Process Safety and Risk Management
COURSE CATALOGUE
2015

ACM Facility Safety

INSTITUTE of HAZARD PREVENTION

About ACM and the Institute of Hazard Prevention

ACM Facility Safety
Located in Calgary, AB, ACM Facility Safety is Canada's largest independent provider of Hazard Analysis, Safeguard and Risk Assessment services. Our mission is to make the world a safer place through culture, process safety and technology. ACM provides expert risk consulting, process safety education and safety lifecycle software solutions, to individuals and organizations, over a wide variety of industries, that want to help make the world a safer place**.**

Risk Consulting Services
ACM Facility Safety draws on extensive field experience, knowledge of IEC 61511 and the "Safety Lifecycle" to provide innovative process safety solutions in the form of risk consultation services to EPC and operating companies for the specification, design, installation, maintenance and operation of their facilities.

SafeGuard Profiler & SafeGuard Sentinel
ACM's in-house experts have created industry-leading software tools that support the safety lifecycle and work seamlessly together to make planning, operating, monitoring and trouble-shooting their facilities, comprehensive and user-friendly.

Educational Services
ACM Facility Safety is a recognized global provider of Process Safety education, tools and methodologies. In 2012 we opened the Institute of Hazard Prevention to provide education on all elements of process safety management to address individuals at all levels within an organization. Our instructors are experienced experts in all phases of the IEC 61511 Safety Lifecycle and industry best practices.

Institute of Hazard Prevention
ACM's Institute of Hazard Prevention is a recognized global provider of Process Safety education, tools and methodologies. Clients tell us they prefer our neutral, third party unbiased workshop oriented educational sessions developed from the real life experiences of our instructors.

ACM's Institute of Hazard Prevention provides regular opportunities for companies to learn from experts, network with industry professionals and share ideas surrounding the need to apply a 'safety first' mentality to everything they do.

The Institute is unique to Canada as the only training facility designed to help organizations elevate their understanding of the Safety Lifecycle and Risk Management, and fits perfectly under ACM's ongoing mandate to make the world a safer place.

Course Registration

HOW TO REGISTER

• Visit www.iofhp.com, select the course or workshop you would like to attend, click 'Register' and follow the necessary steps. If completing the registration on behalf of an employee, please provide an administrative contact.

• Call our Training Team at 403.264.9637 or 1.877.264.9637.

We recommend registering one month prior to the course date (though we invite you to inquire about last-minute availability).

TRAINING FEES

Tuition fees include all manuals, course material, lunches and refreshments. Travel and accommodation costs are not included. Please do not make any non-refundable travel arrangements until we confirm your course will be held as scheduled. ACM assumes no liability for any costs incurred due to the cancellation of any classes. Pay by VISA, MasterCard, AMEX*, cheque or money order. (*Payments by AMEX will incur an additional 3.25% surcharge.) Purchase orders are accepted; however, full payment must be received prior to the course date.

Please make cheques payable to:

ACM Automation Inc.
#700, 940 – 6 Avenue SW
Calgary, Alberta T2P 3T1

CANCELLATION POLICY

The deadline to notify ACM of a cancellation is 14 days prior to commencement of the course/event. If cancellation is received 15 days or more days prior to commencement registrants may:

- Cancel and receive a full refund
- Move to a future offering of the same course/event
- Be replaced with a colleague

If cancellation is received 14 days or fewer prior to commencement, registrants may:

- Be replaced with a colleague
- Be moved to a future offering of the same course/event. This is a one-time offering only. A registration moved to a future date remains non-refundable
- Charge the full cost of the course/event

No-shows the morning of the course/event will forfeit the entire registration fee. Medical emergencies will be addressed on a case-by-case basis.

ACM reserves the right to cancel any course/event prior to the scheduled date and will offer to register you in the next scheduled course/event or promptly refund your payment.

Please keep the cancellation policy in mind when making travel arrangements, such as airline tickets and hotel reservations. **ACM will not be responsible for any travel arrangement fees incurred by cancelling or changing travel plans.**

