

## Environmental Studies Basic Graduate Course Outline/Syllabus

### FACULTY OF ENVIRONMENTAL AND URBAN CHANGE YORK UNIVERSITY

**EU/ENVS 6180 3.00 The Circular Economy: Sustainable Waste Management and Systems Design**  
**Term Being Offered: Winter 2025**

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#### **Course Instructor and Contact Information**

Dr. Calvin Lakhan  
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#### **Course Time and Location**

**Classroom: HNE 141**  
**Time: Monday 2:30 to 5:30pm HNE 141**

#### **1. General Course Description**

This course is designed to introduce students to the topic of waste management, specifically examining the role of waste as a resource, and the importance of developing sustainable waste management systems that promote optimal economic, social and environmental outcomes. This course introduces students to topics surrounding sustainable materials management and the circular economy, distinguishing between linear and circular consumption systems. This course also introduces students to the “waste management hierarchy”, which can be used as a tool to differentiate between preferred end of life management scenarios. Each lecture is centered around a core concept, i.e. recycling, reuse, waste reduction, landfilling etc. with the intent of familiarizing students with a range of potential end of life scenarios. Students will then be asked to consider which end of life option is most appropriate given existing disposal behavior, available infrastructure, and maturity of end markets.

#### **2. Overview and Learning Outcomes**

A key learning objective is to show students that waste management issues are very nuanced, and that the efficacy of certain approaches is highly dependent on both site and situation specific factors. Students are also introduced to the topic of how life cycle analysis can be applied to waste management activity, and how this tool can be used to help guide policy and legislation using an evidence based/scientific approach.

Students are encouraged to take a certain ideological position (i.e. banning/not banning single use plastics), and defend their position to their peers during mock debates. (Note: Students are asked to select from a range of potential waste related topics, or submit one of their own)

The goal of this course is to shed light on a chronically under-researched and poorly understood topic, demonstrating that waste is a resource like any other, that requires careful and controlled management in order to achieve sustainable outcomes.

#### **3. Organization of the Course**

This course is delivered in person. Students are expected to meet at scheduled times, and participate in classroom discussions and debates.

Lectures are structured using the following format (unless stated otherwise):

- 1) 45min lecture on a specific weekly topic. This includes a discussion surrounding the assigned readings for that week
- 2) 45 min Q&A regarding topics discussed during the lecture
- 3) 30 min discussion surrounding how the material discussed during the lecture can be shared with a broader audience (means and mediums of communication, target audience etc.)

An online forum will also be created through York E-Class, which will provide a more informal space for both students and the course instructor to interact, post questions or topics of interest, and share class related resources and materials (i.e. news articles on single use plastics bans, videos about chemical recycling etc.). A Twitter and Instagram account will also be created for the course, where students can post waste related content (pictures, articles, key learnings from lecture etc.) to the broader community (both on and off campus). A key objective of this course is knowledge mobilization, encouraging students to engage with family/friends/community to increase awareness surrounding waste related issues.

Students will also be required to schedule two one on one meetings with the course instructor (outside of lecture hours) over the course of the term to discuss their paper proposal and debate topic. Students will have the discretion to arrange this meeting using Zoom/Skype or over the phone (at a time that is mutually convenient)

### **Evaluation: Grading and Course Requirements**

- 30% of the course grade will be allocated to two classroom debates (2x15) in Weeks 6 and 12
- 10% of the course grade be allocated to a paper proposal due by the end of Week 4
- 40% of the course grade will be allocated to a term paper due in Week 12
- 20% of the course grade will be allocated to classroom participation

Note: Grading for graduate students is based on a Pass/Unsatisfactory evaluation. Graduate students who would prefer a percentage grade in lieu of a pass/unsatisfactory must notify the instructor by the end of week 4.

Assignments received later than the due date will be penalized 5% of the value of the assignment per day that the assignments are late. For example, if an assignment worth 20% of the total course grade is a day late, 1 point out of 20 (or 5% per day) will be deducted. Exceptions to the lateness penalty for valid reasons such as illness, compassionate grounds, etc. will be entertained by the instructor.

