Professional Development in Environment

CALENDAR

School of the Environment
UNIVERSITY OF TORONTO

learn.environment.utoronto.ca
@EnvironmentAtUT
Welcome to the School of the Environment

The need for solutions to environmental issues has never been greater.

Sustainability, energy, climate change, mitigation and adaptation, extreme weather, biodiversity, land use, air quality, conservation, water, resource use, and health are among the challenges we face.

With a focus on interdisciplinary studies, the School of the Environment at the University of Toronto has an opportunity to make a difference. By bringing together scholars from many disciplines, students interested in the environment, and the wider community beyond the University, we are well placed to contribute to understanding and improving the complex relationships between humans and the environment in which we live.

As such, the School’s mandate is to enhance and expand environmental teaching and research within the Faculty of Arts and Science. It aims to involve multiple units in offering environmental programs as shared endeavours and to support research and scholarships that build on existing disciplinary strengths. It provides an intellectual home for students in environmental programs, including academic advising and enhanced research opportunities, with a focus on rebuilding shared undergraduate teaching programs; developing graduate programs; maintaining sustainability-related co-curricular opportunities; and offering high-quality professional development opportunities.

Take this opportunity to discover what the School has to offer.

Kimberly Strong, Director, School of the Environment
University of Toronto

About Our Professional Development Program

In today’s competitive marketplace, a strong economy requires a well-educated and highly skilled workforce. We are teaching and training tomorrow’s experts to meet these challenges by providing valuable knowledge, opening new career paths, fuelling economic growth, and helping learners achieve their personal and professional goals.

The School of the Environment at the University of Toronto specializes in innovative education for working professionals. Our applied and professional programs are developed in collaboration with industry experts and taught by leading industry practitioners ensuring current and leading-edge knowledge and skills.

Courses, seminars, and workshops are developed for mid-career professionals and entrepreneurs who need to enhance their expertise, internationally educated professionals augmenting credentials for the Canadian context, and recent college and university graduates seeking to advance their careers.

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Leading organizations are aware of compliance challenges, increased focus on sustainability, and related risks and opportunities from the impacts of climate change. Both public and private institutions face a combination of increased stakeholder demands and regulatory compliance requirements that influences operational and business decisions.

Risks related to climate change can be physical, regulatory, reputational and/or legal. Institutions are challenged to integrate economic, environmental and social issues into their business models and, simultaneously, to deliver increasing value to their stakeholders. New and evolving regulations and economic instruments, both internationally and domestically, such as carbon taxes, cap-and-trade systems, new building codes, and fuel emission standards impact business operations and a company’s competitiveness.

This creates a need for educated professionals who can interpret and apply these factors to their organization’s business model and goal.
The Intergovernmental Panel on Climate Change recently declared it is extremely likely human influence has been the dominant cause of the observed climatic changes. In response to the changing climate, governments across the world are developing policies and regulations to limit greenhouse gas (GHG) emissions. The greenhouse gas accounting, reporting and verification aspects of the program are grounded in ISO standards. The combination of practical and theoretical components will provide individuals the tools required to steer their organizations in the direction of sustainable practices and to meet the challenges of an expanding regulatory framework and the increasing need for sustainable initiatives.

Explore the causes and impacts of global warming; government policies and the economics of climate change; strategic planning to respond to and minimize climate change; and the financial, environmental and business aspects of adaptation and mitigation efforts.

Climate Policy  CCP 400

The Intergovernmental Panel on Climate Change recently declared it is extremely likely human influence has been the dominant cause of the observed climatic changes. In response to the changing climate, governments across the world are developing policies and regulations to limit greenhouse gas (GHG) emissions. For a variety of reasons, the development of climate policies and their related regulations have progressed at different rates in various jurisdictions across the globe.

In this course, you will explore the current state of international, national, and sub-national climate-change policies relevant to Canada and its major trading partners. It will also provide you with the tools and knowledge to critically assess the performance of climate policies both from the regulatory and from the industry perspectives. This course is dynamic; it provides real-life examples, and will give students the opportunity to apply their knowledge in the development of a GHG mitigation strategy on a company of their choosing.

Students who complete this program will be prepared to create and implement an effective response plan to climate change issues that will reduce environmental damage and give your organization a strategic and competitive edge.

