a pictorial history of the construction of structural components. Among the topics covered are retaining walls, drilled piers and footings, columns, beams, walls, and slabs. In addition to construction issues, an approximate engineering analysis in conjunction with a conceptual review of the structural behavior of each component is presented. Presenters make generous use of physical and digital models to enhance visualization.

Instructors: Mr. Michael Hein and Mr. Steven Williams

Course # V01B

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$899

Design of Composite Beams Using LRFD – V02E

Fundamentals of cross section analysis and design of composite steel and concrete beams using the American Institute of Steel Construction (AISC) Load and Resistance Factor Design (LRFD) Specification for Structural Steel Buildings are covered. The course emphasizes specification requirements and fundamental calculations of moment capacity and cross section rigidity at various levels of composite action. These concepts are essentials for spot checks for design aids and verification of computer program output. A thorough understanding of fundamentals also generally shortens the design process and leads to more efficient choices of materials and structural configurations. A basic background in structural analysis and design is assumed. Prior training in the use of LRFD is not required.

Instructor: Dr. J. Michael Stallings

Course # V02E

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$899

Design of Structural Steel Members Using LRFD – V04B

Fundamentals of design of structural steel members using the American Institute of Steel Construction's Load and Resistance Factor Design (LRFD) Specification for Structural Steel Buildings (1999) are covered. The course emphasizes a limit states view of the design process. An explanation of the common failure modes, or limit states, for which members must be designed and how the LRFD Specification addresses these limit states is the focus of the course. Analysis and design examples are used to illustrate the concepts. A fundamental background in structural analysis and design is assumed.

This course is excellent for engineers seeking a review of the basic principles of steel design and for experienced structural designers who have not started using the LRFD Specification in daily practice. Specific topics covered include the design of tension members, compression members, and beams.

Instructor: Dr. J. Michael Stallings

Course # V04B

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$2288 / Organization \$918

Designing Modern Timber Bridges – V01E

Timber bridges have been used throughout history. However, with new advances in engineered wood products and preservative treatments, modern timber bridges are still a viable alternative for many highway and off-highway construction applications.

This course begins with a presentation of the different types of timber bridge superstructures in use today. Then, the course quickly reviews the basics of wood as an engineering material and the different types of structural wood products, wood mechanical connections, and preservative treatments. Design procedures for wood construction are also reviewed. The course focuses on the design of two main types of timber bridge superstructures: 1) those composed of longitudinal girders with transverse decks and, 2) those composed of longitudinal decks. The course covers the use of sawn lumber and glued-laminated timbers in both of these main superstructure types. The course concludes with a discussion of issues related to timber bridge inspection, maintenance, and rehabilitation.

We encourage you to obtain a copy of the publication from the USDA Forest Service entitled "Timber Bridges: Design, Construction, Inspection, and Maintenance". Call them at 304-285-1591 or order from their web site, www.fs.fed.us/na/wit/. Order publication 02-0001. If you are unfamiliar with design procedures for wood construction, we encourage you to complete the other courses on Designing with Wood.

Instructor: Dr. Steven E. Taylor

Course # V01E

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

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Designing With Wood: Three Parts

This series, sold in three parts, is designed to offer something for both the engineer with little knowledge of wood design as well as the experienced engineer needing to update their knowledge of wood design procedures. It begins with a coverage of wood as a construction material, an introduction to the design procedures for wood, and coverage of special types of wood structures. The second part of the series focuses on using the National Design Specification for Wood Construction (NDS), which uses the traditional allowable stress design (ASD) format.

The series is completed by an in-depth look at the new LRFD procedures for wood design. Extensive design examples will be covered for both the ASD and LRFD sections. We encourage you to obtain a copy of the NDS or the LRFD Manual for Engineered Wood Construction from the American Forest and Paper Association prior to viewing the tapes. Call 800-890-7732 for ordering information.

Instructor: Dr. Steven E. Taylor

Part One – The Basics of Designing with Wood – V99A

Introduction: overview of course and examples of different wood structures. Wood as an Engineering Material: engineering characteristics of solid wood products, structural composite lumber, and panel products. Intro to Wood Design: review of current design formats - ASD and LRFD. Special topics: specifying and using metal-plate connected trusses, timber bridges, and post-frame buildings.

Instructor: Dr. Steven E. Taylor

Course # V99A

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$429

Part Two – Allowable Stress Design for Wood Construction – V99B

Overview of 1997 Edition of the NDS and its Supplement. Design Procedures for Components: fundamentals, design of members in tension, compression, bending, combined stress, and bearing. Component Design Examples. Design Procedures for Connections: fundamentals, bolts, lag screws, nails, wood screws, and other connectors. Connection Design Examples.

Instructor: Dr. Steven E. Taylor

Course # V99B

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$429

Part Three – Load and Resistance Factor Design for Wood Construction – V99C

Overview of 1996 Edition of the LRFD Manual for Engineered Wood Construction and its Supplements. Design Procedures for Components: fundamentals, design of members in tension, compression, bending, bending and axial stress, and bearing. Component Design Examples. Design Procedures for Connections: fundamentals, bolts, lag screws, nails, wood screws, etc. Connection Design Examples. Structural Panel Design Procedures: shear walls and diaphragm design procedures.

Instructor: Dr. Steven E. Taylor

Course # V99C

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$429

Reinforced Concrete Design: Part I – Flexural Members – V04C

Fundamentals of design of reinforced concrete flexural members are covered. Focus is on design by the American Concrete Institute's Building Code Requirements for Structural Concrete 318-02 (ACI 318-02). Fundamental behavior of flexural members and the necessary design checks are presented. New code requirements related to load factors and combinations are described along with the new requirements for the use of net tensile strain in checking ductility and determining the resistance factor for flexure. Examples of analysis and design of beams and one-way slabs are used to illustrate the concepts. A fundamental background in structural analysis and design is assumed.

This course is designed for engineers seeking a review of basic principles of reinforced concrete design. Engineers who only occasionally design miscellaneous flexural members will find the course of particular value. Topics include materials, loads and load combinations, flexure of singly reinforced cross sections, T-beams, beams with compression reinforcement, shear, one-way slabs, and anchorage and development of tension reinforcement.

Instructor: Dr. J. Michael Stallings

Course # V04C

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$918

Reinforced Concrete Design: Part II – Columns – V04D

Focus is on design of reinforced concrete columns using the American Concrete Institute's *Building Code Requirements for Structural Concrete 318-05* (ACI 318-05). Fundamentals necessary for understanding and verifying the output of typical design software and design aids are emphasized. Specific topics include: an introduction to strength design, behavior of tied and spirally reinforced columns, construction of axial load and moment interaction diagrams, strength reduction factors, use of interaction diagrams in design, shear resistance, biaxial bending, and an introduction to slenderness effects.

Instructor: Dr. J. Michael Stallings

Course # V04D

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Shallow Foundation Design Series: Two Parts

This two-part video series consists of Geotechnical Aspects of Shallow Foundation Design and Structural Design of Spread Footings. The series provides a well-rounded review of the design of shallow foundations by addressing the geotechnical and structural issues. The combination of topics is a natural for practicing engineers and has been well received in live seminars for several years. Viewing the set is recommended, but the parts are independent and may be viewed as separate courses.

Instructor: Dr. David J. Elton

Part One – Geotechnical Aspects of Shallow Foundations Design – V04H

Most structures are on shallow foundations. The foundations must withstand the structure's weight without moving. This course explains in straightforward terms the soils aspects of shallow design. Site investigation, soil properties, strength of soils, bearing capacity, and compressibility of soils are examined with the particular points of interest to shallow foundations. This course covers the elements of each so the user gains understanding of the importance of each, and how to perform each step.

Instructor: Dr. David J. Elton

Course # V04H

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Part Two – Structural Design of Spread Footing – V04J

Design of reinforced concrete spread footings is the focus of this course. Fundamental assumptions for determining the soil pressure distribution under footings are presented along with commonly used formulas. Structural design of footings to comply with Building Code Requirements for Structural Concrete (ACI 318-02) is addressed. Individual topics include: loads, load factors, load combinations, resistance factors, materials, flexure, shear, reinforcement details, development length, and embedment reinforcement. Brief comparisons are made to illustrate the primary differences between footing design by ACI 318-02 and the previous version ACI 318-99.

