Environmental and Natural Resources

Topic	Skills		
	Unit 1: Science Foundations		
Sampling Techniques	 Identify sample types and sampling techniques used to collect laboratory and field data 		
	 Determine the appropriate sampling techniques needed to generate data. 		
	 Identify methods of statistical analysis commonly used in research 		
	 (i.e. means, standard deviation, standard error, error bars, etc) Summarize the purpose of statistical analysis methods commonly used in environmental service systems research and explain 		
	 examples of their use in practice. Utilize data analysis to identify trends in a data sample and assess the confidence that can be drawn from those conclusions. 		
Scientific Instruments	 Identify basic laboratory equipment and explain their uses. Demonstrate the proper use and maintenance of basic laboratory 		
	equipmentIdentify basic environmental monitoring instruments and explain		
	their uses. o Demonstrate the proper use and maintenance of environmental		
	monitoring instruments.		
Community Assessing	Unit 2: Laws & Regulations		
Government Agencies	 Distinguish between the types of government agencies (i.e., local, state and federal) associated with environmental service systems. 		
	 Analyze the specific purpose of government agencies associated 		
	with environmental service agencies.		
	 Evaluate and defend the impact and effectiveness of governmental agencies. 		
Types of Laws	 Distinguish between the types of laws associated with environmental service systems 		
	 Analyze the structure of laws associated with environmental service systems. 		
	 Present an evaluation on the impact of laws associated with environmental service systems. 		
Greenhouse Gas Emissions	 Research and categorize the purpose, implementation, and impact of greenhouse gas emission policies. 		
	 Assess the effectiveness and impact of greenhouse gas emissions policies. 		
	 Devise new policies for controlling greenhouse gas emissions that reduce atmospheric carbon levels while generating additional economic activity. 		
International Trade	 Research, analyze, interpret and evaluate the impact of specific environmental serve agencies and policies on international trade. 		
Population Growth	 Examine and summarize the impact that population growth has on environmental service systems. 		
	 Analyze the correlation between increased population size and the need for regulations. 		
	 Predict the impact of future population growth on the environment. 		

Fracking	Research current policies related to fracking and shale oil gas.				
110010116	Assess whether current policies related to fracking and shale oil gas				
	sufficiently address the needs of environmental service systems.				
	Create suggestions for modifications to current fracking policies that				
	address economic, environmental and social sustainability.				
Unit 3: Principles of the Environment					
Meteorology	Distinguish between the different components and structural layers				
	of the earth's atmosphere				
	 Analyze how meteorological conditions influence air quality. 				
	 Assess the environmental, economic, and social consequences of 				
	climate change.				
	 Analyze the basics of the greenhouse effect and describe how the greenhouse affect alters the earth's balance of energy. 				
Soil Science and	 Differentiate and distinguish land uses, capability factors, and land 				
Hydrology	capability classes.				
,	Research and describe the process of soil formation through				
	weathering.				
	o Examine and explain how the physical qualities of the soil influence				
	the infiltration and percolation of water.				
	 Assess the effectiveness of precautions taken to prevent or reduce 				
	contamination of groundwater supplies.				
	 Analyze how interactions between groundwater and surface water 				
	affect flow and availability.				
	o Determine the importance of the roles played by wetlands in regards				
CI.	to water availability, prevention of flooding, and other factors.				
Chemistry	Analyze the soil chemistry of a sample.				
Missohiology	Analyze the water chemistry of a sample. Describe the microbial highly against found in sail and summerize the				
Microbiology	 Describe the microbial biodiversity found in soil and summarize the contribution of microbial biodiversity to the physical and chemical 				
	characteristics of soil.				
	 Assess how the activities of microorganisms in soil affect 				
	environmental service systems and ecosystem biodiversity.				
	Research and describe how microbial populations in an ecosystem				
	affect carbon cycling.				
	Assess the impact of waste-water treatment on environmental				
	service systems.				
Ecology	 Calculate the amount of biodiversity in a given area using an 				
	appropriate method (e.g., quadrat assessment, transect				
	measurements)				
	o Examine and explain the role played by habitats on environmental				
	service systems.				
	Assess the impact of the current rate of habitat loss.				
	 Research, explain, and assess carrying capacities as they relate to environmental service systems. 				
	Unit 4: Managing our Impact				
Pollution Management	o Identify and distinguish types of pollution and distinguish between				
1 onacion management	point source and nonpoint source pollution.				
	 Research ways in which pollution can be managed and prevented 				
	and proposed solutions to meet the needs of local systems.				
	 Conduct tests to determine the presence and extent of pollution. 				