Required Courses:
- CCP 400 Climate Policy and Corporate Responses
- CCP 401 Sustainability Reporting
- CCP 402 Greenhouse Gas Accounting and Reporting
- CCP 403 Greenhouse Gas Validation and Verification
Climate Change Policy and Practice

Sustainability Reporting  CCP 401

Corporate social responsibility programs are considered an organizational best practice. A focus on sustainability helps organizations manage their social and environmental impacts, improving their bottom line. Just as importantly, the disclosure of such activities has become a topic of importance for organizational stakeholders, such as employees, customers, investors and the government. Widely documented and researched benefits to sustainability reporting and disclosure include: an improved organizational reputation; a more loyal and engaged workforce; improved access to capital; and increased organizational efficiency and resource reduction.

In this course, you will explore current best practices and theory behind sustainability reporting. This course will enable you to either begin producing sustainability reports or to enhance current sustainability reporting initiatives.

GHG Accounting and Reporting (ISO 14064-1)  CCP 402

This course will cover important principles and concepts of GHG accounting and reporting at both the organizational and project levels. You will learn to navigate the technical requirements of the major regulated and voluntary GHG cap-and-trade and offset schemes while learning how GHG accounting and reporting considerations affect the environment.

By the end of the course, you should be capable of overseeing the development of an organizational GHG inventory report or a GHG emissions reduction report.

The objectives are to:

- Introduce the concepts of GHG accounting and reporting at the organization and project levels;
- Describe the science of climate change and the role of accounting and reporting in climate change mitigation;
- Provide an introduction to the concepts and development of organizational GHG inventories;
- Introduce the concepts and principles of GHG projects and offset generation; and
- Provide an overview of corporate GHG strategy development.

“The topics covered gave us a good idea of the processes involved.”

“This course provided us with a good overview of the relevant documents that exist in the field.”
Greenhouse Gas Validation and Verification (ISO 14064-3)  CCP 403

This course will provide detailed training on the approach to using the ISO 14064-3 standard, with specific examples of how verification will be applied to a GHG inventory prepared according to the ISO 14064-1 standard, and/or a project that conforms with the ISO 14064-2 standard. An overview of GHG Inventory and Project accounting (following ISO 14064-1, ISO 14064-2, respectively) is explored.

The core value of this course is to emphasize the need for accuracy and consistency with GHG verification as requirements become more rigorous and industry progresses from voluntary reporting towards regulatory compliance.

Learn about seminars and workshops at environment.utoronto.ca

The School of the Environment at the University of Toronto hosts on-going Environment, Environment & Health, and Memorial Lecture Series where student scholarships are awarded. All seminars are held during the regular academic year and are open to both students and the general public.

These seminars bring leading local, national, and international scientists and professionals to speak about current research and issues surrounding the environment. These seminars also create an opportunity for students and the public to hear from and interact with experts in their fields of study.
Environmental management includes impact assessment, but also involves other strategies and tools, such as adaptive management, risk assessment, environmental site audits, assessments, remediation and conflict resolution.

The program is designed to bridge the gap between theoretical knowledge and methodologies of environmental management with a detailed deconstruction of Canadian issues.

The Certificate Program is comprised of four courses:
- CEM 400 - Fundamentals of Environmental Management
- CEM 441 - Urban Sustainability
- CEM 402 - Strategies in Environmental Management
- CEM 403 - Environmental Risk Assessment

NEW - The Advanced Certificate Program is comprised of six courses:
- CEM 400 - Fundamentals of Environmental Management
- CEM 441 - Urban Sustainability
- CEM 402 - Strategies in Environmental Management
- CEM 403 - Environmental Risk Assessment
- CEM 444 - Global Environmental Issues
- WRM 402 - Urban Water Issues
We are becoming increasingly aware of the far-reaching impacts of humans on the natural environment. The study of environmental management requires an understanding from a multitude of perspectives, drawing on skills from numerous areas. The effects of environmental management can be critical for both developed and developing countries, often requiring different approaches and decision-making processes. Through an interdisciplinary approach, this course will explore environmental issues and you will acquire skills required in the decision-making process for environmental management.