Instructor: Dr. J. Michael Stallings

Course # V04J

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Stories from the Field: What Engineers Need to Know About Construction – V02A

This is an actual case study done with a panel of professional project engineers, owners and construction engineers with Brasfield & Gorrie, Uzun & Case, and Collins Project Management. While the education of an engineer is heavily laden with mathematical theories and theoretical perspectives, this course deal with the practical matters of practicing engineers. The panel addresses every day problems of contractors, owners, and field engineers. This looks at pertinent jobsite issues that have caused problems between the engineer and the constructor.

Instructors: Mr. Michael Hein and Mr. Steven Williams

Course # V02A

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Surveying

ALTA/ACSM Land Title Survey – V06E

All surveyors at one time or another are requested to provide an ALTA/ACSM Land Title Survey. This set of standards commonly called the ALTA Standards is a very important part of surveying. This course covers the history of the ALTA Standards, general review of the new 2005 Standards, help in understanding the uncertainties in poorly written deeds and the multiple corner dilemma encountered on a boundary survey. Also included is a review of the certifications, and how to deal with the new Accuracy Standards. Suggestions will be made on software to make meeting positional accuracy easier. The objective of this course is to help people in the surveying and engineering profession deal with very complex legal issues addressed in the standards. The new 2005 accuracy standards will be addressed with suggestions given on how to meet and report the new positional standard. Ideas and suggestions on equipment and procedures while doing an ALTA survey will be part of this video.

Surveyors, technicians and members of the title, legal and real estate communities would benefit from this course. The information presented will allow them to be able to more fully understand, and, therefore, better deal with ALTA/ACSM Land Title Surveys.

Instructor: Mr. Milton Denny

Course #: V06E

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

The Colonial Land System and the Building of America - V00E

The story of men that brought order into the Colonial wilderness - the true story of land grants and military tracts that shaped the future of the country. Learn about the equipment and methods used to accomplish each survey. Find out about the founding fathers that also surveyed the land, how knowledge of the land was power in the hands of Colonial leaders, the prominent role the Colonial Surveyor played in society, and the training in mathematics and science that separated the surveyor from the farm culture of the time. Learn how their work and culture affects your work today.

Instructor: Mr. Milton Denny

Course # V00E

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Surveying Course Pre-approval: FL CEP 039-16; KY 2000-004cc; TX 352-060

Construction Surveying - V97B

Discover what is different about construction surveying. Take a walk through a construction site and learn how to verify the boundary and topo, rough and finish grade the site, stake the roads and sewers, layout the buildings, plumb the structural steel, prepare a record drawing and much more. You also will become familiar with the government regulations affecting construction projects and learn what important clauses and terms to include in your contract to protect yourself and your company.

Instructor: Mr. Milton Denny

Course # V97B

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$369

Surveying Course Pre-approval: FL CEP 039-04; KY 2000-057cc; TX No

Geodesy for Engineers and Surveyors – 2003 - V03A

This course is the logical follow-up to GPS and is of increasing importance to Land Surveyors. The history of Geodesy. The Earth and its motions, Precession and Nutation, Polar Motion, Gravity and the Geoid, Gravity Anomalies. Computations of the Ellipsoid, Datums and how they evolved, Geometry of the ellipsoid, Reduction of surface measurements onto the ellipsoid. Positioning: Coordinate systems, Astronomic, Geodetic, Relationship between Astronomic and Geodetic coordinates and azimuth. Time: Coordinated Universal Time (UTC), and UTI. Leveling: Vertical Datums. State Plane Coordinates, UTM Coordinates, Transforming coordinates from one datum to another.

Instructor: Dr. James P. Reilly

Course # V03A

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$919

Surveying Course Pre-approval: FL CEP 039-14; KY 99-110cc; TX 353-060

History of Surveying Instruments: Impact and Accuracy - V00D

The story of the men who designed and built the scientific instruments used to survey and plat the wilderness. This is a detailed look at each new development in technology used to improve the quality of surveying instruments, which in turn improved the accuracy of surveying. Original instruments will be shown from each different time period with an explanation of their use and unique design. The workmanship and skills possessed by these great men of science affects your work and results today - learn about each step in accuracy improvement and how to interpret it.

Instructor: Mr. Milton Denny

Course # V00D

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$439

Improving Surveying Field Procedures using the Total Station - V05B

This seminar discusses surveying with a total station. Angle measurements and distance measurements, plus the basics of GPS surveying will be discussed. Under angle measurements topics include correct observing procedures, errors caused by an instrument being out of adjustment, accuracy and precision, and how to determine the precision of your instrument.

Under distance measurements topics covered include the characteristics of Electronic Distance Measurements (EDM's), retroprisms, and how to calibrate the EDM on your total station. GPS is here to stay, especially Real-Time Kinematic (RTK) for the practicing land surveyor, and this will be covered in detail.

This course should be of interest to those who practice surveying but also those who work in the civil engineering field, including county engineers, city engineers, public works officials, transportation engineers, DOT personnel, federal employees, contractors and consultants.

Instructor: Dr. James P. Reilly

Course # V05B

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$918

Land Surveying Ethics – Mississippi - V03F

This course covers not only the history of ethics, but gives guidance on all professional issues dealing with responsibility and standard of care. It provides answers to everyday problems that arise in the day to day functioning of all land surveyors. The course's in-depth coverage of ethics as it relates to those in the field and the real-life examples of ethical issues are extensively covered.

In addition, the course also reviews actual court cases with the assistance of Cary J. Williams, and attorney with the law firm of Williams & Williams. His expertise helps to show the law's realistic application of ethical behavior.

This course covers all the above information as well as the special codes for Mississippi.

Instructor: Mr. Milton Denny

Course # V03F

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Professional Ethics for the Kentucky Land Surveyor - V02H

This course covers not only the history of ethics, but gives guidance on all professional issues dealing with responsibility and standard of care. It provides answers to everyday problems that arise in the day to day functioning of all land surveyors. The course's in-depth coverage of ethics as it relates to those in the field and the real-life examples of ethical issues are extensively covered.

In addition, the course also reviews actual court cases with the assistance of Cary J. Williams, and attorney with the law firm of Williams & Williams. His expertise helps to show the law's realistic application of ethical behavior.

This course covers all the above information as well as the new Kentucky Code of Professional Practice and Conduct 201 KAR 18:142 for Kentucky registered Professional Land Surveyors.

Instructor: Mr. Milton Denny

Course # V02H

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Professional Ethics for the Land Surveyor - V02D

This course covers not only the history of ethics, but gives guidance on all professional issues dealing with responsibility and standard of care. It provides answers to everyday problems that arise in the day to day functioning of all land surveyors. The course's in-depth coverage of ethics as it relates to those in the field and the real-life examples of ethical issues are extensively covered.

In addition, the course also reviews actual court cases with the assistance of Cary J. Williams, and attorney with the law firm of Williams & Williams. His expertise helps to show the law's realistic application of ethical behavior.

Instructor: Mr. Milton Denny

Course # V02D

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Rectangular Land System: Subdivision of Public Lands - V00F

This video will examine the United States Public Lands, their extent and how the government acquired them. It will also cover the system of survey and the surveyors that walked the land. You will understand the instructions for field operations and why modern survey distances differ from historic records.

The video also contains actual maps and diagrams of government surveys along with information on equipment used to complete this survey. You will learn to appreciate how these original surveys became the basis for every modern resurvey - a must for anyone dealing in land boundaries.

Instructor: Mr. Milton Denny

Course # V00F

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$439

Surveying Course Pre-approval: FL CEP 039-17; KY 2000-003cc; TX 355-060

The Role of Engineers and Surveyors in Geographic Information Systems – V06G

This course should be of interest to those who practice surveying but also those who work in the civil engineering field, including county engineers, city engineers, public works officials, transportation engineers, DOT personnel, federal employees, contractors and consultants.

The first part of this course looks at the terminology and definitions of a Geographic Information System (GIS). The process of how to design a system, and how to capture information from both existing records and new spatial data is covered. The course contains a short overview of the most popular software and hardware.

