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WHO WE ARE

SFPE is a global organization representing those practicing in the fields of fire protection engineering and fire safety engineering. SFPE’s mission is to define, develop, and advance the use of engineering best practices; expand the scientific and technical knowledge base; and educate the global fire safety community to reduce fire risk. SFPE members include fire protection engineers, fire safety engineers, fire engineers, and other professionals who are working toward the common goal of engineering a fire safe world.

Whether you’re just starting out as a student pursuing a degree in fire protection engineering or a related field, have a few years under your belt and are looking to advance your career, or are a seasoned professional looking for leadership opportunities and other ways to advance the profession, SFPE membership gives you the edge you need to take charge of your career.

Visit sfpe.org for additional information and the most up-to-date schedule of SFPE educational events.

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PUBLICATIONS

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BOOKS
SFPE offers a wide selection of books, from the classics and introductory material to the latest information available. Most authors are known internationally for their expertise and thought leadership on a wide variety of topics most relevant to the fire protection and fire safety fields. Books are available in print and as eBooks where noted. PAGE 3

GUIDES & STANDARDS
SFPE offers a collection of the most relevant and topic-specific fire engineering guides and standards available. PAGE 5

PROCEEDINGS
Missed a Performance-Based Codes and Fire Safety Design Conference or want to review the evolution of industry trends over the last several years? SFPE offers full conference proceedings beginning in 2008. PAGE 9

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**An Introduction to Fire Dynamics, 3rd Edition**  
*Author: Dougal Drysdale*  
Hardcover, Approx. 551 PP., 2011  
ISBN 978-0-470-31903-1  
$68 | $55 Members  

After 25 years, Drysdale’s introduction was expanded to incorporate the latest research and experimental data. Essential reading for all involved, from fire safety engineers and fire prevention officers to students. An Introduction to Fire Dynamics uniquely addresses the fundamentals of fire science and fire dynamics.

**History of Fire Protection Engineering**  
*Author: J Kenneth Richardson*  
Hardcover, Approx. 293 PP., 2003  
ISBN 978-0-8776-5559-6  
$48 | $38 Members  

This book addresses the growth of the fire protection engineering profession. It also covers development of the technologies and tools, educational institutions that train the engineers, and the organizations that promote professionalism and establish standards and norms for technologies and engineering practices.

**Handbook of Smoke Control Engineering**  
*Authors: John H. Klote; James A. Milke; Paul G. Turnbull; Ahmed Kashef; and Michael J. Ferreira*  
Hardcover, Approx. 484 PP., 2012  
ISBN 978-1-9365-0424-4  
$141 | $112 Members  

The Handbook provides comprehensive guidance on smoke control practice, incorporating the research and engineering approaches. It includes fundamental concepts, smoke control systems, and methods of analysis. The information for analysis of design fires includes consideration of sprinklers, shielded fires, and transient fuels. Stairwell pressurization, elevator pressurization, and zoned- and atrium-smoke control are also discussed.

**Introduction to Performance-Based Fire Safety**  
*Authors: Richard L. P. Custer and Brian J. Meacham*  
Hardcover, Approx. 260 PP., 1997  
$119 | $95 Members  

This book presents concepts of performance-based fire safety engineering, divided into goals and objectives, evaluation of the fire, properties of the fire, and quantitative assessment of design alternatives against the goals. The chapters include the relationship of performance-based design and codes, hazard analysis and risk assessment, and a case study.

**Performance-Based Fire Safety Design**  
*Authors: Morgan J. Hurley and Eric R. Rosenbaum*  
Hardcover, Approx. 203 PP., 2015  
ISBN 978-1-4822-4655-1  
$62 | $50 Members  

This book demonstrates how to solve fire protection problems using fire science. It provides an understanding of the performance-based design process, deterministic and risk-based analysis techniques, development of design fire scenarios, and building life-cycle management. Topics include designing to protect people from fire as well as designing for detection systems, smoke control systems, and structural fire resistance.

**Principles and Practice of Engineering (PE) Examination in Fire Protection Engineering, 4th Edition**  
Paperback, Approx. 420 PP., 2012  
$406 | $325 Members  

This book covers the technical subjects on the Principles and Practice of Engineering (PE) Examination specification. The Reference Manual includes sample exercises on concepts that may be encountered on the exam. There are sample problems equivalent to exam problems in length and difficulty, with answers to these exercises provided in the Answer Manual.
SFPE Handbook of Fire Protection Engineering, 4th Edition
Authors: Philip J. DiNenno; Douglas Drysdale; Craig L. Beyler; W. Douglas Walton; Richard L. P. Custer; John R. Hall Jr.; and John M. Watts Jr.
Hardcover, Approx. 1,700 PP., 2008
ISBN 978-0-8776-5821-4
$304 | $243 Members

Written by leading fire scientists and engineers from around the world, this Handbook provides comprehensive coverage of today’s best practices in fire protection engineering and performance-based fire safety. It is a top source for reliable facts on fundamentals, fire dynamics, hazard calculations, fire risk analysis, modeling, and more.

