



COURSE OUTLINE: ESA205 - WASTE MANAGEMENT

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Approved: Sherri Smith, Vice President, Academic, Innovation and Student Services

Course Code: Title	ESA205: WASTE MANAGEMENT
Program Number: Name	5255: ENV. SUSTAINABILITY
Department:	NATURAL RESOURCES PRG
Academic Year:	2023-2024
Course Description:	Students will explore, discuss and develop an understanding of the role of pollution prevention, life cycle assessment, recycling, landfilling and other waste management alternatives.
Total Credits:	3
Hours/Week:	3
Total Hours:	42
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course:	5255 - ENV. SUSTAINABILITY
Please refer to program web page for a complete listing of program outcomes where applicable.	VLO 1 Develop scientific reports to communicate data, analysis and conclusions to community stake holders.
	VLO 2 Design sampling and analysis of environmental data to implement resource surveys.
	VLO 3 Implement environmental audit standards, including the Environmental Assessment (EA) process to meet legal requirements across municipal, provincial and federal jurisdictions.
	VLO 4 Examine field samples using air, water and soil quality testing equipment to evaluate environmental conditions.
	VLO 5 Apply appropriate air and water pollution testing and abatement processes and technologies according to different segments of industrial and/or residential sectors.
	VLO 6 Interpret the effects of various environmental and climate impacts on plant, animal and human health.
	VLO 7 Develop and implement a model to Build community engagement and capacity to achieve the desired organizational outcomes.
	VLO 8 Apply principles of project management and leadership to complete projects on time and within scope.
	VLO 9 Develop and implement an interdisciplinary perspective to evaluate goals, objectives, and strategies for approaching environmental problems.
	VLO 10 Apply principles and practices of community and industry development to increase resiliency, innovation and transformation toward greater sustainability.
Essential Employability Skills (EES) addressed in this course:	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
	EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective



- communication.
- EES 3 Execute mathematical operations accurately.
 - EES 4 Apply a systematic approach to solve problems.
 - EES 5 Use a variety of thinking skills to anticipate and solve problems.
 - EES 6 Locate, select, organize, and document information using appropriate technology and information systems.
 - EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.
 - EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others.
 - EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
 - EES 10 Manage the use of time and other resources to complete projects.
 - EES 11 Take responsibility for ones own actions, decisions, and consequences.

Course Evaluation:

Passing Grade: 50%,

A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.

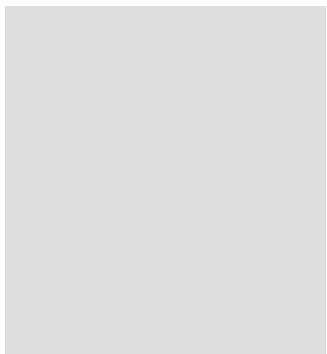
Other Course Evaluation & Assessment Requirements:

Academic success is directly linked to attendance. Missing more than 1/3 of the course hours in a semester shall result in an 'F' grade for the course.

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1: Comprehensive Waste Management Knowledge: Students will demonstrate a deep understanding of waste generation, its environmental impact, and the principles of waste management hierarchy.	1.1 Describe the sources, types, and characteristics of various types of waste materials, including solid, hazardous, and organic waste. 1.2 Explain the environmental and social consequences of improper waste management and the significance of responsible waste disposal. 1.3 Differentiate and analyze the key components of the waste management hierarchy, including refuse, reduce, reuse, repurpose, and recycle. 1.4 Apply knowledge of waste composition and waste generation to make informed decisions on waste management strategies.
Course Outcome 2	Learning Objectives for Course Outcome 2
2: Demonstrate the ability to use spreadsheet and database programs (Excel, Sheets) for data entry and analysis.	2.1 Demonstrate the ability to utilize spreadsheet software (Excel, Sheets) to compile and organize data in a meaningful way 2.2 Demonstrate the ability to use data analysis tools to explore data and perform statistical tests. 2.3 Demonstrate the ability to prepare charts and figures using microsoft excel that clearly display important data 2.4 Demonstrate the ability to compile and present data and recommendations based on environmental regulations
Course Outcome 3	Learning Objectives for Course Outcome 3
3: Practical Waste	3.1 Perform a local waste audit, including surveying,