The second part of this course deals with the planning, design, implementation and uses of a GIS. The map projection and coordinate systems used to design a system will be identified. Topics addressed include data capture for the base mapping, aerial mapping, digital orthophotos, remote sensing, and GPS equipment. All the latest photo capture equipment such as Light Detection and Ranging (LIDAR) and digital aerial cameras will be described.

The third part of the seminar will deal with the National Spatial Reference System/Readjustment of North American Datum (NAD) 83. You can stand on the sidelines or you can get involved in this technology, the choice is yours.

Instructor: Mr. Milton Denny

Course #: V06G

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$918

Standards of Practice for Surveying in Alabama - V03E

The "Minimum Technical Standards" of Alabama as of July 23, 2002 have been changed to "Standards of Practice for Surveying in the State of Alabama." Licensed surveyors are required to practice under the new standards. Surveyors are required to take a course in standards every four years. But since major changes have been made in these standards, including GPS, there is no reason to wait until you are required to take the new standards course. Milton Denny, PLS, will walk you through all aspects of the new standards so you can be sure you are practicing according to the new laws. Additional information will be provided on other standards, such as the ALTA/ACSM standards and how they relate to Alabama Standards of Practice.

Instructor: Mr. Milton Denny

Course # V03E

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$919

State Plane Coordinates - V01D

Review of the Background: Development of the system, the State Plane Coordinate System of 1927, Design, Units of Length, The Clarke 1866 Ellipsoid, The GRS 80 Ellipsoid, NAD 83 Coordinates, State Plane Coordinate System of 1983. Map Projections: Fundamentals, Conformality, Lambert Conformal Projection, Transverse Mercator Projection, Oblique Mercator Projection, Scale Factor, Elevation Factor, Combined Factor, Convergence of the Meridian, Grid azimuth "t," Projected Geodetic Azimuth "T." Conversion from Latitude and Longitude to State Plane Coordinates, and the Reverse, State Zones, Software. Traversing in State Plane Coordinates, Numerical Examples. Surface Coordinates. Universal Transverse Mercator Projection (UTM). Definition, Scale Factors, Zone Dimensions and Definitions.

Instructor: Dr. James P. Reilly

Course # V01D

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$899

Surveying Course Pre-approval: FL CEP 039-19; KY 2000-161cc; TX 432-060

Surveying with GPS - V05D

This presentation is as complete a description of surveying with GPS as one can produce in the time limits of a one-day seminar. GIS receivers will be discussed briefly, but not GIS processing. The technology of state High Accuracy Reference Networks (HARNs) and Continuous Operating Reference Stations (CORS) will be described. The method of establishing 'GPS Derived Orthometric Heights' will be covered in detail. A description of the Russian GLONASS system and the new European GALILEO system will conclude the seminar.

This course should be of interest to those who practice surveying but also those who work in the civil engineering field, including county engineers, public works officials, transportation engineers, DOT personnel, federal employees, contractors and consultants.

Instructor: Dr. James P. Reilly

Course # V05D

Format: DVD-R or VHS videotape with supporting print materials

Length: 5 hours (0.5 CEUs or 5 PDHs or 5 CPCs)

Fee: Individual \$240 / Organization \$579

Surveying Course Pre-approval: FL CEP 039-20; KY submitted for consideration

Understanding Boundary Law- Case Law and Principles of Surveying Law - V05C

This course will review how to research a deed and the procedures of evidence used to locate boundary corners. Study federal laws regulating your surveys, and Alabama statutes pertaining to your surveys. Find out the location of important documents such as the original field notes and township plats. Preview principles as outlined in the BLM manuals that control how sections are divided, and the proper use of collateral evidence.

Review case law in Alabama affecting surveying. Relate the accuracy of the original surveys to the retracement and deed calls.

This course is designed for those who practice surveying but also work in the civil engineering field, including county engineers, city engineers, public works officials, transportation engineers, DOT personnel, federal employees, contractors and consultants.

Instructor: Mr. Milton Denny

Course # V05C

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$918

Vertical Datums and Leveling - V01C

A datum is a reference system for computing or correlating the results of surveys. The two principal types of datums are vertical and horizontal. A vertical datum is a level surface to which heights are referred. In a widespread network of vertical control, geodetic leveling is the technique that provides the most reliable elevation differences between control points. It is a form of precise leveling in which the observing team limits the magnitude of error by using calibrated instruments in combination with a rigorous, symmetrical observing procedure.

You will learn why General Procedures must be followed, gain an understanding of the Sources of Errors and how they occur, learn the Equipment used and how to keep it in good working condition, understand why the Collimation Check is critical, how to use the Compensation Check, and understand the Observing Routine that is used when leveling a line of the National Geodetic Vertical Control Network.

Instructor: Dr. James P. Reilly

Course # V01C

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$899

Surveying Course Pre-approval: FL CEP 039-18; KY 2000-160cc; TX 433-060

Electrical Engineering

Electric Motor Application and Selection: Picking the Right Motor and Getting the Most From the Ones You Have – V96F

This course covers key factors in electric motor design and operations; how to size a motor for your needs; how to analyze electric motor steady state and dynamic performance; and practical methods to improve performance and save operating costs. Of particular value to design engineers as well as plant operations and maintenance professionals.

Instructor: Dr. Charles A. Gross

Course # V96F

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$369

Electrical Circuit Fundamentals for Power Applications – V05A

This course covers the fundamentals of electrical circuit theory, from the viewpoint of electrical power engineers and scientists. Topics covered include charge, voltage, current, resistance, capacitance, inductance, reactance, frequency, period, impedance, admittance, conductance, susceptance, power, and energy. Dc, ac, and transient circuit modes are covered. The work is extended to as polyphase circuit analysis, including wye and delta connections. The symmetrical component transformation is also treated.

Instructor: Dr. Charles A. Gross

Course # V05A

Format: DVD-R or VHS videotape with supporting print materials

Length: 6 hours (0.6 CEUs or 6 PDHs or 6 CPCs)

Fee: Individual \$288 / Organization \$918

Electric Power Systems Protection: Six Parts

This suite of six 0.3 CEU courses covers the engineering fundamentals of Electric Power System Protection. System protection is concerned with fault analysis (“short circuit studies”), switchgear, sensors, the detection and removal of faults, and efficient system restoration.

This course is designed to benefit engineering personnel concerned with protection issues related to the design, planning, or operation of electrical power systems. Electric utility engineers, consultants, co-generation engineers, and independent power producers.

Instructor: Dr. Charles A. Gross

Part One – Fundamentals – V05E

This course presents the analytical fundamentals required for fault analysis.

Instructor: Dr. Charles A. Gross

Course # V05E

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Part Two – Power Systems – V05F

This course presents the circuit models required for fault analysis

Instructor: Dr. Charles A. Gross

Course # V05F

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Part Three – Loads – V05G

This course presents the analytical techniques used for system analysis

Instructor: Dr. Charles A. Gross

Course # V05G

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Part Four – Hardware – V05H

This course presents the hardware used for system protection

Instructor: Dr. Charles A. Gross

Course # V05H

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Part Five – Loads – V05I

This course presents the schemes commonly used for component protection

Instructor: Dr. Charles A. Gross

Course # V05I

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Part Six – Protection – V05J

This course presents the schemes commonly used for line protection

Instructor: Dr. Charles A. Gross

Course # V05J

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Electrical Power Systems: Four Parts

These courses are designed for electrical engineering personnel involved in designing, maintaining, and upgrading electrical systems. The courses cover the fundamentals of electric power systems from the viewpoint of the non-specialist. They will increase the understanding of the fundamentals of the design, performance and operation of electric power systems, and enhance professional engineering competence in this area. These courses may be taken by non-electrical engineering personnel to obtain an understanding of the subject, but must be taken in sequence.

Part One – Fundamentals Review – V01F

This module covers the fundamentals of ac single- and three-phase circuit concepts. Fundamentals and overview; ac circuits: voltage, current, impedance, power; three phase ac circuits: wye, delta connections.

This course can be taken by itself. An understanding of the fundamentals is essential for the remaining courses, however.

Instructor: Dr. Charles A. Gross

Course # V01F

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$429

Part Two – Power Systems – V01G

This module covers the fundamentals of electrical distribution systems, including substations, transformers, circuit components and switchgear. Substations, transformers; conductors, bus work, feeders, laterals; switchgear: fuses, relays, circuit breakers, reclosers.