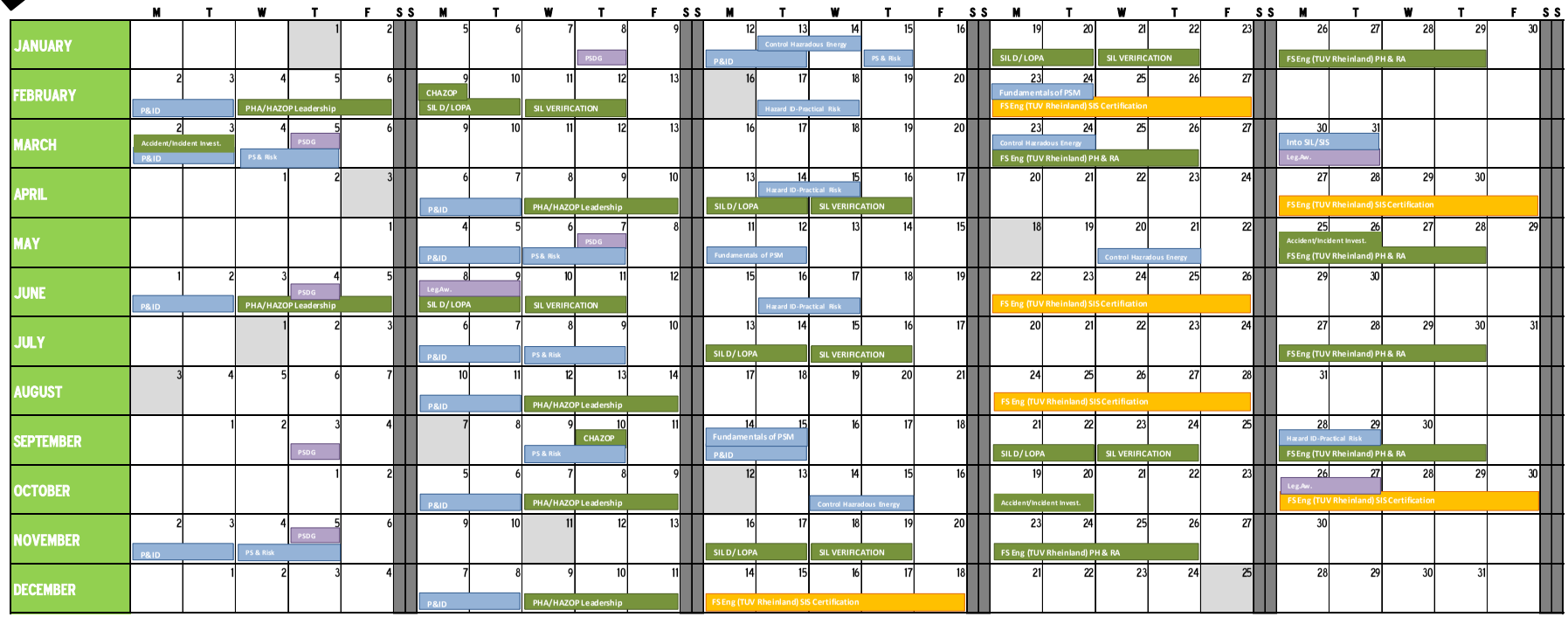
CUSTOMIZED EDUCATION PROGRAMS

Customized Education Programs are available to fit the business requirements for your organization. ACM has assisted many major producers build their Education competency programs for their organization by integrating their own drawings, guidelines and processes with a flexible work schedule to fit the customers scheduling requirements. These courses can be held either at ACM or at an alternative convenient location for your organization, which can result in considerable savings in time, travel and accommodation costs for your company. **For more information on availability and pricing, please contact us today 403.264.9637 or info@acm.ca.**

Education Program Index

2015 EDUCATION CALENDAR

INSTITUTE OF HAZARD PREVENTION FOUNDED BY ACM FACILITY SAFETY



To register, please email info@acm.ca or call 403.264.9637 or 1.877.264.9637
For detailed descriptions of the courses please visit: www.iofhp.com

INSTITUTE of HAZARD PREVENTION

Everyone E1

- Lunch & Learn
- Legislative Awareness in the Oil and Gas Industry (Leg.Aw.)
- Institute of Hazard Prevention Event (IofHP)

Foundation Fn

- Piping and Instrumentation Diagram (P&ID) Engineering Drawings Interpretation
- Safety Lifecycle Experience Hands On Workshop (SLEHOW)
- Fundamentals of Hazard Identification and Practical Risk Assessment (Hazard ID-Pr. Risk)
- Intro to SIL/SIS for Operations and Maintenance Technicians (Intro SIL&SIS)
- Fundamentals of Risk Based Process Safety Management (Fun. PSM)
- Control of Hazardous Energy (CtrlHazEn)
- Introduction to Process Safety & Risk Management (PS & Risk)
- * Process Safety Culture Self-Assessment Workshop (Private)
- * Management of Change (Private)

Advanced Av

- PHA/HAZOP Leadership Workshop
- SIL Determination/LOPA Workshop (SIL D/LOPA) (Part 1 of SIL Workshop Series)
- SIL Verification Workshop (Part 2 of SIL Workshop Series)
- Fundamentals of Accident/Incident Investigation (Accident/Incident Inv.)
- * How to Integrate HAZOP and LOPA Studies
- Control System HAZOP (CHAZOP) Introduction Workshop
- FS Eng (TUV Rheinland) Process Hazards and Risk Analysis (PH&RA) Certificate
- * SafeGuard Profiler Certification & Workshop (Private)

Expert Ex

- FS Eng (TUV Rheinland) Safety Instrumented Systems (SIS) Certificate

The courses listed can be offered as private opportunities.
* The following courses are ONLY offered privately:
* Management of Change
* Process Safety Culture Self-Assessment Workshop
* SafeGuard Profiler Certification & Workshop
* How to Integrate HAZOP and LOPA Studies

For more information, please contact us info@acm.ca

ACM Facility Safety

Introduction to SIL/SIS for Operations and Maintenance Technicians

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COURSE OVERVIEW:

This 2-day workshop objective is to give Operations and Maintenance Technicians an understanding of "Functional Safety", and the relationship of Safety Instrumented System (SIS) with respect to process and operational related hazards. The course introduces the concepts and definitions related with Process Hazards, Risk Analysis, Safety Instrumented Systems, and Functional Safety Management. It will provide some details on maintaining Safety Instrumented Systems and Safety Instrumented Functions in accordance with IEC 61511 standards and encapsulate the concepts of Safety Integrity Level with a hands-on workshop on the afternoon of day-2.

WHO SHOULD ATTEND:

- Maintenance Technicians
- Field and control room operators
- Instrument and Electrical technicians
- Technicians involved in the commissioning, testing, operation, maintenance support, modification and change management of Safety Instrumented System for process plant applications

WHAT YOU WILL LEARN:

- SIL Determination, Layers of Protection Analysis (LOPA)
- What are SIL / SIS?
- Review of Company specific SIF's (including P&ID's)
- How do we go about changing the SIS?
- Why do we need to proof test and what is required?
- What records are needed for change, testing, etc.?
- What engineering processes are needed to conform to IEC61511?
- What operations processes (e.g. MOC/Impairment) are needed?
- How is the system audited?
- Installation and Commissioning
- Operations and Maintenance

Course Fee

$1,795 CAD *per student*

2 days

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

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Fundamentals of Hazard Identification and Practical Risk Assessment

This course contains 12 technical hours and may be eligible for Continuous Maintenance points by The Board of Canadian Registered Safety Professionals (BCRSP)

COURSE OVERVIEW:

We are subject to potentially hazardous situations every day. Often the consequences of these hazards are not severe or they are presented in a form we are familiar with and therefore, are able to effectively cope with the situation. In context, the ability to recognize hazards, assess their potential severity and place controls to mitigate the severity is fundamental to a safety design and workplace. By understanding the basic types of hazards, participants will be able to conduct effective workplace hazard assessments and develop safeguards/controls to reduce or eliminate their severity. Common process hazards will be examined in detail. Participants will understand the difference between a hazard and a risk, the components of risk and provide a sound fundamental base for future Process Hazard Analysis learning. You will learn how to determine probability, the importance of the "As Low As Reasonably Possible" concepts and various risk assessment methodologies.

