

ES 8924 & ME 8148 – Environmental Management Systems

Professor: Cory Searcy, Ph.D., P.Eng.
Office: 332B Eric Palin Hall
Telephone: (416)-979-5000 ext. 2095
Email: cory.searcy@ryerson.ca

Office Hours: Tuesdays: 12:15 p.m. – 2:00 p.m.
Other appointments may be arranged

Course Web Page: <https://my.ryerson.ca>

Class Time: Fridays
January 13 – April 7, 2017
10:00 a.m. – 1:00 p.m.

Class Location: VIC 503

Calendar Course Description:

“This course examines the legal, economic and ethical reasons for the development, implementation and monitoring of a comprehensive, location-specific Environmental Management System (EMS). An EMS enables an organization to systematically identify environmental concerns and address them. The elements of a generic EMS are explored: planning and risk assessment phases; establishment of a policy; the outline of organization arrangements; design of the array of programs that address specific sets of environmental concerns such as production methods, energy use and waste disposal; and the development of a program of periodic environmental audits. The requirements of ISO 14000 are explored. Issues relating to the integration of EMS with quality management systems and occupational health and safety systems are discussed” (Ryerson University School of Graduate Studies Calendar, 2016).

Course Objectives:

By the end of this course, the participants will be able to:

1. Describe and explain key concepts pertaining to EMS.
2. Demonstrate the critical thinking skills needed to apply the content.
3. Describe and explain the personal and social implications related to this subject.
4. Think about environmental management in integrated ways.

Course Materials:

Articles: Several journal articles are required reading. Hard copies will not be provided. The complete list of articles is available in Appendix I.

Standards: *ISO 14001:2015 EMS Requirements with Guidance for Use* will be referred to extensively throughout the course. A copy of ISO 14001 is available for viewing in the Ryerson library. You do not need to purchase a copy of the standard.

Case Studies: Several cases are required reading. Hard copies will not be provided. The complete list of cases is available in Appendix I.

Slides: Lecture slides will be posted on the course web page in PDF format prior to each class.

Course Schedule:

The course will consist of a combination of lectures, in-class discussions, case-based learning activities, and oral presentations. The tentative course schedule is provided in the table below. Every attempt is made to provide a syllabus that is complete and that provides an accurate overview of the course. However, circumstances and events may make it necessary to modify the syllabus during the semester.

Note there is **no class on February 24** due to the spring break. There is also **no formal class on March 31**. Fifteen minute **consultations** with each group will be held on March 31 in EPH 332B. A sign-up sheet will be provided earlier in the term.

Week Number & Date	Tentative (!) Lecture Topic	Reading
1 January 13	<ul style="list-style-type: none"> • Introductions. • Course Outline and Overview. • Introduction to Environmental Management Systems. 	Articles: 1, 2
2 January 20	<ul style="list-style-type: none"> • Introduction to ISO 14001. • ISO 14001 Requirements. • Reflections on ISO 14001. 	Articles: 3, 4 Standard: ISO 14001
3 January 27	<ul style="list-style-type: none"> • Implementing ISO 14001. • Special Applications of ISO 14001. • EMS Auditing. 	Articles: 5, 6 Standard: ISO 14001
4 February 3	<ul style="list-style-type: none"> • Environmental Indicators. • Environmental Reporting. • Environmental Context. 	Articles: 7, 8, 9
5 February 10	<ul style="list-style-type: none"> • Design for Environment. • Life Cycle Assessment. • Sustainable Supply Chain Management. 	Articles: 10, 11, 12
6 February 17	<ul style="list-style-type: none"> • Other Management System Standards. • Integrated Management Systems. • Review for Exam. 	Articles: 13, 14
7 March 3	<ul style="list-style-type: none"> • Exam. 	N/A
8 March 10	<ul style="list-style-type: none"> • Sustainable Development. • Case Module 1: Sustainable Development (Diamond). • Informal Case Presentations. 	Case: 1 Article: 15
9 March 17	<ul style="list-style-type: none"> • Financial Statements. • Case Module 2: Sustainable Supply Chains (IKEA). • Informal Case Presentations. 	Case: 2 Article: 16
10 March 24	<ul style="list-style-type: none"> • Stakeholder Analysis. • Case Module 3: Stakeholder Engagement (Aspen). • Informal Case Presentations. 	Case: 3 Article: 17
11 March 31	<ul style="list-style-type: none"> • Consultations on Team Projects (EPH332B). • Time to Work on Team Projects (No Formal Class). 	N/A
12 April 7	<ul style="list-style-type: none"> • Team Project Presentations. 	N/A