An understanding of the fundamentals is necessary before taking this course.

Instructor: Dr. Charles A. Gross

Course # V01G

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$429

Part Three – Loads – V01H

This module covers the nature of electrical lighting and motor loads, and related issues including regulation, power factor correction, and power quality issues. Load requirements: voltage regulation, power quality; lightning loads; motor loads.

An understanding of the previous course material is necessary before taking this course.

Instructor: Dr. Charles A. Gross

Course # V01H

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$429

Part Four – Protection – V01J

This module covers the general area of power system protection, including overcurrent and overvoltage issues; protective devices; and component protection. Overload protection; fault protection; surge protection.

An understanding of the previous course material is necessary before taking this course.

Instructor: Dr. Charles A. Gross

Course # V01J

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$429

General Lighting Design: Two Parts

General Lighting Design addresses issues essential to the design of artificial illumination systems. It is strongly recommended that both parts be taken consecutively; however, in special circumstances, students may purchase either part separately. For advice on this matter, consult either of the course instructors. The course should be beneficial to Architects, Consulting Engineers, Plant Engineers, Technicians, Sales and Manufacturers Representatives, Contractors, and others who are concerned with the design, installation, operation, and/or maintenance of illumination systems.

Part One – Fundamentals and Indoor Calculations – V05L

Part 1: Fundamentals of light and human vision. Lighting calculations by the point source and lumen methods.

Instructor: Dr. Charles A. Gross and Mr. Joseph A. Holifield III

Course # V05L

Format: DVD-R or VHS videotape with supporting print materials

Length: 4 hours (0.4 CEUs or 4 PDHs or 4 CPCs)

Fee: Individual \$192 / Organization \$612

Part One – Design Considerations, Fixtures and Flood Lighting – V05M

Part 2: Lighting design philosophy; Light sources and Fixtures; an outdoor design example; special applications.

Instructor: Dr. Charles A. Gross and Mr. Joseph A. Holifield III

Course # V05M

Format: DVD-R or VHS videotape with supporting print materials

Length: 4 hours (0.4 CEUs or 4 PDHs or 4 CPCs)

Fee: Individual \$192 / Organization \$612

Signals and Systems: Four Parts

This course is designed for engineers and scientists unfamiliar with the fundamental tools of signal processing, and/or those desiring a refresher course in the foundations of this subject. The course is divided into four modules that cover the fundamentals of Signals and Systems theory, including the basic concepts of analog and digital signal processing. Time and frequency domain concepts will be discussed, including Fourier and Laplace methods. MatLab© programs (m files) will be provided to execute many of the required analyses. The normal mathematical background of a graduate engineer is required.

Instructor: Dr. Charles A. Gross

Course # V04A

Format: DVD-R or VHS videotape with supporting print materials

Length: 12 hours (1.2 CEUs or 12 PDHs or 12 CPCs)

Fee: Individual \$576 / Organization \$1659

Part One – Fundamentals – V06J

This module covers Standard Systems and System Modeling, Fundamentals, and Frequency Response: Filters.

This course can be taken by itself. An understanding of the fundamentals is essential for the remaining courses.

Instructor: Dr. Charles A. Gross

Course # V06J

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Part Two – Fourier Concepts – V06K

This module covers Fourier Concepts: The Fourier Series, an explanation, and an application.

This course can be taken by itself; however, an understanding of the fundamentals is essential.

Instructor: Dr. Charles A. Gross

Course # V06K

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Part Three – Analog Transform Concepts – V06L

This module covers the Fourier Transform, the Laplace Transform, and applications.

This course can be taken by itself; however, an understanding of the fundamentals is essential.

Instructor: Dr. Charles A. Gross

Course # V06L

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Part Four – Discrete Transform Concepts – V06M

This module covers discrete signals (sampling), aliasing, the discrete Fourier transform (FFT), difference equations, and z-transforms.

This course can be taken by itself; however, an understanding of the fundamentals is essential.

Instructor: Dr. Charles A. Gross

Course # V06M

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Ethics and Legal

Business Ethics Module I – V03B

"Ethics" is defined as principles of conduct governing an individual or a group of professionals. Dr. Sauser teaches codes of ethical standards in today's hectic world. He gives you examples of ethical issues with approaches for analyzing and resolving issues. The course's in-depth coverage as it relates to those in the field and the real-life examples of issues are extensively covered.

Instructor: Dr. William Sauser, Jr.
Course # V03B
Format: CD-ROM with supporting print materials
Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)
Fee: Individual \$144 / Organization \$459

Business Ethics Module II – V03C

An additional three hours of relevant examples of ethical situations and the best way to deal with business in today's hectic world.

Instructor: Dr. William Sauser, Jr.
Course # V03C
Format: CD-ROM with supporting print materials
Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)
Fee: Individual \$144 / Organization \$459

Contracts for Engineers, Surveyors and Technical Professionals – V97G

This course will provide the technical professional with a working knowledge of contract law and lay the groundwork for preparing a draft contract for review by a licensed attorney. Model contracts provided by the National Society of Professional Engineers, Associated General Contractors and the American Institute of Architects are discussed as are a variety of real world contract situations encountered by practicing professionals.

Instructor: Dr. Reginald I. Vachon
Course # V97G
Format: DVD-R or VHS videotape with supporting print materials
Length: 4 hours (0.4 CEUs or 4 PDHs or 4 CPCs)
Fee: Individual \$192 / Organization \$449
Surveying Course Pre-approval: FL CEP 039-06; KY No; TX 275-060

Ethics and Professionalism – V98E

This course covers ethics in the practice and concept of a profession. "Ethics" is defined and moral/ethical statements vs. etiquette and law are examined. Codes of ethical standards are listed. The ways ethical questions arise in professional practice and actual example cases are examined. This video presents real-life examples of ethical issues with approaches for analyzing and resolving the issues.

Instructor: Dr. Reginald I. Vachon

Course # V98E

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$379

Surveying Course Pre-approval: FL CEP 039-08; KY No; TX 273-060

Also go to these courses: Professional Ethics for the Land Surveyor, Professional Ethics for the Kentucky Land Surveyor, and Land Surveying Ethics - Mississippi

Land Surveying Ethics – Mississippi - V03F

This course covers not only the history of ethics, but gives guidance on all professional issues dealing with responsibility and standard of care. It provides answers to everyday problems that arise in the day to day functioning of all land surveyors. The course's in-depth coverage of ethics as it relates to those in the field and the real-life examples of ethical issues are extensively covered.

In addition, the course also reviews actual court cases with the assistance of Cary J. Williams, and attorney with the law firm of Williams & Williams. His expertise helps to show the law's realistic application of ethical behavior.

This course covers all the above information as well as the special codes for Mississippi.

Instructor: Mr. Milton Denny

Course # V03F

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Legal Issues For Construction – V97F

Those involved in construction -- contractors, subcontractors, developers, architects, engineers, construction managers and others -- must learn to live with the applicable laws to avoid complex and costly legal disputes during construction. This course will show you how to avoid these problems through planning, management and documentation by explaining, in practical terms, the factors which must be considered at every stage of the construction process.

Instructor: Mr. William E. Dorris

Course # V97F

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$369

OSHA: The General Industry and Construction Standards Interpreted for the Engineer and Surveyor – V99R

Learn from an expert. The format of the sessions is to provide the Engineer and Surveyor with an interpretation of the rules from their viewpoint.

Outline: Why it is important to know about OSHA, Overview, the Act's coverage, State programs vs. Federal coverage, the "new" OSHA - reinventions.

Inspections: how and when they are made, Citations and Penalties, Employer rights and responsibilities, Employee rights and responsibilities, the appeals process, record-keeping requirements, requirements to train employees, where OSHA concentrates efforts in general industry, where OSHA concentrates efforts in field/construction, how to keep up to date on OSHA.

Instructor: Mr. William R. Bunner

Course # V99R

Format: DVD-R or VHS videotape with supporting print materials

Length: 4 hours (0.4 CEUs or 4 PDHs or 4 CPCs)

Fee: Individual \$192 / Organization \$529

Professional Ethics for the Kentucky Land Surveyor – V02H

This course covers not only the history of ethics, but gives guidance on all professional issues dealing with responsibility and standard of care. It provides answers to everyday problems that arise in the day to day functioning of all land surveyors. The course's in-depth coverage of ethics as it relates to those in the field and the real-life examples of ethical issues are extensively covered.

