

Environmental Resiliency (ENRC)

JoAnn Kvamme
Assistant Director
Environmental Dynamics Program
jkvamme@uark.edu

The various graduate certificates and graduate microcertificates in Environmental Resiliency have been created for people already in the workforce who need additional training in resiliency and sustainability certifications, accounting and metrics. These courses will introduce the concepts and prepare students for advancement in their current jobs or open doors to new opportunities.

Graduate Certificate in Environmental Resiliency Leadership

The Leadership Graduate Certificate will create a foundation in earth systems with a focus on social systems. The courses will help students lead and manage in mitigation, adaptation, and transformation to resiliency and sustainability. In this certificate students will learn how to identify and work inclusively with stakeholders, effectively lead, and frame issues.

Students enter the program with a minimum of a B.S./B.A. from an accredited university. Students must have a 3.0 GPA, or better, and for non-native speakers must have language test scores acceptable for admission by the University of Arkansas graduate school standards.

ENRE 51203	Foundations of Environmental Resiliency	3
ENRE 51103	Adaptive Leadership	3
ENRE 52103	Leadership is Convening, Do You Know How to Convene?	3
ENRE 53103	Working with Stakeholders	3
ENRE Elective (recommended course listed below)		3
ENRE 51303	Science Communication for Executives	
Total Hours		15

Graduate Certificate in Resiliency Certifications, Accounting and Metrics

The Environmental Resiliency Certifications, Accounting and Metrics Graduate Certificate will provide a foundation in resiliency and explore various types of accreditation standards for built environments, familiarize students with environmental accounting metrics and reporting frameworks.

Students enter the program with a minimum of a B.S./B.A. from an accredited university. Students must have a 3.0 GPA, or better, and for non-native speakers must have language test scores acceptable for admission by the University of Arkansas graduate school standards.

ENRE 51203	Foundations of Environmental Resiliency	3
ENRE 52303	Carbon Accounting	3
ENRE 53303	ESG Reporting	3
ENRE 54303	Built Environment Certification Systems	3
Electives recommended:		3
ENRE 51303	Science Communication for Executives	

ENRE 52203 You Cannot Manage What You Do Not Measure

Total Hours 15

Graduate Microcertificate in Environmental Resiliency

The Environmental Resiliency Graduate MicroCertificate will be the first step in understanding resiliency.

Students enter the program with a minimum of a BS/BA from an accredited university. Students must have a 3 point GPA, or better, and for non-native speakers must have language test scores acceptable for admission by the University of Arkansas graduate school standards.

ENRE 51203	Foundations of Environmental Resiliency	3
Choose 2 of the 3 electives below:		6
ENRE 52203	You Cannot Manage What You Do Not Measure	
ENRE 53203	Survey of Watershed Hydrology and Water Resource Management	
ENRE 54203	Business and the Environment	

Total Hours 9

Graduate Microcertificate in Resiliency Certifications, Accounting and Metrics Environmental Certifications, Accounting, and Metrics Graduate MicroCertificate

The Environmental Certifications, Accounting, and Metrics Graduate MicroCertificate will be the first step in understanding the new standard certifications being used to move companies and government toward a more sustainable and resilient future.

Students enter the program with a minimum of a BS/BA from an accredited university. Students must have a 3 point GPA, or better, and for non-native speakers must have language test scores acceptable for admission by the University of Arkansas graduate school standards.

ENRE 51203	Foundations of Environmental Resiliency	3
Choose two of the three electives below:		6
ENRE 52303	Carbon Accounting	
ENRE 53303	ESG Reporting	
ENRE 54303	Built Environment Certification Systems	

Total Hours 9

Environmental Resiliency Leadership Graduate Microcertificate

The Environmental Resiliency Leadership Graduate Microcertificate will be the first step to understanding resiliency and the foundations of good leadership. Together these skills will provide opportunities for the employee.

Students enter the program with a minimum of a B.S./B.A. from an accredited university. Students must have a 3.0 GPA, or better, and for non-native speakers must have language test scores acceptable for admission by the University of Arkansas graduate school standards.

ENRE 51203	Foundations of Environmental Resiliency	3
Choose two of the four listed electives:		6
ENRE 51103	Adaptive Leadership	
ENRE 51303	Science Communication for Executives	

ENRE 52103 Leadership is Convening, Do You Know How to Convene?

ENRE 53103 Working with Stakeholders

Total Hours

9

Sustainability Courses

SUST 51003. Foundations of Sustainable and Resilient Systems. 3 Hours.

Exploring sustainability foundations, application, and assessment, this course provides students the skills and competencies to understand, communicate, and evaluate sustainability at multiple scales. Using core sustainability concepts, such as systems and complexity, resilience and vulnerability, we evaluate interrelationships among environmental, societal, and economic well-being and the implications for decision-making. (Typically offered: Fall)

SUST 52003. Decision Making, Analysis and Synthesis in Sustainability. 3 Hours.

Provides an applied framework for analyzing decision dynamics, supporting and promoting more sustainable decisions, and measuring the sustainability of systems. The course applies theories of change, institutional decision theory, social and institutional constructs of sustainability, indicator and metric development across social, ecological, and economic domains, and communication strategies. (Typically offered: Spring)

SUST 53003. Sustainable Global Food, Energy and Water Systems. 3 Hours.

Provides a detailed review of the existing global food production/distribution and water systems, with an emphasis on scarcity, equity, management and challenges from changing global systems. This course explores the inputs and efficiencies of existing agricultural production systems, and examines equity and value in these systems. (Typically offered: Fall)

SUST 56003. Environmental Sociology. 3 Hours.

