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### After participating in the course, you will be able to:

- **estimate** the probability and intensity of ground motions likely to occur at a site, and their design implications
- **perform** seismic analysis of structures both manually and using computer tools
- **use** on your projects the concept of capacity design and structure ductility as well as the seismic design requirements of the NBCC05
- **apply** the basic principles of design and detailing of earthquake resistant steel and reinforced concrete buildings

**DESCRIPTION:** To apply effectively the seismic provisions of the National Building Code of Canada NBCC05, structural engineers need a thorough understanding of the fundamentals of earthquake engineering including ground motion seismology, structural dynamics, concept of capacity design, inelastic behaviour of various materials, and seismic design and detailing. This course provides an opportunity to learn the basic principles and practices of analysis and design of earthquake-resistant design building structures. Static and dynamic analysis of buildings using advanced computer codes is presented. The course covers seismic design and detailing of steel and reinforced concrete buildings.

**OBJECTIVE:** To provide mastery of seismic analysis and design of buildings as well as a clear understanding of seismic provisions of the NBCC05.

**WHO SHOULD ATTEND:** Structural engineers, civil engineers, designers, consulting engineers and project engineers who need a thorough understanding of seismic design.

**FACULTY:** Ashraf El Damatty, P.Eng., Ph.D., Professor, The University of Western Ontario

### PROGRAM OUTLINE

- Welcome, Introduction, Workshop Preview, Learning Outcomes and the Assessment Method
- Earthquake Ground Motions Characteristics
- Response of a Single Degree of Freedom System
- Seismic Analysis of Multi Degrees of Freedom Structures
- Code Procedures for Earthquake Resistant Structures
- Seismic Design of Steel Buildings
- Seismic Design of Reinforced Concrete Structures
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes

# Structural Rehabilitation of Bridges

## 1.8 CEUs/18 PDHs

### After participating in the course, you will be able to:

- **develop** a better understanding of the application of the Canadian Highway Bridge Design Code in conducting step-by-step manual calculations for the evaluation of the bridge load carrying capacity in both flexure and shear, axial tension and compression. This would assist bridge designers, owners to decide on keeping the bridge as is, posting the bridge, rehabilitating or strengthening the bridge, or demolishing it
- **gain** additional exposure to the state-of-the-art and innovative techniques for bridge rehabilitation and strengthening.
- **boost** your technical library with numerical examples for bridge evaluation and rehabilitation

**DESCRIPTION:** In Canada, the number of bridges requiring rehabilitation is increasing at an alarming rate. Addressing this problem consumes an ever-growing percentage of government budgets. Bridges need to be rehabilitated for a variety of causes, such as deterioration due to environmental effects, the need to carry heavier vehicular loads, or deficiencies in the original design or construction. Those responsible for maintaining bridges need to keep abreast of the latest techniques available for assessing the condition of their structures, as well as the methods and techniques for repairing or strengthening them. At this seminar you focus on the technical aspects of bridge rehabilitation, such as the use of bridge inspection equipment, condition survey procedures, and the latest, practical methods of repairing and strengthening existing bridges. The course will be an excellent exposure of the Canadian Highway Bridge Design Code with respect to bridge evaluation, rehabilitation and the use of fiber-reinforced polymer (FRP) technology in bridge repair.

**OBJECTIVE:** To present practical and economical methods for evaluating, inspecting, strengthening and rehabilitating bridges.

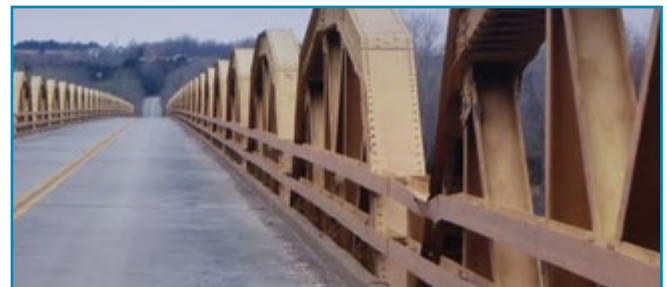
**WHO SHOULD ATTEND:** The course suits primarily the bridge rehabilitation engineers, structural designers and inspectors. However, managers and engineers of national, provincial and local highway agencies, railway bridge engineers, consulting engineers, superintendents and contractors, fabricators, material suppliers and material testing personnel who are interested in rehabilitation of bridges, regulatory agency staff and others responsible for inspecting, maintaining, upgrading and safeguarding existing bridges.

**SPECIAL FEATURES:** The speaker has been selected for his first-hand experience with bridge design, evaluation, rehabilitation and strengthening. You will have time to meet and share experiences with others in the field. Presentations will stress practical applications. You will learn what information each technique produces and how to use this information to evaluate bridge safety and rehabilitation strategies. While the course will discuss future developments of innovative FRP technologies, it will focus on practical applications for use now.

**INSTRUCTOR:** Khaled Sennah, Ph.D., P.Eng., P.E., Ryerson University

### PROGRAM OUTLINE

- Welcome, Introduction, Workshop Preview, Learning Outcomes and the Assessment Method
- Typical Damage of Bridge Structures
- CHBDC Assessment and Evaluation Techniques
- Bridge Condition Assessment
- Rehabilitation of Concrete Bridge Superstructures
- Rehabilitation of Steel and Composite Concrete-Steel Bridge Superstructures
- Rehabilitation of Bridge Substructures
- Use of FPP Composites in rehabilitation:
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes
- Adjournment



### After participating in the course, you will be able to:

- **apply** the structural analysis methods and structural behaviour of beams, trusses, slabs, columns, walls, frames, arches, domes, cable structure, footings, and pile foundations
- **comment** on the design of reinforced concrete and structural steel members with the comprehensive understanding gained from this course
- **solve** common structural engineering problems
- **use** the design procedures for wood and masonry

**DESCRIPTION:** Non-structural engineers and architects need an understanding of the basic concepts rather than rigorous mathematical derivations. If you need a better understanding of the design and construction of concrete, steel, wood or masonry building structures, you will find this course particularly helpful. Course participants are expected to have some elementary knowledge about structural design and analysis of simple structures.

**OBJECTIVE:** To present basic methods of structural design of buildings, introduce participants to the codes that govern structural design, and familiarize them with available design aids.

**WHO SHOULD ATTEND:** Architects, non-structural engineers (civil, mechanical, electrical, mining, chemical and agricultural engineers), plant engineers, fabricators and manufacturers of structural systems, general contractors, property managers, directors of physical plants, municipal building officials, building inspectors, field review personnel, project engineers and others who would like to know more about structural systems.

**SPECIAL FEATURES:** This course is not designed to make you a structural engineer, but you will leave the course with a basic understanding of building structures. Participants should have some elementary knowledge

of structural analysis and design in order to gain maximum benefit from this course.

Lectures followed by simple hands-on exercises during the problem solving sessions will facilitate learning. You will receive an extensive set of notes that will minimize note taking so you can enhance your learning experience.

Participants should bring a hand-held, battery-operated calculator to this seminar for the exercises at the end of each day.

In order to gain the maximum benefit from this seminar, participants are encouraged to read in advance the following:

- Part 4 of the 2005 National Building Code of Canada
- Structural Commentaries (Part 4) of 2005 National Building Code of Canada

**INSTRUCTOR:** Peter Chan, Building Engineer, City of Toronto

### PROGRAM OUTLINE

- Welcome, Introduction, Workshop Preview, Learning Outcomes and the Assessment Method
- Structural Loads and Procedures
- Structural Analysis
- Member Properties
- Structural Behaviour
- Reinforced Concrete Design
- Structural Steel Design
- Wood Design
- Masonry Design
- Building Design Sample
- Questions and Answers - Feedback to Participants on Achievement of Learning Outcomes
- Concluding Remarks and Final Adjournment

## Wind Effects on Buildings: Design Using the 2010 National Building Code

## 1.8 CEUs/18 PDHs

### After participating in the course, you will be able to:

- **develop** a good understanding of how wind interacts with buildings and other structures
- **become** familiar with the local wind simulation methodology
- **make** calculations of windloads on structures and cladding using design examples
- **assess** the impact of ground level snow drifting and work out roof snow loading
- **know** how to use the provisions of the 2010 Canadian Wind Code
- **understand** guidelines for the design of wind resistant buildings
- **apply** basic concepts of wind engineering
- **find** out how to reduce wind loads and ensure wind resistant construction
- **review** wind speed data

**DESCRIPTION:** Wind engineering applications form an integral part of the building design process, providing architects and design engineers with a comprehensive understanding of the interaction between environmental factors and building design. A proper connotation of this interaction can provide significant cost savings to building owners in terms of developmental, material, and operational costs.