“The Certificate in Environmental Management laid the foundation for achieving my desired career focus—management consulting with a sustainability focus. Since completing the course, I have gone on to establish a new consulting practice in green information technology at my firm. Given my busy schedule, it was near impossible for me to take a full-time course—the distance education program fit in well, and it had all the ingredients (great instructional support, team work, real-time chat) that make for a good learning environment.”

TD, Kingston, Jamaica

Currently, 54% of the world’s population resides in urban areas and this percentage is projected to steadily increase over the coming decades. Moreover, the environmental impacts of urban areas in many parts of the world, which are substantial and far-reaching, provide compelling reason to transition towards more sustainable forms of urban development. It is well established that urban areas typically have substantial ecological footprints and, in the case of large cities, the associated footprints can be several hundred times greater than their actual land bases, representing local, regional and global impacts.
Environmental Management

Strategies in Environmental Management  CEM 402

All human activity has an impact on the environment in which we live. In this course, you will explore various environmental management strategies and the roles played by different stakeholders in dealing with the various types of conflict and uncertainty that may arise, building on themes introduced in CEM 400.

The role of each level of government in Canada in environmental management will be explored, from the development of specific environmental regulations and the definition of environmental impact assessment procedures to broader policy decisions with environmental consequences. Approaches to environmental management (such as visioning, adaptive management, and decision analysis) are explored, drawing on examples nationally and internationally.

Moreover, given that even the best-laid environmental management plans may not prevent conflicts from arising between stakeholders, this course reviews dispute resolution techniques.

“CEM 402 provided a holistic view of environmental management. I learned a great deal about management options, stakeholder involvement, and the process for dealing with conflict and uncertainty. I have been able to incorporate these principles into my daily work. I really enjoyed the topic—it confirmed that this is the right direction for me professionally.”

CC, Victoria, BC

Environmental Risk Assessment  CEM 403

Risk assessment is a critical element of environmental management. This course begins by examining the definition of risk in the context of environmental management and compares expert and laymen approaches to risk assessment. You will explore exposure measurement, toxicology, and epidemiology as ways to assess environmental risk in terms of effects on human health and safety, including tools used to analyze technology and process-related risks such as failure mode analysis and fault trees.

“CEM 403 provided a new perspective on environmental problems from the risk point of view.”

“The instructor was knowledgeable and presented the information clearly and attended to students’ questions on time.”
Global Environmental Issues  CEM 444

This course aims to provide students from a wide variety of academic and professional backgrounds with a broad and comprehensive understanding of contemporary global environmental issues; encompassing the driving forces, nature of the impacts on the planet and populations in different parts of the world, and range of responses and strategies at different scales to address these issues. Course material will also examine the governance of the global commons, which includes a few success stories to date, along with obstacles and formidable challenges for the foreseeable future. Course content will draw from academic and non-academic sources, highlighting experiences and lessons learned to date in confronting global-scale environmental challenges.

Urban Water Issues  WRM 402

This course looks at urban water issues from an environmental management perspective. Taking an interdisciplinary approach, the course examines water as a resource and the ways in which science, policy, decision-making, ethics, and corporate approaches play out in the management of water in the urban context.

Further, the course incorporates international perspectives on the major challenges implicit in providing adequate water supply and ensuring water quality to expanding urban populations while, at the same time, maintaining the integrity of natural systems. Through case studies drawn from Canada and other parts of the world, the responses and strategies of various urban areas are investigated.

Read the course schedules at learn.environment.utoronto.ca
“ I recommend Environmental Distance Learning at the University of Toronto to anyone who is passionate about the environment, who is seeking personal knowledge in the topics, and who truly wants to broaden their skill sets.

Distance Learning at U. of T. not only embraced me and enabled me to succeed in my education endeavours, but also provided a wealth of knowledge and opened my mind to another level. ”

AA, Carnation, WA, U.S.A.

“The Certificate in Environmental Management Program at the University of Toronto was a perfect way for me to obtain a solid and credible educational background in the field of Environmental Management. This gave me a base to switch into an environmental career from an unrelated one.”

KM, Toronto, ON

Find answer to FAQs at learn.environment.utoronto.ca
GIS (Geographic Information Systems) is a rapidly expanding computer technology field involving mapping and analysis of spatial data. GIS is a powerful tool for the analysis of geographic information and in decision-making. It is a technological application, which can be used across various disciplines.