Solid Waste Disposal	 Compare and contrast different types of solid waste and options for
	treating solid waste.
	Research and summarize the benefits and processes of composting.
	 Apply scientific principles to explain the benefits and processes of composting.
	 Analyze and document different recycling methods and classify
	materials that can be recycled.
	 Survey and evaluate recycling programs and procedures.
Drinking Water	 Analyze and document all steps in the public drinking water
	treatment process according to applicable standards.
	 Research methods commonly used to treat wastewater and septic waste.
	 Analyze and document the steps necessary to ensure that wastewater
	and septic waste can be safely released into the environment.
Energy Sources	Identify the advantages and disadvantages of conventional energy
	sources in regards to environmental service systems.
	 Analyze and document the main categories of energy consumption.
	Devise a strategy for improving future energy consumption in a
	manner consistent with the intents of environmental service systems.
	 Calculate the impact of the carbon cycle imbalance (due to energy
	consumption).
	Unit 5: Natural Resources & their Management
Natural Resource	 Summarize and classify the different kinds of natural resources
Availability	using common classification schemes
	 Devise strategies for the preservation of natural resources based on
	their classification.
	 Summarize the components that comprise all ecosystems.
	Conduct analyses of ecosystems and document the interactions of Conduct analyses of ecosystems and document the interactions of
	living species and non-living resources.
	 Analyze how biodiversity develops through evolution, natural selection and adaptation; explain the importance of biodiversity to
	ecosystem function and availability of natural resources.
	o Classify different types of natural resources in order to enable protection, conservation, enhancement, and management in a
	particular geographical region.
Types of Systems	 Apply ecological concepts and principles to atmospheric natural
Types of Systems	resource systems.
	 Apply ecological concepts and principles to aquatic natural resource
	systems.
	 Apply ecological concepts and principles to terrestrial natural
	resource systems.
	 Apply ecological concepts and principles to living organisms in
	natural resource systems.
	Unit 6: Humans & Nature
Human Regulation	A see so the impact of hymnon activities on the availability of natural
Truman Regulation	 Assess the impact of human activities on the availability of natural
Tuman regulation	o Assess the impact of numan activities on the availability of natural resources.
Tuman Regulation	
Truman Regulation	resources.
Tullian Regulation	resources. o Evaluate how the availability of natural resources can be improved

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Human Perception	0	Analyze how modern perceptions of natural resource management,
		protection, enhancement, and improvement change and develop over
		time.
	0	Research and assess how historical figures played a prominent role
		in shaping how natural resources are viewed and used today.
	0	Anticipate and predict how future technological advancements may
		affect the use and views of natural resources.
Economic Impact	0	Compare and contrast how the economic value of a natural resource
Leonomie impaet	O	affects its availability.
	0	Assess the importance of the use of natural resources on local, state,
	0	and national economies.
	0	Analyze and document how the adoption of green technology and/or
		alternative energy affected a local, state, or national economy.
Communicate our	0	Examine and describe ways in which a message regarding natural
Impact		resources may be communicated to the public through standard
		media sources.
	0	Assess how to most effectively communicate a message about
		natural resources via social media and the Internet.
	0	Create a communication plan to influence the behavior of people,
		call people to action, and instill a sense of civic behavior regarding
		natural resources.
	J	Jnit 7: Sustainability in Agriculture
Sustainable Production	0	Develop plans to ensure sustainable production and processing of
		natural resources.
	0	Summarize forest harvesting methods.
	0	Develop a forest harvesting plan that ensures economic,
		environmental, and social sustainability.
	0	Develop a method for the sustainable harvest of wildlife species.
	0	Evaluate methods used to extract and process minerals for
		economic, environmental, and social sustainability.
	0	Assess the economic impact of fossil fuel extraction in regards to the
		costs and benefits to a local, state, and/or national economy.
	0	Evaluate an example of outdoor recreation and develop suggestions
	O	for how it can be more sustainable.
		Analyze and apply techniques used to acquire aquatic species for
	0	their environmental, economic, and social sustainability.
Cartographic Skills	0	Summarize how to use maps and technologies to identify directions
Cartographic Skins	0	and land features, calculate actual distance, and determine the
		elevations of points.
	0	Analyze an area's resources using GIS technologies.
	O Unit	t 8: Captain Planet-the Power is Yours
Responsible		Demonstrate natural resource protection, maintenance,
Management	0	enhancement, and improvement techniques.
ivialiagement	_	Devise a comprehensive improvement plan for the following:
	0	
		stream, timber stand, wildlife habitat, rangeland, recreational
Disasses	_	activities, marine or coastal natural resources.
Diseases	0	Classify and analyze a plant disease based on its symptoms.
	0	Classify and analyze diseases in wildlife and aquatic species and
		determine if it needs to be reported to proper authorities.
Invasive Species		

	0	Prevent or manage introduction of ecologically harmful species in a
		particular region.
	0	Create a management plan to reduce spread of harmful insects in
		natural resource systems.
	0	Identify and classify invasive species common to a particular region.
	0	Devise strategies to prevent ecological damage that would result
		from the introduction of an invasive species.
Wildlife Management	0	Differentiate between desirable and undesirable fires and research
		the role fire plays in a healthy ecosystem.
	0	Develop a prevention plan for harmful fires for a particular region.
	0	Anticipate and predict how fire management techniques will evolve
		in the future.

FWLD 101-Intro to Natural Resources- Fish and Wildlife 101 (Andrew and Carmen)

ENVR

SPSCI 105- Dr. Rink- Environmental and Natural Resources