School of Earth and Space Exploration at Arizona State University: Initial Conceptualization

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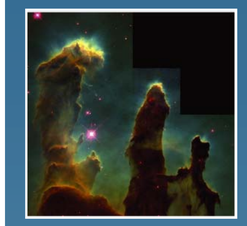
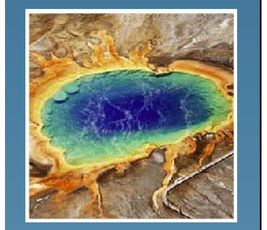
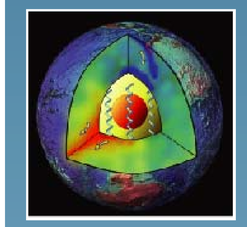
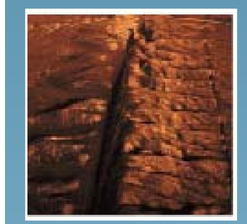
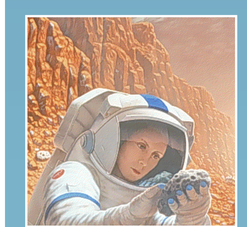







Background:

In response to impetus from ASU's new President Michael Crow, the Department of Geological Sciences is developing plans for a new academic unit (a 'School') that would enhance our capabilities for fundamental and large scale research and that would educate a new cadre of scientists and engineers in a fundamentally different and transdisciplinary way. This poster outlines some initial concepts for the ASU School of Earth and Space Exploration (SESE). The School will utilize and develop the 'exploration cycle' that integrates science, engineering, education and policy components of the School's research and educational themes.

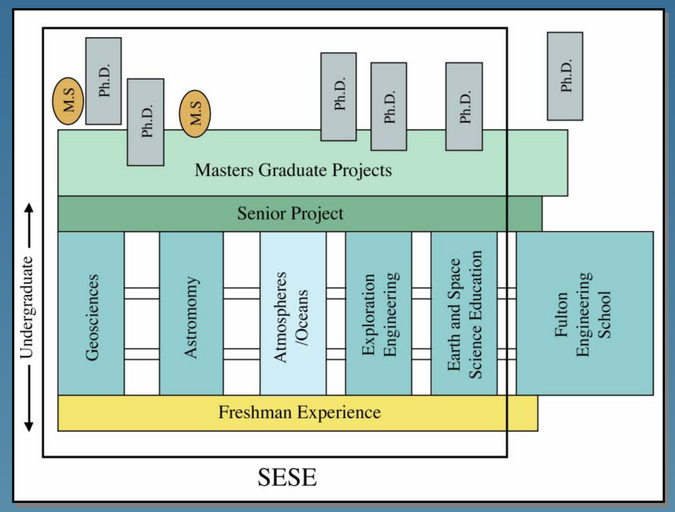
School of Earth and Space Exploration

- Combine Earth, Planetary, Astrophysical Sciences and "Exploration" Engineering into an integrated academic unit
- Two main goals:
  - Accelerate the pace of discovery by emphasizing transdisciplinary research and eliminating divide between science and engineering
  - Train future explorers to address national workforce needs: scientists with knowledge of engineering, engineers with knowledge of science
- Integrated training will include entry-to-graduation exploration projects, where scientists and engineers work together to accomplish specific project goals

SESE Research Themes

- Understand how today's Universe of planets, stars & galaxies arose
- Understand the workings of the dynamic Earth, and apply our understanding to explore other planets
- Investigate the origin of life on Earth, its diversity and coupled evolution with the planet and its environments, and understand how the signatures of life can be detected on other worlds
- Increase preparedness for, and adaptation to geologic hazards and environmental issues through an improved understanding of the interrelationships between humans and our planet
- Enable discoveries by exploring Earth and space with increasing engineering innovation and efficiency
- Enhance student and public literacy about Earth and space and provide a bridge between discovery, exploration, and public policy

SESE Student Experiences



The SESE undergraduate curriculum will integrate across sciences and engineering while providing strong concentrations in each discipline. In their first two years SESE undergraduates will become part of a 'learning community' in which math, science, and humanities are integrated and taught collaboratively. In addition, first-year and second-year 'Exploration Science and Engineering' courses will help science and engineering students learn together and provide exposure to the basic science and engineering aspects of modern exploration. Upper division students engage in specific curricula for specific focus areas. Collaborative senior projects will bring students back together for an integrative capstone experience.

Much remains to be developed in the SESE concept. Especially challenging will be the integration of science and engineering curricula, faculty, and expectations. The results will be well work the effort, leading to an exciting and unique School that will train outstanding students for the rigors of tomorrow's science, engineering and exploration needs.