GIS enables the user to assess and manage existing conditions, and help predict future conditions. GIS is used today in fields as diverse as criminal justice, marketing, economic development, public health administration, environmental assessment, risk analysis, ecology, urban planning, emergency management, real estate, education etc.

The Certificate in GIS for Environmental Management provides students with a broad exposure to the principles and applications of GIS. Students will develop a strong foundation in GIS and Remote Sensing theory and techniques and GIS software skills.

The Certificate in GIS for Environmental Management is comprised of four courses.

Required Courses:

• GEM 400- Introduction to GIS for Environmental Management
• GEM 401- Advanced GIS for Environmental Management

And any two of the following:

• GEM 402- Geospatial Technologies for Environmental Mapping with GIS
• GEM 403- Environmental Remote Sensing
• GEM 404- GIS Modeling for Environmental Applications
• GEM 405 - Advanced Remote Sensing Techniques for Environmental Applications

Certificate of Advanced Study in GIS for Environmental Management is designed for professionals who wish to achieve greater conceptual understanding and technical expertise to master the field of GIS.

The Advanced Certificate is comprised of six courses:

• GEM 400- Introduction to GIS for Environmental Management
• GEM 401- Advanced GIS for Environmental Management
• GEM 402- Geospatial Technologies for Environmental Mapping with GIS
• GEM 403- Environmental Remote Sensing
• GEM 404- GIS Modeling for Environmental Applications
• GEM 405 - Advanced Remote Sensing Techniques for Environmental Applications
Introduction to GIS for Environmental Management  GEM 400

This course provides an introduction to digital mapping and spatial analysis using a geographic information system (GIS). The course begins by building a foundation of fundamental concepts such as scale and map projections, critical to all future GIS analytical work. You then learn how to create maps, input data, and use GIS software to analyze geographic problems, and learn techniques that can be applied to environmental management as well as to a variety of other subject areas. You will use leading-edge industry data and a case study provided by EcoLog ERIS.

Advanced GIS for Environmental Management  GEM 401

This course builds on GEM 400 and covers advanced topics in spatial analysis and data modelling using GIS for environmental management. The goal is to provide a comprehensive introduction to the techniques and functions used in the analysis of spatial data to help in the understanding of the patterns and processes that lie beneath the features represented in the spatial database.

You learn how to analyze spatial patterns, such as indicators of environmental risk and amount of forest interior available for wildlife, and how to create and analyze three-dimensional surfaces, visualize geospatial data, and understand point patterns and spatial autocorrelation. The course concludes with a discussion of GIS implementation and project management.

"The GEM 400 course is very ‘real.’ It is designed to provide solutions to problems we encounter around us and to provide fast and accurate responses to queries. The most interesting thing is the applicability of GIS to so many sectors (precision agriculture, hazard management, navigation, monitoring, et cetera). I really enjoyed the training modules to get the hands on experience with the guidance of the instructors."

VS, Osaka, Japan

"GEM 401 course content was very good, with easy-to-understand, relevant handouts. I liked the hands-on approach to GIS software and the supporting theory. Also, a great instructor, who has lots of experience in this field."

LM, Saskatoon, SK
This course introduces fundamental concepts of geospatial information in relation to environmental studies. It outlines fundamentals of geographic coordinate systems and projections, content and layout of topographic maps, map reading, interpretation and measurement, as well as using topographic maps as a base for thematic mapping.

Aerial photographs, widely used in many environmental management applications, are also discussed in detail. The course introduces different types of images, their specific features, and their use for different applications. This part of the course culminates into theoretical and practical aspects of visual image interpretation, as a result of which a thematic map is usually created. The course introduces fundamentals of map design, specifically for thematic maps that compliment any environmental study. Another part of a typical project requires collection of data in the field. Basics of techniques and instruments for such activities are introduced in the course with the emphasis on spatial data sampling. In addition, global position systems (GPS) and mobile mapping technologies are an inherent part of the course, which culminates on issues of integration of modern IT and wireless technologies and their impact on cartography, mapping, and GIS. The overall goal of this course is in developing confidence in interoperability of geospatial methods and technologies for assessment and monitoring of environmental resources.