SFPE Handbook of Fire Protection Engineering, 5th Edition
Authors: Daniel Gottuk; John R. Hall Jr.; Kazunori Harada; Morgan J. Hurley; Erica Kuligowski; Milosh Puchovsky; José Torero; John M. Watts Jr.; and Christopher Wieczorek
Hardcover, Approx. 3,493 PP., 2016
$1,199 | $299 Members
eBook, Approx. 3,493 PP., 2016
ISBN 978-1-4939-2565-0
$949 | $299 Members

Significantly expanded, the fifth edition offers new and updated information. As the definitive reference on fire protection engineering, it provides thorough treatment of the best practices in fire protection engineering and performance-based fire safety. It remains a key resource for fire safety engineering fundamentals, fire dynamics, fire risk analysis, and more.

Sprinkler Hydraulics and What It’s All About, 2nd Edition
Author: Harold S. Wass Jr.
Paperback, Approx. 250 PP., 2000
$109 | $88 Members

Intended to take the mystery out of hydraulic calculations, the book helps users understand water flowing through piping. It starts with brief discussions of the mathematics and moves on to advances in sprinkler technology. Additional topics include hydraulic calculations, sprinkler discharge, K-factors, design areas, friction-loss formula, and more.

Sprinkler Hydraulics and What It’s All About, 3rd Edition
Author: Harold S. Wass Jr., edited by Russell P. Fleming
Release: Summer 2017

Intended to take the mystery out of hydraulic calculations, this book helps users understand water flowing through piping. It starts with brief discussions of the mathematics and moves on to the advances in sprinkler technology. Additional discussions include hydraulic calculations, sprinkler discharge, K-factors, design areas, friction-loss formula, and more. The book reflects relevant engineering and scientific and technical advancements based on the upcoming 2019 edition of NFPA 13.

SHOP NOW
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This guide provides methods for assessing the impact of radiation, from pool fire sources to potential targets. It outlines methods for calculating safe separation distances between fire sources and potential targets that would be damaged by fire radiation. The methods in this guide include a range of detail and rigor.

Engineering Guide: Fire Exposures to Structural Elements
Paperback, Approx. 151 PP, 2004
$109 | $88 Members

This guide provides methodologies that estimate the thermal boundary condition for a fire over time. The methods are based on experimental measurements and correlations, and focus on global rather than local results.

Engineering Guide: Guidelines for Substantiating a Fire Model for a Given Application
Paperback, Approx. 71 PP, 2011
$109 | $88 Members

The guide provides a framework for determining and documenting the suitability of a particular fire model for use in a specific fire protection application. The models discussed range from simple algebraic correlations and zone models to computational fluid dynamics or field models.

Very tall buildings create complex fire protection challenges. This guide provides information on special topics that affect the fire safety performance of very tall buildings and their occupants during a fire. It discusses how these topics are addressed as part of the overall building design process, using performance-based fire protection engineering concepts.

Order SFPE guides and standards online at www.sfpe.org/store or call +1-301-718-2910 for service and assistance.
Engineering Guide: Human Behavior in Fire
eBook, Approx. 48 PP., 2003
ISBN 978-0-9252-2303-6
$96 | $76 Members

Summarizing state-of-the-art knowledge regarding human behavior in a fire, this guide identifies quantitative and qualitative information and resources. The information can be used when exercising engineering judgment in the practical design of buildings, identifying evacuation scenarios for performance-based designs, and in estimating evacuation response.

Release: Fall 2017

This guide summarizes the state-of-the-art knowledge on human behavior in fire. It identifies quantitative and qualitative information and resources. This information can be used when exercising engineering judgment in the practical design of buildings, identifying evacuation scenarios for performance-based designs, the estimation of evacuation response, and identifying tenability criteria.

Engineering Guide: Piloted Ignition of Solid Materials Under Radiant Exposure
Paperback, Approx. 68 PP., 2002
$109 | $88 Members

This guide provides methods for predicting piloted ignition of solid materials from thermal radiation. It reviews the concept of minimum ignition level as well as five methods to calculate the time-to-ignition under constant radiative heat flux. This guide includes sample results for each method and an appendix of relevant material properties.

Engineering Guide: Predicting Room of Origin Fire Hazards
Paperback, Approx. 84 PP., 2007
ISBN 978-0-9252-2307-4
$109 | $88 Members

The guide provides a methodology that defines and quantifies fire development and ensuing conditions within the room of fire origin, from the fire’s incipient stage through full development. It presents an approach for the selection of different analytical methods of varying complexity to quantify room-of-origin fire conditions and identifies useful source documentation available to fire protection engineers when conducting fire-hazard analyses.

Engineering Guide: Predicting 1st and 2nd Degree Skin Burns from Thermal Radiation
Paperback, Approx. 32 PP., 2000
$109 | $88 Members

This guide provides methods for predicting thermal injury to humans from thermal radiation. The methods discussed are limited to predicting only first-degree and superficial second-degree burns. Although this guide provides guidance on calculating the onset of pain from empirical studies, it does not include any prediction of human response to pain as it relates to fire safety decisions.