WHO SHOULD ATTEND:

- Anyone who works in close proximity to hazardous processes such as Operations and Maintenance Personnel, Supervisors, Engineers and Safety Professionals who require a sound understanding of risk and risk management.
- Anyone who is working in close proximity to hazardous processes such as Operations and Maintenance Personnel, Supervisors, Engineers and Safety Professionals.
- Anyone who requires a sound understanding of risk and risk management.
- Anyone who wishes to increase their hazard awareness.

WHAT YOU WILL LEARN:

- The Hazard Management Model
- Natural Hazards
- Conflict Based Hazards
- Technological Hazards
- Safety Hazards
- Fire and Explosion Hazards
- Tools for Hazard Identification
- Evaluating Hazards
- Risk Assessment Concepts
- The Risk Analysis Process
- Determining Probability
- Analysing Consequences
- Risk Acceptability/Tolerability
- Risk Assessment Methodologies
- Comparison of Techniques

Course Fee

$1,795 CAD *per student*

2 days

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

Engineering Drawings Interpretation - Piping and Instrumentation Diagrams (P&ID)

The Board of Canadian Registered Safety Professionals (BCRSP) has previously awarded Continuous Maintenance points for this course. The current content contains 12 technical hours and may be eligible for BCRSP CM points.

COURSE OVERVIEW:

Safety issues, design/installation defects and mal-operation all have a financial impact that can be greatly reduced by properly training employees who have a solid foundation in the fundamentals of P&ID interpretation.

WHO SHOULD ATTEND:

This course focuses on engineering drawings typically used in the chemical and process industries by engineers and technologists in the design phase and by operations and maintenance staff once facilities are up and running. It is suitable for employees, managers, officers of corporations and anyone else with an interest in how these drawings should be created, maintained and used in assessing emergency situations and regulatory compliance issues.

- Facilities, Operations and Maintenance Professionals
- Engineers In Training (EITs)
- I & C, Mechanical Engineers and Technologists
- Professionals responsible for Process Hazards Analysis/HAZOP/ Safeguarding studies.
- Health & Safety / HSE Professionals .

Course Fee

$1,495 CAD *per student*

2 days

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

Control of Hazardous Energy

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This course contains 12 technical hours and may be eligible for Continuous Maintenance points by The Board of Canadian Registered Safety Professionals (BCRSP)

COURSE OVERVIEW:

Unintended or deliberate release of hazardous energy carries the very real risk of serious injuries, fatalities, asset damage and loss of reputation. Businesses that require their employees work on or near hazardous energy need to implement safety best practices, and must be able to demonstrate due diligence towards prevention of exposure to all forms of hazardous energy. This course is designed to inform you of the hazards of all types of hazardous energy that exist in oil and gas processing, petrochemical and chemical industries. Using case studies the second day of the course will provide basic knowledge of hydrocarbon fires and explosions. Participants will learn the principles and chemistry of flammable materials, understand the different types of hydrocarbon fires/explosions and their impacts, the factors that influence the severity of a fire or an explosion. The importance of using proper isolation procedures to control hazardous energy is discussed.

WHO SHOULD ATTEND:

- Anyone who works in close proximity to hazardous processes such as Operations and Maintenance Personnel, Supervisors, Engineers and Safety Professionals.
- Anyone who wants to gain more knowledge regarding process hazardous energy.

WHAT YOU WILL LEARN:

- Recognize potential hazardous energy sources in facilities
- Controls and Safeguards for process inherent energies
- Designing Safety into equipment and facilities
- Pressure Vessels and Safeguards
- Safety in Design
- Temporary Energy Isolation, Lock and Tagout
- Interactive case studies of hazardous energy and controls that were missing or were ineffective.
- Combustion Basic Concepts
- Ignition Sources
- Flammability
- Hydrocarbon Fires
- Dispersion
- Standard ISO 834
- Explosions
- Degree of Congestion
- Vapour Reactivity
- Confinement

Course Fee

$1,795CAD *per student*

2 days

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

Fundamentals of Risk Based Process Safety Management

This course contains 12 technical hours and may be eligible for Continuous Maintenance points by The Board of Canadian Registered Safety Professionals (BCRSP)

COURSE OVERVIEW:

This **two day overview course** designed to give operations and technical personnel a basic understanding of the principles of process safety management. The course is designed to be interactive using both group work and case studies to reinforce the learning and understanding.

This overview course is based upon the Risk Based Process Safety Approach developed by the Center for Chemical Process Safety published in 2007. It also takes into consideration the Canadian Society for Chemical Engineering PSM standard.

Note: this course can be adapted to your current organizations safety program.

WHO SHOULD ATTEND:

Anyone who is working in close proximity to hazardous processes such as Operations and Maintenance Personnel, Supervisors, Engineers and Safety Professionals.

Anyone who wishes to gain a better understanding of process safety and the application of the principles to facilities handling hazardous materials.

WHAT YOU WILL LEARN:

- The differences and similarities of occupational and process safety systems and how they work together
- A comparison of current Industry Standard PSM programs
- The importance of each PSM component
- Some key details of each component
- How the application of each element impacts daily work activities
- More knowledge to help you work safely
- Understand how PSM integrates into your current safety management system and implementing key aspects of PSM with the field workforce.

Course Fee

$1,495 CAD *per student*

2 days

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

Introduction to Process Safety and Risk Management

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WORKSHOP OVERVIEW:

Over this 2-day course, participants will experience the safety lifecycle starting from the conceptual phase of a project right through to when it is operating including software tools. Beginning with a solid understanding of how to capture and present risk at your facility using software, using the results of you process hazard analyses, SIL Determination (LOPA), as well as a SIL Verification information, and ending by looking at ways of managing risk in real time during operations and maintenance.