As someone who is extremely busy with work and home life, I was in search of a program that would allow me the flexibility to learn and which still provided me with the level of education I expect from a top university. I was attracted to U. of T. for two reasons—the Environmental program was a one-of-a-kind program with topics of my interest, and after extensive research, I found U. of T. to be a top university when compared to others from around the world.

PB, Rio de Janeiro, Brasil

Environmental Distance Learning at the University of Toronto is a great tool for professionals all over the world. I would recommend Environmental Distance Learning at the University of Toronto for Environmental Agencies workers all over the Americas, federal and state level.

AA, Carnation, WA, U.S.A.
Environmental Remote Sensing  GEM 403

This course introduces students to the principles of remote sensing (RS) and develops basic skills in using RS data and techniques for environmental studies. The first part of the course will cover principles and techniques of acquisition, enhancement, and analysis of RS imagery, as well as visual and computer-based image interpretation. The second part deals with application of RS principles and data in environmental studies. Topics include the use of RS for environmental applications related to different studies of vegetation, soil, water, air, and land use/land cover.

You will develop an understanding of inventorying, mapping, and monitoring the Earth’s natural resources through the measurement, analysis, and interpretation of electromagnetic energy emanating from features of interest. You will also acquire hands-on experience in digital image processing using the image analysis package integrated into ArcGIS software. A series of laboratory works is designed to lead you through the key steps in processing satellite images to detect, extract, and evaluate quantitative information about different objects on the Earth’s surface.

“ I really like remote sensing! This course engages many different students from a variety of backgrounds. My favorite theme in this course was change detection and vegetation analysis. ”

“ I enjoyed the ESRI online tutorials and the lab work. It’s great to have the opportunity to apply what you’re learning and see the results. ”

GIS Modelling for Environmental Applications GEM 404

This course provides you with a theoretical understanding and practical experience in GIS modelling for specific environmental applications. It introduces new environmental applications to GIS modelling techniques and methodologies used in combination with GIS analysis techniques for spatial modelling for environmental applications. You will acquire hands-on experience in spatial modelling using the GIS package with extensions.

You will gain a theoretical understanding in addition to practical experience in GIS modelling for specific environmental applications. It will introduce new environmental applications to GIS modelling techniques and methodologies to use in combination with GIS analysis techniques for spatial modelling for environmental applications. The discussed environmental applications relate to natural resource use as well as engineering tasks.
Building on the fundamental remote sensing concepts, techniques, and environmental applications introduced in the GEM 403-Environmental Remote Sensing course, this course aims at broadening with advanced and current topics in processing and analysis of remote sensing images for environmental applications. This course focuses on the use of hyperspectral, LiDAR and RADAR data to study land, ocean, and atmospheric environmental processes. Specific topics include, but are not limited to, hyperspectral image classification and accuracy assessment, multi-sensor thermal data analysis, air-borne LiDAR data processing, atmospheric laser profiling, application of LiDAR data for environmental studies.

Students will have the opportunity to deepen their hands-on experience in digital image processing using various image analysis packages. A series of laboratory works are designed to lead students through the key steps in processing satellite images to detect, extract and evaluate quantitative information about different objects on earth. This course introduces advanced remote sensing techniques that are increasingly used in environmental research and applications.
Renewable energy is becoming one of the fastest growing industries in the face of the current environmental crisis, resulting from dependence on fossil fuels and unprecedented global rate of development.

The program will explore historical and current perspective on forms of renewable energy, their current usage in developed and developing nations, drivers in forming markets, and political will. The interdisciplinary approach of this program challenges the learner to explore the impacts of renewable energy on the current global energy picture.

Grounded in a holistic approach to sustainable development, the program aims to develop strategic, consensual, and inclusive solutions to the renewable energy and environmental management case studies.

The Certificate Program is comprised of four courses:

Two compulsory courses:
• CRE 400 - Principles of Renewable Energy
• CRE 401 - Biofuels

Two of the following courses:
• CRE 402 - Wind Energy
• CRE 403 - Urban Energy Systems
• CRE 404 - Solar Energy
Principles of Renewable Energy  CRE 400

The current flow of energy into the growing global economy is not sustainable. Renewable energies have become increasingly popular and more common, with policy drivers being put in place to increase their use and production.

