2/4/2025	DATE	MSD	DIVISION
☐	REQUIRED COURSE	☐	NEW COURSE
☑	ELECTIVE COURSE	☑	REVISION

Lake Land College

Course Information Form

COURSE NUMBER:	BIO-130		TITLE: *(30 Characters Max)*		Environmental Science						
SEM CR HRS:	4.0	Lecture:	3.0	Lab:	2.0	ICCB Lab:	2.0	ECH:	5.0		
Course Level:	☑ Gen Ed/IAI ☐ Baccalaureat /Non-IAI	☐ Career/Technical ☐ Dev Ed/Not in Degree Audit		Clinical Practicum:	0.0	Work-based Learning	0.0	WBL ECH:	0.0		
COURSE PCS #	11 - 26.1305		IAI Code	L1 905L				Contact Hours (Minutes Per Week)			
Repeatable (Y/N):	N	Pass/Fail (Y/N):	N	Variable Credit (Y/N):	N	Min:		Max:		16 Wks	250	8 Wks	500
Prerequisites:	None										
Corequisites:	None										
Catalog Description: (40 Word Limit)	This course examines the principles that govern natural environments and human interconnections to them. Some topics include resource use, pollution, sustainability, energy, water, food, ecology, evolution, climate change and population. Laboratory exercises include outdoor field studies and indoor hands-on exercises										

List the Major Course Segments (Units)	Contact Lecture Hours	Contact Lab Hours	Clinical Practicum	Work-based Learning
Unit I - Overview, resources, cultural changes, worldviews and sustainability	7	4		
Unit II – Science, chemistry of life, laws of matter and energy applied to ecosystems, water resources: their importance to living organisms and ecosystem impacts of world water use	12	8		
Unit III - Food and energy resources: their importance to living organisms and ecological impacts	8	8		
Unit IV - Principles and concepts of ecology and evolution and sustaining biodiversity	11	8		
Unit V - Population, air pollution, climate change, ozone depletion, solid and hazardous waste: their causes and effects on living organisms	7	2		
TOTAL	45	30	0	0

EVALUATION							
QUIZZES	☑	EXAMS	☑	ORAL PRES	☐	PAPERS	☑
LAB WORK	☑	PROJECTS	☑	COMP FINAL	☑	OTHER	☐

COURSE MATERIALS	
TITLE:	Environmental Science
AUTHOR:	G.T. Miller, Scott Spoolman, S.E. & Andrews Brown, D.M.
PUBLISHER:	National Geographic Learning/Cengage Learning
VOLUME/EDITION/URL:	17th edition
COPYRIGHT DATE:	2025

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		The student will be able to:
Unit I - Overview, Resources, Cultural Changes, Worldviews and Sustainability		
Ch.1 Introduction, overview and cultural change Ch. 1 Labs - attached	7.5	1. Describe environmental science and its goals. 2. Summarize the various types of Earth's resources. 3. Distinguish between the demographic, cultural and economic differences of developing countries and developed countries and how this affects their environmental impacts. 4. Explain cultural changes that have occurred since humans have existed on Earth and how those changes impacted the natural world. 5. Describe the basic causes of environmental problems and their impacts on humans and ecosystems.