Course Evaluation:

Classification	Component	Weight
Term Work	Exam	40%
	Assignments	8%
	Informal Case Presentations	9%
Team Project	Project Proposal	1%
	Formal Team Presentation	12%
	Written Team Report	30%
TOTAL		100%

Term Work: *Exam.* The exam is closed-book. Everything covered in class, the lecture slides, the required readings, the assignments, or additional handouts may be tested. Additional details on the exam will be provided prior to the exam date. **The exam will be held in class on March 3.**

Assignments. Exercises will be assigned at the end of most sessions. All assignments are equally weighted. Additional details are available in Appendix II. **The assignments are due Thursdays at 11:59 pm the following week.**

Informal Case Presentations. An informal team presentation is required as a part of each case module. Additional details on the informal case presentations are available in Appendix II. **The presentations will be held in class on March 10, March 17, and March 24.**

Team Project: *Proposal.* A proposal for the team project is required. Additional details on the proposal, including possible topic areas, are available in Appendix III. **The proposal is due no later than the beginning of class on February 3.**

Formal Team Presentation. A formal presentation of the team project is required. Additional details on the presentation are available in Appendix III. **The presentations will be held in class on April 7.**

Written Team Report. A written report of the team project is required. Additional details on the report are available in Appendix III. **The report is due no later than the beginning of class on April 7.**

Student evaluation will be expressed in raw marks (out of 100% for each evaluation component) during the course delivery. Mark total for the course will be obtained by assigning the component weights given above to the marks obtained in the course, and summing up the weighed marks. The letter grade system will then be applied to the final total mark only. As a guideline, the following grading scale will be used:

A+ 90.0 – 100%	B+ 77.0 – 79.9%
A 85.0 – 89.9%	B 73.0 – 76.9%
A- 80.0 – 84.9%	B- 70.0 – 72.9%
F < 69.9%	

According to Ryerson University Policy, students must receive their final grades only from the Registrar. Final course grades may not be posted or disclosed anywhere (including email) by the instructor.

Feedback:

Questions, comments, and suggestions regarding the course are welcomed.

Electronic means of communication are preferred for discussions regarding lectures, assignments, and exams. If you do not receive a response within one business day, please feel free to send a follow-up email.

Class Attendance:

Class attendance is expected, but no attendance is taken. If for some reason a student should miss a class, it is the student's responsibility to:

1. Inform themselves of any administrative announcements (e.g. schedule changes) discussed during a session.
2. "Make-up" any of the course material covered in the session. This is of particular importance as there will be material presented in the sessions that may not be covered adequately in the assigned reading.

It is not necessary to inform me of an absence should a situation arise where attendance is not possible. Please note, however, that I reserve the right not to provide extensive information about what transpired in a class.

Class Participation:

Participation in class discussions, exercises, and (especially) cases is expected.

Class Conduct:

Please make every attempt to be in class on time. For the sake of your colleagues, please do not hold private conversations or eat any food in class. If the need to talk or eat is overwhelming, please exit discretely.

Academic and Non-Academic Conduct:

All participants in the course are required to adhere to all relevant Ryerson University policies. Students are particularly encouraged to familiarize themselves with the Ryerson University Student Codes of Academic Conduct and Non-academic Conduct.

The Student Code of Academic Conduct is available at:
<http://www.ryerson.ca/senate/policies/pol60.pdf>

The Student Code of Non-academic Conduct is available at:
<http://www.ryerson.ca/senate/policies/pol61.pdf>

Other Ryerson University policies, including the course management policy, are available at:
<http://www.ryerson.ca/senate/policies>

Appendix I – Course Materials

Articles:

The following articles are required reading. Please review them in accordance with the course schedule provided on page 2. Some of the articles will not be formally addressed in the assignments or in the course slides, but they will provide a basis for discussion and reflection in the lectures.