A wide range of bio-fuel options were presented. Readings focused on issues on both developed and developing countries.

Biofuels  CRE 401

In this course, we investigate a specific case of renewable energy: biofuels. Through an in-depth investigation of biofuels, you will explore renewable energy, both in the Canadian and global context. You will also examine the various feedstocks we use to produce biofuels, the various types of biofuels, and policy approaches. You will review how biofuel production can offset or replace conventional fuels in both developed and developing nations, and examine the possible repercussions of biofuel production, including a consideration of life-cycle analyses and sustainability issues.

Wind Energy  CRE 402

Wind energy has been used for centuries for irrigation and milling purposes, but today its main application is the generation of electricity. Market shares of renewable energy technologies have grown dramatically over the past few years. In 2008, the global wind energy capacity increased by almost 30 per cent, and in the European Union, renewable energy technologies provided the majority of newly installed power generation capacity, with wind supplying the largest share (Global Wind Report 2008).

Nevertheless, wind power is not without its drawbacks, and studying its many aspects is important in understanding its benefits and limitations. This course takes an interdisciplinary approach and covers the important facets of the wind energy sector. The ultimate goal is to give you the necessary background knowledge to evaluate wind power projects in an informed and unbiased manner.

DM, Halifax, NS

“A wide range of bio-fuel options were presented. Readings focused on issues on both developed and developing countries.”

The CRE 400 course covered all aspects of renewables. Each division was touched upon. It provided a great overview for the field. The course readings were interesting and greatly added to my knowledge of the subject matter. Quite simply, I enjoyed learning about this subject and hope to take it further.”
The solar energy transmitted from the sun to the Earth each year is roughly 10,000 times the amount of energy humans currently derive from fossil fuels and nuclear energy. As early as the 1900s, scientists and engineers developed technologies to actively harness this energy and put it to work, only to have these devices displaced by inexpensive and energy-dense fossil fuels. Can modern solar technologies compete economically with such fuels? Will concerns about anthropogenic climate change and other environmental threats usher in a new solar age?

In this course, you will seek to answer these questions using an interdisciplinary approach. The basic science of solar radiation will be reviewed as well as the history of its use. Photovoltaic (solar to electricity) systems will be studied in detail as well as active and passive solar-thermal energy systems. The environmental and economic benefits, as well as costs, of solar technologies will be investigated along with the influence of environmental policy and economic factors on the feasibility of such systems.
Renewable water resources at both the global and local levels will undergo marked changes in our lifetime. Population growth in urban centres, climate change and an increasingly dependent energy infrastructure on water creates a dynamic and challenging context for ensuring adequate financing and responsible development for use of water.

The Certificate in Water Resource Management aims to increase participants’ water IQ, as well as provide a coherent basis for learning about current and emerging water issues at the global, regional and local scale. We will focus on institutional and economic aspects of water in the context of climate change and expected water scarcity. Specifically, the course will present a critical overview of the value placed on water – both explicit and implicit – in today’s societies.

Courses from other program streams complement the focus on the significant role that water development and responsible use play in energy, cities etc. as well as useful techniques (e.g. GIS) for further research and learning.

Three compulsory courses:
• WRM 400 - Water Resource Management
• WRM 401 - Water Auditing
• WRM 402 - Urban Water Issues

And one of the following courses:
• CRE 400 - Principles of Renewable Energy
• GEM 400- Introduction to GIS for Environmental Management

Read the course schedules at learn.environment.utoronto.ca
Population growth in urban centres, climate change, and energy infrastructure increasingly dependent on water creates a dynamic and challenging context for ensuring adequate financing and responsible development for use of water.

The course provides a critical overview of water issues with particular reference to the connections between water and broad economic activities and social goals such as food production, energy, transboundary water conflicts and co-operation, and human health. The impacts of climate change on water resources will be a key theme raised throughout the course as will the different challenges facing developed and developing countries.

An expanding population, urbanization, escalating standards of living, and climate change all place pressure on the world’s water resources. Its treatment, distribution, usage, and waste management are all key issues for both urban and rural populations. The ability to understand, manage and then reduce your water footprint will be key to the ability of your business to manage these risks.