Ch. 25 Worldviews and sustainability Ch. 25 Labs – attached	3.5	1. Differentiate among the various environmental worldviews; assess one's own worldview. 2. Propose steps needed to create a sustainable society.
Unit II – Science, Chemistry of Life, Laws of Matter and Energy Applied to Ecosystems, Water Resources: Their Importance to Living Organisms and Ecosystem Impacts of World Water Us		
Ch. 2 Science, matter and energy Ch. 2 Labs – attached	9.5	1. Demonstrate critical thinking in the application of the scientific method. 2. Describe matter and energy laws and relate them to ecosystems and human resource use. 3. Explain the forms and types of matter and energy.
Ch. 13 and 20 Water resources Ch. 13 and 20 Labs – Attached	10.5	1. Recognize the importance of water to all living organisms. 2. Describe human influences on water availability and water quality.
Unit III - Food and Energy Resources: Their Importance to Living Organisms and Ecological Impacts		
Ch. 12 Food resources Ch. 12 Labs - attached	7.5	1. Describe the main types of agriculture and their impact on human health and the environment. 2. Explain the human benefits and environmental impacts of a green revolution. 3. Summarize the world's main food problems and their possible solutions. 4. Recognize the environmental impacts of human food production and propose solutions.
Ch. 15 Non-renewable energy resources Ch. 15 Labs - attached	4.25	1. Describe the fossil fuels and the environmental and human health impacts of their use. 2. Summarize energy production by nuclear reactors.
Ch. 16 Renewable energy resources and energy efficiency Ch. 16 Labs - attached	4.25	1. Describe the various renewable energy resources; explain the environmental, economic, and health benefits and drawbacks of each.
Unit IV - Principles and Concepts of Ecology and Evolution and Sustaining Biodiversity		
Ch. 3,4,5 Ecosystems and how they work Ch. 3,4,5 Labs - attached	10.5	1. Explain the components of a functional ecosystem. 2. Describe the cycling of matter and flow of energy through an ecosystem. 3. Interpret the dynamics of populations and those factors which influence them. 4. Recognize various types of species interactions. 5. Summarize the biogeochemical cycles. 6. Explain the major biomes and aquatic life zones of earth. 7. Describe how evolution affects biodiversity.
Ch. 10 Sustaining terrestrial biodiversity Ch. 10 Labs - attached	5.25	1. Describe the commercial and ecological significance of forests. 2. Explain the current state of forests of the world and how humans have affected them.

Ch. 9 Sustaining species and ecosystem services Ch. 9 Labs - attached	3.25	1. Explain the economic, medical, aesthetic, ecological and ethical significance of wild species. 2. Identify threatened and endangered species; describe the role of conservation biology in protecting species.
Unit V - Population, Air Pollution, Climate Change, Ozone Depletion, Waste Management: Their Causes and Effects on Living Organisms		
Ch. 6 Human population Ch. 6 Labs - attached	2.5	1. Describe factors affecting human population growth. 2. Compare population growth rate in developed and developing countries. 3. Identify environmental problems associated with the growth of the human population.
Ch. 18 Air pollution and ozone Ch. 18 Labs - attached	2.5	1. Describe the main causes and health effects of indoor and outdoor air pollution. 2. Assess the importance of the ozone layer to life on Earth and relate the causes and effects of ozone destruction in the stratosphere.
Ch. 19 Climate and climate change Ch. 19 Labs – attached	2	1. Identify sources of greenhouse gases. 2. Assess possible environmental effects of climate change.
Ch. 21 Solid and hazardous waste Ch. 21 Labs- attached	2	1. Contrast the main types of solid and hazardous waste and the strategies for dealing with this waste. 2. Explain the physiological effects of lead, mercury and dioxin on the human body. 3. Propose ways to reduce waste generation.
	75	

Outcomes*	Outcome Title	At the successful completion of this course, students will be able to:
Course Outcome 1	Cultur Change Impact	Examine cultural and worldview changes that have taken place throughout human existence and relate how these changes have impacted the natural world and its resources.
Course Outcome 2	Char Sustainable Soc	Describe the characteristics of a sustainable society and propose specific actions that could move our society/economy toward becoming sustainable.
Course Outcome 3	Matter Energy Laws	Summarize the matter and energy laws and give examples of how they apply to resource use by humans and in functional ecosystems.
Course Outcome 4	Ecosystem Biodivers	Identify the components of functional ecosystems and assess their importance to the ecosystem and to human life. Explain how biological evolution affects biodiversity. Investigate the reasons for species extinction and propose methods of protecting endangered and threatened species.
Course Outcome 5	Sustainable Altern	Assess the environmental and human health effects of current agricultural practices and the use of fossil fuels. Critique sustainable alternatives to fossil fuels and unsustainable agricultural practices.
Course Outcome 6	Current Env Prob	Examine current environmental problems and be able to apply critical thinking in suggesting possible solutions to them. Relate current environmental problems to the health of humans and other living organisms.
Course Outcome 7	Sci Method Env Prob	Demonstrate the scientific method to devise solutions to an environmental problem.
Primary Laker Learning Competency	Scientific Literacy: Students apply the scientific process to real-life situations.	
Secondary Laker Learning Competency	Critical Thinking: Students connect knowledge from various disciplines to formulate logical conclusions.	

**Course and program outcomes will be used in the software for outcomes assessment and should include at least 1 primary and 1 secondary Laker Learning Competency. Limit to 3-5.*