Wind engineering examines the impact of wind force on a building in terms of wind pressures on a building's exterior shell; its torsional movement; door pressures; snow loading on simple and complex roofs; and landscape and site planning to optimize protection of building entrances, and key pedestrian and traffic areas from wind. Concerns related to off-site impacts of new construction on existing surroundings, and microclimatic impacts on pedestrian areas are also addressed through wind engineering studies. Data acquired from previous research and studies allow more accurate assessment of material requirements and strengths, thereby avoiding higher costs associated with more conservative building codes. Wind engineering studies can also optimize landscape designs to provide the best monetary value in terms of snow and wind effect reduction. This course focuses on the application of wind engineering studies to the building design process.

### OBJECTIVES:

- To provide participants with a general background of wind effects on buildings.
- To expose participants to the methods and procedures for the efficient application of wind studies in designing a building more economically than a similar building designed with more conservative building code provisions.

**WHO SHOULD ATTEND:** Building designers, architects, builders, civil and construction engineers, building officials and others involved in the design, construction, operation and maintenance of buildings and other structures.

**FACULTY:** Theodore Stathopoulos, Ph.D., P.Eng, F.CAE, F.ASCE, Professor, Concordia University

### PROGRAM OUTLINE

- Welcome, Introduction, Seminar Preview, Learning Outcomes and the Assessment Method
- Introduction to Wind Engineering
- Meteorology I
- Meteorology II
- Applications / Assignments
- Building Aerodynamics
- Provisions of the 2010 Canadian Wind Code
- Wind Loads on Structures
- Wind Design Case Study
- Solution of Wind Design Case Study
- Pedestrian Winds
- Ground Level Snow Drifting and Snow Loading on Roofs
- Design Examples - Instructor's View
- Discussion of Design Examples - Participants' View
- Specific Items of Interest to Participants and State-of-the-Art
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes
- Concluding Remarks and Final Adjournment

### After participating in the course, you will be able to:

- **understand** the principles and procedures for designing anchors for soils and rocks.
- **learn** how to select the right type of anchors and methods for installation, grouting and prestressing them.
- **become** knowledgeable about the corrosion protection methods used.
- **gain** insight into the long term behaviour of anchors in ground.
- **review** application of anchoring in excavation, rock and soil slopes, walled excavation, retaining walls, bridge structures, foundations, basins and water reservoirs, loading equipment in field tests and many other applications.

**DESCRIPTION:** Strengthening and stabilizing rock masses, and resisting structural movements by anchoring them via prestressed reinforcement is achieved by anchoring. Also, to withstand lateral forces, temporary tie-backs in soil are necessary for construction of shallow foundations. This practical and informative seminar is aimed both at design and construction engineers interested in safe and economic methods for strengthening engineering structures.

**OBJECTIVE:** To present an in depth review of design, applications and installation methods for anchoring in rock and soil.

**WHO SHOULD ATTEND:** Designers, geotechnical engineers, construction managers, contractors, owners and other technical personnel interested in the technology of anchoring in rock and soil.

**FACULTY:** Abouzar Sadrekarimi, Ph.D., P.Eng.

### PROGRAM OUTLINE

- Welcome, Introduction, Workshop Preview, Learning Outcomes and the Assessment Method
- Anchors in Speciality Geotechnical Engineering
- Soil Anchors
- Rock Anchors
- Anchored System Design
- Corrosion Considerations in Design
- Load Testing of Anchor Systems
- Contracting Approaches
- Construction Inspection and Performance Monitoring
- Example Studies
- Round Table: Future of Anchoring
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes
- Concluding Remarks and Final Adjournment

## Asphalt Mix Design

## 1.2 CEUs/12 PDHs

### After participating in the course, you will be able to:

- **make** critical decisions in the lab and on the construction projects using the background knowledge gained from the course
- **select** asphalt and aggregate material knowing their effect on mixture properties
- **perform** proportioning, volumetric analysis, mixture evaluation using the guidelines for the application of different mixture types
- **increase** the useful life of your pavement by efficient asphalt mix design
- **analyze** your specifications to understand how they affect the quality you receive

**DESCRIPTION:** Maximizing the performance of high quality materials and sophisticated construction practices is best achieved with a thorough understanding of material properties and asphalt mix design. Engineers and technical managers are faced with the challenge of maintaining, within shrinking budgets, the investment in highways, airport runways, urban roads, parking areas and access roads in many residential, commercial and industrial developments. An understanding of the considerations for the design and construction of an asphalt pavement and of the factors that influence its deterioration is essential to make technically and economically feasible decisions regarding the design of asphalt mixes. Participants will work on asphalt mix design suitable for different load and environmental conditions.

**OBJECTIVE:** To present methods of design for asphalt mix suitable for various applications.

**WHO SHOULD ATTEND:** Designers actively involved in asphalt mix design, materials specifications and field management of asphalt mixes, geotechnical and materials engineers in government transport departments, project managers, maintenance engineers, technicians and technologists, contractors, construction inspectors, technical managers, consultants and municipal engineers with responsibility for asphalt pavements. This course is an excellent opportunity for those wishing to develop or increase their knowledge base of asphalt mix to build longer lasting pavements.

**SPECIAL FEATURES:** The instructor has been selected for his involvement in asphalt technology. You will receive comprehensive lecture notes and reference materials.

**INSTRUCTOR:** Karim Ismail, Carleton University

### PROGRAM OUTLINE

- Welcome, Introduction, Workshop Preview, Learning Outcomes and the Assessment Method
- Role of Asphalt Mixes in Pavement Life
- Aggregates and their Characteristics
- Asphalt Mix Design Considerations
- Asphalt Binder-SHRP Material Selection
- Other Available Resources
- Hot Mix Asphalt (HMA) Design Requirements
- Designing Mixtures with RAP-Marshall and SUPERPAVE Mixtures
- Quality Management in the Field
- Asphalt Mix Design-Resurfacing
- Specifications-Mixing, Tests, Spreading and Compaction
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes
- Concluding Remarks and Final Adjournment



### After participating in the course, you will be able to:

- **discover** the basics of slab on grade thickness design appropriate to the applied loads and site conditions
- **gain** a working knowledge in the essentials of slab jointing, reinforcing and detailing
- **familiarize** yourself with floor finishing techniques and how they influence surface tolerances and surface defects
- **understand** how specifications, construction techniques and inspection combine to assure serviceable concrete floors

**DESCRIPTION:** Virtually every building structure, from the simplest strip-mall to the largest industrial or municipal complex, features floor slabs on ground within the facility. In-service problems with such floors are recognized as the most common deficiencies reported in industrial and commercial buildings. Yet few engineers or contractors are ever formally educated in the design and construction details required for serviceable floors. Achieving functional and durable floors time after time requires basic knowledge by owners, designers and contractors in just how the design, construction and performance of slabs on ground differs from structural slabs. This day-long course presents practical guidance in selecting design details and materials which assure highly serviceable concrete floors.

In this course, the instructor presents material in an inter-active style with extensive use of visual aids. You are encouraged to bring for discussion your concrete slabs on grade problems.

**OBJECTIVE:** To provide a comprehensive understanding of the practical aspects of slab-on-grade design, construction practices, surface tolerances and troubleshooting of surface defects and structural deficiencies.

**WHO SHOULD ATTEND:** Property owners, developers and facility managers, plant operators and maintenance personnel, municipal and other government agencies, engineers and consultants, building inspectors, inspection technicians, contractors' supervisors and foremen, ready-mix and specialty product sales and technical personnel and others wishing to gain hands-on knowledge in the design and construction of commercial and industrial concrete floors on grade.

**SPECIAL FEATURES:** This course achieves a balance between concepts and the practical aspects of design considerations, construction practices and trouble shooting.