### **Description of Assignments**

#### ***Classroom Debates***

Students will be asked to choose from a list of topics (sample shown below), and be assigned to one of two groups, "In support of" or "Against". Students will then be asked to research these topics and gather materials to support their respective positions. This will ultimately culminate in a one hour debate, where students will be asked to defend their position (either for or against) and take questions from the class.

Each student will be required to participate in two debates, such that they have the experience of arguing both in support of, and against a particular policy or issue.

A non-exhaustive list of topics includes:

- Should single use plastics be banned?
- Should Ontario be allowed to export waste to other jurisdictions?
- Is diversion the most appropriate metric for measuring the success of a program?
- Is recycling a right or a privilege?
- Should we attempt to divert all materials, irrespective of cost?
- Should consumers be forced to adopt reusable packaging?
- Should there be a landfill ban on recyclable products?
- Should there be a landfill ban on organics?
- Are diversion programs such as Terracycle really sustainable?
- Is Zero Waste achievable?
- Are compostable plastics a viable alternative to single use plastics?
- Is extended producer responsibility good or bad?
- Should incineration be counted as a form of diversion?
- Should recycling be left to a free market, or should legislation force producers to use recycled content and develop end use applications for recycled feedstock?
- Should all commercial establishments (restaurants, office buildings, public space venues etc.) be required to offer recycling programs and track quantities of waste generated and diverted?
- Should a recycling program be owned and operated by municipalities, or by the producers of end of life packaging?

### ***Term Paper***

Students will be asked to develop a 1-page paper proposal by the fourth week of class (such that they be provided with sufficient time to learn about waste definitions, waste streams and various end of life material management options). The proposal should be submitted electronically to lakhanc@yorku.ca

Students will be required to complete a 15-18 page paper (double-spaced) that examines a topic of their choosing that relates to waste management. The final paper is due during Week 12 and should be submitted electronically to lakhanc@yorku.ca.

### ***Participation***

Your participation grade will be based on your contributions to discussions, awareness of issues in required readings, and ability to relate to broader concerns of the course.

#### **1. Weekly Schedule of Topics and Readings**

Required readings are central to the course. The following list of lecture topics and readings is subject to change. Readings listed under each date will be discussed on that date.

#### **Week 1: What is waste? Re-conceptualizing waste as a resource**

- Defining waste and what we mean by waste management
- A description of waste streams, i.e., residential vs. IC&I, organics vs. printed paper etc.
- Existing approaches to waste management in both the developed and developing world
- What is the goal of our waste management system? Maximum diversion, maximum carbon offsets, or lowest possible cost?

#### **Week 2: Waste Management Hierarchy: “Reduce, Reuse and Recycling” is not just a catchy phrase**

- Prioritizing waste management outcomes
- History of waste management policy and legislation in Canada
- Difficulties surrounding measuring waste reduction and reuse

*Weekly Readings:*

- Brisson, I. E. (1997). Assessing the waste hierarchy: A social cost benefit analysis of municipal solid waste management in the European Union. *Samfund, Okonomi and Miljo*, 19. AKF Forlaget, Copenhagen
- Canadian Council Ministers of the Environment. (2014). State of Waste Management in Canada. Available at [http://www.ccme.ca/files/State\\_Waste\\_Mgmt\\_in\\_Canada%20April%202015%20revised.pdf](http://www.ccme.ca/files/State_Waste_Mgmt_in_Canada%20April%202015%20revised.pdf)

### **Week 3: Recycling (Part 1): Thinking outside the Blue Box**

- History of recycling in Ontario and Canada
- Are recycling rates the yardstick for measuring a successful system?
- The evolving tonne: Why recycling is becoming increasingly difficult
- Why recycling can actually be bad for the environment

#### *Weekly Readings:*

- Babooram, A., and Wang, J. (2008). Recycling in Canada. Statistics Canada Publications
- McRobert, David. (1994). Ontario's Blue Box System: A Case Study of Government's Role in the Technological Change Process, 1970-1991. Osgoode Hall Law School, York University.
- McRobert, David. (1992). Reforming Legislation and Regulations to Promote the 3Rs: Some Observations on Ontario's Waste Management Act, 1992 and the Proposed 3Rs Regulations. Available at [http://www.lacieg2s.ca/law/wma-3r.htm#\\_ftn7](http://www.lacieg2s.ca/law/wma-3r.htm#_ftn7)

