



COURSE OUTLINE: ESA101 - INTRO SUSTAINABILITY

Prepared: Lynn Goulding

Approved: Sherri Smith, Chair, Natural Environment, Business, Design and Culinary

Course Code: Title	ESA101: INTRODUCTION TO SUSTAINABILITY
Program Number: Name	5255: ENV. SUSTAINABILITY
Department:	NATURAL RESOURCES PRG
Academic Year:	2023-2024
Course Description:	Students will be introduced to the concepts of sustainability and discuss the challenges and opportunities that influence movement toward sustainability.
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 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 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 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%, D 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 a F Grade for this course.																
Books and Required Resources:	Open Education Resources Open Education Resources, links supplied by Professor																
Course Outcomes and Learning Objectives:	<table border="1"> <thead> <tr> <th>Course Outcome 1</th> <th>Learning Objectives for Course Outcome 1</th> </tr> </thead> <tbody> <tr> <td>Define the meaning of sustainability and understand the role of both the natural and human parts of the system.</td> <td>1.1 Critically assess the impact formula or IPAT theory of environmental impact 1.2 Define and critique the Malthusian Catastrophe. 1.3 Compare and discuss in an ecological context J-curves and S-curves and how they relate to carrying capacity. 1.4 Explain the major reasons for the population demographic transition: income, level of female education, and social structure of the country. 1.5 Understand the implications of populations growth on sustainability.</td> </tr> <tr> <th>Course Outcome 2</th> <th>Learning Objectives for Course Outcome 2</th> </tr> <tr> <td>Understand the factors of climate change and articulate methods of avoiding conflict in shared resources.</td> <td>2.1 Critique the Tragedy of the Commons and develop solutions to avoid a tragedy: external governance, property rights/privatization and internal governance/community. 2.2 Know the major factors that determine the Earth's climate, in particular the concepts of insolation, albedo and greenhouse gases and describe examples of each. 2.3 Describe how cores (rock, sediment, ice) can give past climate evidence and understand the changes in the Earth's climate. 3.4 Describe the projected impacts of global warming on global temperature, climate variability, glaciers, sea level and ecosystems over the next century.</td> </tr> <tr> <th>Course Outcome 3</th> <th>Learning Objectives for Course Outcome 3</th> </tr> <tr> <td>Rate different sources of renewable energy in the context of energy security and sustainability.</td> <td>3.1 Define the concept of renewable energy. 3.2 Know that the key advantages are sustainability, security, and (relative) non-pollution. 3.3 Outline the major sources of renewable energy and assess their potential for growth. 4.4. Describe nuclear energy and evaluate fuel extraction and use.</td> </tr> <tr> <th>Course Outcome 4</th> <th>Learning Objectives for Course Outcome 4</th> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>	Course Outcome 1	Learning Objectives for Course Outcome 1	Define the meaning of sustainability and understand the role of both the natural and human parts of the system.	1.1 Critically assess the impact formula or IPAT theory of environmental impact 1.2 Define and critique the Malthusian Catastrophe. 1.3 Compare and discuss in an ecological context J-curves and S-curves and how they relate to carrying capacity. 1.4 Explain the major reasons for the population demographic transition: income, level of female education, and social structure of the country. 1.5 Understand the implications of populations growth on sustainability.	Course Outcome 2	Learning Objectives for Course Outcome 2	Understand the factors of climate change and articulate methods of avoiding conflict in shared resources.	2.1 Critique the Tragedy of the Commons and develop solutions to avoid a tragedy: external governance, property rights/privatization and internal governance/community. 2.2 Know the major factors that determine the Earth's climate, in particular the concepts of insolation, albedo and greenhouse gases and describe examples of each. 2.3 Describe how cores (rock, sediment, ice) can give past climate evidence and understand the changes in the Earth's climate. 3.4 Describe the projected impacts of global warming on global temperature, climate variability, glaciers, sea level and ecosystems over the next century.	Course Outcome 3	Learning Objectives for Course Outcome 3	Rate different sources of renewable energy in the context of energy security and sustainability.	3.1 Define the concept of renewable energy. 3.2 Know that the key advantages are sustainability, security, and (relative) non-pollution. 3.3 Outline the major sources of renewable energy and assess their potential for growth. 4.4. Describe nuclear energy and evaluate fuel extraction and use.	Course Outcome 4	Learning Objectives for Course Outcome 4		
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	Describe the importance of sustainable source water and how to alleviate water stress caused by community and industry and agriculture demands.	<p>4.1 Apply the basics of hydrology and hydrogeology to understand surface water and groundwater supply models and water budgeting.</p> <p>4.2 Connect the impact of surface runoff, evaporation, transpiration and interception storage to source water.</p> <p>4.3 Understand the concept of virtual water trading and how this can help alleviate water stress.</p> <p>4.4 Describe how the Green Revolution came about. Describe some reasons behind the increase in food production.</p> <p>4.5 Define and critique the Precautionary principle.</p>
	Course Outcome 5	Learning Objectives for Course Outcome 5
	Recognize various policies and regulations and the challenges around successful implementation.	<p>5.1 Outline examples of environmental policy success and failures.</p> <p>5.2 Describe mobilization bias and how it can impact policy.</p> <p>5.3 Enumerate the differences between and cite examples of: command and control regulations and incentive-based regulations.</p> <p>5.4 Understand the concept of positive and negative externalities and describe how negative externalities can be reduced, contrasting the role of regulatory and market-based approaches.</p>
	Course Outcome 6	Learning Objectives for Course Outcome 6
	Demonstrate an understanding of the complexities of measuring sustainable practices by critiquing various types of environmental foot printing .	<p>6.1 Understand what biodiversity is and why it is considered important in ecosystem health.</p> <p>6.2 Recognize ecosystem services and describe intrinsic valuation of the natural world.</p> <p>6.3 Define the concepts of resilience and fragility in an ecosystem context and critique environmental foot printing, ecological foot printing, carbon foot printing and fragility in an ecosystem context.</p> <p>6.4 Describe and critique food miles.</p> <p>6.5 Define embodied/embedded energy and understand its importance in sustainability assessment.</p> <p>6.6 Recognize the process of Life Cycle Assessment.</p>

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments	30%
Discussion posts	20%
Final Test	20%
Mid Term Test	10%
Project and Presentation	20%

Date: July 20, 2023

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