

## 2016 LARC 2.0 Proposal

### A Revised Environmental Science Curriculum: Inspiring Scholarly Inquiry

#### 1. Participant(s) and their departments

Karen Arabas - EES

Joe Bowersox - EES

Mindy Butterworth - EES

Katja Meyer - EES

Scott Pike - EES

Type of curriculum innovation (inquiry-based module, redesigned course, program revision)

Program Revision

#### 3. A 500-word statement about the proposed curricular innovation:

Courses involved

All courses in ENVR and EARTH, plus POLI304W and POLI341 are part of our program revision.

Narrative and Goals

The Environmental and Earth Science (EES) faculty share a common commitment to shaping graduates (in both our major and across the CLA) who are scientifically and socially literate, well versed in integrative and interdisciplinary systems thinking, have significant experience with discovery-based research (NAS 2015), and whose toolbox includes critical thinking, quantitative, written and communication skills necessary for both professional success and responsible citizenshipPlan

directs us to develop greater field and community-based learning, all of which enable us to put scholarly inquiry at the heart of our curriculum. As would be expected in the face of all this change, our program objectives and curriculum have lost their overarching coherence and they lack intentional scaffolding, particularly with respect to being able to provide our majors (and other CLA students engaged in our general education courses) with a clear approach and research-rich experiences.

Our LARC proposal will help support Phase III (May 2016-May 2017) of a multi-year effort to enhance and improve the EES curriculum so that it better aligns with our departmental and CLA goals. In 2013 we initiated Phase I with a self-study, the results of which helped guide our hiring of 2 tenure track faculty specializing in climate change: a geoscientist and medical geographer. In Fall 2015, with our new colleagues in place we initiated Phase II, conducting basic course mapping to better understand our current curriculum. In November 2015, we began to redevelop our identity, focus, and mission, through a two-day, intensive workshop on program envisioning and design facilitated by the National Association of Geosciences Teachers (NAGT). Using a backward design approach, we developed 1) a draft statement of how the systems approach guides our program, 2) a set of program learning outcomes (PLOS), and 3) a draft SWOT analysis examining internal and external factors that may help or hinder these outcomes (drafts of these documents available upon request). In December 2015 and January 2016 we finished our SWOT analysis and created a work plan for undertaking our program design and revision (Phase III), buoyed by the approaches and tools we learned at the NAGT workshop. Our program design and revisions will focus on appropriate scaffolding of content and research skills in order to better prepare our students for their senior capstone course and summer research opportunities, while also providing non-majors and majors with the tools to be responsible consumers of environmental information in part through engagement in research, field experiences, and service-learning collaborations.

Our plan is to 1) submit a revised curriculum to the Programs Committee in September 2016, 2) revise courses during AY 2016-2017 and summer 2017, and 3) to implement the curriculum beginning Fall 2017. We plan to consult with several outside experts as we revise the curriculum and create our assessment tool. In addition, we plan to engage current and former students for feedback on our revisions. Please see timeline below for details.

#### Work Plan & Implementation Schedule

Time Line	Task
Spring 2016	Revise our systems approach statement
	Produce a final set of measurable and assessable program learning outcomes in these four areas: content, skills, experiences, and values.
	Use the NAGT program matrix tool to map how our <i>current</i> curriculum addresses these <i>new</i> learning outcomes.
Summer 2016	Use the program matrix tool mapping results to revise the EES

approach to curriculum content and research-rich activities for practice reflects direction from our self-study and current best practices. My colleagues have demonstrated their commitment to developing a common vision for our curriculum, and will approach the hard work ahead with energy, enthusiasm, and an excellent work ethic.

## References cited

GMU (George Mason University). *2015 Students as Scholars: Course and Curriculum Mapping*. <http://oscar.gmu.edu/fac-staff/Mapping.cfm>. Accessed 1/18/16

Hall, S.J., T. Tietenberg, and S. Pfirman. 2005. *Environmental Programs at Liberal Arts College: Findings and Recommendations for the Andrew W. Mellon Foundation*. What Works - A PKAL Essay. Project Kaleidoscope. Washington DC.

NAS (National Academies of Sciences, Engineering, and Medicine). 2015. *Integrating Discovery-Based Research into the Undergraduate Curriculum. Report of a Convocation*. Washington, DC. National Academies Press.