### **Week 4: Recycling (Part 2): Recycling Behavior**

- Recycling Behavior Part 1: Key determinants of recycling behavior (using the theory of planned behavior)
- Recycling Behavior Part 2: The role of race and ethnicity as antecedents to recycling behavior
- Recycling Behavior Part 3: Reprogramming recycling behavior: Why asking people to recycle may actually be bad for the environment and the economy

#### *Weekly Readings:*

- Johnson, C., Booker, J.M., and Cordell. H. (2004). Ethnic Variation in Environmental Belief and Behavior: An Examination of the New Ecological Paradigm in a Social Psychological Context. *Environment and Behavior*, 36 (2): 157-186
- Deutz, P. (2009) Producer responsibility in a sustainable development context: Ecological modernisation or industrial ecology? *The Geographical Journal*, 175 (4): 274-285
- Fornara, F. et al. (2011). Distinguishing the sources of normative influence on pro environmental behaviors: The role of local norms in household waste recycling. *Group Processes & Intergroup Relations*, 14 (5): 623-635.

### **Week 5: Extending responsibility? Who is responsible for managing waste at end of life?**

- Extended Producer Responsibility: What is it, how is it applied and is it really a suitable solution?
- Roles and responsibilities of stakeholders in an EPR system
- Blue Box Case Study: A history of EPR in Ontario and BC
- Challenges and obstacles to implementing EPR for packaging waste

#### *Weekly Readings:*

- Canadian Council of Ministers of the Environment. (2009). Canada-wide action plan for extended producer responsibility. Accessed From: [http://www.ccme.ca/en/current\\_priorities/waste/epr.html](http://www.ccme.ca/en/current_priorities/waste/epr.html)
- Extended Producer Responsibility Canada. (2017). Overview of the State of EPR in Canada: What have we learned? Available at <http://www.eprcanada.ca/reports/2017/Overview-of-the-State-of-EPR-in-Canada-long-version-EN.pdf>
- Product Stewardship Institute. (2020). EPR for Packaging and Paper Products: Policies, Practices and Performance. Available at <https://www.productstewardship.us/page/epr-for-ppp-policies-practices-performance>

#### **Week 6: Classroom debates – Session 1**

#### **Week 7: Single Use Plastics, a necessary evil?**

- Are single use plastics really that bad for the environment?
- Should single use plastics be banned? What alternatives are available, and what infrastructure is in place to support a ban?
- The economic and social impacts of a single use plastic ban

#### *Weekly Readings:*

- Walker, T., and Xanthos, D. (2018). A call for Canada to move toward zero plastic waste by reducing and recycling single use plastics. *Resources Conservation and Recycling*, 133: 99-100.
- Gock, Angela et al. (2018) Legal Strategies to Cure the Plastic Planet: Corporate Marriage and Public Health Regulation of Single-Use Non-Biodegradable Plastics. *JLM* 26: 311-321. Available at SSRN: <https://ssrn.com/abstract=3323910>
- CBC Market Place. (2019) Canada Pledges to eliminate single use plastics: CBC's Marketplace consumer cheat sheet. Available at <https://www.cbc.ca/news/business/marketplace-cheat-sheet-june-16-2019-1.5176178>

#### **Week 8: Sustainable Waste Management: A right or a privilege?**

- How are poor and marginalized communities affected by packaging changes and EPR legislation?
- Case Study: Terracycle's Loop Program – what does being a sustainable citizen cost?
- How socio-economic inequality manifests itself in access to waste management services and programs

#### *Weekly Readings:*

- Ryan, K. (2019). Household products are about to look a lot different, thanks to this company. available at <https://www.inc.com/kevin-j-ryan/terracycle-loop-reuse-recycle-plastic-containers.html>
- Martuzzi, M. Mitis, F. Forastiere, F. (2010) Inequalities, inequities, environmental justice in waste management and health. *European Journal of Public Health*, 20: 21-26.
- Norton, J.M. et al. (2007) Race, wealth, and solid waste facilities in North Carolina, *Environmental Health Perspectives*, 115: 1344-1350.

