



UNIVERSITY OF
TORONTO
MISSISSAUGA

Master of Science in Sustainability Management

**COURSE SSM2030H – Advanced Sustainability Management
2018-19**

Instructor/Coordinator:

Prof. Shashi Kant

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Class Time: Monday 5.30PM to 8.30PM

Class Room: MScSM Class Room

Course Description:

The course is designed to provide knowledge and applications of advanced aspects/tools related to sustainability management. The course covers advanced aspects focused on carbon (GHG) measurement and accounting; energy use, efficiency, and management in built environments, transportation, industrial sector, and communities; and energy use & management and climate adaptation & resilience in different sectors. Accordingly, the course is divided in three modules. In each module, the emphasis will be on application of advanced aspects/tools to sustainability management.

Instructional Approach:

This course is taught through the lectures, class-room discussions, case discussions, group discussions and presentations and guest lectures by experts. In many classes, a case will be presented and discussed. Students are required to read the required readings prior to coming to the class. In addition, short exercises will be done during class hours on relevant topics of the week.

Course Classification:

Science course

Academic Misconduct:

Students should note that copying, plagiarizing, or other forms of academic misconduct **will not be tolerated**. Any student caught engaging in such activities will be subject to academic discipline ranging from a mark of zero on the assignment, test or examination to dismissal from the university. Any student abetting or otherwise assisting in such misconduct will also be subject to academic penalties.

Normally, students will be required to submit their written assignments/projects to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included

as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site

Course Drop Deadline:

Please consult with the Program Coordinator and the Program Director if some unavoidable situation arises and you have to drop a required course of the program

Grading:

Learning in this course results primarily from in-class discussions and presentations as well as completion of a project. Final grade will be calculated as follows:

Components of Evaluation and their Weights

Component	Dates	Weight (%)
1. Module I – Carbon/GHG	January	27%
2. Module II – Water	February	34%
3. Module III - Energy and Climate Adaptation	March	39%
Total		100

Module's Evaluation: The course is divided in three modules and each module is taught by a different instructor. Your participation in the class discussions, case study analysis and discussions, and understanding of the concepts taught in every module will be evaluated by the respected instructors. Hence, your presence in every class is critical for your success in this course; absence in any class may lead to zero marks for that class.

In addition, MScSM being a professional program, you should follow professional norms in all classes. The professional norms include be in time, finish your work on time, contribute to group work, present in the class when others are presenting, use of computer only for academic purpose, no whispering in the class, no use of cell phones and any other electronic device in the class, and many other norms. Please refer to the MScSM Handbook for other details of professionalism.

Any violation of professional norms in any class will result in deduction of marks for that class and module. The instructor may ask every student to submit his/her own professional norms report at the end of the class.

In every class, you should bring and display your name card; it is critical for your evaluation.

Course Schedule:

Module I: Carbon/GHG Measurement, Accounting, and Auditing **Guest Instructor - Ian Lipton, President, The Carbon Accounting Company**

January 7, 2019

Carbon accounting and its context - contexts for national and subnational greenhouse gas inventories, contexts for corporate greenhouse gas inventories, some real-world examples of corporate carbon inventories, frameworks, standards, and protocols

Organizational boundaries - Setting organizational boundaries, How are organizational boundaries impacted, the 7 commonly reported greenhouse gases and Global Warming Potentials, Emission sources, Emission sinks and reservoirs, Methods for collecting and managing data, Emissions factors, Sample greenhouse gas inventory

Readings:

1. World Resources Institute and World Business Council for Sustainable Development, The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition, www.ghgprotocol.org/standards/corporate-standard, Introduction and chapters 1 - 7.
2. CDP (Carbon Disclosure Project), How-to Guide to Corporate Internal Carbon Pricing: Four Dimensions to Best Practice Approaches (Consultation Draft), October 2017. Go to www.cdp.net, register as a user, and download this report. Review it at your convenience.
3. CDP, Putting a Price on Carbon: Integrating Climate Risk into Business Planning, October 2017. Go to www.cdp.net, register as a user, and download this report. Review it at your convenience.

January 14, 2019

Scenarios and application of principles - Baseline scenarios, GHG reductions, Transacting environmental attributes (carbon credits (offsets), Renewable Energy Credits (RECs), Carbon permits), Carbon reduction projects, Principles of conducting GHG audits for inventories and reduction projects

Readings:

1. World Resources Institute and World Business Council for Sustainable Development, The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition, www.ghgprotocol.org/standards/corporate-standard, Chapters 8-11.