SFPE Code Official’s Guide to Performance-Based Design Review
eBook, Approx. 123 PP., 2004
ISBN 978-1-5800-1202-7
$72 | $58 Members

This guide provides resources to enforcement officials who may have to judge the adequacy of a performance-based fire protection designs prepared to meet performance-based codes, designs prepared as equivalencies to prescriptive-based code requirements, and designs intended to meet objectives that exceed those contained in a code or standard.
Paperback, Approx. 207 PP., 2007
ISBN 978-0-8776-5789-7
$95 | $76 Members

Intended for engineers and building stakeholders participating in a performance-based fire safety design, this guide outlines a performance-based design process that includes defining project scope, identifying goals/objectives, establishing performance criteria, defining fire scenarios, developing trial designs, evaluating designs, and preparing documentation.

SFPE Engineering Standard on Calculating Fire Exposures to Structures
Paperback, Approx. 34 PP., 2011
$109 | $88 Members

This standard provides a methodology on how to estimate fire exposure to a structure that is part of a performance-based structural fire engineering design. This standard addresses fully developed fire exposures such as fully developed fires within an enclosure and localized fires not affected by an enclosure.

SFPE Engineering Standard on Calculation Methods to Predict the Thermal Performance of Structural and Fire Resistive Assemblies
Paperback, Approx. 44 PP., 2015
$109 | $88 Members

This standard provides requirements for the development and methods used to predict the thermal response of structures to time-dependent thermal boundary conditions imposed by fires. The annex provides precisely calculated reference temperatures from 16 verification cases that represent a variety of relevant problems in fire safety engineering.

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Since 1976, SFPE has surveyed fire protection engineers on different aspects of their compensation and reported on the findings. Findings focus on education, service time, age, gender, job level responsibilities, retirement intentions, total compensation, and benefits.

**Highlights include:**

- **Median U.S. Salary:** $110,100
- **Total Compensation Among Survey Participants Increased by 8.6% Over the 2014 Survey Results**
- **67% of U.S. Participants Hold a Professional Engineer’s License (PE)**

**IT PAYS TO BE A PE!** On average, PEs earn 21% more than non-PEs.

The 2016 Fire Protection Engineering Compensation + Benefits Report is the only resource of its kind — order your copy today at SFPE.ORG/2016CompReport.

**SFPE Member Price: $49**
**Non-Member Price: $149**

Join SFPE today and save!
The International Conference on Performance-Based Codes and Fire Safety Design Methods has established a reputation within the fire protection engineering community as the paramount event for keeping abreast of advancements in performance-based fire protection design. Proceedings from the events in 2008, 2010, 2012, and 2014 include detailed information on newly emerging technologies and the latest trends in fire safety engineering from across the globe.

7th International Conference on Performance-Based Codes and Fire Safety Design Methods
Paperback, Approx. 395 PP., 2008
$74 | $59 Members
CD, Approx. 395 PP., 2008
$74 | $59 Members

8th International Conference on Performance-Based Codes and Fire Safety Design Methods
Paperback, Approx. 464 PP., 2010
$74 | $59 Members
CD, Approx. 464 PP., 2010
$74 | $59 Members

9th International Conference on Performance-Based Codes and Fire Safety Design Methods
USB Drive, 2012
$74 | $59 Members

10th International Conference on Performance-Based Codes and Fire Safety Design Methods
USB Drive, 2014
$74 | $59 Members
CUSTOMIZED ON-SITE TRAINING

Earn Continuing Education Units (CEUs) or Professional Development Hours (PDHs)

SFPE offers premier on-site training throughout the world. SFPE on-site training courses are a cost-effective solution that delivers the classroom learning experience to your organization and eliminates travel and hotel expenses — often, the most affordable and convenient way to train a team of people. Plus, training is scheduled when it is convenient for you. Courses can be tailored to the unique needs of your attendees; start and end times may be adjusted.

SFPE also offers select courses in conjunction with other events throughout the year. Working with its global network of chapters and partners, SFPE identifies the topics, venues, and timing to meet the needs of the community. These face-to-face learning programs offer discounted pricing for organizations sending a team. The events also facilitate valuable networking opportunities among colleagues in the fire protection engineering field.

For a complete schedule, visit sfpe.org. Email info@sfpe.org for more information on SFPE training and educational events.
ADVANCED FIRE ALARM SYSTEM DESIGN — SESSION I: APPLYING THE PRINCIPALS OF PERFORMANCE-BASED DESIGN

Course Description
This two-day course presents a review of the performance-based design process and its applicability to the design of fire alarm systems. The course covers creating a stakeholder committee, refining performance objectives to concrete performance criteria, and developing performance equivalent alternative designs. Fire dynamics and the role of fire modeling in the design process and design documentation are also addressed.