In addition, the course also reviews actual court cases with the assistance of Cary J. Williams, and attorney with the law firm of Williams & Williams. His expertise helps to show the law's realistic application of ethical behavior.

This course covers all the above information as well as the new Kentucky Code of Professional Practice and Conduct 201 KAR 18:142 for Kentucky registered Professional Land Surveyors.

Instructor: Mr. Milton Denny

Course # V02H

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Professional Ethics for the Land Surveyor – V02D

This course covers not only the history of ethics, but gives guidance on all professional issues dealing with responsibility and standard of care. It provides answers to everyday problems that arise in the day to day functioning of all land surveyors. The course's in-depth coverage of ethics as it relates to those in the field and the real-life examples of ethical issues are extensively covered.

In addition, the course also reviews actual court cases with the assistance of Cary J. Williams, and attorney with the law firm of Williams & Williams. His expertise helps to show the law's realistic application of ethical behavior.

Instructor: Mr. Milton Denny

Course # V02D

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Tort Liability and Ethics for Public Agencies – V03G

This course will treat a central question that remains always before us as we make choices on both a personal and professional level - a question that society demands that we ask ourselves individually. It is the question that society will use in judging our actions and the resulting consequences. This question, which can be styled in many different ways with the same effect is, "What good thing must I do?"

From a legal perspective, this question is styled as a negative, advising us to "Do no wrong." The legal term "tort" means "wrongful act." Guided by this perspective, lawyers advise us to do no "good" by describing what past juries have found to be wrong. Ethicists offer a different styling of the "what good thing must I do?" question, suggesting "good" is relative to a chosen perspective. In fact, many ethicists would challenge other's right to judge if using a different perspective. However, we do share a common "perspective," a "common law." Our society's founding principles set this "shared" perspective for all of us either through choice for most or by mandate for the rest.

In this course, you will be taught how two seemingly divergent perspectives are really part of the same system, a layered system. At one level, this system deals with shared, common values central to answering the question "What good thing must I do?" At a different level, this system deals with the law, which is the mechanism to deal with those choosing to disregard these values.

In doing this, you will look "under the hood" of our system starting with the legal and ethical heritage that has shaped our culture and society. Based on this criteria, you will evaluate current legal perspectives to determine which works best for you. Presupposing that a straightforward perspective serves best, you will explore whether or not it leads to the right legal conclusions. Finally, you will see this straightforward approach illustrated as we work through a "risk management" program dealing with highways, roads, and bridges. Who should take the course? Engineers, managers, and maintenance professionals all make choices in responding to this "What good thing must I do?" question. We must make choices capable of being judged by society as evidenced by a jury's verdict of "right," or at least not "wrong."

Instructor: Dr. Larry Crowley

Course # V03G

Format: DVD-R or VHS videotape with supporting print materials

Length: 5 hours (0.5 CEUs or 5 PDHs or 5 CPCs)

Fee: Individual \$240 / Organization \$765

Trench Safety – D99A

Trench Safety is a ten-lesson tutorial based on the OSHA requirements for construction excavation safety. Its purpose is to teach safe trenching practices, taking advantage of the multimedia and hyper-linking capabilities of the World Wide Web.

You will be introduced to the dangers of construction excavations using newspaper accounts of recent trenching accidents from around the U.S. The mechanics of trench cave-ins, the potential hazards to workers, the OSHA requirements on excavation safety, and protective systems used to avoid trench cave-ins and protect workers from harm will also be explained. This tutorial incorporates the latest information on excavation safety.

This is a CD-ROM course. Your computer must have a web browser. An internet connection is not necessary, but if you have one the CD will activate links to the web for updated material. Your computer must have a CD-ROM player and a printer. Tests are taken interactively on the CD-ROM and must be printed and mailed to us for grading.

Instructor: Mr. Michael Hein

Course # D99A

Format: CD-ROM with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$359

Management Topics

Buying/Selling The Engineering or Land Surveying Firm – V02C

If you are the owner of a business, or the potential buyer of a business, you need to know the answers to the following questions: When is the right time to sell? When should I buy? How do I get the company ready to sell? What is a company worth? How do I attract buyers? How do I limit the amount of taxes I have to pay? How do I as new owner become successful after the sale? How do I preserve my good name after the sale? Most professionals only buy or sell a company once in their lifetime. Make sure you understand how the game is played before you make a costly mistake. The cost of this seminar on tape maybe one of the best investments you as a professional can make. Included is a special interview about buying and selling between Milton Denny, PLS and Van Clinklescales, PE, PLS, PhD.

Instructor: Mr. Milton Denny

Course # V02C

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Construction Project Management – V97A

This course is designed for engineers and other professionals who want to know more about the detailed aspects of construction project management. Topics covered include CPM schedule updating, job cost/forecasting, project documentation, change orders and project close out. This course provides just the right blend of theory and practical examples.

Instructor: Mr. Scott Kramer

Course # V97A

Format: DVD-R or VHS videotape with supporting print materials

Length: 4 hours (0.4 CEUs or 4 PDHs or 4 CPCs)

Fee: Individual \$192 / Organization \$449

Contract Administration: Change Order Basics – V03H

Construction projects seldom, if ever, go exactly as planned. The weather turns unexpectedly poor during construction. The wall color is not to the owner's liking and needs to be changed. New technology must be incorporated into the facility during construction. A recently rediscovered cemetery will require rerouting of the planned sewer line. Unforeseen site conditions must be accommodated in constructing the foundation. Plan dimensions don't add up correctly or a structural detail was mistakenly omitted from the final drawings. These few examples are only intended to illustrate the unlimited number of similar "unplanned" occurrences that form the basis for contract changes and its accompanying revisions to scope, time, and cost.

This course covers the basics of this challenging aspect of administering construction contracts: the change order. It is designed to show a balanced approach to the change order process and, as such, can benefit you whether you are an owner's representative, designer, or contractor. The focus will be on an unbiased presentation of the process and presentation of generally accepted techniques to use in arriving at a fair and reasonable settlement of time and costs. The development of the material assumes no prior in-depth knowledge in this area. Be sure to have your calculators available to help with problems used to illustrate the methods introduced during the seminar.

Instructor: Dr. Larry Crowley

Course # V03H

Format: DVD-R or VHS videotape with supporting print materials

Length: 5 hours (0.5 CEUs or 5 PDHs or 5 CPCs)

Fee: Individual \$240 / Organization \$765

Effective Marketing of Professional Services for Engineers and Surveyors - V98B

This video is designed to show you how to improve your marketing and public relations efforts to increase business. Included is information on how to find and win the jobs that will keep your company growing profitably. It will offer practical "how to" suggestions on organizing the marketing function, writing a marketing plan keeping the marketing effort on track. Also, there is information on writing good proposals and doing great presentations. This video will contain examples of marketing materials for you to use. If you plan to be in business in the 21st century, this video is a must!

Instructor: Mr. Milton Denny

Course # V98B

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$379

Surveying Course Pre-approval: Florida CEP 039-11; KY 2000-059cc; TX 269-060

Engineering Economy – V97E

Engineering economy continues to be critical to successful engineering practice. This course covers the basics of the subject with emphasis on methods to support economic analysis in business. You will learn how to make decisions on when to purchase equipment and when to lease, how to amortize investments and quantify the effect of depreciation, and how to compute present worth and future worth of capital investments. Also covered are benefit/cost and incremental analysis, rate of return and interest analysis, leading to a discussion of minimum annual return needed to return a profit on a project. (Tax implications of engineering economy are not covered because of the dynamic nature of tax law).

Instructor: Dr. David J. Elton

Course # V97E

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$369

Establishing Your Engineering or Surveying Practice – V98Z

Here is the information you need to get a new or newly established technical practice up and running on a sound business footing. This course discusses the rewards and challenges of an independent practice and tells you how to get started. It covers how to establish a vision for your practice, the legal requirements for going into business, initial marketing efforts, the requirements for a business contract, how to negotiate that contract, collecting accounts, how to manage your time and where to turn for business assistance. This video is a must for engineers, surveyors or other professionals who wish to establish themselves as independent consultants and service providers or who wish to improve the operation of an existing small practice.