From a good P&ID to a great contingency safety plan for operations, many people are involved in this process and it's important to understand where the information transfers and how each phase of the project relates to the next, all being managed with the use of dedicated software tools. The data collected in the initial stages of your new or existing project will ultimately have an impact on how your operators run the plant, and if something is missed or forgotten you may have a negative situation.

This course is not just for the experts but is a valuable overview for anyone involved in hazard prevention and risk management at any level. No knowledge of the IEC 61511 guidelines or other standards is required to participate. Past course participants have ranged from Vice Presidents to Project Managers and Engineers.

One (1) day of instruction using dedicated software tools, led by ACM's team of Functional Safety Engineers and Experts.

WHO SHOULD ATTEND:

Anyone who works in close proximity to hazardous processes such as Operations and Maintenance Personnel, Supervisors, Engineers and Safety Professionals who require a sound understanding of risk and risk management.

Engineers involved in facilities design and construction will especially benefit from this course.

WHAT YOU WILL LEARN:

First Part:

- Process Hazard Analysis,
- PHA

Second Part:

- SafeGuard Profiler,
- Safety Integrity Level Verification/ Validation

Third Part:

- SafeGuard Profiler: Layer of Protection Analysis, LOPA; (SIL Determination- Contingency Planning- Safety Requirement Specifications)

Fourth Part:

- SafeGuard Sentinel- (Real Time Risk Exposure)- (Minimize Operating Risk Exposure, MORE)

Course Fee

$1,895 CAD *per student*

1 day

Includes registration, lunch and refreshments, and course materials.
Does not include applicable taxes.

Process Safety Culture Self-Assessment Workshop

Private session only

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WORKSHOP OVERVIEW:

Ever wonder how your process safety culture stacks up? You know you need training but just what is the best approach to maximize value? The place to start is a self-assessment of your current process safety culture. **This tailored workshop** is divided into 2 days; on day one you will explore the distinction between process and occupational safety, the drivers for process safety and the value proposition. How incidents and disasters have impacted the culture will be reviewed, using examples from your company. All of the participants will anonymously complete a detailed self-assessment questionnaire the results of forms the basis of the second day of the workshop. On day two, using the information compiled from the questionnaire, you will understand your company's cultural strength and opportunities. Using this information you will be able to identify the priority areas for training and development.

WHO SHOULD ATTEND:

Day 1: A cross section of company employees representing different departments, levels and seniority (to a maximum of 25). This can also be done at field locations. May also be done as several sessions depending on the number of participants and locations

Day 2: A cross section of senior leaders and managers who will action the information from day 1 (to a maximum of 25).

WHAT YOU WILL LEARN:

- Distinction between Process and Occupational safety
- The current drivers that influence process safety
- How disasters have impacted our culture
- Identify how internal incidents have influence process safety
- Understand the business case for process safety
- How the two NASA shuttle disasters relate to process safety

Course Fee

Private session only. Call for details 403.264.9637

2 days

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

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Preventing Disaster: Learning from Longford Workshop

Private session only

A **1-day intensive workshop** to develop, improve and enhance knowledge of process safety organisational factors.

The course utilises the “Preventing Disaster: Learning from Longford” DVD and associated book. It is based on his detailed analysis of the **ESSO Longford gas explosion** that resulted in the death of two workers and crippled Melbourne's gas supply for two weeks, as outlined in Professor Hopkins' "Lessons from Longford: the Esso Plant Explosion".

WORKSHOP OVERVIEW:

The workshop explores the eleven key contributory elements are examined and flagged in a generic way so that participants can apply the same approach to their organization. The eleven lessons are:

1. The Hazard Identification Factor
2. The Corporate Safety Department Factor
3. The Government Legislation Factor
4. The Auditing Factor
5. The Reporting Systems Factor
6. The Lost Time Injury Frequency Factor
7. The Technical Support Factor
8. The Alarm System Factor
9. The Management of Change Factor
10. The Communication Between Shifts Factor
11. The Maintenance Cost Cuts Factor

Facilitated Action Plan development

WHO SHOULD ATTEND:

• Strategic decision makers including Managers, supervisors, engineers, safety personnel, and others involved in the design, operation, modification or maintenance of hazardous plant or processes
• Anyone who would like to develop a broader understanding of the factors involved in managing safety

WHAT YOU WILL LEARN:

Upon completion of the course participants will:

• Understand and be able to apply the lessons learned in this workshop to their own organization
• Identify potential risks and areas in need of improvement
• Develop an action plan – the workshop activities will aid participants in developing a detailed action plan on applying "Lessons Learned" to their own organization.

The course is intended to alert and instruct participants regarding any weakness in their Safety System.

Course Fee

Private session only. Call for details 403.264.9637

1 day

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

Macondo Blowout: The Human and Organizational Causes Workshop

Private session only

The Gulf of Mexico oil spill in 2010 killed 11 workers and caused unprecedented environmental damage. The U.S. Chemical Safety Board (CSB) consulted Professor Andrew Hopkins in preparing its investigation of the incident.

In this **1 day intensive workshop** participants will acquire the essential background knowledge required to analyze human and organisational causes as significant factors when companies fail to recognise the warning signs prior to workplace accidents.

Following two years of critical analysis of the Deepwater Horizon disaster, he wrote ***Disastrous Decisions: The Human and Organisational Causes of the Gulf of Mexico Blowout***. This book has become a widely studied text world-wide and is the basis of the DVD workshop "Macondo Blowout: The Human and Organisational Causes".

WORKSHOP OVERVIEW:

Professor Andrew Hopkins focuses on the human and organisational causes of the Macondo blowout. He analyses the organisational factors that contributed to poor engineering decisions made with all the judgements centred on commercial risk. Little consideration for major hazard risk was given. ***Why was there no focus on major hazard risk?*** The distinction between process safety and personal safety that Hopkins makes, answers this question.
It is important to understand the human and organisational causes discussed in this program that can impact an organizations ability to manage its safety risks.