This course provides a thorough overview of the issues facing the world’s water supply, including current best practices to manage and reduce a water footprint. You will learn best practices for water consumption management and related resource and waste management issues to ensure your organization is managing its water footprint effectively and economically.

“ Very interesting subject matter and good balance of issues.”

“ I like the interdisciplinary outlook of the course and how it duels on important issues of our daily lives. ”

“ The course provided a broad coverage of issues related to water resource management. ”

“ Every week presented and concentrated on a new and interesting topic.”
Urban Water Issues  WRM 402

This course looks at urban water issues from an environmental management perspective. Taking an interdisciplinary approach, the course examines water as a resource and the ways in which science, policy, decision-making, ethics, and corporate approaches play out in the management of water in the urban context.

Further, the course incorporates international perspectives on the major challenges implicit in providing adequate water supply and ensuring water quality to expanding urban populations while, at the same time, maintaining the integrity of natural systems. Through case studies drawn from Canada and other parts of the world, the responses and strategies of various urban areas are investigated.

“Environmental Distance Learning at the University of Toronto is a great tool for professionals all over the world. I would recommend the program for Environmental Agencies workers all over the Americas, federal and state level.”

PB, Rio de Janeiro, Brasil

Principles of Renewable Energy  CRE 400

The current flow of energy into the growing global economy is not sustainable. Renewable energies have become increasingly popular and more common, with policy drivers being put in place to increase their use and production.

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“The CRE 400 course covered all aspects of renewables. Each division was touched upon. It provided a great overview for the field. The course readings were interesting and greatly added to my knowledge of the subject matter. Quite simply, I enjoyed learning about this subject and hope to take it further.”

DM, Halifax, NS
Introduction to GIS for Environmental Management  GEM 400

This course provides an introduction to digital mapping and spatial analysis using a geographic information system (GIS). The course begins by building a foundation of fundamental concepts such as scale and map projections, critical to all future GIS analytical work. You then learn how to create maps, input data, and use GIS software to analyze geographic problems, and learn techniques that can be applied to environmental management as well as to a variety of other subject areas. You will use leading-edge industry data and a case study provided by EcoLog ERIS.

“The GEM 400 course is very ‘real.’ It is designed to provide solutions to problems we encounter around us and to provide fast and accurate responses to queries. The most interesting thing is the applicability of GIS to so many sectors (precision agriculture, hazard management, navigation, monitoring, et cetera). I really enjoyed the training modules to get the hands on experience with the guidance of the instructors.”

VS, Osaka, Japan
Energy Courses

• Implementing Energy Systems Management (ISO 50001)
• Renewable Energy Technologies

GHG Courses

• GHG Inventory, Accounting and Reporting (ISO 14064-1)
• GHG Project Quantification, Monitoring and Reporting (ISO 14064-2)
• GHG Validation and Verification (ISO 14064-3)

Sustainability Reporting

Water Auditing

Implementing Energy Systems Management (ISO 50001)

Energy is critical to organizational operations and can be a major cost to any business. Although organizations cannot control energy prices, government policies or the global economy, how their energy is managed can be improved.

This one-day course is based on the energy management planning principles of ISO 50001 and the broader energy management process. We will follow ISO 50001’s main premise of a process from development of an energy policy through energy management planning to implementation, measurement and verification.

This course will provide owners, managers, consultants and other building professionals a road map to assess utility costs and consumption; how to develop retrofit programs; and detail the various methods employed to identify, implement, monitor and sustain conservation programs.
Renewable Energy Technologies

As we move into a carbon-constrained era, the use of available sources of carbon-free energy will intensify. Coupled with continuing price decreases that move renewable energy systems towards price-parity with fossil fuels, owners, utilities and governments will intensify their interest in these technologies. Yet they are poorly understood and mistakes are made as systems are integrated into buildings and utility systems without proper understanding.

Greenhouse Gas (GHG) Courses

Climate change has become an issue of critical importance to business as regulations continue to emerge and stakeholders demand increasing levels of information related to environmental performance. Many companies are seeking to manage their exposure to climate risks and realize the growing opportunities through developing a carbon management strategy.

With current and anticipated local, provincial and federal regulations, as well as voluntary corporate and association commitments to sustainability, energy consumers and producers are compelled to develop greenhouse gas management plans to minimize energy production/use costs and reduction of greenhouse gas emissions.