**INSTRUCTOR:** Dr. Lamya Amleh, Ryerson University

### PROGRAM OUTLINE

- Welcome, Introduction, Seminar Preview, Learning Outcomes and the Assessment Method
- Geotechnical Considerations in Slab Design
- Slab on Grade Design
- Construction Practices
- Floor and Thickness Tolerances - Specification and Inspection
- Super Flat Floors
- Trouble-Shooting Slabs on Grade
- Surface Treatments
- Specifications
- Sample Problems and Discussion
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes
- Concluding Remarks and Final Adjournment

## Ontario Electrical Safety Code

### After participating in the course, you will be able to:

- **apply** the electrical code requirements for fire alarms, fire pumps and emergency systems
- **employ** the requirements of the code to ensure they are accounted for in the design, construction and operation of electrical systems
- **use** your knowledge of grounding and bonding requirements in the code
- **better** protect your electrical system with the additional insight gained into the protection and control requirements of the code
- **upgrade** your compliance with the requirements for hazardous locations in the code
- **work** with the code having understood the requirements about motor applications, substations and high voltage lines requirements in the code
- **comply** with the code requirements for wire and cable applications

**DESCRIPTION:** Designers, installers and users are responsible for electrical safety. The Ontario Electrical Code establishes safety standards for design, installation, maintenance and use of electrical facilities for prevention of undue electrical fire and shock hazards.

Excellent code knowledge is a prerequisite to correct specification and application of equipment and wiring in all areas of design, construction, maintenance, manufacturing and the use of electricity. This seminar demonstrates accurate interpretations and applications in areas such as wiring systems, grounding and bonding, protection and control, motors, lines and substations, explosion-proof areas, fire alarms and emergency systems. It also highlights other key standards, including the Building Code, IEEE, NFPA and CSA which are referenced throughout the Ontario Electrical Code.

**OBJECTIVE:** To enhance participants' knowledge in key sections of the Ontario's Electrical Safety Code.

**WHO SHOULD ATTEND:** This seminar will be of interest to engineers and others in design and construction, engineers and other plant personnel, maintenance and safety personnel, contractors, fire and accident investigators, operating personnel, manufacturing, government and electrical utility staff.

### SPECIAL FEATURES

The interactive style of the instructor provides you with ample opportunity to get answers to all your questions relating to Ontario's Electrical Safety Code.

### You will receive the following publications:

- The Ontario Electrical Safety Code - contains the complete Canadian Electrical Code plus the 46 Ontario Amendments.
- C22.1-12 Code Handbook, An Explanation of Rules of the Canadian Electrical Code, Part 1.

**FACULTY:** Khaled Akida, P.Eng., M.Sc

### PROGRAM OUTLINE

- Welcome, Introduction, Workshop Preview, Learning Outcomes and the Assessment Method
- Electrical Code Overview
- Wire and Cable Applications - Sections 4, 12 and 36
- Grounding and Bonding - Sections 10 and 36
- Protection and Control - Section 14
- Fire Alarm Systems and Fire Pumps - Section 32
- Motor Applications - Section 28
- High Voltage Substations and Lines - Sections 36 and 26
- Hazardous Locations - Section 18
- Intrinsically Safe and Non-Incendive Circuits
- Emergency Systems - Section 46
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes

### After participating in the course, you will be able to:

- **select** out of the various types of transformers, motors, variable speed drives, rectifiers, inverters, uninterruptible power systems (UPS), generators, circuit breakers, and fuses that are more suitable for your application.
- **use** diagnostic testing, inspect with the awareness of common failure modes, apply advanced fault detection techniques, and recognize critical components that need more frequent attention.
- **save** cost by enhancing reliability through predictive and preventive maintenance
- **increase** availability of your equipment by appropriate commissioning using the understanding of commissioning requirements gained at the course
- **apply** the new maintenance skills learnt at the course to minimize the operating cost and maximize efficiency, reliability and longevity
- **troubleshoot** the non-performing equipment

**DESCRIPTION:** Maximum efficiency, reliability, and longevity of electrical equipment such as the various types of motors, variable-speed drives, transformers, generators, rectifiers, inverters, uninterruptible power systems, circuit breakers, and fuses are of great concern to many industries. These objectives can only be achieved by understanding the characteristics, selection criteria, common problems and repair techniques for preventive and predictive maintenance. This seminar is a MUST for anyone who is involved in the selection, applications, or maintenance of electrical equipment. It provides the latest in technology. The seminar covers how this equipment operates and provides guidelines and rules that must be followed for a successful operation. Their basic design, operating characteristics, specification, selection criteria, advanced fault detection techniques, critical components as well as all maintenance issues are covered in detail.

### OBJECTIVES:

- To provide a comprehensive understanding of the various types of motors, variable-speed drives, transformers, rectifiers and inverters, uninterruptible power systems (UPS), generators, circuit breakers, and fuses to enable participants better specify, select, commission and maintain this equipment for their applications.

- To achieve reduced capital, operating and maintenance costs along with increase in efficiency.

**WHO SHOULD ATTEND:** Electrical and mechanical engineers, consulting engineers, electrical and mechanical technicians and technologists, project engineers, power plant managers, outage managers, maintenance and operations engineers, marine inspectors, computer technologist, procurement managers, technical sales managers, senior electricians and other technical personnel interested in electrical equipment.

**SPECIAL FEATURES:** Included in the seminar is a book titled “Electrical Equipment Handbook” (600 pages) published by McGraw-Hill in 2003.

**FACULTY:** Ajit Bapat

### PROGRAM OUTLINE

- Welcome, Introduction, Workshop Preview, Learning Outcomes and the Assessment Method
- Overview
- Electrical Switching Stresses
- Typical Substation Design
- High Voltage Circuit Breakers
- Medium-Voltage Switchgear and Circuit Breakers
- Low Voltage Switchgear And Breakers
- Coordination Of Electrical Protection Systems
- Commissioning Tests For LV and MV Switchgear
- Transformers
- Grounding of MV and LV systems
- Standby Generators and Automatic Transfer switches
- Protective Relaying, Control And Metering
- Arc Flash Hazard and Mitigation by Design
- Preventive Maintenance
- Life Extension of Switchgear Control Equipment
- Case Study - Medium Voltage
- Questions and Answers and feedback to Participants on Achievement of Learning Outcomes
- Concluding Remarks and Final Adjournment

# Renewable Energy Projects, Distributed Generation and Grid Integration - Challenges, Opportunities and Solutions

### After participating in the course, you will be able to:

- **identify** the challenges and solutions of renewable energy integration into the power grid having reviewed the basic modeling and operation of wind and solar park.
- **act** with understanding of the complex nature of generation and interconnection contracts.
- **apply** system modeling concepts to wind and solar park systems with the comprehensive understanding gained at this course.
- **exercise** control over cost of renewable energy projects with the understanding of the rationale of tariff and some basis of capital cost estimates.

**DESCRIPTION:** Renewable Energy, particularly Wind and Solar, have become mainstream sustainable- energy technologies and can be used to reduce greenhouse gas emissions. These sustainable resources are changing the energy landscape in Canada and US. These technologies have witnessed a significant global growth. That is also changing the way how power is generated, transmitted and delivered to load centres. It changes the very nature of our grid system and its behavior. The addition of these intermittent resources requires specialized grid operation, protection, and control techniques and methodologies. Their intermittency remains a major concern for the utility operators and adds significant cost to developer’s budget. The integration of variable generation offers unique challenges and opportunities. This course covers from design to the commissioning stage of renewable power projects (wind and solar system) including the various other distributed generation resources such as Fuel Cell and Bioenergy. The course identifies the challenges of integration of these resources from the utility’s perspective. The course also covers practical strategies that energy generators, project developers and grid operators can deploy to overcome these challenges in a cost-efficient and timely manner. The impacts of wind energy and solar system on the power grid are discussed in detail.

### OBJECTIVES:

- To prepare the next generation of renewable energy leaders and help to develop balanced supply mix scenario
- To develop the framework to solve the technical and commercial challenges in cost effective manner

- To present the viewpoints of the utility and the power generators so that both work with mutual understanding and in a cooperative environment

**WHO SHOULD ATTEND:** Engineers and environmentalist, utility engineers, academia (research analysis), local distribution companies, maintenance staff, construction companies, vendors and suppliers, renewable energy companies, consultants and researchers in wind energy, project finance professionals, law practices specializing in power, renewable energy and grid connection agreements, entrepreneurs, commercial and industrial businesses exploring the option of renewable energy projects

**INSTRUCTORS:** Muhammad Amjad, P.Eng., and Corina Rosenberg, P.Eng.

### PROGRAM OUTLINE

- Welcome, Introduction, Workshop Preview, Learning Outcomes and the Assessment Method
- Physics and Engineering of Renewable Energy Technology (Wind and Solar)
- System Design Concept and Applications
- Building Large Scale Wind and Solar Park
- Green Energy Act/Freed in Tariff/Micro FIT
- Ontario Power System
- Planning, Design and Operation of an Electric Power System
- Renewable Energy Integration Issues in Canada
- Contracts and Licensing
- Renewable Energy Approval Process
- Canadian Utility Requirements
- System Stability Issue, FERC Regulation and Fault Ride through Capabilities
- Review Wind Power Plant Restoration
- SCADA for Power Plants
- The Human Machine Interface (HMI) Layer
- Case Studies and Review of Operational Parks
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes
- Concluding Remarks and Final Adjournment

### After participating in the course, you will be able to:

- **make** recommendations on the appropriate ADR techniques for contentious environmental engineering, land development, risk assessment, and impact assessment projects and programs.
- **facilitate** small groups – design groups, guide discussions, solve problems, and achieve a consensus with stakeholders.