	<p>Management Skills: Students will develop practical skills in conducting waste audits, setting up composting systems, and assessing waste-to-energy technologies and recycling programs.</p>	<p>classifying, and analyzing waste materials, and use the data to propose effective waste disposal and diversion strategies. 3.2 Set up and maintain a functional worm composting system for organic waste management, demonstrating the ability to manage decomposition processes and maintain the health of the worm population. 3.3 Evaluate waste-to-energy technologies, such as incineration and biogas production, by conducting an independent waste audit and assessing their feasibility and environmental impact. 3.4 Conduct a recycling audit to assess the effectiveness of local recycling programs, identify areas for improvement, and propose solutions to enhance recycling practices.</p>
	Course Outcome 4	Learning Objectives for Course Outcome 4
	<p>4: Responsible Hazardous Waste Management: Students will learn to identify and manage hazardous waste materials while complying with relevant regulations.</p>	<p>4.1 Identify and classify hazardous waste materials based on their properties, risks, and regulatory requirements. 4.2 Demonstrate proper handling, storage, and transportation practices for hazardous waste materials, ensuring safety and compliance with relevant regulations. 4.3 Describe the treatment and disposal methods for hazardous waste, including chemical, physical, and biological processes, and evaluate their suitability for specific waste types. 4.4 Analyze case studies and real-world scenarios to make informed decisions about the responsible management of hazardous waste.</p>
	Course Outcome 5	Learning Objectives for Course Outcome 5
	<p>5: Sustainable Solutions and Policy Awareness: Students will analyze and propose strategies for waste minimization, pollution prevention, and understand the local and global regulations and policies related to waste management.</p>	<p>5.1 Develop waste minimization and pollution prevention strategies, considering the principles of reduce, reuse, and recycle, to reduce the environmental impact of waste generation. 5.2 Evaluate the effectiveness of waste management regulations and policies at local, regional, and international levels, identifying areas of compliance and improvement. 5.3 Propose and discuss strategies to encourage businesses and industries to adopt Extended Producer Responsibility (EPR) programs and contribute to sustainable waste management practices. 5.4 Conduct a local landfill activity to witness waste management practices in action and apply critical thinking to identify areas for improvement and sustainability.</p>
	Course Outcome 6	Learning Objectives for Course Outcome 6
	<p>6: Emerging Trends and Innovation: Students will explore emerging trends in waste management, including the circular economy and innovative solutions, enabling them to</p>	<p>6.1 Discuss emerging trends in waste management, such as the circular economy and zero waste initiatives, and explain their potential impact on waste reduction and sustainability. Identify innovative solutions and technologies in waste management, including digital tools, data analytics, and sustainable product design.</p>



adapt to evolving industry practices and technologies.

Apply critical thinking and problem-solving skills to propose and evaluate the implementation of innovative waste management practices in real-world scenarios.

6.2 Identify innovative solutions and technologies in waste management, including digital tools, data analytics, and sustainable product design.

6.3 Apply critical thinking and problem-solving skills to propose and evaluate the implementation of innovative waste management practices in real-world scenarios

6.4 Recognize the importance of adaptability and continuous learning in the field of waste management to keep up with evolving trends and technologies.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Case Study	10%
Final Report	30%
Independent Waste Audit	10%
Local Landfill	5%
Recycling Audit	5%
Test 1	10%
Test 2	10%
Waste Audit	5%
Wastewater Treatment	5%
Worm Compost	5%
Worm Compost 2	5%

Date:

November 24, 2023

Addendum:

Please refer to the course outline addendum on the Learning Management System for further information.

