New Program Proposal

Date Submitted: 01/26/23 12:43 pm

Viewing: ENREMS : Environmental Resiliency, Master of Science

Last edit: 02/13/23 9:28 am

Changes proposed by: jkvamme

Submitter:	User ID:	jkvamme	Phone:	479-575-6603
Program Status	Active			
Academic Level	Graduate			
Type of proposal	Major/Field of Study			
Select a reason for this new program	Adding New Degree--(LOI 1, Proposal-1)			
Are you adding a concentration?	No			
Are you adding or modifying a track?	No			
Are you adding or modifying a focused study?	No			
Effective Catalog Year	Spring 2024			
College/School Code	Graduate School and International Education (GRAD)			
Department Code	Environmental Dynamics (ENDY)			
Program Code	ENREMS			
Degree	Master of Science			
CIP Code				

In Workflow

1. **GRAD Dean Initial**
2. **GRAD Dean Initial**
3. **Provost Initial**
4. **Director of Curriculum Review and Program Assessment**
5. **Registrar Initial**
6. **Institutional Research**
7. **ENDY Chair**
8. **GRAD Dean**
9. **Dean of University Libraries**
10. **Global Campus**
11. **Provost Review**
12. **Graduate Council**
13. **Faculty Senate**
14. Provost Final
15. Provost's Office--Documentation sent to System Office
16. Higher Learning Commission
17. Board of Trustees
18. ADHE Initial
19. ADHE Final
20. Provost's Office--Notification of Approval
21. Registrar Final
22. Catalog Editor Final

Approval Path

1. 01/24/23 6:36 pm Christa Hestekin (chesteki): Rollback to Initiator
2. 01/26/23 11:33 am Christa Hestekin

(chesteki): Approved for GRAD Dean Initial

3. 01/26/23 11:33 am Christa Hestekin (chesteki): Approved for GRAD Dean Initial
4. 01/26/23 12:34 pm Jim Gigantino (jgiganti): Rollback to Initiator
5. 01/26/23 12:54 pm Christa Hestekin (chesteki): Approved for GRAD Dean Initial
6. 01/26/23 12:55 pm Christa Hestekin (chesteki): Approved for GRAD Dean Initial
7. 01/26/23 1:04 pm Jim Gigantino (jgiganti): Approved for Provost Initial
8. 02/07/23 11:03 am Alice Griffin (agriffin): Approved for Director of Curriculum Review and Program Assessment
9. 02/07/23 11:29 am Gina Daugherty (gdaugher): Approved for Registrar Initial
10. 02/08/23 9:38 am Doug Miles (dmiles): Approved for Institutional Research
11. 02/08/23 6:21 pm Christa Hestekin

(chesteki): Approved for ENDY Chair
12. 02/08/23 6:34 pm Christa Hestekin (chesteki): Approved for GRAD Dean
13. 02/09/23 3:44 pm Jason Battles (jasonjb): Approved for Dean of University Libraries
14. 02/09/23 3:47 pm Suzanne Kenner (skenner): Approved for Global Campus
15. 02/09/23 8:15 pm Jim Gigantino (jgiganti): Approved for Provost Review
16. 04/05/23 2:43 pm Christa Hestekin (chesteki): Approved for Graduate Council

03.0101 - Natural Resources/Conservation, General.

Program Title

Environmental Resiliency, Master of Science

Program Delivery Method

Online/Web-based

Is this program interdisciplinary?

Yes

College(s)/School(s)

College/School Name
Graduate School (GRAD)

Does this proposal impact any courses from another College/School?

Yes

College(s)/School(s)

College/School Name
Fay Jones School of Architecture and Design (ARCH)

College/School Name
Walton College of Business (WCOB)

What are the total hours needed to complete the program? 30

On-line/Web-based Information

Reason for offering Web-based Program

The target audience is mid-level employees who understand their company, agency, or program rules, regulations, and procedures. Many of these individuals are decision makers for environmental and sustainability policies. While they may be very skilled in aspects of their professions, they need a more comprehensive understanding of the science, theory, and methods to assist in their policy decisions and to realize the potential implications of their policies. We hope to engage the target group to assist them in career advancement and making the best choices possible in responding to our changing climate to aid in sound, sustainable, and resilient practices.

The web-based program is the best way to facilitate the needs of this group of people.

Maximum Class Size for Web-based Courses 25

Course delivery mode

Method(s)
Online

Class interaction mode

Method(s):
Electronic Bulletin Boards

Percent Online

100% with No Required Campus Component

Provide a List of Services Supplied by Consortia Partners or Outsourced Organization

na

Estimate Costs of the Program over the First 3 Years $60,000

List Courses Taught by Adjunct Faculty

Upload Memorandum of Understanding Forms (if required)

Program Requirements and Description

Requirements

Requirements for Admission include:

BA/BS from an accredited university or college

Minimum 3.0 GPA

Non-native speakers of English must meet the Graduate School's English Language Proficiency Requirement.