The course provides a social perspective on environmental issues. It examines the linkage between society, ecological systems and the physical environment. It provides conceptual framework(s) for analyzing environmental issues, considers the role of humans in environmental issues, and enhances understanding the complexity of the relationship between societal organization and environmental change. Graduate degree credit will not be given for both SUST 46003 and SUST 56003. (Typically offered: Fall)

SUST 56903. Environmental Justice. 3 Hours.

This course deals with the ethical, environmental, legal, economic, and social implications of society's treatment of the poor, the disenfranchised, and minorities who live in the less desirable, deteriorating neighborhoods, communities, and niches of our country. The class integrates science with philosophy, politics, economics, policy, and law, drawing on award-winning films, current news, and case studies. Graduate degree credit will not be given for both SUST 46903 and SUST 56903. (Typically offered: Spring)

SUST 5900V. Special Problems in Sustainability. 1-6 Hour.

Special Problems is intended to fulfill a need in the sustainability curriculum to offer one-time pilot course work in any semester prior to the formal curriculum approval process, offer seminars on unusual but timely topics in sustainability on a one-time basis, or independent study for students seeking additional expertise in sustainability research and scholarship. Prerequisite: Graduate standing. (Typically offered: Irregular) May be repeated for up to 6 hours of degree credit.

SUST 69103. Sustainable Design and Construction: Remediation and Plants on Structure. 3 Hours.

Plants on Structure introduces students to strategies and techniques of plant use in the built environment. Potential topics include green infrastructure (e.g., green roofs and walls), site, soil, and water remediation techniques (e.g., phytoremediation, bioswales, and living machines), and structural considerations. Technical documentation methods and other representation and/or communication techniques as a means of conveying design intent are included. (Typically offered: Spring)

Environmental Dynamics Courses

ENDY 50503. Quaternary Environments. 3 Hours.

An interdisciplinary study of the Quaternary Period including dating methods, deposits soils, climates, tectonics and human adaptations. (Typically offered: Fall) This course is cross-listed with ANTH 50503, GEOS 50503.

ENDY 51103. Global Change. 3 Hours.

Examines the interacting natural and anthropogenic factors involved in global change, concentrating on climate variability and change. Prerequisite: Graduate standing or instructor's approval. (Typically offered: Spring) This course is cross-listed with GEOS 51103.

ENDY 56503. GIS Analysis and Modeling. 3 Hours.

Unlike conventional GIS courses that focus on studying "where", this course will teach students to address beyond "where" using various GIS analysis and modeling techniques to explore "why" and "how". The course will provide theoretical and methodological reviews of the principles of cartographic modeling and multi-criteria decision-making. Students will receive degree credit for only one of ENDY 56503 or GEOS 56503. (Typically offered: Spring) This course is cross-listed with GEOS 56503.

ENDY 58503. Environmental Isotope Geochemistry. 3 Hours.

Introduction to principles of isotope fractionation and distribution in geological environments isotopic analytical methods, and extraction of isotope samples; application of isotopes in characterization of geologic processes and interaction with hydrologic, surficial, and biologic attenuation, paleothermometry soil and biochemical processes. (Typically offered: Spring) This course is cross-listed with GEOS 58503.

ENDY 6000V. ENDY Thesis Research. 1-6 Hour.

Master's Thesis. May be repeated for degree credit. (Typically offered: Fall, Spring and Summer) May be repeated for up to 6 hours of degree credit.

ENDY 60103. Environmental Dynamics. 3 Hours.

Required course for ENDY doctoral candidates. Overview of Earth Systems: Lithosphere; Hydrosphere, Atmosphere, Biosphere, Cryosphere, and human interaction across Earth systems. Emphasis on understanding of processes within Earth systems and interactions across Earth Systems as they pertain to global self-regulation, secular variation, climate stability, development and sustainability of human societies. Prerequisite: Graduate standing. (Typically offered: Fall)

ENDY 6020V. Current Topics Seminar. 1-2 Hour.

Various aspects of the environment will be explored through topic specific seminars. Subject matter will change each semester addressing current environmental issues and research. Seminars will be one or two hours credit. Prerequisite: Graduate standing. (Typically offered: Irregular) May be repeated for up to 6 hours of degree credit.

ENDY 60303. Society and Environment. 3 Hours.

This course examines the complex interrelationships between human societies and the natural environment. Drawing on diverse and interdisciplinary perspectives in archaeology, ethnography, history, geography, and palaeo-environmental studies, readings and discussion will explore the co-production of social and environmental systems over time. (Typically offered: Spring) This course is cross-listed with ANTH 60303.

ENDY 6890V. Special Problems in Environmental Dynamics. 1-6 Hour.

Independent study of a topic related to environmental dynamics under the guidance of an ENDY faculty member. (Typically offered: Fall, Spring and Summer) May be repeated for up to 12 hours of degree credit.

ENDY 69901. Environmental Dynamics Colloquium. 1 Hour.

Weekly meetings for discussion of current research in environmental dynamics. Graduate students must register for colloquium each semester during their first three semesters. Colloquium credit does not count towards minimum hours required for the doctorate. Prerequisite: Graduate standing. (Typically offered: Fall and Spring) May be repeated for up to 20 hours of degree credit.

ENDY 7000V. Doctoral Dissertation. 1-18 Hour.

Doctoral dissertation. Prerequisite: Graduate standing. (Typically offered: Fall, Spring and Summer) May be repeated for degree credit.