Instructor: Mr. Milton Denny

Course # V98Z

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$379

Surveying Course Pre-approval: Florida CEP 039-09; KY 2000-058cc; TX 271-060

Information Security: Protect Your Company and Yourself – V06F

Information security is one of the most important topics today, both for businesses and individuals. Unfortunately, information security is typically viewed as a technical topic, suitable only for computer professionals. Nothing could be further from the truth. Information security is far more of a managerial and personal topic, than a technical topic. As a result, Dr. Rainer teaches this course from a non-technical, managerial perspective. The course's in-depth coverage includes risk management, threats to your organization's information, and defenses against those threats. On an individual level, the course concludes with guidelines to follow in securing your personal information at home, helping to prevent loss of private, sensitive information and/or identity theft.

Instructor: Dr. Kelly Rainer

Course # V06F

Format: DVD-R or VHS videotape with supporting print materials

Length: 4 hours (0.4 CEUs or 4 PDHs or 4 CPCs)

Fee: Individual \$280 / Organization \$980

Leading Lean – V04F

Leading Lean has its focus on performance management. During the course you will define performance management, learn about the basics of performance management, create a performance improvement plan, learn how to give effective feedback and how to conduct an ABC analysis. The ABC analysis is a problem-solving process in which the antecedents and consequences currently operating for both the problem and correct behaviors are identified and classified. It is conducted when a behavior you want to happen is not occurring often enough and a behavior you do not want to happen is occurring too often.

Successful lean implementations are determined most often by the effectiveness of people issues rather than technical skills or tools. Extracting performance from individuals and teams is a key to successful continuous improvement. The course will lay the foundation for success through motivating and rewarding people.

Instructor: Dr. Beth Foate

Course # V04F

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$459

Managing the Engineering and Surveying Firm: Positioning for the 21st Century – V98D

Here are the tools you need to handle the business challenges of your growing technical practice. You will learn about your new legal responsibilities, expanding your staff to handle new opportunities, hiring and developing new employees, how to provide attractive benefits for them, controlling costs, where to seek new growth opportunities and how to apply new technology to your operation. This course is a must for the technical professional whose practice is established and who is facing the challenges of growth.

Instructor: Mr. Milton Denny

Course # V98D

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$379

Surveying Course Pre-approval: Florida CEP 039-10; KY No; TX 270-060

Marketing Model for Success: RAMPS – V05K

This program takes a very complex, vast subject and defines it in one word, RAMPS, enabling anyone to understand and practice marketing techniques. It presents an over view of this business discipline and how it integrates with other business functions to lead to profits for the organizations. Focusing on Services marketing, this training provides a step-by-step program for planning and implementing marketing for the engineering firm. It explains how effective and efficient marketing requires targeting specific segments of the population, identifying behavior patterns and changing them for improved profitability. Specific examples are provided. The RAMPS plan to marketing success is a proven technique, developed for and used in the construction industry for over 20 years.

Instructor: Dr. Jackie A. DiPofi

Course # V05K

Format: DVD-R or VHS videotape with supporting print materials

Length: 4 hours (0.4 CEUs or 4 PDHs or 4 CPCs)

Fee: Individual \$192 / Organization \$612

Marketing Engineering and Surveying Services to Government Agencies – V98C

Most professionals know that the government is a major contractor of professional services. This video explains the unique rules of the game in governmental contracting. Included is an overview of the Brooks Act and other relevant laws and regulations dealing with these services. You will be shown how to identify the projects with details on how to submit your qualifications. The Standard Forms 254 and 255 will be reviewed with tips on what not to include on your submittal. The video will cover the selection process used by most government agencies and what to expect if selected. Included is information on audits, overhead rates and final performance evaluations. If you have not been involved in governmental contracting, this video can help you get started in this major market.

Instructor: Mr. Milton Denny

Course # V98C

Format: DVD-R or VHS videotape with supporting print materials

Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)

Fee: Individual \$144 / Organization \$379

Surveying Course Pre-approval: Florida CEP 039-12; KY 2000-060cc; TX 268-060

On Time: Project Scheduling Basics – V03D

If a project manager was given three wishes concerning an ongoing project, one would surely be its "on time" completion. This course covers scheduling basics from a list-making perspective. You will learn how to develop lists of project activities, assign duration to listed activities, and show interdependence between activities on a logic diagram. You will be taught how to calculate the start/finish timing along these activity paths, prioritize activities based on timing, and to provide answers to critical project questions. And, you will be schooled in updating your schedule -- your list -- in accordance with actual progress.

This course can benefit you whether you're a scheduling novice or a seasoned veteran. For the novice, use this course to come up to speed on scheduling terminology and technique. No prior scheduling knowledge is assumed for this course. Let scheduling become a valuable tool in assuring "on-time" performance for your projects. If you're a seasoned veteran that sees merit in "to-do" lists yet relegates scheduling to a necessary evil, perhaps you'll gain a fresh perspective. Seeing schedules characterized as dynamic project lists may serve to take the drudgery out of scheduling.

Instructor: Dr. Larry Crowley

Course # V03D

Format: DVD-R or VHS videotape with supporting print materials

Length: 5 hours (0.5 CEUs or 5 PDHs or 5 CPCs)

Fee: Individual \$240 / Organization \$765

Presentation Skills for Engineers and Technical Professionals – V05N

A unique skill-building course to help you prepare and deliver clearer, more persuasive presentations to clients, sales prospects, and internal audiences.

This course will help you:

- Enhance your career by becoming a stronger, more confident presenter
- Present technical content to non-technical audiences in a compelling way
- Start overcoming your fear of presenting and public speaking
- Increase your consulting skills by becoming a better communicator
- Develop a strong and interesting speaking voice
- Utilize a three-step process for handling questions from the audience
- Differentiate between effective and ineffective use of presentation visuals

Instructor: Ms. Deborah Boswell

Course # V05N

Format: DVD-R or VHS videotape with supporting print materials

Length: 4 hours (0.4 CEUs or 4 PDHs or 4 CPCs)

Fee: Individual \$192 / Organization \$612

Strategic Business Writing Workshop – W98B

Effective writing is a key career tool. Every letter, every memo -- every communication you send -- should support your business and personal strategy. Master a new, results-driven formula for writing business correspondence that sparkles with clarity, impact and power. Sharpen your edge and fine-tune your skills in seven easy lessons. Write more effective letters, memos, reports and proposals -- and receive personal feedback as you progress. Learn to streamline your writing and avoid typical writing traps. Increase your competitive edge, all at your own pace from your own computer.

Due to the interactive nature of the course and the individual attention given by the instructor, organizational licenses are not available.

Instructor: Ms. Fern Lebo
Course # W98B
Format: Internet
Length: 15 hours (1.5 CEUs or 15 PDHs or 15 CPCs)
Fee: Individual \$435 / Not available for Organizations

Value Stream Mapping – V04G

Value Stream Mapping is a tool used to create a material and information flow map of a product or processes. This powerful tool allows companies to map the flow of products in the back door as a raw material, through all manufacturing steps, and off the loading dock as finished product. This is the value stream. You begin the journey with the current state map - it shows you where you are. Then, you plan your Lean journey with the future state map - it shows you where you're going and how you're going to get there. Based on your Value Stream Map, you can streamline work processes, thereby cutting lead times and reducing operating costs.

During the course you will use the powerful Value Stream Mapping tool to create a current state map for a real-world firm featured in a detailed case study. Use the value stream icons and learn the common language of Lean as you draw your current state map for the case company. Next you will analyze the case company's current state, find the non-value added activities, and then draw a future state map for the case company that eliminates those activities. You also develop a plan for attacking those non-value added activities.

Instructor: Dr. Hank Czarnecki
Course # V04G
Format: DVD-R or VHS videotape with supporting print materials
Length: 3 hours (0.3 CEUs or 3 PDHs or 3 CPCs)
Fee: Individual \$144 / Organization \$459

Course Instructors

Ms. Deborah Boswell

Deborah Boswell is an accomplished speaker, trainer, and consultant in the area of business communications. As founder and president of Professional Speech Services of Alabama, P.C., she combines her clinical and corporate experience to improve the communications skills of engineers, technical professionals, and other business clients. The firm has offices in Birmingham and Huntsville, Alabama. Ms. Boswell received her B.S. degree from Auburn University. She received a Master of Science in Speech Pathology from the University of Montevallo.