Learning Objectives
Upon successful completion of this course, participants will:
- Understand the process of performance-based design and how it is applied to the design of fire alarm systems
- Understand the nature and character of fire and the associated products of combustion
- Describe how fire originates; spreads within and outside of buildings/structures; and how it can be detected, controlled, and/or extinguished
- Analyze fire hazards

CEUs 1.4 | PDHs 14

ADVANCED FIRE ALARM SYSTEM DESIGN — SESSION II: COMPUTATIONAL METHODS OF FIRE ALARM SYSTEM DESIGN

Course Description
This two-day course focuses on the computational methods used to implement a performance-based design approach to fire alarm design problems. It includes a review of fire dynamics, computational methods for predicting initiating device response, and computational methods for predicting the efficacy of visible and audible occupant notification. Participants will solve several design problems during this course.

Learning Objectives
Upon successful completion of this course, participants will:
- Illustrate basic familiarity with the computational methods
- Understand the zone and CFD modeling approaches to simulating fire phenomena
- Develop analytical skills for verification and validation of simulation results from fire modeling software

CEUs 1.4 | PDHs 14

APPLICATION OF FIRE RISK ASSESSMENT

Course Description
Following a brief overview of the Engineering Guide: Fire Risk Assessment, participants will be divided into working groups and tasked with applying this SFPE guide to a specific project. Groups will choose from a selection of projects including a historic building, a high-rise residential occupancy, or a petroleum industry facility. In addition to applying the guide to their specific project over this two-day course, participants will also review the work of other groups to broaden understanding of fire risk assessment concepts.

Learning Objectives
Upon successful completion of this course, participants can:
- Describe the various steps associated with a fire risk assessment as outlined in the SFPE Engineering Guide to Fire Risk Assessment
- Evaluate a project and prepare representative goal statements, objective statements, boundary conditions, and assumptions
- Prepare a fire hazard assessment for a designed project

CEUs 1.4 | PDHs 14

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For a complete schedule, visit sfpe.org. Email info@sfpe.org for more information on SFPE training and educational events.
BEYOND THE CAUSE AND ORIGIN: ENGINEERING ANALYSIS OF BUILDING FIRE

Course Description
This two-day course plays a vital role in the investigation and analysis of building fires for fire protection engineers. FPEs have the educational background and training to identify and address building and fire code issues that may have contributed to the ignition and/or development of a fire; they also have the education and training to analyze the dynamics of building fires as well as the expected and actual performance of different fire protection systems under fire conditions.

This course addresses different types of engineering analyses related to building fires including ignition, fire spread, fire detection, fire suppression, fire confinement, and egress analysis. This course also addresses the legal context under which most fire investigations are conducted. Several case studies are presented to demonstrate the engineering analysis of building fires.

Learning Objectives
Upon successful completion of this course, participants will:
- Understand the different roles for fire protection engineers in fire investigations
- Follow the legal and regulatory context for fire investigations and experts
- Recognize the role of building codes and fire safety standards in assessing standards of care for building design, construction, operation and maintenance

CEUs 1.4 | PDHs 14

DUST EXPLOSION: HAZARD RECOGNITION, ASSESSMENT, AND MANAGEMENT

Course Description
This two-day course covers the chemistry and physics of dust deflagrations, the process and progress of dust explosions, and how the dust explosion hazard can be managed in prescriptive- and performance-based design environments. The course emphasizes dust properties, explosion modeling, preventive measures, ignition sources, protective measures, process hazard analysis, legislation, and case studies. It enables attendees to better understand dust hazards, recognize potentially serious events, and implement effective safeguards. Special attention is given to polyethylene dust explosion hazards, and several sample problems are included.

Learning Objectives
Upon successful completion of this course, participants can:
- Compare the practices known to likely result in industrial dust explosions
- Review the practices, standards, and guidelines to reduce the potential for a combustible dust explosion
- Identify types of potential combustible dust hazards

CEUs 1.4 | PDHs 14

EMERGENCY COMMUNICATIONS SYSTEMS: PLANNING, DESIGN, AND USE

Course Description
This two-day course focuses on the demand for mass notification systems (MNS), which has grown in recent years among government agencies, major corporations, and institutional organizations. The National Fire Alarm and Signaling Code's NFPA 72 has been expanded to include guidance for emergency communications systems, which may form a part of a more extensive mass notification system. Participants will learn that the in-building emergency communications systems may be a portion of a larger integrated system using other media and communication channels, and will accept signal priority from an external source. These systems include the wireline and wireless telephone networks, broadcast and cable television, radio, public safety land mobile radio, satellite systems, and the Internet.

Learning Objectives
Upon successful completion of this course, participants can:
- Identify multiple channels for emergency communications
- Understand the benefits and limitations of these available channels
- Articulate a design plan for an emergency communications system to meet requirements of an emergency response plan

CEUs 1.4 | PDHs 14
ENGINEERING HUMAN RESPONSE IN FIRE: PRINCIPLES, MODELS, AND APPLICATIONS

Course Description
This two-day course addresses the human response in fire and the tools available to represent this response within the engineering process. The course outlines the theoretical and empirical basis of our current understanding, making frequent references to actual incidents as well as engineering applications. This is followed by a broad discussion of available tools that represent human response — from engineering calculations to computational simulation models. Discussion of the underlying assumptions and techniques of these models is supported by demonstrations and case studies.