**DESCRIPTION:** This hands-on 3-day course provides training and experience in effective “alternative dispute resolution” (ADR) techniques – facilitation, negotiation, mediation and arbitration. The methods are specifically designed for environmental planning and engineering – the main emphasis will be on facilitation techniques for public and stakeholder engagement – ratepayers, NGOs, public meetings, public liaison committees, workshops, focus groups, design charettes, visioning groups, etc.

### OBJECTIVES:

- To design ADR programs and hire the appropriate ADR professionals
- To facilitate any small group effectively
- To help meetings to be more productive
- To build consensus with various stakeholders
- To analyze and solve problems.

Students will lead actual facilitation sessions with fellow students.

**WHO SHOULD ATTEND:** Engineers, CETs, risk assessment practitioners, environmental planners, hydro-geologists, city councilors, urban planners, environmental assessment professionals.

**FACULTY:** Prof. Chuck Hostovsky, Ph.D., MCIP, RPP

### PROGRAM OUTLINE

- Welcome, Introduction, Seminar Preview, Learning Outcomes and the Assessment Method
- Objectives
- Define Alternative Dispute Resolution (ADR)
- Define Conflict
- Review UNESCO Seville Statement
- High Profile Dispute Resolution - Case Study
- Why ADR in Environmental Management?
- The Dispute Resolution (Mediation) Movement
- Desired Environmental Conflict Resolution Outcomes
- ADR Stage 1 – Prenegotiation
- Best Alternative To A Negotiated Agreement - B.A.T.N.A.
- Active Listening and Fact Finding
- Methods of First Contact - Active Listening and Fact Finding
- Methods of Facilitation
- Methods of Negotiation
- Mediation Methods
- Tasks of the Mediator
- Arbitration
- Facilitator Skills
- Facilitation Objectives
- Types of Facilitators
- Designing Facilitated Small Groups
- Group Structure
- Beginning and Ending Facilitated Workshops
- Role of the Facilitator
- Types of Facilitation Techniques
- ADR Training and Certification
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes

## Small Communal Wastewater Treatment Systems

### After participating in the course, you will be able to:

- **discover** the complexity of wastewater treatment and the need to involve regulatory personnel, competent design engineers, and
- **have** an appreciation for the whole task.
- **develop** alternative ways of accomplishing the end result and gain an insight into the reasons why different engineers recommend different systems and processes
- **question** the rationale of the engineering proposals with the knowledge gained from this course
- **operate** the systems as the owner in the designed manner and do the necessary reporting to the authorities.

**DESCRIPTION:** The continued efficient operation of communities wastewater systems without detrimental environmental impact is a growing concern for wastewater system owners. With limited funds available to the owners as well as regulatory agencies, the task of on-site sewage treatment and disposal is becoming increasingly difficult. This seminar addresses issues regarding the legislative framework, technology, and operation of wastewater systems in view of enhancing their efficiency. In addition to conventional systems, this seminar will address large subsurface sewage disposal systems such as those serving groups of buildings, recreational parks etc.

**OBJECTIVE:** To develop skills necessary for trouble-free operation of communal wastewater treatment systems

**WHO SHOULD ATTEND:** Owners, designers and operators of wastewater systems associated with stand-alone facilities and municipal personnel responsible for enforcing regulations.

**FACULTY:** Ronald Zaloum, Ph.D., Montreal, Quebec

### PROGRAM OUTLINE

- Welcome, Introduction, Seminar Preview, Learning Outcomes and the Assessment Method
- Assessment of Participants of Wastewater Knowledge by Way of a Sample Test
- Legislative Framework in Canada
- Wastewater Properties and Characterization
- Treatment Theory and Practice of Stand Alone Technologies
- Overview of Solid-Liquid Separation
- Principles of Waste Treatment Optimization
- Waste Treatment Technologies for Carbonaceous and Nutrient Removal
- Large Surface and Subsurface Sewage Disposal Systems
- Disinfection
- Overview of Solids Disposal
- Sample Test Review
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes
- Concluding Remarks and Final Adjournment





**After participating in the course, you will be able to:**

- **update** your knowledge and skills in contracting, integrating health and safety, data management and reporting, inspections and investigations, negotiating approvals and environmental management
- **gain** an understanding of the legislation that directly impacts solid waste, industrial effluents and air emissions
- **review** practical approaches for environmental compliance as applicable to contaminated site and decommissioning projects, hazardous materials, storage tanks and spills
- **learn** to manage environmental issues carrying substantial liabilities which are subject to regulations of mixed jurisdictions as well as regulatory requirements that are uncertain or confusing
- **benefit** from the opportunity to share your specific situation and problems with other participants and specialists
- **interact** with instructors, practising professionals from industry, consultants, and regulatory personnel who have extensive industrial experience

**DESCRIPTION:** The environmental “command and control” compliance philosophy continues to dominate the government policy agenda and legislative changes continue to reflect current standards and recent court decisions. The only way to avoid liability for non-compliance is to thoroughly understand regulatory requirements. This course enhances your knowledge and skills by increasing your understanding of current environmental compliance issues.

It deals with the current regulatory environment in a variety of jurisdictions, environmental management systems, liability and the interrelationships among federal, provincial, and municipal agencies. The regulations are described and references for information provided. Emphasis is then on the application of regulations in the various areas of concern.

**OBJECTIVES:**

- To review the current environmental regulations, and their implications for provincial, municipal, industrial, commercial and institutional sectors.
- To provide a briefing on new legislative directions
- To explain application of specific environmental regulations on processes and projects.
- To provide knowledge and develop participants’ skills in their major functional areas.

**WHO SHOULD ATTEND:** Environmental managers, coordinators, engineers and scientists and other personnel from environmental as well as from health and safety and environmental departments, corporate/project managers, directors and officers, facility managers, plant superintendents in-house counsel, consultants, regulatory personnel at the federal and provincial levels and municipal personnel responsible for environmental management, waste management and sewage.

**SPECIAL FEATURES:** This course is designed specifically to enhance your knowledge and develop your skills in areas of everyday concern to you. Industrial environmental professionals with limited previous knowledge will become knowledgeable about environmental regulations, while more experienced professionals will benefit from the reference materials and the updates of the regulations. Both will receive a comprehensive overview of the federal and provincial environmental regulations and how they affect industrial processes and projects.

**INSTRUCTORS:** Stephen Lamming, AMEC Environment & Infrastructure, Joanna Vince, Willms & Shier Environmental Lawyers LLP, Jacquelyn Stevens, Willms & Shier Environmental Lawyers LLP, Harry Dahme, Gowlings

**PROGRAM OUTLINE**

- Welcome, Introduction, Seminar Preview, Learning Outcomes and the Assessment Method
- Overview
- Changes to the Canadian Environmental Protection Act
- Water - Federal, Provincial/Municipal
- Environmental Assessment
- Chemical Management Planning
- Consultation and Aboriginal Issues
- Renewable Energy Projects
- Standards Development
- Toxics Reduction Act
- Licenses and Approvals (Air and Noise)
- Noise Assessment
- Spills
- Enforcement: Inspection and Investigation
- Liability and Legal Defence
- Case Study – Prosecution
- Property Transfer and Contaminated Sites
- Dealing with Wastes
- Greenhouse Gases and Climate Change
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes
- Concluding Remarks and Final Adjournment



**EPIC ON-SITE PROGRAM, WHERE AND WHEN IT’S CONVENIENT FOR YOU**

EPIC courses are available as private on-site programs when you need to have a group of employees trained within your organization. They can be identical to the program offered in EPIC brochures, or modified to suit your specific requirements. Take advantage of this opportunity to save time and travel expenses by having our instructor(s) come to you.