Dr. E. Ray Brown

Dr. E. Ray Brown is the Director of the National Center for Asphalt Technology at Auburn University's College of Engineering and a Professor of Civil Engineering. Dr. Brown received his B.S. and M.S. from Mississippi State University and his Ph.D. from Texas A&M University in 1983. He joined NCAT in 1987 from the U.S. Army Corps of Engineers Waterways Experiment Station in Vicksburg, Mississippi, where he was chief of the Materials Research Center. His HMA related experience is extensive, including such areas as mixture design and construction, quality control, training, and development of specifications.

Mr. William R. Bunner

Mr. William R. Bunner is the President of Training Associates, Inc. Mr. Bunner is a Certified Environmental Trainer. He received his B.S. and M.A. from Ohio State. His lengthy and varied experience includes Head of Training and Safety for the Ohio EPA, Manager of Safety and Training for Envirosafe Services, Manager of Safety for Aware Engineering, and Adjunct Faculty at the University of Florida. He has been an expert witness for OSHA and participated in lead, PCB, asbestos, and other substance removal. He has conducted numerous training courses in hazardous materials and is certified by OSHA to teach regulations overview for General Industry Standards (500) and Construction Standards (501).

Dr. Larry Crowley

Dr. Larry Crowley is a member of the Civil Engineering Faculty at Auburn University where he teaches classes in construction engineering and management. He holds an MBA in management and finance from Texas Christian University and a B.S. in civil engineering from Texas A&M University. He previously worked in the design/construction industry for more than a decade in Texas, where he is a registered professional engineer. He has been employed in several different capacities - design engineer, contract administrator, contractor, project manager, and construction manager. Most relevant to this course was his experience as a scheduling engineer for the Corps of Engineers on a \$33 million hospital renovation and addition project. This seven-story project was divided into 69 phases with approximately 5000 activities in order to maintain uninterrupted operations of the Air Force Base hospital. He is currently serving as a member of ASCE's Construction Research Council and the Transportation Research Board's topic panel for owner-controlled insurance programs. He has recently published articles on the use of statistical models and robust statistics in construction bid data.

Mr. Hank Czarnecki

Hank Czarnecki serves as a member of Auburn University's outreach faculty and as senior lean specialist for the Alabama Technology Network at Auburn University. He has worked for the past five years facilitating continuous improvement (Kaizen) events. He has five years of experience as a process engineer in the automotive industry. He is a certified NIST Lean Manufacturing Trainer and has trained thousands of engineers, managers, and floor associates in lean manufacturing. Hank has a BS in Industrial Engineering from the University of Pittsburgh and an MS in Industrial Engineering from Auburn University.

Mr. Milton E. Denny

Mr. Milton E. Denny is a registered surveyor in six states, received his certificate in Land Boundard Surveys from the University of Illinois, and is a veteran of project development and management of surveying and mapping firms. He's the past president of the Alabama Society of Professional Land Surveyors, a Fellow in the American Congress on Surveying and Mapping and served for six years on their Board of Direction. Mr. Denny is the author of the manual "Marketing Professional Services for Land Surveyors and Photogrammetrists," "Hazardous Waste Acronyms," and "Small Business Handbook for Surveyors and Engineers." He was instrumental in the starting of a new member organization in the American Congress on Surveying and Mapping called Geographic and Land Information Society. He served as the first president. He's Vice President/Project Development with the Firm 3001, the spatial data company.

Dr. Jackie DiPofi

Jackie DiPofi is the Director of the Small Business Development Center, an operating unit of Business and Engineering Outreach at Auburn University. The Small Business Development Center (SBDC) is partially funded by the U. S. Small Business Administration (SBA). Dr. DiPofi has a broad range of work experience spanning over 30 years, which provides her with practical skills applicable to most industries. Prior to joining Auburn University, she served in management positions in construction, retailing, accounting, and advertising. As an independent consultant, she assisted over 100 individuals in businesses as diverse as real estate, childcare, and architecture. Dr. DiPofi earned her Ph.D. (2003) in Management from Auburn University and her M.B.A. (1987) and B.S. (1979) in Commerce and Business Administration from The University of Alabama. Her research interests include family business issues and organizational change. She has conducted programs for Auburn University Colleges of Business, Engineering, Veterinary Medicine, Human Sciences, Agriculture, Education, Liberal Arts and the School of Pharmacy. Dr. DiPofi has developed training for many organizations, but most recently for the Southern Medical Association, Alabama Society of Certified Public Accountants, Southern Regional Radon Training Center, BE&K and Auburn Bank.

Mr. William E. Dorris

Mr. William E. Dorris is a partner with the nationally known law firm of Smith, Currie & Hancock in Atlanta, Georgia. He has developed an extensive and diverse national construction law practice, representing various parties in the construction industry and projects throughout the country. He has been involved in numerous construction arbitrations, mediations, administrative board hearings, and state and federal trials and has authored several publications relating to construction law.

Dr. David J. Elton

Dr. David J. Elton is an Associate Professor of Civil Engineering at Auburn University, specializing in geotechnical engineering for more than 17 years. He has taught many short courses on soils, erosion control, drainage, foundations, lime stabilization, slope stability, and mechanically stabilized backfill walls for universities and others. His specialty areas include: in situ testing, foundations, geosynthetics, liquefaction, soil mechanics, computer applications, soils magic and pavement evaluation. He is the author of many technical papers, including one that won the Fred Burggraf Award of the Transportation Research Board. Dr. Elton serves on ASCE, IGS and TRB committees related to geosynthetics and geotechnical engineering. Dr. Elton headed the Professor Training Course for Geosynthetics, a national course taught at Auburn University. Dr. Elton's doctorate is from Purdue University. He was editor of the International Geosynthetics Society Newsletter for five years, is a US Patent holder and is a registered Professional Engineer.

Dr. Jeffrey W. Fergus

Dr. Jeffrey W. Fergus received a B.S. in Metallurgical Engineering from the University of Illinois and a Ph.D. in Materials Science and Engineering from the University of Pennsylvania. Dr. Fergus has been involved in research on materials chemistry including high-temperature oxidation and the development of chemical sensors. Dr. Fergus is currently an Assistant Professor in the Materials Engineering program at Auburn University where he teaches a graduate course in corrosion.

Dr. Beth Foate

Beth Foate is an independent consultant with Performance Improvement Consulting, LLC and specializes in lean training and implementations. Beth has 10 years of experience in human services organizations in Alabama and California. In addition, she has 5 years of manufacturing experience with a large commercial aircraft manufacturer. During that time she facilitated teams in process improvements resulting in more than \$1M in savings. Beth is currently an adjunct faculty for Athens State University for their Applied Technology program and provides assistance in lean manufacturing throughout Alabama. She holds a Ph.D. in Experimental Psychology, and an MBA in Production Operations Management, and an MS in Management.

Dr. Charles A. Gross

Dr. Charles A. Gross is the Square D Professor of Electrical Engineering at Auburn University. His more than thirty-five years of electrical engineering experience in industry and education includes work with several industries, consulting firms, and governmental agencies. Professor Gross holds a B.S. in Physics and a B.S. in Electrical Engineering from the University of Alabama as well as M.S. and Ph.D. degrees in Electrical Engineering from the University of Missouri at Rolla. He is a registered engineer and a senior member of the Institute of Electrical and Electronic Engineers (IEEE). The second edition of his book, *Power Systems Analysis*, was published by John Wiley and Sons, Inc. in the spring of 1986. He has authored or co-authored numerous technical papers and received several outstanding teaching awards.

Mr. Douglas I. Hanson

Mr. Douglas I. Hanson is the Assistant Director of the National Center for Asphalt Technology at Auburn University. He received his B.S. from the South Dakota School of Mines and Technology and his M.S. from the University of New Mexico in 1969. While in the Air Force he worked with airfield pavement design, construction and maintenance. He was district engineer of The Asphalt Institute, and came to Auburn from the New Mexico State Highway Department where he was chief of the materials laboratory.