#### **Week 9: An introduction to Life Cycle Analysis: New tools for measuring the success of a program**

- What is life cycle analysis? How can it be applied to waste management?

- From cradle to cradle vs. cradle to grave, distinguishing between upstream and downstream impacts
- What is the goal of our waste management system? Maximum diversion, maximum carbon offsets, or lowest possible cost?

*Weekly Readings:*

- McDougall, F., White, P., Franke, M. and Hindle, P. (2001) *Integrated Solid Waste Management: A Life-Cycle Inventory*, Second Edition. Cambridge: Blackwell.
- Morris, J., Matthews, S., Morawski, C. (2015). Review and Meta Analysis of 82 studies on end of life management methods for source separated organics. Open Access White Paper
- Laurent, A. et. al. (2014) Review of LCA Studies of solid waste management systems. *Waste Management* 34(3): 573-588.

**Week 10: Developing a Resilient Waste Management System – Adaptive capacity and planning for the unpredictable**

- How COVID has affected waste management policy, planning and behavior
- Environmental, Economic and Social risks associated with disruptions to waste management services
- Case Study: The Chinese National Sword – why Canada can't keep exporting our waste problems

*Weekly Readings:*

- Ali, M. (2006) Urban waste management as if people matter. Editorial. *Habitat International* 30(4): 729-730.
- Colon, M. and Fawcett B. (2006) Community-based household waste management: Lessons learnt from EXNORA's 'zero waste management' scheme in two South Indian cities. *Habitat International* 30(4): 916-931.
- United Nations Office for the Co-ordination of Humanitarian Affairs (2013). Disaster Waste Management Guidelines. Available at [ecentre.org/wp-content/uploads/2019/05/Disaster-Waste-Management-Guidelines-6.pdf](http://ecentre.org/wp-content/uploads/2019/05/Disaster-Waste-Management-Guidelines-6.pdf)

**Week 11: Reduce, Reuse and Recycle - Not just a catchy phrase**

- Waste reduction and reuse: Better for the environment, but how do we encourage and measure it?
- Exploring the dichotomy between packaging reduction, and recycling. Why send materials to landfill may not be a bad thing.
- The “Cling Wrap” case study
- Terracycle and Loop: Innovation or Greenwashing?
- Food fight: The role of packaging in avoiding food waste

*Weekly Readings:*

- Fercoq, A. (2016). Lean/Green integration focused on waste reduction techniques. *Journal of Cleaner Production* 137: 567-578.
- Graham-Rowe, E. et al. (2015). Predicting household food waste reduction using an extended theory of planned behavior. *Resources, Conservation and Recycling*, 101: 194-202.

- Kelleher, Maria. (2015) The Evolving Tonne – implications of packaging waste reduction. Available at <https://www.youtube.com/watch?v=6P3tn0HwtxM>

### **Week 12: Classroom Debates Session 2**

- Final session of debates and classroom discussion
- Students will be expected to submit their term paper by the end of this class

### **Important Course information**

All students are expected to familiarize themselves with the following information, available on the [Senate Committee on Academic Standards, Curriculum & Pedagogy webpage](#)

- Senate Policy on Academic Honesty and the Academic Integrity Website
- Ethics Review Process for research involving human participants
- Course requirement accommodation for students with disabilities, including physical, medical, systemic, learning and psychiatric disabilities
- Student Conduct Standards
- Religious Observance Accommodation

### **[Intellectual Property Notice](#) (optional)**

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### **Notes:**

A more detailed Basic Course Outline Model (Word) is available under “Related Resources” on the [University Secretariat’s Academic Standards, Curriculum and Pedagogy](#) webpage.

Basic course outline/syllabus shall be available to students no later than two weeks prior to the commencement of classes. A more detailed course syllabus shall be available in the first week of class.

Please send your basic graduate course outline/syllabus (as a pdf) to Ouma Jaipaul-Gill, [oumajai@yorku.ca](mailto:oumajai@yorku.ca).