WORKSHOP OBJECTIVE:

At the end of the workshop participants will:

- Understand how organisational structure may contribute to poor engineering decision making
- Be aware of major hazard risk indicators
- Be aware that preoccupation with profit before safety comes at a cost
- Be able to learn from other incidents
- Understand defence in depth
- Be aware of the multi-causal nature of accidents.
- Develop an action plan – the workshop activities will aid participants in developing a detailed action plan on applying "Lessons Learned" to their own organization. The course is intended to alert and instruct participants regarding managing their risks.

Course Fee

Private session only. Call for details 403.264.9637

1 day

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

Controls Hazard & Operability (CHAZOP) Workshop

This course contains 6 technical hours and may be eligible for Continuous Maintenance points by The Board of Canadian Registered Safety Professionals (BCRSP)

COURSE OVERVIEW:

This 1-day workshop is designed to deliver expert instruction on the technical content of a CHAZOP session and why they are performed. This includes understanding the principles behind each of the major methods (CHAZOP, What-if? and FMEA) and the fundamentals on CHAZOP methodology, noding, team composition and preparation for a CHAZOP session. The participants will then practice what they have learned in preparing drawings and worksheets for a mini CHAZOP session.

WHO SHOULD ATTEND:

- Automation technologists and engineers
- IT professionals
- Automation suppliers and vendors
- Supervisors, managers and engineers responsible for CHAZOP studies

OBJECTIVES

Participants will develop the knowledge and skills, through the use of interactive case studies, necessary to successfully complete a CHAZOP.

During the workshop participants will have the opportunity to prepare the drawings and facilitate the analysis using drawings.

By the end of the exercises participants will understand what is involved in the organization, participation and preparation of their own CHAZOP session.

Course Fee

$995 CAD *per student*

1 day

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

PHA / HAZOP Leadership Course

This course contains 18 technical hours and may be eligible for Continuous Maintenance points by The Board of Canadian Registered Safety Professionals (BCRSP)

COURSE OVERVIEW:

This 3-day PHA / HAZOP course is designed to deliver expert instruction on how to successfully plan and execute Process Hazards Analysis (PHA) studies efficiently and effectively. This includes understanding the principles behind each of the major PHA methods (HAZOP, What-if?, Checklist, FMEA), learning how to deal with challenging personalities within the PHA team and how to avoid common pitfalls and traps so your PHA studies run smoothly.

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WHO SHOULD ATTEND:

- Supervisors, managers and engineers responsible for PHA studies
- PHA / HAZOP Team Leaders & scribes
- Health & Safety / HSE professionals
- Process Safety Management (PSM) / Loss Management specialists

COURSE OBJECTIVES

Provide knowledge and skills to prepare the participants to be able to effective prepare and facilitate (lead) PHA's within their organization.

In the afternoon of Day 2 and for Day 3, you will form a study team with other participants and take turns leading the team through "practice" HAZOP and What-if sessions. The instructor will coach you and provide feedback on your performance. Participants will have the opportunity to prepare the drawings, populate the software and facilitate the studies using drawings such as the one below. By the end of the exercises students will be able to facilitate their own HAZOP and What if sessions.

Course Fee

$2,200 CAD *per student*

3 days

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

SIL Determination / LOPA Course

Part 1 of SIL COURSE SERIES. Please also see Part 2: SIL Verification

This course contains 12 technical hours and may be eligible for Continuous Maintenance points by The Board of Canadian Registered Safety Professionals (BCRSP)

COURSE OVERVIEW:

This 2-day course is designed to deliver expert instruction on how to successfully plan and execute Safety Integrity Level (SIL) Determination studies efficiently, effectively and in accordance with the IEC 61511 standard. This includes understanding the principles behind three of the most commonly used SIL Determination methods (Layer of Protection Analysis, Calibrated Risk Graph and Safety Layer Matrix), learning how to deal with challenging personalities within the SIL team and how to avoid common pitfalls and traps so your studies run smoothly.

Note* The SIL Determination / LOPA course maybe be taken in conjunction with the SIL Validation Workshop to gain a more thorough understanding of the Safety Lifecycle process.

WHO SHOULD ATTEND:

This course teaches all the requirements to prepare team leaders to facilitate and document SIL Determination studies, including:

- Risk Assessment specialists
- SIL / PHA / HAZOP team leaders & scribes
- Process Safety Management (PSM) / Loss Management specialists
- Supervisors, managers and engineers responsible for SIL studies
- Project managers who need to understand the concepts and principles of IEC 61508 & 61511
- Engineers involved in any aspect of the SIS Safety Lifecycle

WHAT YOU WILL LEARN:

- Where does LOPA fit into the safety lifecycle of the facility and create clarify regarding SIL determination.
- Learn about the most common SIL determination methodologies.

Course Fee

$1,850 CAD *per student*

2 days

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

SIL Verification Course

Part 2 of SIL course Series. Please also see Part 1: SIL Determination / LOPA workshop

This course contains 12 technical hours and may be eligible for Continuous Maintenance points by The Board of Canadian Registered Safety Professionals (BCRSP)

COURSE OVERVIEW:

This **2-day course** is designed to provide participants with the tools necessary to perform SIL Validation studies compliant with the IEC 61511 standard. The practical course uses real life examples to demonstrate to students how to conceptually design multiple Safety Instrumented Functions (SIFs) to meet the specified safety integrity levels.

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Note* The SIL Verification course maybe be taking in conjunction with the SIL Determination / LOPA Workshop to gain a more thorough understanding of the Safety Lifecycle process.