1. Glavic, P. and Lukman, R. 2007, "Review of sustainability terms and their definitions", *Journal of Cleaner Production*, Vol. 15, pp. 1875-1885.
2. Steffen, W., Broadgate, W., Deutsch, L., Gaffney, O., and Ludwig, C. 2015, "The trajectory of the Anthropocene: The Great Acceleration", *The Anthropocene Review*, Vol. 2, No. 1, pp. 81-98.
3. Brouwer, M.A.C. and van Koppen, C.S.A. 2008, "The soul of the machine: continual improvement in ISO 14001", *Journal of Cleaner Production*, Vol. 16, pp. 450-457.
4. Poder, T. 2006, "Evaluation of environmental aspects significance in ISO 14001", *Environmental Management*, Vol. 37, No. 5, pp. 732-743.
5. Hillary, R. 2004, "Environmental management systems and the smaller enterprise", *Journal of Cleaner Production*, Vol. 12, pp. 561-569.
6. Karapetrovic, S. and Willborn, W. 2000, "Generic audit of management systems: fundamentals", *Managerial Auditing Journal*, Vol. 15, No. 6, pp. 279-294.
7. Roca, L. and Searcy, C. 2012, "An analysis of indicators disclosed in corporate sustainability reports", *Journal of Cleaner Production*, Vol. 20, No. 1, pp. 103-118
8. Siew, J. 2015, "A review of corporate sustainability reporting tools (SRTs)", *Journal of Environmental Management*, Vol. 164, pp. 180-195.
9. Steffen, W. et al. 2015, "Planetary boundaries: Guiding human development on a changing planet", *Science*, Vol. 347, No. 6223, pp. 736.
10. Hauschild, M.Z., Jeswiet, J., and Alting, L. 2004, "Design for environment – do we get the focus right?" *CIRP Annals - Manufacturing Technology*, Vol. 53, No. 1, pp. 1-4.
11. Pryshlakivsky, J. and Searcy, C. 2013, "Fifteen years of ISO 14040: A review", *Journal of Cleaner Production*, Vol. 57, pp. 115-123
12. O'Rourke, D. 2014, "The science of sustainable supply chains", *Science*, Vol. 344, No. 6188, pp. 1124-1127.
13. Carroll, A.B. 1999, "Corporate social responsibility: evolution of a definitional construct", *Business and Society*, Vol. 38, pp. 268-295.
14. Bernardo, M., Casadesus, M., Karapetrovic, S., and Heras, I. 2009, "How integrated are environmental, quality and other standardized management systems? An empirical study", *Journal of Cleaner Production*, Vol. 17, pp. 742-750.

15. Robert, K-H, Schmidt-Bleek, B., Aloisi de Lardere, J., Basile, G., Jansen, J.L., Kuehr, R., Price Thomas, P., Suzuki, M., Hawken, P., and Wackernagel, M. 2002, "Strategic sustainable development – selection, design, and synergies of applied tools", *Journal of Cleaner Production*, Vol. 10, pp. 197-214.
16. Hojmosse, S. and Adrien-Kirby, A.J. 2012, "Socially and environmentally responsible procurement: A literature review and future research agenda of a managerial issue in the 21st century", *Journal of Purchasing and Supply Management*, Vol. 18, pp. 232-242.
17. Hardin, G. 1968, "The tragedy of the commons", *Science*, Vol. 162, pp. 1243-1248.

Cases:

1. *Diamond Developers: Measuring Sustainability* (revised April 27, 2016) by T. Rogmans, Ivey Publishing Case Case 9B16M075 (Available for purchase at <https://www.iveycases.com/ProductView.aspx?id=78129>).
2. *Sustainability at IKEA Group* (revised December 8, 2015) by V.K. Rangan, M.W. Toffel, V. Dessain, and J. Lenhardt, Harvard Business School Case 9-515-033 (Available for purchase at <https://cb.hbsp.harvard.edu/cbmp/product/515033-PDF-ENG>).
3. *Aspen Skiing Company (A)* (revised November 25, 2013) by M.W. Toffel and S. Van Sice, Harvard Business School Case 9-611-002 (Available for purchase at <https://cb.hbsp.harvard.edu/cbmp/product/611002-PDF-ENG>).