Mr. Michael Hein

Mr. Michael Hein is a Professor in the College of Architecture, Design and Construction at Auburn University. He received his Bachelor of Science Degree in Civil Engineering from Tulane University in 1971 and Masters Degree in Structural Engineering from Princeton University in 1973. His industry experience includes working as a Project Engineer for structural consulting offices in New York, Olympia and Seattle, Washington, and Auburn and Birmingham, Alabama. Mr. Hein is a registered Professional Engineer in the State of Washington. He has extensive experience in computer based training and software application development for architecture, engineering and construction. His specialty areas include CAD, Structural Design, Soils and Foundations, and Computer Aided Instructional delivery methods including the WWW. In 1994, he was selected Outstanding Faculty Member of the Year by the students of the AU Architecture School. He is director of Educational Technology for the College.

Mr. Joseph A. Holifield III.

Mr. Holifield is a Senior Electrical Engineer with the Consulting Firm of Thompson Holdings in Mobile Alabama, and holds a Bachelor of Electrical Engineering from Auburn University. He has multiple State Professional Engineering Registrations and over 40 years experience as a general consulting electrical engineer. Associated with the General Lighting Design course, he has designed lighting systems for schools, aircraft hangars, industrial assembly facilities, sports lighting, roadways, and high mast lighting.

Dr. S. Rod Jenkins

Dr. S. Rod Jenkins is a Professor in the Department of Civil Engineering at the United States Air Force Academy, and is a Professor Emeritus of Auburn University. Dr. Jenkins' teaching and research interests are in the Environmental Engineering arena, but he also has a continuing interest in engineering economy and has taught many short courses on the subject. Dr. Jenkins received his B.S.C.E. degree from Georgia Tech and his M.S. and Ph.D. degrees from Harvard University. He taught at the University of Wyoming and Auburn University (for 22 years) before moving to USAFA. He is a Registered Professional Engineer in both Alabama and Wyoming.

Mr. Prithvi S. (Ken) Kandhal

Mr. Prithvi S. (Ken) Kandhal is the Associate Director of the National Center for Asphalt Technology at Auburn University. He came to NCAT from the Pennsylvania DOT where he was chief asphalt engineer for 17 years. He received his M.S. in Civil Engineering from Iowa State University in 1969. While at PennDOT he planned and executed numerous research projects on asphalt rheology and its effect on pavement performance, baghouse fines in HMA, statistical specifications, recycling and rutting.

Mr. Scott Kramer

Mr. Scott Kramer is an Assistant Professor in the College of Architecture, Design and Construction at Auburn University. He received his Bachelor and Masters Degrees in Civil Engineering from Auburn University in 1982 and 1983. His industry experience includes working as an estimator, project engineer and project manager for nine years with two different national construction firms. His research interests include using information technology in project management, case studies and corporate training. In 1996, he received the National Teaching Award presented by the Associated Schools of Construction.

Ms. Fern Lebo

Ms. Fern Lebo, President of Lebo Communications, is the internationally published author of six books, scores of articles and dozens of professional papers. She writes and produces technical documents and manuals, case studies, newsletters and educational materials. She also designs and presents in-house workshops targeted to meet the needs of her corporate clients.

Dr. R. Kelly Rainer, Jr.

Dr. R. Kelly Rainer, Jr. is George Phillips Privett Professor of Management Information Systems at Auburn University, Auburn, Alabama. He is currently working closely with the International Information Systems Security Certification Consortium on a number of information security research projects. He received his B.S. in Mathematics from Auburn University, his D.M.D. from the University of Alabama in Birmingham, and his Ph.D from the University of Georgia. He has written several books, the latest of which, A Manager's Guide to Information Security, will publish early in 2007.

Dr. James P. Reilly

Dr. James P. Reilly received his B.S. in Mining Engineering from Penn State and his M.S. and Ph.D. in Geodetic Science from Ohio State. After a varied career in engineering, University research and teaching, industrial and private consulting, Reilly currently serves as Department Head in the Department of Surveying Engineering at New Mexico State University in Las Cruces. Through his firm, Geodetic Enterprises, LLC., Reilly does GPS consulting and seminars on surveying applications and GPS. He writes a bi-monthly column, "The GPS Observer," for P.O.B. Magazine. Dr. Reilly is the current President of the American Congress of Surveyors and Mappers.

Dr. William Sauser, Jr.

Dr. William Sauser, Jr. is Associate Dean for Business and Engineering Outreach and Professor of Management at Auburn University. Dr. Sauser earned his BS in Management and his MS and PhD in Industrial/Organizational Psychology at the Georgia Institute of Technology. He is licensed to practice psychology in Alabama and holds a specialty diploma in Industrial/Organizational Psychology from the American Board of Professional Psychology. Dr. Sauser's interests include organizational development, strategic planning, human relations in the workplace, and continuing professional education. He is a Fellow of the American Council on Education and the Society for Advancement of Management and a former president of the Alabama Psychology Association and the Society for Advancement of Management (International). Dr. Sauser also serves on the board of directors of the Auburn/Opelika Convention and Visitors Bureau. He has published extensively in the fields of psychology, management, and higher education leadership, and serves on the editorial board of the SAM Advanced Management Journal.

Dr. J. Michael Stallings

Dr. J. Michael Stallings is Professor and Head of Civil Engineering at Auburn University and is a registered Professional Engineer in Alabama. He holds BCE and MS degrees from Auburn University and a Ph.D. from the University of Texas at Austin. His teaching and research interests include structural analysis and design, experimental study of structural behavior, fatigue and fracture mechanics, and bridge evaluation and rehabilitation. Dr. Stallings is an accomplished researcher and is a past member of technical committees of ASCE and TRB. He has been recognized for his classroom teaching with a Birdsong Merit Teaching Award and has been selected three times (yearly award) by the students at Auburn as the Outstanding Civil Engineering Faculty Member.

Dr. Mary Stroup-Gardiner

Dr. Mary Stroup-Gardiner is an Assistant Professor at Auburn University. She received her B.S. in 1985 and M.S. in 1987 from the University of Nevada. She received her Ph.D. in Civil Engineering from the University of Minnesota in 1997. She is a member of the research staff of the National Center for Asphalt Technology at Auburn. For the last 12 years, she has conducted numerous research projects on such topics as investigating the effect of material variables on test method precision, rheological evaluations of polymer modified asphalts, use of roofing waste as an HMA additive, evaluation of test methods for measuring HMA volumetrics, and characterization of fundamental HMA mixture properties of the Minnesota Road Research Project mixtures. Dr. Gardiner is active in ASTM and in Transportation Research Board committees.

Dr. Steven E. Taylor

Dr. Steven E. Taylor is an Associate Professor in the Biosystems Engineering Department at Auburn University. Dr. Taylor received his B.S. and M.S. degrees from the University of Florida, and his Ph.D. from Texas A&M University. He teaches and conducts research in structural wood engineering and forest engineering. His interests and expertise are in the areas of wood structure design and modeling, timber bridges, structural reliability, stochastic modeling, improved stream crossings for forest roads, and using GPS in forest operations. He is active in several professional and technical societies and industry groups. Dr. Taylor is a registered Professional Engineer in Alabama.

Dr. Reginald I. Vachon

Dr. Reginald I. Vachon is a licensed attorney in Alabama and admitted to practice before the United States Supreme Court. He is also a Professional Engineer licensed in Georgia, Alabama, Mississippi, Louisiana, Texas and Wisconsin. Dr. Vachon is Principal and COO of Gipco Holdings International, Ltd.. He has over 30 years experience in corporate management, administration, engineering, design, construction, manufacturing and education for government, business and industry. He also has domestic and international experience as CEO, COO and/or Principal of firms engaged in engineering, manufacturing, product design and development, marketing, consulting, construction, software development, and laboratory and environmental services.

Mr. Steve Williams

Mr. Steve Williams is a Professor in the Department of Building Science, within the College of Architecture, Design and Construction at Auburn University. He received his Bachelor of Science Degree in Civil Engineering from the University of Toledo in 1975 and Masters Degree in Civil Engineering from Clemson University in 1981. His industry experience includes working as a structural engineer for consulting firms in Toledo, Ohio and Greenville, South Carolina. Mr. Williams is a registered Professional Engineer in the State of Alabama. His specialty areas include Concrete, Structural Design, and Information Technology in Construction. He was selected Student Government Association Outstanding Faculty member in the College of Architecture Design and Construction in 1983-84 and 1997-98.

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