CREATING A FIRST YEAR SEMINAR IN ASTROBIOLOGY. A. Olcott Marshall[1] and K.S. Bitting[1], [1]Department of Geology, University of Kansas, 1475 Jayhawk Blvd, Lawrence KS 66045 olcott@ku.edu kelsey.bitting@ku.edu

Introduction: First year seminars are small courses designed to actively engage new students by introducing them to exciting ideas and novel research. These courses are not designed for students in a specific major, though; the hope is that by providing students a chance to explore innovative topics through student-faculty and student-student interactions, students will become excited about learning while developing and expanding their writing, communication and critical thinking abilities. Astrobiology is a perfect topic for this type of class, as it provides a way to teach the scientific process of knowledge production, geologic observation, and the interactions between science, technology and society via outer space, a topic with near-universal appeal.

Here at the University of Kansas we will begin teaching a new seminar, *Geol 177: Exploring Mars: Our Evolving View of the Red Planet,* in the Fall of 2015. Although we will use a variety of approaches to engage the students, from examining historical records of early Mars observations to reading modern fictional accounts of life on Mars, a large part of the semester will be based on having the students produce, interpret and present their own astrobiological data. Led by an interdisciplinary team of Earth scientists, students will visit a Mars analog field site in Oklahoma to collect geochemical and biological evidence both directly and via a remotely-guided protocol simulating the true time delay and physical removal experienced by scientists operating remotely-operated vehicles and instruments on other planets. After students analyze their data in the classroom back at the University of Kansas, they will be communicating their questions, process, and findings in writing on a blog for the public and then creating a museum-outreach event open to the community as a whole.

We have ambitious learning outcomes for the class: (1) students will be able to evaluate the strengths and limitations of scientific data and the knowledge it supports, and trends in strengths and limitations of scientific data and knowledge through time; (2) students will be able to compare and contrast science and technology, and explore the bi-directional relationships between the evolution of scientific knowledge, the development of technology, and changes in our society's standard of living; (3) students will be able to synthesize their questions, experiences, and learning outcomes around science to create a meaningful narrative to share with the public. We have found in previous courses that in order to allow students to successfully achieve such outcomes, they need to be scaffolded through the steps of the project and provided with a rubric of expectations. Rather than a lecture-driven approach in which students are passive recipients of knowledge, this course will include team-based active learning approaches that allow students to practice the skills and abilities that are central to the learning outcomes from the outset. We will share our backwards design approach to developing a student-centered astrobiology learning experience that will enable undergraduates to succeed in this course, and lay the foundation for 4 years of deep, engaged, transformative learning.