The strengths and limitations of the theory, data available, and tools employed are clearly outlined, providing the audience with a realistic expectation of what is available, insights to be gained, and implications of having or not having these insights. The subject matter (i.e., human response) and the modeling approaches are presented together, allowing the audience to assess, select, and employ tools in a more informed and integrated manner.

Learning Objectives
Upon successful completion of this course, participants can:

- Demonstrate understanding of the subject to assist with theory development and data collection
- Explain which factors must be included in calculations and the data available to support these factors
- Identify the impact that products may have upon an actual population, why this impact is important, and what tools can be used to demonstrate this impact

CEUs 1.4 | PDHs 14

EVACUATION FOR FIRE SAFETY ENGINEERING

Course Description
This two-day course is for fire safety consultants and people working with fire safety at companies, fire brigades, municipalities, and government agencies. The aim of the course is to introduce human behavior theories relevant for fire safety engineering. The course includes a wide variety of topics, such as human behavior theories, emergency exit design, evacuation elevators, toxicology, pedestrian dynamics, egress modeling, and selection of evacuation scenarios. Most material will be covered in lectures, but there will also be one workshop on the concept of panic as well as exercises related to the design of emergency exits and basic egress calculations.

Learning Objectives
Upon successful completion of this course, participants can:

- Describe human behavior theories relevant to fire safety engineers
- Understand pedestrian dynamics and different egress modeling approaches (network, grid, and continuous models), and their limitations
- Perform egress calculations (back-of-the-envelope calculations), which are often done in the initial phase of FSE design

CEUs 1.4 | PDHs 14

FIRE AND LIFE SAFETY DESIGN OF VERY TALL BUILDINGS: CHALLENGES AND STRATEGIES

Course Description
This one-day course will explore a wide range of fire and life safety challenges associated with very tall buildings and strategies to address them. To enhance learning, attendees will participate in simple qualitative hazard, risk, or reliability analyses; fire and life safety strategy development for representative building configurations and fire scenarios; and fire safety management and evacuation planning exercises. Due to time constraints, no quantitative or computational analyses are included.

Generally, the topics and sequence will follow those in the SFPE Engineering Guide: Fire Safety for Very Tall Buildings. Content includes an overview of fire events in tall buildings, highlighting issues of concern and lessons learned. Emerging trends in very tall building design, which may have implications for fire and life safety performance, will be discussed.

Learning Objectives
Upon successful completion of this course, participants can:

- Identify potential impacts of new and emerging technologies and design features on fire and life-safety performance in very tall buildings
- Explain how hazard, risk, and reliability analysis can help identify and assess scenarios of concern and potential mitigation options
- Explain the roles that occupant risk perception and situation awareness might have on the selection and operation of defend-in-place and evacuation strategies

CEUs .7 | PDHs 7
INTRODUCTION TO FIRE DYNAMICS SIMULATOR AND SMOKEVIEW

Course Description
This two-and-a-half day course focuses on the fire dynamics and fire modeling tools used by an investigator to develop a technically defensible analysis of the fire incident. This course provides an introduction into the principle concepts of fire dynamics and fire modeling, and shows how these techniques are used in investigations. Several case studies are examined to demonstrate the capabilities and limitations of physical and computational fire modeling. The impact of fuel composition, fuel geometry, compartmentation, and ventilation on fire development and the resulting physical damage to structures is also be discussed.

Learning Objectives
Upon successful completion of this course, participants can:
- Explain computational fluid dynamics overview
- Describe fluid flow theory, conservation equations; Turbulence Modeling: K-Epsilon, DNS, LES; and grid generation and solvers
- Understand a fire dynamics simulator including input file, running FDS, and output file

CEUs 1.05 | PDHs 10.5

ADVANCED FIRE DYNAMICS SIMULATOR AND SMOKEVIEW

Course Description
This two-and-a-half day course is a hands-on workshop on advanced techniques in fire dynamics simulator (FDS) modeling and smokeview visualization. FDS solves practical fire problems in fire protection engineering. It is an effective tool for fire responders in emergency services and can be used in building services to conduct simulations of realistic compartment fire cases to reduce the cost of large-scale fire testing.

Learning Objectives
Upon successful completion of this course, participants can:
- Explain computation fluid dynamics and underlying physics
- Describe smokeview result analysis for simple models
- Distinguish stair-stepping sloped and curved surfaces
- Articulate pre- and post-flashover fires

CEUs 1.05 | PDHs 10.5

USE OF QUANTITATIVE TOOLS FOR ANALYSIS OF FIRE DYNAMICS

Course Description
This two-day course is open to anyone interested in applying first-order quantitative methods for the analysis of fire dynamics associated with fire safety design and post-fire reconstruction. The course presentations provide the principles of performance-based design of structures for fire safety. Focus is on the use of analytical and numerical tools in the estimation of performance of fire safety systems. Included is a discussion of the theoretical basis for the quantitative tools, technical references, assumptions, required input data, sources of available input data, and limitations. Student exercises focus on application of the presented methods.

