

## Request to Establish New Academic Program in Arizona

Please complete all fields. Boxes may be expanded to accommodate longer responses. Clarifying field descriptions can be found below. Should you have any questions or concerns, please email Helen Baxendale, Director of Academic Affairs and Policy at [helen.baxendale@azregents.edu](mailto:helen.baxendale@azregents.edu)

**University:** University of Arizona

<b>Name of Proposed Academic Program:</b> BA in Geosciences and Society
<b>Academic Department:</b> Geosciences
<b>Geographic Site:</b> Main Campus, Tucson, AZ
<b>Instructional Modality:</b> In Person
<b>Total Credit Hours:</b> 120
<b>Proposed Inception Term:</b> Fall 2023
<p><b>Brief Program Description:</b></p> <p>The B.A. in Geosciences and Society is intended for students who are interested in combining a strong foundational understanding of geosciences with areas in social sciences related to grand challenges such as natural resources, water, and climate. Graduates will be uniquely qualified to lead in careers that promote and communicate an understanding of, and create evidence-based solutions to, urgent issues such as protecting water resources, natural hazards to communities, degradation of important biomes, and the impacts of climate change, from the geoscientist perspective.</p>
<p><b>Learning Outcomes and Assessment Plan:</b></p> <p><b>Learning Outcome #1:</b> Earth Materials – Graduates will demonstrate a working knowledge of common Earth materials including their composition, origin, and uses.  <b>Concepts:</b> Students will develop understanding of what Earth materials are made of, how they form and change, and how they are used.  <b>Competencies:</b> Students will demonstrate ability to work with and identify rocks and minerals, soils, resources, and geology topics.  <b>Assessment Methods:</b> This outcome will be assessed in homework, exams, and exit exam upon graduation.  <b>Measures:</b> Questions 1-8, 11-13, 15, 16, 22, 27, 30, 31, 38, 56, 64, 69, 75, 103, and 109 of exit exam</p> <p><b>Learning Outcome #2:</b> Surface Processes – Graduates will be able to describe how Earth surface processes operate and how they impact humans.  <b>Concepts:</b> Students will develop understanding of sedimentary systems, interaction of earth surface with oceans and atmosphere, geomorphological processes, climate and climate change, and environmental geology.  <b>Competencies:</b> Students will demonstrate their knowledge of how the earth’s surface forms and changes over time.</p>

**Assessment Methods:** This outcome will be assessed in homework, exams, and exit exam upon graduation.

**Measures:** Questions 19-22, 27, 28, 39-52, 64-81, 84, 85, 87, 88, 92-97, 101, 102, 104-108, and 110-127 of exit exam

**Learning Outcome #3:** Earth Interior – Graduates will be able to describe processes in the Earth's interior.

**Concepts:** Students will develop understanding of the major geophysical and geochemical properties of Earth's interior, their genesis and role in tectonics, earthquakes, and magmatism, and other Earth properties.

**Competencies:** Students will demonstrate their knowledge of the physical and chemical processes occurring in Earth's interior.

**Assessment Methods:** This outcome will be assessed in homework, exams, other work, and exit exam upon graduation.

**Measures:** Questions 4, 9, 10, 12-17, 23, 30-32, 36-38, 53, 82, and 89 of exit exam

**Learning Outcome #4:** Geologic Time – Graduates will know the geologic time scale and major Earth events.

**Concepts:** Students will develop understanding of absolute and relative time, major timescale divisions, and geological and biological events in Earth history.

**Competencies:** Students will demonstrate their ability to determine absolute and relative ages and explain importance of geological time scale and events that define its divisions.

**Assessment Methods:** This outcome will be assessed in homework, exams, and exit exam upon graduation.

**Measures:** Questions 18, 24-26, 29, 33-35, 53, 83, 86, 89-91, 98-100, and 116 of exit exam

**Learning Outcome #5:** Geological Materials – Graduates will acquire specific skills required for the study and interpretation of geological materials, history, and features.

**Concepts:** Students will develop skills in map reading, field methods and observations, analytical methods, and quantitative methods.

**Competencies:** Students will demonstrate their ability to create and use geological maps and/or interpret field observations and apply analytical and quantitative methods to geological information.

**Assessment Methods:** This outcome will be assessed in homework and exams and exit exam upon graduation.

**Measures:** Questions 18, 24-26, 29, 33-35, 58, 61, 72, 77, 78, 88, 90, 94, 96, 97, and 109 of exit exam

**Learning Outcome #6:** Scientific Process – Graduates will be able to use scientific process, including being able to read and critically evaluate primary Earth science literature and data, and effectively communicate geologic information both orally and in writing.

**Concepts:** Students will develop understanding of the processes of science including making observations and measurements, performing experiments, and formulating and testing scientific hypotheses.

**Competencies:** Students will demonstrate their ability to utilize observations, measurements, and data to draw and communicate geologic conclusions.