**For more information on these programs, please visit our website at: [www.epic-edu.com](http://www.epic-edu.com) or call Tim Chugh at: 1-888-374-2338 ext 242 or email him at [tchugh@epic-edu.com](mailto:tchugh@epic-edu.com).**

**After participating in the course, you will be able to:**

- **use** the principal Canadian standard form construction documents issued by the Association of Consulting Engineers of Canada (ACEC), the Ontario Association of Architects (OAA), and the Canadian Construction Documents Committee (CCDC)
- **recognize** how construction contracts allocate risk among the parties and why it is to your advantage to use standard form construction documents to allocate that risk in a manner that is fair and appropriate
- **minimize** contract disputes and claims by using the standard form contract documents during the course of an engineering and construction project by managing the project fairly

**DESCRIPTION:** A major problem in construction contract relations is the use of ambiguous or conflicting contract documents. Contracts from different projects are often merged without a thorough review, resulting in provisions from one part of the contract conflicting with provisions in another part. Even when new contract documents are written, considerable effort is necessary to ensure that they are complete and consistent, and critical items are not overlooked. You can avoid these problems by using standard documents that are well designed, thoroughly reviewed and accepted by major construction industry organizations.

By participating in this practical new course, you will learn how to reduce the occurrence of these problems by using a standardized set of contract documents that have been developed by various industry organizations in Canada including the Canadian Construction Documents Committee (CCDC). The CCDC is a broad-based coalition of construction industry organizations whose mission is to develop and distribute quality construction documents that are both complete and fair.

**OBJECTIVE:** To impart confidence among participants to use the standard quality construction documents which have minimum ambiguities and conflicting provisions and reflect the current best thinking in the construction industry.

**WHAT YOU WILL RECEIVE**

- Instruction from experienced faculty
- Copies of Canadian standard form construction contract documents
- A comprehensive set of presentation material by the instructor

**WHO SHOULD ATTEND:** Those responsible for developing, managing and using construction contract documents industrial, commercial, institutional and multi-unit residential buildings will benefit from this course, including owners, principals, construction managers, owner representatives, engineers, project managers, contract administrators, consulting engineers, architects, contractors and procurement managers.

**FACULTY:** Michael MacKay, Barrister & Solicitor

**PROGRAM OUTLINE**

- Welcome, Introduction, Workshop Preview, Learning Outcomes and the Assessment Method
- Introduction
- The Bidding Process
- What's New in CCDC-2-2008?
- The Standard Form Building Contract:
- An Overview of Other Standard Form Construction Contracts
- Workshop – Tinkering with the Standard Form through Supplementary Conditions
- Documents for Design Services
- The Content of Agreements for Design Services
- Other Design Services Agreements
- Administrative Documents and Support Forms
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes

## Fundamentals of Supervision and Management

**After participating in the course, you will be able to:**

- **set** development goals and strategies for yourself and your team members
- **identify** and leverage individual motivation strategies for your team with the ways you learn in this course
- **communicate** a vision and identify what you require from your team to be effective in day to day communication
- **delegate** appropriately to ensure that your team can develop their competency without risk to outcomes

**DESCRIPTION:** If you have recently been promoted to a supervisory or management position or want to learn how to become a more effective manager, this course will help you master the basics of business by learning the language of management.

You will learn how to make a successful transition from employee to manager and you'll learn how to manage your time so that you can deal with the constant demands of a managerial job.

You will learn the skills required to delegate responsibility and motivate your employees. A large part of a manager's job involves getting the things done through other people, and this course will help you understand how to influence and direct other people's performance.

Finally, you will learn how to solve problems and resolve conflicts so you can accomplish your job more effectively.

**OBJECTIVE:** To provide participants with an understanding of their own natural management style and, working with that style, to develop strategies, methods and tools to support their goal of becoming an effective manager. The course will also provide them with an understanding of employee motivation and performance management.

**WHO SHOULD ATTEND:** You have made the shift from a technical job to a role supervising, managing or leading people. Anyone who wants to be more comfortable and effective in their management role.

**A WORD TO THE BOSS:** If you have an efficient technical employee you want to succeed in the management or supervisory position, ensure his/her success by sending him or her to this course.

**FACULTY:** Lorraine Elliott

**PROGRAM OUTLINE**

- Welcome, Introduction, Workshop Preview, Learning Outcomes and the Assessment Method
- Leadership and Management
- How are Technical People Different?
- Management Styles
- Motivating Your Team
- Setting Goals vs Creating a Vision
- Goal Setting and Planning
- Time Management
- The Fine Art of Delegation
- Effective Communication Skills
- Facilitating Innovation and Creativity
- Conflict Resolution
- Employee Performance Reviews
- Putting It All Together
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes

### After participating in the course, you will be able to:

- **examine** claims arising from construction
- **discover** in detail the roles and obligations of contractor/consultant/owner
- **protect** yourself in construction contracts
- **recognize** special risk and liability issues
- **apply** your knowledge gained from this course to tendering on construction projects
- **determine** the type of contract that best suits your needs

**DESCRIPTION:** Today's competitive and complex construction industry requires careful consideration in the formation of the construction contract. We all want the work, but are the contracts equitable? Are the specifications and timetable feasible? What is your liability exposure? Properly prepared contractors, subcontractors, architects, engineers, and developers can avoid anticipated liability, reduce performance disputes and receive payment for work performed. In this course you focus on practical solutions for today's construction problems. Relying on years of experience, the instructor will illustrate what you should look for in a contract, exposures to avoid, and ways to protect yourself should a dispute arise.

Actual case examples will be discussed explaining contract performance, how to resolve construction disputes, how to prepare for a litigation case, and the bidding process.

This course covers legal issues from the formation of the contract to the final payment, and is designed to assist construction professionals and their lawyers in day to day business activities.

**OBJECTIVE:** To give a broad overview of legal problems encountered by construction professionals in the industry.

**WHO SHOULD ATTEND:** Contractors, subcontractors, architects, engineers, owners, developers, suppliers, lenders, project coordinators, credit managers, liability insurers and brokers. This course is also recommended for lawyers who want to develop expertise in the field of Construction Contract Law. It is also of interest to municipal, provincial, and federal agencies that engage contractors for public contracts.

**INSTRUCTOR:** Michael Mackay, Barrister & Solicitor

### PROGRAM OUTLINE

- Welcome, Introduction, Workshop Preview, Learning Outcomes and the Assessment Methods
- The Canadian Legal System
- Basic Contract Law
- Types of Construction Contracts
- Construction Bidding and Tendering - Legal and Practical Do's and Don'ts
- Construction Claims Overview
- Changes and Extras
- Workshop – Case Study
- Hidden Risks
- Time is of the Essence
- Liens - One of your Risks on Construction Projects
- Bonds - What Risks do they Cover and to What Extent?
- Architects and Engineers
- Construction Torts
- Taking Care of your People
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes
- Concluding Remarks and Final Adjournment

## Building Mechanical Systems-Design, Operation and Maintenance

## 1.8 CEUs/18 PDHs

### After participating in the course, you will be able to:

- **learn** the fundamentals of plumbing and sanitary systems design
- **gain** a working knowledge of heating, ventilating and air conditioning systems
- **appreciate** the design considerations associated with piping systems, pumps, valves, fans and boilers
- **become** conversant with the requirements of a building fire protection system
- **understand** elevator and escalator installations and their objectives

**DESCRIPTION:** The efficient and reliable functioning of building mechanical equipment and systems is necessary to satisfy production and employee and/or public requirements in a safe and economical fashion. An initial overview of the building code will be presented and the operation and maintenance of building mechanical equipment and systems will be discussed. The fundamentals and basic concepts associated with the operation and maintenance of boilers, pumps, piping, valves, fans and elevators will be discussed. The systems considered in this seminar are water, plumbing and sewer, heating ventilating and air conditioning (HVAC), steam systems, gas systems and fire protection.

**OBJECTIVE:** To provide an understanding of the fundamentals of building mechanical systems, including operation and maintenance, for their continued reliable and cost-effective functioning.