WHO SHOULD ATTEND:

This course teaches Functional Safety Engineering fundamentals to engineers and technologists responsible for designing Safety Instrumented Systems, including:

- I & C Team Leaders, engineers and technologists
- High Integrity and Critical Control System specialists
- Supervisors, managers and engineers responsible for ensuring that SIS have been designed to appropriately mitigate the level of risk specified
- Engineers involved in any aspect of the SIS Safety Lifecycle

WHAT YOU WILL LEARN:

The fundamentals of safety instrumented systems (SIS) using the IEC 61511 standard.

Learn how the key elements such as safety requirements specification impact the engineering of SIS.

The fundamentals of Safety Instrumented Functions (SIF) to meet the specified safety integrity levels.

Course Fee

$1,850 CAD *per student*

2 days

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

Fundamentals of Accident/Incident Investigation

This course contains 12 technical hours and may be eligible for Continuous Maintenance points by The Board of Canadian Registered Safety Professionals (BCRSP)

COURSE OVERVIEW:

In this **2 day course** you will learn how to conduct effective investigations. You will learn the purpose of investigating, the important points to be considered, and how to manage and perform effective investigations. Using a workshop format there is extensive hands-on interactivity on many investigation techniques, including evidence collection, care and custody. Analysis of causation aspects of investigation using recent case studies is used to enhance this important process by focusing on the basic fundamentals required for it. By completing the two days you will engage in all facets of the investigative process and have experienced all the important fundamentals of conducting a successful investigation.

WHO SHOULD ATTEND:

Anyone who's involve in conducting an incident investigation such as the Supervisors, Team Leads, Engineers, Safety Professionals and Regulators.

WHAT YOU WILL LEARN:

- The importance of investigation
- Legislative requirements and effective interfacing with regulators
- How to form an investigation team
- A proven investigation process
- How to collect and interpret evidence
- Importance of the chain of custody for evidence preservation
- Analyzing for root cause using a simple root cause tool
- Effective report writing techniques

Course Fee

$1,495 CAD *per student*

2 days

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

FS Engineer (TÜV Rheinland) for Process Hazards and Risk Analysis

COURSE OVERVIEW:

This Functional Safety course is ideally suited for Process Engineers who need a more in depth understanding and formal qualification in the Process Hazard and Risk Analysis lifecycle phases associated with Functional Safety. It is part of TUV Rheinland Functional Safety Program which is the only worldwide extended vocational training program in the area of Functional Safety where knowledge and competencies are approved by the certification body TUV Rheinland Industrie GmbH, Automation & Functional Safety.

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The Process Hazards and Risk Analysis (PH&RA) Functional Safety Engineering Certification program offer a comprehensive understanding of hazard theory and several of the most relevant hazard analysis methodologies:

- HAZOP
- What-if, combined what-if/checklist analysis
- Failure Modes Effect Analysis (FMEA)
- Calibrated Risk Graph / Safety Layer Matrix
- Layer of Protection Analysis (LOPA)
- Fault Tree Analysis (FTA)
- Event Tree Analysis (ETA)

PARTICIPANT ELIGIBILITY REQUIREMENTS:

In accordance with the TÜV Rheinland Functional Safety Program guidelines, students should possess:

- A minimum of 3 to 5 years' experience in the field of functional safety;
- University degree or equivalent engineer level responsibilities status as certified by employer.

Participants are eligible to receive a TÜV Rheinland certificate and to use the title " Functional Safety PH&RA (TÜV Rheinland)" concerning Process Hazards & Risk Analysis within the TÜV Rheinland Functional Safety Program provided that they:

- Attend ACM's TÜV Rheinland Functional Safety Program training in Process Hazards & Risk Analysis;
- Pass the Final Exam after attending the ACM Automation Inc. provided training;
- Meet all other eligibility criteria according to the TÜV Rheinland Functional Safety Program.

Note: Participants who meet these requirements without a professional engineer designation (ie. Technologists) will be given the option of selecting either the "Functional Safety Engineer (TÜV Rheinland)" or "TÜV Rheinland Functional Safety Qualified" title.

Course Fee

$3,300 CAD *per student*

3 days + ½ day for exam

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

How to Integrate HAZOP and LOPA Studies

Private session only

COURSE OVERVIEW:

This one day course provides an overview of the HAZOP and Layer of Protection Analysis (LOPA) methods and introduces students to the idea of producing a HAZOP ready for SIL Determination. Students will learn how an integrated HAZOP / LOPA approach will impact the LOPA analysis by reducing session times and improving the confidence and accuracy of the SIL determination. Students will also learn what other steps follow after SIL Determination, and the importance they play to minimize operational risk exposure. The course will also introduce a simplified lifecycle model to enable a quick and easy understanding of "Functional Safety" and how the HAZOP / LOPA methods fit within the IEC 61511-1/2/3 standard.

WHO SHOULD ATTEND:

- Risk Assessment specialists
- SIL / PHA / HAZOP team leaders & scribes
- Process Safety Management (PSM) / Loss Management specialists
- Supervisors, managers and engineers responsible for SIL studies
- Project managers who need to understand the concepts and principles of IEC 61508 & 61511
- Engineers involved in any aspect of the SIS Safety Lifecycle

WHAT YOU WILL LEARN:

Topics covered during the 1-day session include:

- Introduction to HAZOPs
  - What is a HAZOP?
  - Why do we perform HAZOPs?
  - When do we perform a HAZOP?

- Introduction to Layer of Protection Analysis
  - What is LOPA?
  - Why do we perform LOPA?
  - When do we perform LOPA?

- What is a SIL Ready HAZOP?
  - What are the benefits?
  - How do you perform a SIL Ready HAZOP?
  - When do you perform a SIL Ready HAZOP?
  - Who needs to participate?
  - What are the training requirements?

Course Fee
Private session only. Call for details 403.264.9637
1 day
Includes registration, lunch and refreshments, and course materials.
Does not include applicable taxes.