Learning Objectives
Upon successful completion of this course, participants can:
- Explain hot-gas layer temperature — natural and forced ventilation
- Define burning characteristics of liquid pool fires
- Know flame heights for specific physical configurations — natural and forced ventilation
- Understand advanced mechanisms for smoke management — calculations for smoke control, reservoirs, entrainment, flow-through fans, and pressure calculations

CEUs 1.4 | PDHs 14
HYDRAULIC CALCULATIONS FOR FIRE SAFETY SPRINKLER SYSTEMS

Course Description
This one-day course presents new insights into hydraulic behavior and the overall methodology for performing hydraulic calculations of fire sprinkler systems. This course reviews key fundamentals while closely analyzing NFPA 13 provisions and the present, reliable 16-step hydraulic design process. Topics include water supply, design criteria, calculation formulas, and their output. This course will also introduce the basic principles involved including friction-loss formulas and calculation methods of several piping arrangements. This hands-on course will include real-life examples using calculation software.

Learning Objectives
Upon successful completion of this course, participants can:
• Understand the basic principles of hydraulic calculations for fire sprinkler systems
• Perform and review basic hydraulic calculations for fire sprinkler systems
• Understand water supplies for fire sprinkler systems with the inclusion of basic fire pump criteria into a water supply

CEUs .7 | PDHs 7

INTRODUCTION TO INDUSTRIAL FIRE PROTECTION ENGINEERING

Course Description
This two-day course introduces fire protection engineering fundamentals related to building materials and design, water supply of fire protection, fire extinguishing systems, fire alarms systems, special occupancies and hazards, and storage of flammable and hazardous materials. Participants are introduced to the basics of using occupancy hazard classification for determining sprinkler densities and hose streams, procedures for determining fire-flow demand for un-sprinklered facilities, and procedures for performance-based fire safety.

Learning Objectives
Upon successful completion of this course, participants will:
• Know the principles of fire protection engineering that affect building material and design
• Understand the potential fire hazards common to industrial facilities and fire protection engineering techniques used to prevent or mitigate fires in these facilities
• Learn how to provide an adequate water supply for fire protection

CEUs 1.4 | PDHs 14

INTRODUCTION TO STRUCTURAL FIRE PROTECTION ENGINEERING

Course Description
This one-day course identifies and characterizes fire hazards in demanding industrial occupancies from computer rooms to fuel pump islands, rare documents to manufacturing equipment, and special hazard-suppression systems that help protect high-risk, high-value environments and operations. The course introduces the basics of process safety with a focus on the methods and techniques used when evaluating existing or proposed fire safety protection solutions in industrial facilities. Emphasis is placed on identifying hazards, risk exposure, and how to address risk.

Learning Objectives
Upon successful completion of this course, participants will:
• Understand how to characterize the types of special hazards in various industrial occupancies and how to assist in determining suitable suppression methods
• Learn the difference between available special hazard protection methods
• Understand the major hazards associated with industrial processes and facilities

CEUs .7 | PDHs 7

LEARN MORE
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P.E. EXAM PREPARATION

Course Description
This two-day course assists each attendee in formulating a preparation strategy for obtaining a passing grade in the FPE P.E. Exam. Course scope includes an overview of the P.E. exam process, review of the eight fire protection topics comprising the technical scope of the exam, and discussion of resource materials such as handbooks and the NFPA fire codes. The second day of the course will be a sample test workshop, including determining the solution to a sample problem from each of the eight subject areas.

Learning Objectives
Upon successful completion of this course, participants can:
• Prepare for the exam and understand exam-taking strategies
• Understand fire protection analysis
• Know fire protection management
• Understand human behavior in fires
• Explain fire dynamics
• Determine the process of smoke management

CEUs 1.4 | PDHs 14

PERFORMANCE-BASED FIRE PROTECTION

Course Description
This one-day course provides an overview of the SFPE Engineering Guide to Performance-Based Fire Protection. This process identifies methods such as defining a project scope; developing goals, objectives, and performance criteria; selecting design fire scenarios and design fires; developing and evaluating trial designs; and preparing design documentation. Emerging issues related to Performance-Based Design (PBD) are also covered, including incorporating risk-informed methods in PBD; selecting an appropriate fire model for a given application; estimating Required Safe Egress Time (RSET); performance-based design in tall buildings; performance-based design in long tunnels; performance-based design in structural fire engineering; conducting peer review for a performance-based design, and performance-based design Information Technology Management for fire protection systems.

Learning Objectives
Upon successful completion of this course, participants can:
• Define the process outlined in the SFPE Engineering Guide to Performance-Based Fire Protection
• Formulate fire safety goals and objectives for a given project
• Differentiate and apply various types of acceptance criteria
• Estimate design fires based on a given scenario

CEUs .7 | PDHs 7

PRINCIPLES AND APPLICATIONS OF EGRESS MODELING

Course Description
This two-day course addresses human response in fire and the tools available to represent this response within the engineering process. The course outlines the theoretical and empirical basis of current understanding, making frequent references to actual incidents as well as engineering applications. This is followed by a broad discussion of the tools available to represent human response, from engineering calculations to computational simulation models.