**WHO SHOULD ATTEND:** Design, installation, commissioning, operations, maintenance and other engineers who need to upgrade their current experience and knowledge of building mechanical systems, including mechanical engineers, industrial and commercial plant and facilities

engineers, consultants, property managers, project engineers, and other technical personnel who are responsible for HVAC, utility and plumbing systems. The seminar will be of particular interest to personnel responsible for the management of commercial, institutional and industrial buildings

**INSTRUCTORS:** Alan Powell, Program Director, Doron Weiss, Andrew Wells, KJA Consultants Inc.

### PROGRAM OUTLINE

- Welcome, Introduction, Workshop Preview, Learning Outcomes and the Assessment Method
- The Building Code
- Fire Protection Systems
- Boilers
- Pipe Systems
- Pumps
- Fans and Blowers
- HVAC and Air Chiller Systems
- Plumbing Systems
- Sanitary Works
- Elevator Technology
- Escalators and Passenger Conveyors
- Elevator and Escalator Modernization
- Inspection, Troubleshooting and Maintenance
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes
- Concluding Remarks and Final Adjournment

**After participating in the course, you will be able to:**

- **apply** key fundamentals in the design and operation of HVAC systems
- **perform** air conditioning cycle, load, duct and hydronic piping design calculations
- **select** procedures for efficient operation of various HVAC equipment and systems
- **recognize** energy saving opportunities in HVAC systems using the insight gained at the course into energy cost saving opportunities
- **assess** comfort conditions
- **design** efficient controls for your HVAC systems

**DESCRIPTION:** Mastering fundamentals, sizing, selection, and operation is a must for designers and operators of HVAC systems.

This course covers the fundamentals of HVAC systems starting from Psychrometry and representation and calculations of air conditioning processes and cycles. Cooling and heating load calculations, design of air distribution systems, HVAC equipment and system selection, controls, energy conservation and economics of HVAC systems are all covered in this course. Manufacturer equipment performance data is provided with correction methods when conditions vary from rated values. Performance data are provided for packaged ACs, Roof Top Units (RTUs), air and water heat pumps, furnaces, chillers, compressors, cooling towers, hydronic coils, pumps, and fans. The course also provides many useful rules of thumb to aid the beginning individual in the design and sizing of HVAC systems. The experienced individual will find them useful for a quick design and operation check. Topics are introduced for individuals who have little background on the subject while providing valuable information for personnel having experience with HVAC systems.

**OBJECTIVES:**

- To provide a practical understanding of the theory dictating the design and control of HVAC systems.
- To provide systematic sizing and selection procedures of various HVAC equipment.
- To provide information on efficient operation, energy conservation, and economics of HVAC systems.

**WHO SHOULD ATTEND:** Design and project engineers and technologists, plant and facility engineers, consultants, mechanical engineers and technologists, maintenance and operation personnel and other technical personnel who need to upgrade/refresh their current knowledge of HVAC systems.

**FACULTY:** Mohamed Hamed, P.Eng.,

**PROGRAM OUTLINE**

- Welcome, Introduction, Course Preview, Learning Outcomes and the Assessment Method
- Psychrometry
- Air Conditioning Cycles
- Space Conditions – Comfort
- Cooling/Heating Load Calculations
- WORKSHOP I
- Design of Air Distribution System (Duct Design)
- WORKSHOP II
- HVAC Equipment and System Selection
- WORKSHOP III
- Rules of Thumb (ROT's)
- Controls
- Energy and Costs
- Questions and Answers and Feedback to Participants on Achievement of Learning Outcomes

**Instructors' Bio****CIVIL****Seismic Analysis and Design of Steel and Reinforced Concrete Buildings**

December 4-6, 2012 • Mississauga, ON

**Ashraf El Damatty** is a Professor at the Department of Civil and Environmental Engineering, The University of Western Ontario. He is a Research Associate at the Institute of Catastrophic Loss Reduction and the Boundary Layer Wind Tunnel Laboratory. He has more than 20 years experience in teaching, research and consulting in Structural Engineering. Dr. El Damatty is the Founder and Principal of Engineering Analysis and Dynamics (EAD) specializing in advanced analysis and design of structures. He is Founder and Past Chair of the Steel Committee of the Canadian Society of Civil engineering. He has been a consultant to many private and government organizations in Canada, USA, and the Middle East. He has conducted structural design of a large number of high-rise, medium-rise and industrial buildings in Canada and abroad. He has also conducted field monitoring and seismic testing of a number of structures. He has more than 100 publications in the area of structural engineering. He has been the principal and co-principal investigator of awarded research grants exceeding \$10.0 M.

**Structural Rehabilitation of Bridges**

December 12-14, 2012 • Mississauga, ON

**Khaled Sennah**, Ph.D., P.Eng., P.E., Full Professor of Structural Engineering with Ryerson University, Toronto, Ontario, Canada and the Chair of the Civil Engineering Department. He has over 23 years of research, teaching and industrial experience in the area of structural engineering, with particular emphasis on bridges. He designed and shared in design of major multimillion-dollar projects in United States of America, Canada, Saudi Arabia and Egypt. His core area of expertise includes design, evaluation, retrofit and rehabilitation of bridge infrastructure on which he published more than 100 publications. Recently, he received the 2002 state-of-the-art of Civil Engineering Award and the 1999 Arthur Wellington Prize from the American Society of Civil Engineers, ASCE, and the 1997 P. L. Pratley Award from the Canadian Society of Civil Engineering, CSCE, for best journal papers on Bridge Engineering. He has been collaborating with Ontario Ministry of Transportation in developing prefabricated bridge systems and connection technologies, precast concrete barriers, FRP-reinforced bridge barriers and rehabilitation of bridge girders using FRP technology.

**Structural Engineering for Non-structural Engineers**

January 28-31, 2013 • Mississauga, ON

**Peter Chan**, M.Sc., P.Eng., CBCO has been working as a Building Engineer with the City of Toronto since 1987. Prior to that, he has over 10 years experience with structural consultants in both Ontario and British Columbia designing buildings, bridges and communication towers. He has been serving as a member of the Standing Committee on Structural Design, National Research Council of Canada since 1996. Peter has taught this course for EPIC over a dozen times.

**Wind Effects on Buildings: Design Using the 2010 National Building Code**

February 20-22, 2013 • Mississauga, ON

**Ted Stathopoulos**, Ph.D., P.Eng is a Professor of Building, Civil and Environmental Engineering at Concordia University, Montreal. He is a specialist in the area of wind engineering and building aerodynamics including natural ventilation with more than 30 years of experience. Dr. Stathopoulos has participated actively in numerous external bodies including the ASCE Standards Committee of Minimum Design Loads of Buildings and Other Structures. He has been honored by the American Association for Wind Engineering and he received the 1997 Engineering Award of the National Hurricane Conference for his "exhaustive studies leading to the adoption of the new ASCE-7 Minimum Design Loads for Buildings and Other Structures which is already leading to safer, more hurricane-resistant construction in many areas". He has received the 2012 Alan G. Davenport Medal of the International Association for Wind Engineering and the 2009 Jack E. Cermak Medal of the Engineering Mechanics Institute of ASCE among several other research and teaching awards and distinctions. Dr. Stathopoulos is a professional engineer registered in Québec, Ontario and in Greece; he is Fellow of the Canadian Academy of Engineering and also Fellow and Life Member of the American Society of Civil Engineers. He is the Editor of the Journal of Wind Engineering and Industrial Aerodynamics and member of Editorial Board of the ASCE Journal of Aerospace Engineering and Wind and Structures.

**Ground Anchoring Systems**

February 21-22, 2013 • Mississauga, ON

**Dr. Abouzar Sadrekarimi** is an assistant professor at Western University, London, Ontario. He joined Western after two years of engineering practical experience at Golder Associates Ltd. Dr. Sadrekarimi completed his PhD in Geotechnical

Engineering at the University of Illinois, Urbana-Champaign, one of the leading geotechnical engineering research universities in the world. Dr. Sadrekarimi has over 30 published papers in conferences and journals. He was actively involved in geotechnical engineering and student organizations at the University of Illinois where he founded the Geotechnical Engineering Student Organization and the graduate student chapter of Geo-Institute of the ASCE at the University of Illinois. In addition, Dr. Sadrekarimi has received many awards including the prestigious Ralph B. Peck Fellowship Award, the best student paper award at the GeoCongress 2008 Conference, and the New Madrid Chapter of the Earthquake Engineering Research Institute Award. Dr. Sadrekarimi's current research interests include Geotechnical Earthquake Engineering and Soil Dynamics, Static and Seismic Stability and Deformation of Retaining Walls and Slopes, Critical State Soil Mechanics, Shear Banding and Strain Localization, Influence of Particle Level Deformation Mechanisms (softness and damage) on Soil Behaviour, Laboratory Element Testing, Numerical and Analytical Methods in Geotechnical Engineering, In-situ Soil Testing. Dr. Sadrekarimi is a member of the International Society of Soil Mechanics and Foundation Engineering, American Society of Civil Engineers, and Canadian Geotechnical Society.