Appendix II – Details on Term Work

Assignments:

The solutions to all assignments must be **submitted through D2L** (not email) in a **single PDF document**. All components of each question must be addressed. Complete sentences are required. Bullet points and tables may be used provided there is some (brief) discussion. Each question should be answered in one page, using the Times New Roman style with 12-point font and 1.5 paragraph spacing.

The assignments are equally weighted. Each assignment is worth 1% of the overall course mark. Answers will be marked as either “acceptable” or “not acceptable”. Answers deemed acceptable will receive full credit, while answers deemed unacceptable will receive no credit. Late assignments will not be accepted unless approval is granted in advance (exceptional circumstances are required). Grades will be posted in D2L.

With the above in mind, below are the assignment questions for this term.

Assignment 1

What is the role of business, if any, in addressing major global environmental challenges?

Assignment 2

A major electric utility has committed to a greenhouse gas reduction initiative that takes effect immediately. All sites are to use their ISO 14001 EMSs to set appropriate environmental objectives. Demonstrate the concept of objectives (per ISO 14001) by writing three for the Ontario operations of this organization. Identify some of the steps that could be taken to achieve each objective.

Assignment 3

Identify three elements of ISO 14001 you believe a good auditor would check every time they do an audit of a particular organization, irrespective if it was a full assessment or a surveillance audit.

Assignment 4

Locate a corporate environmental, sustainable development, or CSR report for a company in which you have an interest. For the selected report critically review the performance indicators listed in the report. As a part of the review, discuss the extent to which the indicators address sustainability context.

Assignment 5

Identify three key supply chain issues for a fashion company. Briefly explain some of the steps the company could take to address these issues in its supply chain.

Assignment 6

Write a 1-page summary of Case 1 (Diamond Developers).

Assignment 7

Write a 1-page summary of Case 2 (IKEA).

Assignment 8

Write a 1-page summary of Case 3 (Aspen).

Informal Case Presentations:

Students will be randomly assigned to teams near the beginning of the term. The same teams will be used for the informal case presentations and the team projects.

Each team will be required to present an informal presentation of its answers to the key questions in each case module. Time will be provided in class to discuss the questions and prepare the informal presentation. In the informal presentation, a brief overview of the team's responses to the selected question should be provided. **No PowerPoint slides are required.** All team members must present in at least one informal case presentation. The duration of the presentation is a maximum of **4 minutes**. Please do not exceed the time limit. The presentations will be held in class.

Each informal case presentation is worth 3% of the overall course mark. The mark will be assigned to the team as a whole, not individually, except in the case of absences. Students who are absent or do not participate in any presentation will receive a score of zero.

The informal presentations will be graded on the following scale:

- Exceeds expectations A+
- Meets expectations A
- Fails to meet expectations B

Grades will be posted in D2L.

Appendix III – Details on Team Projects

Students will be randomly assigned to teams near the beginning of the term. The same teams will be used for the informal case presentations and the team projects.

Project Topic Guidelines:

There is wide latitude in selecting a topic for the project. For example, topic areas covered in class may be studied in greater depth. As illustrative examples, the research could focus on specific aspects of: environmental management system (EMS) standards, special applications of EMS, environmental performance measurement, environmental reporting, life cycle assessment, sustainable development, corporate social responsibility, or integrated management systems, among other topics. The topic is your choice, subject to approval by the professor. **One key limitation is that the project must be based on publicly-available information.**

To structure thinking about possible topics, you may decide to use one of several constructs:

1. *Critical Review*: For example: “Corporate social responsibility: A literature review and research agenda.”
2. *Trends Analysis*: For example: “Trends in ISO 14001 certification by industry sector in Canada.”
3. *Exploratory Research*: For example: “The role of environmental management systems in corporate sustainable development.”
4. *Cause and Effect*: For example: “Does the implementation of environmental performance measurement systems result in improved environmental performance?”
5. *Historical Context*: For example: “The impact of the Bhopal industrial disaster on the development and evolution of Responsible Care.”
6. *Compare and Contrast*: For example: “A comparison and critical review of two or more industrial association initiatives that involve membership requirements pertaining to environmental management.”
7. *Solution to a Problem*: For example: “Implementing environmental management systems in First Nations communities.”
8. *Other*: For example: “An analysis of environmental context of [an organization]”, “A life cycle assessment of the key environmental impacts of [a product or service]”, or “An emergency preparedness and response plan for [a real-world accident]”.

Project Proposal:

Each team is required to develop a project proposal. The proposal must be **submitted through D2L** (not email) in a **single PDF document**. The proposal is worth 1% of the overall course mark. Late submissions will not be accepted unless approval is granted in advance (exceptional circumstances are required). The proposal must be typed in the Times New Roman style using 12-point font with 1.5 paragraph spacing. **The maximum length of the proposal is two (2) pages, plus a preliminary bibliography.**

The proposal should be organized into the following sections:

- *Title*: A preliminary title for the project should be provided.
- *Introduction*: A brief overview of the focus of the project, including the motivations for research, should be provided.
- *Purpose*: This section should provide a statement of the purpose of the project.
- *Scope*: The scope of the project, including any assumptions and limitations, should be explained.
- *Approach*: An explanation of how the purpose will be achieved should be provided.
- *Bibliography*: A preliminary list of sources of information for the project should be provided. References should be cited using the APA style.

Formal Team Presentation:

The duration of the presentation is **12 – 15 minutes**. Please do not exceed the time limit. All team members should be involved in the presentation. The presentation will be followed with a brief question and discussion session. The team should be prepared to lead the discussion if necessary.

Each formal team presentation is worth 12% of the overall course mark. The mark will be assigned to the team as a whole, not individually, except in the case of absences. Students who are absent or do not participate in the presentation will receive a score of zero.

There is some flexibility on the structure of the presentation. However, the following guidelines should be applied:

- *Outline:* The presentation should begin with a brief outline.
- *Topic Overview:* Background on the topic should be provided, including what it is, why it is important, and what needs to be done.
- *Research Introduction:* A brief overview of the purpose, scope, and approach used in the project should be provided.
- *Main Body:* The main section of the presentation should be appropriately structured in light of your approach. It could contain a discussion of key findings and/or proposed solutions.
- *Conclusions:* Key conclusions should be concisely presented. If appropriate, recommendations for further work or research should be provided.

Written Team Report:

The report must be between **15 – 18 pages** in length, plus a references section and any appendices. The title page, references, and appendices are not included in the page limit. The report must be typed in the Times New Roman style using 12-point font with 1.5 paragraph spacing. A **hardcopy** of the report is required in addition to the regular submission through **D2L**. On the hardcopy, the paper may be printed on both sides.

The written report is worth 30% of the overall course mark. The mark will be assigned to the team as a whole, not individually.

There is some flexibility on the structure of the report. However, the following guidelines should be applied:

- *Title Page:* A title page with the title of the project.
- *Abstract:* A 150-word abstract should briefly summarize the issue studied, the purpose, scope, approach, results, and conclusions/recommendations.
- *Introduction:* The introduction should provide some context for the rest of the project, including a concise overview of the topic, the need for the research, the purpose, the scope, the key assumptions, and the approach. A summary of the remaining sections in the report should be provided.
- *Main Body:* The main body should be appropriately structured in light of your approach. It could contain a survey of the literature, discussions, analysis, results, and/or proposed solutions.
- *Conclusions:* A strong and compelling conclusion is required. The main contributions of the project should be highlighted and, if appropriate, clear recommendations for further work or research should be provided.
- *References:* The project should contain no less than 8 references, with an emphasis on peer-reviewed journal papers, conference papers, and books. References should be cited in the APA style.
- *Appendices:* Appendices are not required, but may be included if necessary.