The discussion of the underlying assumptions and techniques of these models is supported by demonstrations and case studies. In all instances, the strengths and limitations of the theory, data available, and tools employed are clearly outlined, providing a realistic expectation of what is available. The subject matter (i.e. human response) and the modeling approaches are presented together allowing participants to assess, select, and employ such tools in a more informed and integrated manner.

Learning Objectives
Upon successful completion of this course:
• Researchers benefit from a clear understanding of the subject matter that informs their theory development and data collection
• Engineers benefit from understanding which factors must be included in their calculations, the data available to support these factors, and tools to represent them

CEUs 1.4 | PDHs 14
**PRINCIPLES OF FIRE PROTECTION ENGINEERING**

**Course Description**
This three-day course is intended for anyone interested in gaining or refreshing a basic to intermediate knowledge of the principles of fire protection engineering. This course presents the application of science and engineering principles to protect people, property, and environments from harmful and destructive effects of fire and smoke. It covers areas of fire detection, suppression, and mitigation as well as human behavior and recommendations on how to maintain a tenable environment for evacuation during a fire scenario. Fire-suppression system components are examined to include fire science, fire safety design, fire detection and fire alarm systems, fire-suppression systems, automatic sprinkler systems, and smoke control principles. Industry standards and variations are discussed using NFPA codes and building codes.

**Learning Objectives**
Upon successful completion of this course, participants can:
- Understand combustion and ignition phenomena
- Forecast how buildings are protected from fire and how human behavior responds during emergencies
- Know the means of egress concepts, human tenability limits, occupant responses to cues, and decisions made by people in fire situations and during evacuation
- Distinguish the performance of basic construction materials in the fire environment

CEUs 2.1 | PDHs 21

**PROTECTING FLAMMABLE AND COMBUSTIBLE LIQUIDS**

**Course Description**
This two-day course provides participants with basic knowledge of protection options available in NFPA 30 - 2012 edition and testing programs that may become the basis for future editions of NFPA 30. This course gives an overview of the latest NFPA 30 document, describes fire test results that have become requirements in NFPA 30, discusses current and future fire testing for protection of flammable and combustible liquids, and explains how to apply NFPA 30 requirements to two case studies involving storage of flammable or combustible liquids.

**NFPA 30, Flammable and Combustible Liquids Code** is a widely used document by authorities having jurisdiction worldwide. It contains the latest, best-available technology for protecting against severe fire and explosion hazards of flammable and combustible liquids. Two case studies demonstrate to participants how NFPA 30 requirements are used to protect storage of flammable and combustible liquids in real-life circumstances.

**Learning Objectives**
Upon successful completion of this course, participants can:
- Explain storage arrangements and associated terminology
- Classify proper commodity classification including those with mixed-plastic components
- Determine major changes in NFPA 13 involving commodity classification and options for exposed, expanded plastics

CEUs 1.4 | PDHs 14

**PROTECTION OF STORAGE OCCUPANCIES — NFPA 13**

**Course Description**
This one-day course provides a basic knowledge of the available technology and techniques for protecting these very challenging occupancies. This course reviews the range of storage types and configurations that exist and emphasizes the prerequisite knowledge required to competently provide engineering solutions that are sound in principal and practice while maintaining constructability. Current full-scale testing, available modeling, and actual events are part of this presentation. Participants learn the use and application of NFPA standards (and connections to the IBC and IFC), which are the basis for most engineering solutions. Participants become familiar with applicable techniques and solutions, the effect of the variety of available storage sprinklers on the design criteria, and exercises on detailed evaluations of opposing protection solutions.

**Learning Objectives**
Upon successful completion of this course, participants can:
- Explain storage arrangements and associated terminology
- Classify proper commodity classification including those with mixed-plastic components
- Determine major changes in NFPA 13 involving commodity classification and options for exposed, expanded plastics

CEUs .7 | PDHs 7
SMOKE CONTROL SESSION I: FUNDAMENTALS AND PRESSURIZATION SYSTEMS

Course Objectives
This one-day course addresses the fundamentals of smoke control, including the underlying principles of smoke control, a discussion of air-moving equipment and systems, stairwell pressurization, elevator smoke control, zoned smoke control, automatic controls, and commissioning. Design analysis methods of pressurization smoke control systems are addressed, including network computer modeling using CONTAM. Zone fire models are also addressed. A case study of pressurization smoke control is included.

Learning Objectives
Upon successful completion of this course, participants will:
• Understand the codes and standards that define the design of smoke control systems
• Learn how fire suppression and smoke control systems are integrated
• Identify at least four design considerations for smoke control systems

CEUs .7 | PDHs 7

SMOKE CONTROL SESSION II: DESIGN FIRES, ATRIUM CONTROL, AND TENABILITY SYSTEMS

Course Description
This one-day course includes design fires, smoke plume mechanics, and types of atrium smoke control systems. The special topics of make-up air, minimum smoke layer depth, plug holing, and pre-stratification are addressed. Methods of analysis including algebraic equations, zone fire models, scale modeling, and computational fluid dynamics (CFD) are also discussed. Tenability analysis is addressed. A case study of atrium smoke control is also included.