#### Asphalt Mix Design

February 21-22, 2013 • Mississauga, ON

**Karim Ismail**, Ph.D., P.Eng. is Assistant Professor with Department of Civil and Environmental Engineering, at Carleton University. He has over 10 years in experience in Education, Research, and Practice in different fields of Transportation Engineering. He is also a present member of Transportation Research Board Surrogate Safety Measure and Pedestrian Committee.

#### Designing and Constructing Concrete Floors on Grade

February 25-26, 2013 • Mississauga, ON

**Dr. Lamyia Amleh**, B.A.Sc., M.A.Sc., Ph.D., P.Eng. is an Associate Professor at Civil Engineering Department of Ryerson University. She specializes in the behaviour and design of structures. Her research includes corrosion of reinforcing steel in concrete, durability of structures, rehabilitation of concrete structures, service life prediction, structural optimization design for durability, and preservation and rehabilitation of infrastructure, with particular emphasis on highway bridges. She has undertaken a very elaborate program including studying the deterioration of bond at the steel-concrete interface at four different stages of corrosion. She also has published numerous research papers, directly related to the deterioration and NDE of concrete structures.

### ELECTRICAL

#### Ontario Electrical Safety Code

January 17-18, 2013 • Ottawa, ON

**Khaled M. Akida**, is an Electrical Engineer with 12 years of experience in power system studies, field testing and EHS program settings. Khaled received his M.Sc. from The University of New Brunswick (UNB). He has managed and executed various projects on power system studies analysis (short circuit, coordination study, arc flash, load flow, power factor correction, harmonics, dynamic stability, and ground grid testing, design and analysis) for major electrical utilities, industrial and commercial facilities in Canada and US. Khaled has various IEEE publications, a technical reviewer at many IEEE journals in power systems and control systems, and a certified electrical safety trainer for GE Energy. Khaled is a very active member for IEEE substation committee on IEEE 81 ground testing (WGE6) and IEEE 80 ground design (WGD7). Khaled has been the recipient of GE Management Award, got many leadership certifications from GE Leadership Development Centre at Crotonville and is the chair of Industry Application Chapter (IAS) @ IEEE Toronto Section. Khaled is a registered P.Eng. in Ontario, Alberta and New Brunswick and Senior Member of IEEE.

#### Electrical Power Equipment – Selection, Commissioning and Maintenance

February 4-6, 2013 • Mississauga, ON

**Ajit Bapat** is well known in the electrical distribution field having served over 40 years in the industry. His expertise in the art and science of ground fault protection is acknowledged in North America. He holds Master's Degrees in Business Administration and Electrical Engineering, specializing in power systems and power system protection, and has particular interest in ground fault protection, digital metering systems, microprocessor based integrated systems for protection, metering, monitoring and control of power distribution systems. He is a member of Professional Engineers Ontario and a senior life member of the IEEE.

#### Renewable Energy Projects, Distributed Generation and Grid Integration—Challenges, Opportunities and Solutions

February 6-8, 2013 • Mississauga, ON

**Mr. Muhammad Amjad**, a professional electrical engineer, has nineteen years of multidisciplinary experience in project planning, designing, financing, procurement and construction of renewable and conventional energy projects. He has been actively involved from prefeasibility to the construction and commissioning stage of the project. He has spent several years in engineering consulting, utility and development sectors. He assisted many energy companies, developers and utilities in managing RFP process, contract negotiation and administration. On technical side, he was involved in system engineering, analyzing emerging energy and power markets, remote metering, and SCADA. He assisted in selecting and procuring the capital intensive equipment (Wind Turbines, Solar Panels, Generators, Substation, Transmission and Distribution), saving millions in project development costs. He has been actively involved in engineering and public policy infrastructure projects

particularly in energy and power in Canada and overseas. On utility level, he was involved in private power development, utility management, smart metering, and restructuring and transmission lines. Currently, Mr. Amjad is working as the Principal, Electrical Engineering Group at SkyPower Corp.

**Corina Rosenberg**, P.Eng., is System Engineering Manager with Curtiss Wright Controls, Engineered Systems. She has over 20 years of experience in system engineering and control systems. She is also a present member of INCOSE (International Council of Systems Engineering) and has served on the board of TASSQ (Toronto Association of Systems and Software Quality) in the past.

### ENVIRONMENTAL

#### Environmental Facilitation, Mediation and Dispute Resolution

January 9-11, 2013 • Mississauga, ON

**Dr. Chuck Hostovsky**, MCIP, RPP has been a faculty member at the University of Toronto for the past 16 years and is now a Professor of City & Regional Planning at the Catholic University of America in Washington, DC. He teaches urban, environmental, waste management, transportation, as well as Alternative Dispute Resolution (ADR). He is presently in practice as a senior environmental planning consultant with the Quartek Group Inc. in Niagara. He holds a baccalaureate degree in Environmental Systems (Toronto), a Masters in Environmental Studies (York) and PhD in Regional Planning & Resource Management (Waterloo). With 25 years experience as a Registered Professional Planner, he previously worked for the Ministry of the Environment, the City of Guelph, CH2MHill, AMEC, McCormick Rankin and the MMM Group. Dr. Hostovsky has been involved in ADR practice in dozens of NIMBY (not-in-my-backyard) infrastructure projects and facilitated over 250 public meetings, focus groups, workshops, and design charrettes involving controversial projects such as landfill sites, wind farms, sewage treatment facilities, highways/roads, mass transit, groups homes, housing developments, etc. He has also negotiated and mediated consensus with stakeholders for many of these disputes. Prof. Hostovsky is extensively published in the refereed literature. He was one of the project managers that resulted in the 2011 Canadian Institute of Planners award for planning excellence in Transportation and Infrastructure. He has two teaching awards, most recently the 2011 Canadian Mortgage and Housing Corporation's Excellence in Education Award for Promotion of Sustainable Practices.

#### Small Communal Wastewater Treatment Systems

January 17-18, 2013 • Ottawa, ON

**Ronald Zaloum**, Ph. D., has earned his Bachelor degree in Chemical Engineering at McGill University, Montreal, a Masters in Environmental Engineering at McMaster University, Hamilton and his Ph. D. in Environmental Studies at Metz University, France. Prior to retiring, he was Program Manager with Environment Canada, Quebec Regional Office, in Montreal, where he was involved in municipal and industrial wastewater treatment. Dr. Zaloum was Adjunct Professor and Researcher at the Department of Civil Engineering and Applied Mechanics at McGill University.

#### Understanding Environmental Regulations

January 28-30, 2013 • Mississauga, ON

**Stephen Lamming** is a Senior Associate and Air Quality Scientist within the AMEC Environment & Infrastructure, Mississauga Office. Dr. Lamming has more than 25 years experience in air quality management including greenhouse gases. His expertise includes meteorology, emissions assessment, impact assessment and climate change mitigation/adaptation. Stephen has worked with municipal, industrial and resource sector clients across Canada and internationally to assess climate impacts; determine emissions; prepare and execute sampling programs; conduct transport and dispersion modelling; assess community impact; develop abatement and monitoring strategies; and prepare permit documentation. He has also been involved in air quality assessment and management studies (including greenhouse gases) as part of the Federal and Provincial Environmental Assessment process for thermal power generation facilities, landfill sites, and linear infrastructure (pipeline).

He has prepared greenhouse gas inventories for industry, resource sector and municipal clients and has worked with companies in preparing emissions trading protocol documentation for NOx emission credits and emissions trading. He has qualified as an expert witness at the Ontario Environmental Review Tribunal and has developed and delivered professional development programs for private and public sector participants in air quality management and greenhouse gas reduction at major centres across the country.