SafeGuard Profiler Certification & Workshop

Private session only

COURSE OVERVIEW:

This **2-day course** is comprised of combined classroom instruction and workshop exercises

SafeGuard Profiler is a field proven, IEC compliant Safety Integrity Level (SIL) Life Cycle tool that gives high integrity and critical control systems designers, engineers, operators and maintainers the information and power to conduct SIL Determination, Validation and Optimization exercises. This 2-day workshop has been designed to offer hands-on instruction on the use of this world-class SIL Lifecycle tool. The range of topics that will be covered in this interactive session include importing HAZOP data, performing SIL Determination studies using Risk Graph and LOPA, SIF Loop Verification, SRS, and Reporting.

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WHO SHOULD ATTEND:

This course is well suited to engineers and technologists who aim to follow the best engineering practices with regard to the application of Safety Instrumented Systems in the process industry, including:

- TÜV Functional Safety Engineers or TÜV Functional Safety Experts
- SIS Expert at Plant
- High Integrity and Critical Control System specialists
- I & C Team Leaders, engineers and technologists
- SIL LOPA team leaders & scribes
- Engineers involved in any aspect of the SIS Safety Lifecycle

WHAT YOU WILL LEARN:

Section 1: Concepts Review
Safety Life Cycle (SLC)
What is SafeGuard Profiler?
Where is SafeGuard Profiler used in the SLC?
HAZOP and SafeGuard Profiler.
Risk Graphs, LOPA.
What is SIL Determination? (SIL, PFD, MF, TF, RRF)
What is SIL Validation? (MTTR, T1, TC, DC, SFF, RBD)
Safety Requirements Specifications (SRS)

Section 2: Getting to Know SafeGuard Profiler
Installing SafeGuard Profiler
Access and Navigation
Creating a new Project
HAZOP Display Setup
LOPA "Loop" Creation
SIL Determination using LOPA Scenario Analysis
Alternate LOPA Scenarios
Risk Graph Analysis
Risk Graph – Alternate Scenarios
SIF Loop Verification(RBD, PFD)
Loop Linking (SIF to LOPA, SIF to SIF)
SRS
Contingency Planning and Risk Exposure Reports
Project Export/Import

Section 3: SafeGuard Profiler Interface to External Data
Configuration File
Tag Data
CSV Files
Excel Files
Failure Rate Data

Section 4: Guided Examples

Section 5: Exercises

Course Fee

Private session only. Call for details 403.264.9637

2 days

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

FS Engineer (TÜV Rheinland) for Safety Instrumented System

COURSE OVERVIEW:

The TÜV Rheinland Functional Safety Program supports technicians as well as engineers, or any person working in the functional safety business. It supports the professional development of practitioners in the field of functional safety by incorporating the principles of IEC 61508 and IEC 61511, and other relevant international standards into a training course designed to add to their depth of knowledge and understanding of the subject. The program also offers technicians and engineers who possess significant work experience in the field of functional safety the ability to obtain a certificate verifying their expertise. For more information, refer to **www.tuvasi.com**.

ACM's TÜV Rheinland **Functional Safety Technician** training course within the TÜV Rheinland Functional Safety Program has been reviewed and accepted by TÜV Rheinland Industrie Service GmbH - Automation, Software and Information Technology (ASI). For more information, refer to **www.acm.ca**.

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WHO SHOULD ATTEND:

This course is well suited to engineers and technologists who aim to follow the best engineering practices with regard to the application of Safety Instrumented Systems in the process industry, including:

- Risk professionals responsible for establishing corporate tolerable risk targets
- Managers / Team Leaders responsible for determining SIS design standards
- Engineers and technicians responsible for ensuring that SIS have been designed to appropriately mitigate the level of risk identified
- Project Managers who need to understand the concepts and principles of IEC 61508 & 61511
- Engineers involved in any aspect of the SIS Safety Lifecycle

PARTICIPANT ELIGIBILITY REQUIREMENTS:

In accordance with the TÜV Rheinland Functional Safety Program guidelines, participants should possess:

- A minimum of 3 to 5 years' experience in the field of functional safety
- University degree or equivalent engineer level responsibilities status as certified by employer

Participants are eligible to receive a TÜV Rheinland certificate and to use the title " Functional Safety Technician (TÜV Rheinland)" concerning SIS within the TÜV Rheinland Functional Safety Program provided that they:

- Attend ACM's TÜV Rheinland Functional Safety Technician Program training in SIS
- Pass the Final Exam after attending the ACM Automation Inc. provided training;
- Meet all other eligibility criteria according to the TÜV Rheinland Functional Safety Program.

Course Fee

$4,300 CAD *per student*

4 days + ½ day for exam

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

Legislative Awareness in the Oil and Gas Industry

This course contains 12 technical hours and may be eligible for Continuous Maintenance points by The Board of Canadian Registered Safety Professionals (BCRSP)

COURSE OVERVIEW:

What legal responsibilities do you, your co-workers and your employees have regarding safety in the workplace? This **2 day course** is designed to provide an introduction to key regulations that govern the requirements for design and operation of hazardous processes.

The emphasis is placed on the legislation that impacts the oil and gas industry.

The course will provide background regarding the history and importance of government regulation; however the bulk of the time will be spent using the Alberta Occupational Health & Safety legislation, Alberta Energy Regulator Directives and the National Energy Board with emphasis on how to apply these regulations in your work activities rather than memorizing detailed clauses or sections. Prior knowledge of these acts and regulations is not required.

(There is a requirement that all workers understand their obligations and duties under the Alberta OH&S Act.)

WHO SHOULD ATTEND:

Anyone who works in close proximity to hazardous processes such as Operations and Maintenance Personnel, Supervisors, Engineers and Safety Professionals.

Anyone who requires a working knowledge of these regulations and legislation.