Learning Objectives
Upon successful completion of this course, participants can:
• Understand the benefits of performance-based smoke evacuation
• Demonstrate how computational fluid dynamics are used in performance-based fire protection designs to more accurately predict tenability and exhaust in atria
• Review a prescriptive smoke exhaust calculation and identify shortcomings

CEUs .7 | PDHs 7

SMOKE CONTROL SESSION III: CONTAM ANALYSIS OF PRESSURIZATION SYSTEMS

Course Description
This one-day course focuses on NIST’s Multizone Airflow and Contaminant Transport Analysis Software (CONTAM) as a validation tool for the analysis of zoned smoke control, stairwell pressurization, and elevator pressurization systems. Data input is addressed including floor plan representation, zone properties, phantom zones, building leakage, airflow paths, air handling systems configuration, supply points, return points, and weather data. Methods to speed up data input are addressed as are running simulations and data output. Participants gain experience using CONTAM during a case study.

Learning Objectives
Upon successful completion of this course, participants can:
• Determine airflows — infiltration, exfiltration, and room-to-room airflows in building systems driven by mechanical means, wind pressures acting on the exterior of the building, and buoyancy effects induced by the indoor and outdoor air temperature difference
• Understand contaminant concentrations — the dispersal of airborne contaminants transported by these airflows and transformed by a variety of processes including chemical and radio-chemical transformation, adsorption and desorption to building materials, filtration, and deposition to building surfaces, and generated by a variety of source mechanisms
• Know the effects of personal exposure — the predictions of exposure to occupants to airborne contaminants for eventual risk assessment

CEUs .7 | PDHs 7

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CEUs .7 | PDHs 7
SPEECH INTELLIGIBILITY FOR EMERGENCY COMMUNICATIONS SYSTEMS:
SPEECH INTELLIGIBILITY PLANNING AND ASSESSMENT

Course Description
This one-day course includes mass notification systems (MNSs) that continue to rely on voice as the primary messaging and communication strategy. This course introduces tools, options, and requirements in the 2016 edition of NFPA 72, National Fire Alarm and Signaling Code, which engineers, designers, authorities, and other stakeholders can use to evaluate the implementation of intelligible ECSs. The course focuses on planning, design, and assessment tools to understand the different elements that affect speech intelligibility and tools required to assess the intelligibility of emergency communications systems.

Learning Objectives
Upon successful completion of this course, participants can:
• Define speech intelligibility
• List three factors that affect speech intelligibility
• Explain how reverberation affects speech intelligibility
• Describe at least one reason why speech intelligibility is not the same as audibility

CEUs .7 | PDHs 7

SPRINKLER DESIGN FOR ENGINEERS

Course Description
This three-day course is based on NFPA 13 and 20 standards. The course provides the tools needed to design and install fire sprinkler systems in accordance with building and fire codes. This course covers introductory aspects essential for engineers who are new to sprinkler system design, classification of the hazards and commodities to be protected, confirmation of the hydraulic date and preliminary hydraulic design, and preparation of design documentation. In addition, more advanced topics such as application of new technologies, protection of high-piled storage, and computer-generated hydraulic calculations is also included.

Learning Objectives
Upon successful completion of this course, participants can:
• Use hazard classifications to design sprinkler systems
• Select the most suitable type of system for the project
• Develop system design criteria using hydraulic calculations
• Describe sprinkler vs. non-sprinkler system requirements

CEUs 2.1 | PDHs 21

THE CODE OFFICIAL'S GUIDE TO PERFORMANCE-BASED DESIGN

Course Description
This four-day course is becoming more prevalent as new codes are adopted. Without a strong background in performance-based design, new codes can create challenges for enforcement officials or other stakeholders. Developed in collaboration with the U.S. Fire Administration, the International Code Council, and the International Fire Marshals Association, this course provides guidance on approaches to review performance-based designs.

Learning Objectives
Upon successful completion of this course, participants can:
• Differentiate the necessary skills and qualification needed as part of a design team
• Understand the review process and define objectives and performance requirement
• Identify fire design scenarios and develop trail designs
• Evaluate engineering methods and models and design method limitations

CEUs 2.8 | PDHs 28

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CERTIFIED FIRE PROTECTION SPECIALIST (CFPS) COURSE
This online educational course helps you navigate the NFPA Fire Protection Handbook (which is the basis for the exam), supports maximum retention, and allows time to review between the sessions. This course starts each spring and fall. Participants have access to three interactive, two-hour sessions with an opportunity to earn up to 6 PDHs. Participants may ask questions as they arise. Session recordings will also be available.

FIRE PROTECTION ENGINEERING (PE) COURSE
The online PE exam review course is an excellent preparation tool to prepare you for the annual Fire Protection Engineering PE Exam. The online PE exam course has been revised to meet current NCEES exam specifications. This course starts each July and ends in October. Participants access 14 live, 90-minute sessions with a chance to earn up to 21 PDHs. Each session is taught by a subject matter expert using web conferencing technology, which allows participants to ask questions as they arise. This highly effective, online prep course helps exam-takers organize and navigate through the reference materials and allows for maximum retention.

For more information or to register go to sfpe.org or call +1-301-718-2910.