**Assessment Methods:** This outcome will be assessed in homework and exams, and exit exam upon graduation.

**Measures:** Questions 9-11, 14, 17, 20, 23, 28, 36, 45, 46, 65, 91, 104, and 121 of exit exam

Assessment Measure	Sources of Evidence	Data Collection Point(s)
Job Placement Statistics	Student / Alumni Survey	At graduation as part of alumni survey
Academic Program Review	Reviewer's Responses	Every 7 years
Exit Exam	Qualtrics Data	At graduation as part of exit survey

**Projected Enrollment for the First Three Years:** Anticipated enrollment for the first three years is between 10-30 students.

**Evidence of Market Demand:**

Market demand is based on reports of Arizona and Nationwide jobs data for 40.06 – Geological and Earth Sciences/Geosciences, and 30.15 – Science, Technology, and Society. Data is from Lightcast (formerly Burning Glass) Based on these reports, jobs in the areas of both Geosciences as well as science, tech, and society, are expected to grow over the next ten years, both nationally and statewide.

Geological and Earth Sciences/Geosciences for Arizona: Projected job growth rate is average over next ten years, with nearly 17% of jobs in the Arizona job market coming from Geoscience jobs in a variety of fields including K-12 education and Environmental and Climate Science. Average salary projected to be above the average living wage for Arizona. Most Arizona jobs posted in Geoscience fields (96%) only require a bachelor's degree.

Geological and Earth Sciences/Geosciences Nationwide: Projected job growth rate is average over next ten years, with nearly 8% of jobs in the national job market coming from Geoscience jobs in a variety of fields including K-12 education and Energy and Sustainability experts. Average salary projected to be above the average living wage. Most nationwide jobs posted in Geoscience fields (93%) only require a bachelor's degree.

Science, Technology and Society for Arizona: Projected job growth rate is low-average over next ten years, with nearly 17% of jobs in the Arizona job market coming from Sci/Tech/Soc. Average salary in this area is slightly higher than Geosciences and projected to be above the average living wage for Arizona. Most Arizona jobs posted in Sci/Tech/Soc fields (93%) only require a bachelor's degree.

Science, Technology and Society Nationwide: Projected job growth rate is average over next ten years, with nearly 8% of jobs in the national job market coming from Sci/Tech/Soc. Average salary in this area slightly higher than Geosciences and projected to be above living wage. Most jobs posted in Sci/Tech/Soc fields (93%) only require a bachelor's degree.

**Similar Programs Offered at Arizona Public Universities:** Arizona State University – B.A. in Earth and Environmental Studies

**Objection(s) Raised by Another Arizona Public University?** YES NO  
 Has another Arizona public university lodged a written objection to the proposed program with the proposing university and the Board of Regents within seven days of receiving notice of the proposed program?

**If Yes, Response to Objections:**

Please provide details of how the proposing university has addressed the objection. If the objection remains unresolved, please explain why it is in the best interests of the university system and the state that the Board override it.

**New Resources Required? (i.e. faculty and administrative positions; infrastructure, etc.):**

Initially, this degree will be sustained by current course offerings, faculty, and support staff. We do not anticipate needing many new resources in the first year of the degree, except for the additional time spent by faculty and advisory staff in teaching and advising additional students. B.A. students will be advised by Hilda Aboytia, our current Sr. Undergraduate Academic Advisor, who is well-versed in the B.A. curricular plan and requirements, as part of her regular workload. The additional students will not cause her load to exceed 200 advisees. As the degree track grows and course sizes grow, we may need to offer some of our existing courses more often or in multiple sections to accommodate additional students down the line, which would require reshuffling of our teaching assignments to accommodate more frequent offerings of core courses.

Subsequent growth of the program should be supported by the AIB model of departmental funding. As class sizes increase, we will need more TA support for laboratory sections, particularly for GEOS 251, the one class that is required of all majors (B.A. and B.S.), as it acts as a prerequisite to many of our other Geoscience courses. GEOS 251 has a required laboratory which is taught by our graduate teaching assistants, and so as our B.A. enrollment grows, we will need to increase our temp teaching budget to cover more TA support in laboratory sections.

If the B.A. degree grows considerably in enrollment, we will need to explore the possibility of hiring another advisor, specifically for our B.A. students. This may require an increase in program fees for our students, as our in-house advisor is paid out of program fees. In addition, we may find that we need to develop new courses to better serve the B.A. students, and as this happens, we will need resources to incentivize faculty to develop and/or teach new courses. But we do not anticipate this need in the first 1-2 years of the degree program.

**Plan to Request Program Fee/Differentiated Tuition?** YES **NO**

**Estimated Amount:** N/A

**Program Fee Justification:** N/A

**Specialized Accreditation?** YES **NO**

**Accreditor:** N/A