WHAT YOU WILL LEARN:

- The role of due diligence.
- How the current regulations evolved, and the importance of disasters that led to the development of the regulations in Canada and Alberta.
- How the Alberta Occupational Health & Safety Act, Regulation and Code work and how to use them.
- Relevant regulations under the National Energy Board (NEB) Jurisdiction.
- Relevant Directives under the Alberta Energy Regulator (AER).
- The duties and responsibilities of both the employer and worker.
- Apply what has been learned to solve practical workplace issues using these regulations.
- How other legislations impact the workplace, such as Law C-21 (formally Bill C-45), Canadian Environmental Protection Act (CEPA) 200 and Globally Harmonized System (Workplace Hazardous Materials Information System, WHMIS

Course Fee

$1,495 CAD *per student*

2 days

Includes registration, lunch and refreshments, and course materials.

Does not include applicable taxes.

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Location & Travel Considerations

The ACM Head Office and Institute of Hazard Prevention are located at:

#700, 940 – 6 Avenue SW

Calgary, Alberta, Canada

TRAVEL

The ACM Head Office and Institute of Hazard Prevention are located in downtown Calgary, approximately 20 km (30 minutes) from the Calgary International Airport YYC. For driving directions please refer to Google Maps.

HOTELS NEARBY

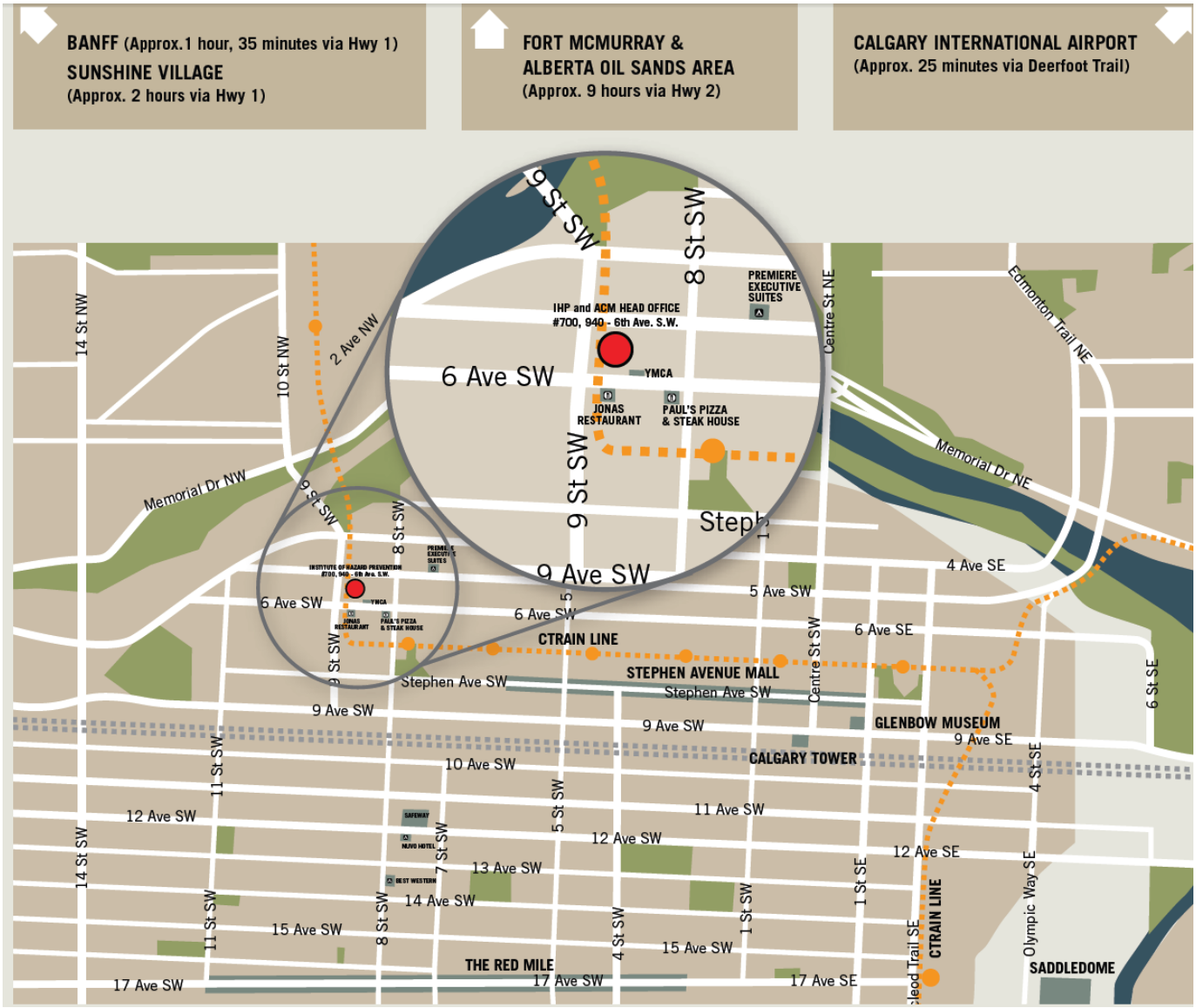
- Sandman Hotel Calgary City Centre
- Ramada Hotel Downtown
- Holiday Inn Express Hotel & Suites
- The Westin Calgary

TAXI SERVICES

- Associated Cab: 403.299.1111
- Delta Cab: 403.278.9999
- Checker Yellow Cab: 403.299.9999
- #TAXI (#8294) from your mobile device to access all Calgary taxi services

ATTIRE & SUPPLIES

Casual attire is acceptable for all ACM Education programs. Please bring a pen or pencil and notepad. All additional course materials will be supplied by ACM.



HOW TO REGISTER

- Visit www.iofhp.com, select the course or workshop you would like to attend, click 'Register' and follow the necessary steps. If completing the registration on behalf of an employee, please provide an administrative contact.
- Call our Training Team at 403.264.9637 or 1.877.264.9637.

We recommend registering one month prior to the course date (though we invite you to inquire about last-minute availability).

INSTITUTE OF HAZARD PREVENTION founded by ACM Facility Safety
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Helping you make your world a safer place

We help the world's largest operating and engineering companies improve facility uptime, manage process risk and comply with international safety standards. Here is a list of those companies we've helped along the way.

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