Requirements for the Master of Science Degree:

The Environmental Resiliency MS requires students to complete 10 courses or 30 hours (no thesis). Students are required to take SUST 5103, SUST 5203, and SUST 5303 plus ENRE 5123 . The remaining 18 hours are electives from the list below or approved by the advisor.

The Environmental Resiliency MS presents an advanced study of resiliency in the context of sustainability, climate, and environmental change. The program components are divided into four core areas: 1) sustainability, 2) leadership, 3) resiliency, and 4) certifications, accounting, and metrics. Students will learn theories and methods of resiliency and sustainability as part of a broader understanding of climate change and solutions as they apply to the four topic areas above. A common core of classes in sustainability and resiliency will serve as the foundation for the four topic areas.

ENRE 5123 FOUNDATIONS OF ENVIRONMENTAL RESILIENCY	Course ENRE 5123 FOUNDATIONS OF ENVIRONMENTAL RESILIENCY Not Found	3
SUST 5103	Foundations of Sustainable and Resilient Systems	3
SUST 5203	Decision Making, Analysis and Synthesis in Sustainability	3
SUST 5303	Sustainable Global Food, Energy and Water Systems	3
Select from the following electives:		**18**

BUSI 5023	Sustainability in Business
ENRE 5113 ADAPTIVE LEADERSHIP	Course ENRE 5113 ADAPTIVE LEADERSHIP Not Found
ENRE 5133 SCIENCE COMMUNICATION FOR EXECUTIVES	Course ENRE 5133 SCIENCE COMMUNICATION FOR EXECUTIVES Not Found
ENRE 5213 LEADERSHIP IS CONVENING, DO YOU KNOW HOW TO CONVENE?	Course ENRE 5213 LEADERSHIP IS CONVENING, DO YOU KNOW HOW TO CONVENE? Not Found
ENRE 5223 YOU CANNOT MANAGE WHAT YOU DO NOT MEASURE	Course ENRE 5223 YOU CANNOT MANAGE WHAT YOU DO NOT MEASURE Not Found
ENRE 5233 CARBON ACCOUNTING	Course ENRE 5233 CARBON ACCOUNTING Not Found
ENRE 5313 WORKING WITH STAKEHOLDERS	Course ENRE 5313 WORKING WITH STAKEHOLDERS Not Found
ENRE 5323 SURVEY OF WATERSHED HYDROLOGY AND WATER RESOURCE MANAGEMENT	Course ENRE 5323 SURVEY OF WATERSHED HYDROLOGY AND WATER RESOURCE MANAGEMENT Not Found
ENRE 5333 ESG REPORTING	Course ENRE 5333 ESG REPORTING Not Found

ENRE 5423 BUSINESS AND THE ENVIRONMENT	Course ENRE 5423 BUSINESS AND THE ENVIRONMENT Not Found
ENRE 5433 BUILT ENVIRONMENT CERTIFICATIONS	Course ENRE 5433 BUILT ENVIRONMENT CERTIFICATIONS Not Found
SUST 6913	Sustainable Design and Construction: Remediation and Plants on Structure
Total Hours	30

Program Costs

There will be no new administrators. Instructional cost will be covered by tuition revenue.

Library Resources

The University of Arkansas Libraries provides access to information resources that support the educational objectives and outcomes of the University of Arkansas, including the College of Engineering. The libraries house more than 2 million print volumes and over 5.5 million microforms. The annual reports can be found at http://libinfo.uark.edu/info/annualreport.asp. All electronic resources purchased by the libraries, including databases, are accessible from anywhere in the world on a 24 hour/7 days per week basis.

There are over 42,000 current journals and serials maintained by the libraries. The journal, book and conference publications, and other engineering societies are well represented in the libraries. Most of the current subscriptions for science and technology journals are in electronic format. The libraries also provide access to full text of newspapers, trade journals magazines, and interdisciplinary scholarly journal articles through Academic Search Complete and Business Source Complete (EbscoHost), ABI Inform (ProQuest), and Academic Universe (Lexis Nexis).

The Libraries maintain a subscription to appropriate portions of Knovel, which enriches access to interactive texts and data sources. Other texts and textbook materials may be purchased as e-books. ASTM, ASCE, and IEEE standards are fully accessible through online venues. A selected number of standards from organizations such as AASHTO, ASME, and ISO are available in the print collection.

Instructional

Facilities

There will be no new facilities and no facilities will be renovated.