January 21, 2019

Case studies: In small groups students will conduct a mock greenhouse gas inventory applying the principles and information discussed in the first three classes of this module. Case studies will be provided in class along with the relevant emissions factors.

Module II:

Guest Instructor: Eric Meliton Project Manager, Partners in Project Green (TRCA) and Principal Consultant (Echion Group Inc.)

Grading for this Module – 50% class participation and 50% student evaluation (details will be explained in the class)

Readings

- RobescoSAM Water: the market of the future - RobescoSAM (2015)
PDF: http://www.robecosam.com/images/Water_Study_en.pdf
 - Pages 1-35
 - Utilized for lecture #1 (introduction to North America water/wastewater industry)
- Green technology: an A-to-Z guide - Dustin Mulvaney (2011) ISBN: 9781412996921
 - Pages 444-454
 - Utilized for lectures #2-4 (water treatment, wastewater treatment, and stormwater management)

January 28, 2019

Industry Insights and Overview – North America

- Availability, Demand, and Risk
- Sector Water Withdrawal and Connectivity
- Capital Expenditure and Equipment Trends
- Regulatory Concerns and Industry Challenges

February 4, 2019

Drinking Water Purification – Technologies and Applications

- Centralized Utility Treatment and Purification
- Industrial Pre-Treatment
- Scientific Insights (Case Study): Ontario Water Works Association or Ontario Clean Water Association

February 11, 2019

Effective Wastewater Treatment – Technologies and Applications

- Centralized Utility Treatment and Discharge
- Industrial Effluent Discharge
- Scientific Insights (Case Study): Southern Ontario Water Consortium or WaterTAP Ontario or Canadian Water Network

February 25, 2019

Sustainable Stormwater Management – Technologies and Applications

- Adaptation to Extreme Weather Events
- Stream, Creek, and Wetlands Restoration
- Urbanized Stormwater Programs
- Site-Level Stormwater Infrastructure Design
- Scientific Insights (Case Study): Toronto and Region Conservation Authority or Credit Valley

Module III: Energy Use & Management and Climate Adaptation & Resilience in Different Sectors

Guest Instructor: Ersoy Gulecoglu, Sustainability Manager, Metrolinx

Module Evaluation

Learning in this course results primarily from in-class discussions and presentations as well as completion of a project. Final grade will be calculated as follows:

- Class attendance and participation – 50%
- Case Study Report (3-5 pages) – 50%

March 4, 2019

Energy Management in Business: Policy, Strategy, Planning, Values and Principles in Practice

- Energy management in the context of Sustainability and Climate Change
- Greenhouse Gas (GHG) Management
- Policy Frameworks, Values and Guiding Principles
- Strategic Planning, Continuous Improvement (LEAN), Resourcing and Procurement
- Components of a Successful Energy Management Program and Plan

March 11, 2019

Energy Management in Different Sectors: Buildings, Transportation, Industrial and Community, and Review of Sector Specific Sample Energy Plans and Key Success Factors (KPIs)

- Energy Management in Buildings
 - Building Envelope, Lighting, HVAC Systems
 - Green Buildings and Certifications
 - Audits, Commissioning, Maintenance, Measurement and Verification
- Energy Management in Transportation Sector
- Energy Management in Industrial Sector
- Energy Management in the Community

March 18, 2019

Climate Change Adaptation and Resilience

- Climate Change Impact on Business

- Understanding the Science and Policy Context
- Identifying Sector-specific Vulnerabilities and Risks on People, Assets and Service
- Adapting to Climate Change and Responding to Extreme Weather Events
 - Developing an Adaptation Plan
 - Business Continuity and Emergency Response Planning
- Creating a Climate Resilient Organization
 - Making the Business Case
 - Awareness Building and Engaging Internal and External Partners
 - Mainstreaming Resiliency into Business Management Practices
 - Overview of Best Practices

March 25, 2019

In-class Team Exercise, Presentations and Feedback

- Class will be divided into teams under each sector to develop a strategic case, a management plan outline, a stakeholder map, issues and risk analysis to address both Energy Management and Climate Adaptation areas. Each team will choose and focus on one of the following sectors, and present their assignment to the class to get feedback:
 - Buildings
 - Transportation
 - Industrial
 - Community

Specific questions that will help develop the team presentations will be issued on the day of the class.

April 1, 2019

Special Topics & Guest Speakers

- Careers, Learning, Development and Certifications in Energy Management and Climate Adaptation
- Guest Speakers (TBD) and Q&A
- Recap, Feedback and Closing