**Harry Dahme** is a partner at Gowlings' Toronto office and leader of the Environmental Law National Practice Group. He has practised exclusively in the area of environmental law since 1984 and has a solid reputation as one of the foremost environmental lawyers in Canada. Harry has been involved in all aspects of environmental law. He regularly advises on environmental risks in corporate transactions. He advises corporations and boards of directors on the development and maintenance of corporate environmental due diligence programs. He provides ongoing regulatory advice to businesses in a wide variety of sectors. He has an active advocacy practice which includes defence to prosecutions, appeals to various tribunals including the Environmental Review Tribunal, and civil litigation with respect to environmental claims. Harry has been consistently recognized by the following: Certified by the Law Society as a Specialist in Environmental Law, Best Lawyers in Canada®, 2006-2013—Leading lawyer in Environmental Law, Canadian Legal Lexpert® Directory 2005-2012 (Consistently recommended, Environmental Law), Chambers Global 2011-2012 (Environmental Law), Who's Who Legal: The International Who's Who of Business Lawyers 2010-2012 (Environmental Law), Listed as a leading environmental lawyer in Canada in the Environment Handbook 2010-2012, published by Practical

Law Company, Lexpert, Canada's Leading Infrastructure Lawyers 2012, 2013 and Listed in the Guide to the World's Leading Environmental Lawyers, 2010.

**Jacquelyn Stevens** is an associate with Willms & Shier Environmental Lawyers LLP. Her practice is focused on civil and regulatory litigation and aboriginal law dealing with environmental issues. Jacquelyn's civil litigation experience includes representing clients in environmental, corporate/commercial and administrative law cases. Jacquelyn has advised both private sector and First Nations clients on legal issues of aboriginal consultation. She also advises clients on contaminated land remediation during civil litigation and real estate matters. Jacquelyn has appeared before administrative tribunals, the Ontario Provincial Court, Ontario Superior Court of Justice and the Ontario Court of Appeal. Jacquelyn has completed two Masters Degrees: a Master of Studies in Environmental Law from Vermont Law School, with a focus on International Environmental Law and Sustainable Development; and a Master of Science degree in Geology from St. Francis Xavier University. With her background in Earth Sciences, Jacquelyn works effectively with technical consultants.

**Joanna Vince** is an associate with Willms & Shier Environmental Lawyers LLP. Joanna's practice includes litigation of civil and regulatory environmental claims, defending prosecutions and appearances before environmental and energy tribunals. She advises clients on the remediation and redevelopment of contaminated land, risk management and environmental due diligence. Joanna assists clients to plan, structure and implement renewable energy projects. Joanna obtained her B.Sc. (Honours) from the University of Toronto specializing in biology and environmental science. Joanna received her J.D. and a Certificate in Environmental Studies from the University of Toronto and was called to the Bar of Ontario in 2011. Joanna was a summer and articling student with Willms & Shier Environmental Lawyers LLP.

## GENERAL & CONSTRUCTION

### Using Standard Form Contracts for Construction and Design Services

December 3-4, 2012 • Mississauga, ON

**Michael MacKay** has practiced law in Toronto for over 21 years, the last 19 almost exclusively in the field of construction law, and the last 14 at his own firm. He was a member of the Ontario Bar Association's Construction Law Section's Executive Committee from 1993 to 2009, and for most of that time co-edited its newsletter "Nuts & Bolts". He is a frequent contributor to the Construction Law Letter. For the last 14 years, he has travelled across Canada to talk on construction law topics – including a complete construction law course for EPIC.

### Fundamentals of Supervision and Management

January 17-18, 2013 • Ottawa, ON

**Lorraine Elliott** is a Career Management Coach with many years experience recruiting, managing and coaching talented technical employees. She brings a unique and first-hand perspective to managing technical teams and individuals and ensuring that technical people are given support and leadership in a way that inspires them to be aligned with the values and vision of their employer, and therefore to be both productive and retained. Lori holds a B.Sc. from the University of Toronto, post-graduate teaching qualifications in Adult Education and is currently finishing a M.Sc. in Organizational Psychology at the University of London (UK). She is presently Director of Coaching with NEXCareer in Toronto as well as an organizational development and performance consultant in her own practice.

### Foundations of Construction Law

January 21-22, 2013 • Mississauga, ON

**Michael MacKay** (See bio on "Using Standard Form...")

## MECHANICAL

### Building Mechanical Systems-Design, Operation and Maintenance

December 5-7, 2012 • Mississauga, ON

**Mr. Alan Powell** is a Program Director with EPIC (Educational Program Innovations Center) who has over 30 years experience in the maintenance of industrial facilities. After graduating with a Master of Science degree in Engineering from the University of Manchester in England, he immigrated to Canada. During his career he has developed maintenance programs, introduced significant maintenance cost saving concepts and managed a process to revise the preventive maintenance program in many large facilities. He has authored and presented several papers on maintenance at national and international conferences.

**Doron Weiss**, P. Eng. is a Commissioning Agent and his responsibilities range from overall project management to hands-on performance verification of mechanical systems, including HVAC, fire protection, sanitary and storm drain, fuel storage, and fuel distribution systems. Prior to becoming a Commissioning Agent, Mr. Weiss successfully designed and administered the installation of a number of complete mechanical systems in public, administrative and telecommunications buildings. His experience includes mechanical design of HVAC, fire protection, sanitary plumbing and drainage, piped gas, and steam supply services for institutional, commercial and industrial buildings, as well as peer reviews to confirm appropriate design. Mr. Weiss also possesses a wealth of knowledge regarding work in the international arena, having worked on many projects in Nigeria, Israel, and Ireland.

**Andrew Wells** is a Registered Professional Engineer (Ontario), Elevating Device Mechanic (Class F, Ontario), QEI-1 Qualified Elevator Inspector (NAESA - USA) and a graduate from Ryerson Polytechnic University with a Bachelor of Civil Engineering. Mr. Wells was self-employed in the property management field prior to joining KJA in 1997. Mr. Wells is General Manager and is currently involved with all aspects of company operations including traffic analysis, preparation of specifications and project supervision, system examinations for maintenance, due diligence, reserve fund and insurance claim reviews. Mr. Wells has been involved with the development, tendering and implementation of quality assurance supervision programs and maintenance agreements for several organizations. Mr. Wells played major roles in the development, engineering, tendering, and supervision relating to the vertical transportation systems for numerous projects.

### Fundamentals, Sizing, Selection, and Operation of HVAC Systems

February 4-6, 2013 • Mississauga, ON

**Dr. Mohamed S. Hamed**, Ph.D., P.Eng. is a Professor of Mechanical Engineering and founding director of the Thermal Processing Laboratory (TPL) at McMaster University. Dr. Hamed has 28 years of industrial experience in the field of thermal engineering, five years of which as Director of Research and Product Development in Canada. Dr. Hamed has developed and presented numerous training courses and seminars in the field of HVAC and Refrigeration, Renewable Energy Systems, Energy Conservation and Management, Boiling Heat Transfer, and Two-phase Flows. He has served as a consultant in many projects in Canada and abroad. His industrial experience includes design, sizing, process development, troubleshooting, and maintenance of domestic and industrial HVAC systems, air washers, cooling towers, heat exchangers, water, oil, steam and gas piping systems, various types of heat treating ovens and furnaces, fluidized beds, water and gas quench systems, solid-gas separation systems, and furnace atmosphere generators. Dr. Hamed is a registered Professional Engineer in the Province of Ontario and a member of various professional associations such as ASHRAE, ASM International, TMS, CSME, CFD Society of Canada, ASME, and a senior member of SME. He is also an editorial board member of the Transactions of the CSME, the International Journal of Microstructure and Materials Properties (IJMMP), and the International Journal of Computational Thermal Sciences. Dr. Hamed is a program director with EPIC Educational Program Innovations Center.

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The fee for the course is \$1,795 + HST. If you register after November 2, 2012 the fee increases to \$1,965 + HST.
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- Ground Anchoring Systems**  
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The fee for the course is \$1,295 + HST. If you register after January 18, 2013 the fee increases to \$1,465 + HST.
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Course Code: 03-0105-2265  
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- Building Mechanical Systems-Design, Operation and Maintenance**  
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- Fundamentals, Sizing, Selection, and Operation of HVAC Systems**  
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Course Code: 03-0202-2265  
The fee for the course is \$1,795 + HST. If you register after January 4, 2013 the fee increases to \$1,965 + HST.

**Course Locations**

**Mississauga, ON**  
 EPIC Learning Center  
 5670 McAdam Rd  
 Mississauga ON L4Z 1T2  
 Phone: 1-888-374-2338

**Ottawa, ON**  
 Radisson Hotel Ottawa Parliament Hill  
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- Gas & Steam Turbines
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- Control Valves
- Vibration Control
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- Storm Water Control
- Waste Water Management
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