Faculty Resources

NA

List Existing Certificate or Degree Programs
that Support the Proposed Program

Program(s)
GEOGBA-CTRS - Geography: Cartography/Remote Sensing GIS Concentration
BIOLMS - Biology, Master of Science
OPANMS - Operations Analytics, Master of Science in Operations Analytics
SUSTGC - Sustainability Graduate Certificate
WCOB Acad Regs - WCOB College Academic Regulations

Are Similar Programs available in the area?

No

Estimated Student Demand for Program: 25 new students per year

Scheduled Program Review Date: 2030-2031

Program Goals and Objectives

Program Goals and Objectives
Graduates of the ENRE program will understand the science behind climate change and the part resiliency plays in mitigating its impact. They will possess skills to communicate this information to a variety of stakeholders and to effectively work toward environmental resiliency in policy and practice.

Learning Outcomes

Learning Outcomes
Specific outcomes include: • Students will have awareness of key environmental issues and have the ability to communicate the principal problems the built environment causes to Earth's systems for the purposes of broad ecological literacy and working towards bringing the built environment to operate within planetary boundaries. • Students will understand the triple bottom line as a metric of sustainability, the five pillars of sustainability, and the 'infinity loop' in resilience frameworks. • Students will recognize general applicability of laws of physics to sustainability and resilience (e.g., conservation of energy, conservation of mass, water cycle). • Students will be able to define what an ecosystem is and relate its carrying capacity; and determine how resource use efficiency and conservation relate to carrying capacity. Be able to discuss reversible vs. permanent impacts on ecosystems. • Students will be able to create a Personal Sustainability Plan (PSP) including how to apply sustainability principles to their individual field. • Students will be able to define the concept of a carbon footprint and an ecological footprint using accepted theories, methods, and frameworks. • Students will grow in their understanding of how sustainability and resiliency relate to their role, their work, and

Learning Outcomes
communities. • Students will learn to articulate what inspires them to create change that leads to a more resilient world. • Students will learn techniques and skills for becoming mindful leaders of bold change. • Students will learn the skills needed to identify when there is an opportunity to lead. • Students will know how to engage stakeholders authentically so that they can successfully convene and mobilize people to a shared vision for change. • Students will be able to communicate the concept of uncertainty and its role in decision making. • Students will know the types of tools and frameworks available to them for measuring and managing their organization's impacts and how to access them. • Students will be able to advocate for using measurement to reduce negative impacts associated with business practices. • Students will be able to conduct surveys of certifications and build proficiency in the core set of key performance indicators that are shared across the certification metrics. • Students will be able to define, explain, and apply the economic, environmental, and social components of sustainability and resilience. Students will be able to present complex technical information such as scientific data clearly to multi-stakeholder groups • Students will be globally and culturally sensitive • Students will be able to apply functional knowledge gained in this program to solve real-world or simulated problems to it.

Description and Justification for this request

Description of request	Justification for request
We wish to add a new master's program. This program presents an advanced study of resiliency in the context of sustainability, climate, and environmental change. The program components will be divided into four core areas: 1) sustainability, 2) leadership, 3) resiliency, and 4) certifications, accounting, and metrics. Students will learn theories and methods of resiliency and sustainability as part of a broader understanding of climate change and solutions as they apply to the four topic areas above. A common core of classes in sustainability resiliency will serve as the foundation for the four topic areas.	According to Forbes, natural disasters cost $145 billion in the United States 2021. As the climate change accelerates, these costs will rise. The government has recently been taking the cost of climate change more seriously and in President Biden's budget for fiscal year 2023 there is a record $44.9 billion targeted to address the climate crisis (this is a 60% increase from 2021). Within that budget there is $18 billion for climate resilience and adaptation programs. Employees who understand environmental systems and issues may best to address these problems with solutions that make us more resilient and allow our system to become sustainable. Nationally, jobs with sustainability in the title have grown tenfold in the past decade. Sustainability and resilience jobs grew by eight percent in our region over the last five years, but only six percent of potential employees list green skills and knowledge. So, in addition to the regional need for higher-education curricula and trained employees in resilience and sustainability, there is also a clear

Description of request	Justification for request
	present and future need for employees nationally if students elect not to work in Arkansas. ENRE offers people who are in jobs where much of this change will take place to hone their skills an augment to their ability to contribute to finding the solutions needed as we move forward. These will not just be scientists, though they will be important part of the solutions; we need to provide leaders, analyst and communicators across job markets including government agencies, private business, and NGOs. addressing, evaluating, and tackling some of the most pressing climate issues. We also want to prepare students, or those changing occupations, with a basis for entering many of the new jobs being created by the influx of resources earmarked to addressing our environmental resilience and sustainability practices. Two workforce analyses were conducted by UA Global Campus to assess the need for this program. The types of jobs in both Workforce Analysis reports tended toward included program and project managers, compliance officers and analysts. Communication ranks at the top of employer desired skills, along with leadership (both sorely underreported on applicant resumes). To be successful in these areas the employee needs to understand the basics of sustainability and resilience, which we provide through the targeted micro-certificates, Graduate certificates, and the master's degree program. Other skills that employers desire that are often not reported in resumes are data analysis, problem solving, planning and risk management. The four core areas we propose address these needs of employers, not only giving a background and foundation in sustainability and resilience, but providing a better understanding of how to communicate and lead projects toward those goals. Through the Certification, Accounting and Metrics concentration we give students the tools they need to understand practices and evaluate them as managers, which will be critical as federal and state agencies and business work to meet the evolving industry and government standards.