“I appreciated that the materials were sent way before the course. Learning them before the course allowed discussions to be beyond the basics. I appreciated that the level of discussions shared among participants was intelligent, high level, yet candid and friendly.”
GHG Inventory,
Accounting and Reporting – (ISO 14064-1)

The principles and process of preparing a facility or company-wide greenhouse gas (GHG) inventory will be explored. Participants will become very familiar with the International Organization for Standardization (ISO) standard, ISO 14064-1 and the World Business Council for Sustainable Development and World Resources Institute Greenhouse Gas Protocol. These standards have become the foundation for most regulated and voluntary GHG reporting systems in North America.

This course will be beneficial for people intending prepare a GHG inventory as well as those people intending to understand the process for developing a GHG inventory with the goal of becoming a GHG verifier.

GHG Project Quantification,
Monitoring and Reporting (ISO 14064-2)

This course will provide the learner with an understanding of the concepts and techniques of the greenhouse gas project quantification, monitoring and reporting. We will explore greenhouse gas projects – those that both reduce emissions (e.g. alternative energy systems) and enhance emission removals (e.g. forestry projects).

We will also review the principles and requirements of ISO 14064-2, which provides guidance at the project level for quantification, monitoring and reporting of activities intended to cause greenhouse gas (GHG) emission reductions or removal enhancements.

Linkages between ISO 14064-2 and other GHG protocols, such as the WRI/WBCSD GHG Protocol for projects and the Voluntary Carbon Standard will be explored. Potential linkages with the Clean Development Mechanism will also be discussed.

GHG Validation and Verification (ISO 14064-3)

This course will provide detailed training on the approach to using the ISO 14064-3 standard, with specific examples of how verification will be applied to a GHG inventory prepared according to the ISO 14064-1 standard, and/or a project that conforms with the ISO 14064-2 standard. An overview of GHG Inventory and Project accounting (following ISO 14064-1, ISO 14064-2, respectively) is explored.

The core value of this course is to emphasize the need for accuracy and consistency with GHG verification as requirements become more rigorous and industry progresses from voluntary reporting towards regulatory compliance.
Sustainability Reporting

Corporate social responsibility programs are considered an organizational best practice. A focus on sustainability helps organizations manage their social and environmental impacts, improving their bottom line. Just as importantly, the disclosure of such activities has become a topic of importance for organizational stakeholders such as employees, customers, investors, and the government. Widely documented and researched benefits to sustainability reporting and disclosure include an improved organizational reputation; a more loyal and engaged workforce; improved access to capital; and increased organizational efficiency and resource reduction.

In this two day course, you will explore current best practices and theory behind sustainability reporting. This course will enable you to either begin producing sustainability reports or to enhance current sustainability reporting initiatives.

Water Auditing (ISO 14046)

An expanding population, urbanization, escalating standards of living, and climate change all place pressure on the world’s water resources. This program will provide a thorough background to understand and manage issues facing the world’s water supply, including current best practices to manage and reduce a water footprint. Ensure your organization is managing its water footprint effectively and economically.
Drawing on the depth and breadth of environmental expertise found across the University, the School of the Environment offers, in some cases in collaboration with other departments, a range of environmental programs.

At the undergraduate level, the School offers Major and Minor programs in Environmental Science (BSc) and Environmental Studies (BA). It also offers Collaborative Specialist and Directed Environmental Minor programs.

At the graduate level, the School offers two programs for study: the Collaborative Programs in Environmental Studies and Environment and Health. The collaborative programs provide the opportunity for graduate students enrolled in a master’s and doctoral program in a degree-granting unit to refine the focus of their research to reflect an interdisciplinary approach to thinking about the environment.

In 2018, the School of the Environment will offer a stand-alone Masters in Environment and Sustainability. For more information, please visit the School of the Environment website.
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Donna Nielsen, Manager, Professional Development Programs
416.978.7077
d.nielsen@utoronto.ca
http://learn.environment.utoronto.ca

School of the Environment
University of Toronto
Earth Sciences Centre, Room 1016V
33 Willcocks St. Toronto, ON M5S 3E8
416.946.5403
environment@utoronto.ca
http://www.environment.utoronto.ca