Upload attachments

ENREMS - New Degree - Degree Costs and Salary Earnings.docx

ENREMS - New Degree - Ltr of Intent.docx

ENREMS - New Degree - Supporting Documentation.pdf

ENREMS - New Degree - Proposal.docx

Reviewer Comments

Christa Hestekin (chesteki) (01/24/23 6:36 pm): Rollback: The way courses have been entered is incorrect.

Jim Gigantino (jgiganti) (01/26/23 12:34 pm): Rollback: Rollback to submitter at their request for change

Alice Griffin (agriffin) (01/26/23 2:38 pm): Hyperlinked the courses in the first paragraph of program requirements.

Alice Griffin (agriffin) (01/26/23 2:47 pm): Replaced red box courses with courses that have already been approved in order to clean up and distinguish which courses were actually pending approval.

Alice Griffin (agriffin) (01/26/23 2:53 pm): Removed the duplicated language of program goals from learning outcomes.

Alice Griffin (agriffin) (01/26/23 2:56 pm): Moved the admissions requirements from bottom of requirements to above course list. Also added a header to the requirements. These changes are to provide consistency with other graduate programs in the catalog of studies. Program is encouraged to review for accuracy.

Alice Griffin (agriffin) (01/26/23 3:03 pm): Added comment: Select from the following electives and check "sum" box to demonstrate the total required 30 hours for the program. Also removed "in approval chain" as a comment from catalog copy. As the red box will demonstrate courses are still pending approval. Program is encouraged to review edits for accuracy.

Alice Griffin (agriffin) (01/26/23 3:04 pm): Elective courses were indented to remove hours from right tally and demonstrate they are part of the 18 hours of electives section of the program requirements.

Alice Griffin (agriffin) (01/26/23 3:08 pm): Changed proposed course title ENRE 5213 Leadership is Convening, Do You Know How to Convene? to... Leading is Convening, Do You Know How to Convene? ...to match the proposed course title proposed in Course Inventory Management.

Alice Griffin (agriffin) (01/26/23 3:12 pm): Changed proposed course title ENRE 5223 You Can't Manage What You Don't Measure to...You Cannot Imagine What You Do Not Measure...to match the proposed course title proposed in Course Inventory Management. Program is encouraged to review these course titles for accuracy.

Alice Griffin (agriffin) (01/26/23 3:19 pm): Changed proposed course title ENRE 5433 Built Environment Certification Systems...to Built Environment Certifications... to match the proposed course title proposed in Course Inventory Management. Program is encouraged to review for accuracy.

Alice Griffin (agriffin) (01/26/23 3:23 pm): Corrected CIP Code from 3.0101 to 03.0101.

Alice Griffin (agriffin) (01/26/23 3:52 pm): Changed proposed course title ENRE 5123 Foundations of Resiliency to ENRE 5123 Foundations of Environmental Resiliency to match the proposed course title submitted into Course Inventory Management. Program is encouraged to review for accuracy.

Alice Griffin (agriffin) (01/27/23 3:40 pm): ATTENTION REGISTRAR: Please remove the Undergraduate Council from the approval workflow.

Alice Griffin (agriffin) (01/27/23 4:49 pm): After corresponding with submitter, changed ENRE 5213 to Leadership is convening, do you know how to convene? and changed ENRE 5223 to You cannot manage what you do not measure. Revised proposal as well.

Alice Griffin (agriffin) (02/01/23 1:15 pm): Inserted approval dates and updated titles in the LOI. Also uploaded the degree costs document.

Alice Griffin (agriffin) (02/07/23 10:59 am): Revised scheduled program review date to an academic year.

Alice Griffin (agriffin) (02/07/23 11:03 am): Revised LOI, Proposal, and Supporting Documents with submitter input.

Gina Daugherty (gdaugher) (02/07/23 11:29 am): Removed Undergraduate Council from workflow.

Jim Gigantino (jgiganti) (02/09/23 8:11 pm): fixed typo

Gina Daugherty (gdaugher) (02/13/23 9:28 am): Added Master of Science to program title.

Key: 938