



New Academic Program Workflow Form

General

Proposed Name: Geosciences and Society

Transaction Nbr: 00000000000165

Plan Type: Major

Academic Career: Undergraduate

Degree Offered: Bachelor of Arts

Do you want to offer a minor? N

Anticipated 1st Admission Term: Fall 2023

Details

Department(s):

SCNC

DEPTMNT ID	DEPARTMENT NAME	HOST
1205	Geosciences	Y

Campus(es):

MAIN

LOCATION	DESCRIPTION
TUCSON	Tucson

Admission application terms for this plan: Spring: Y Summer: N Fall: Y

Plan admission types:

Freshman: Y Transfer: Y Readmit: Y Graduate: N

Non Degree Certificate (UCRT only): N

Other (For Community Campus specifics): N

Plan Taxonomy: 40.0601, Geology/Earth Science, General.

Program Length Type: Program Length Value: 0.00

Report as NSC Program:

SULA Special Program:

Print Option:

Diploma: Y B.A. Geosciences and Society

Transcript: Y B.A. Geosciences and Society

Conditions for Admission/Declaration for this Major:

No criteria.

Requirements for Accreditation:

N/A

Program Comparisons

University Appropriateness

This B.A. will serve 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.

The proposed B.A. in Geosciences and Society is being developed with the intention to reach an entirely different set of students from our B.S. students, who have interests in the geosciences but are currently not well served by our department's B.S. offerings. The new B.A. program is explicitly designed for students who are not interested in the career paths of geology, geophysics, or related traditional geoscience fields, but who are interested in using a foundational understanding of geoscience to further careers in other topics. Today's students are often very aware of and passionate about issues facing our society, such as climate change and the dwindling of natural resources, areas that require a strong foundation in geoscience in order to be fully understood. We envision the typical B.A. student to be someone interested in going into fields such as science communication, public policy, environmental law, education, or business, in applications where a strong understanding of geoscience principles can be applied to their work. As specific examples, the type of student we hope to recruit to this program is someone interested in dealing with municipal planning and geological hazards, someone teaching middle or high school earth science, or someone going on for a law degree with an interest in climate change applications. There is a strong and increasing need for such individuals at the

interface of science and society who are currently not well served by the science-only focus of our B.S. major offerings. The B.A. program we have designed is intended to educate such individuals with a combination of tailored science curriculum centered around geoscience topics of considerable societal and applied interest, coupled with a solid foundation in one of several social science options (law, communication, policy). The strong geoscience core curriculum requires students to complete courses in physical geology, surface processes, energy resources, ocean sciences, and global change, all of which present critical content for someone hoping to apply geoscience principles to a public-facing career. Required course work in Programming and Data Analysis in Earth Sciences as well as Remote Sensing or Geographic Information Systems (GIS) will ensure that students have highly transportable skills for gathering and communicating geoscience information and concepts. Cognate science skills in mathematics, physics, and chemistry are reduced in this program relative to our B.S. offerings to emphasize numeracy, especially in statistical reasoning, which is so critical in policy and social science careers. In addition to the science requirements, students in the Geosciences and Society B.A. program will choose a series of courses from one of three emphasis areas: 1) Law, 2) Science Communication, or 3) Public Policy. The offerings in each of these areas have been chosen to build core knowledge in an interface field that will allow our students to be competitive at either entry-level positions (for example in municipal government or science communication) or can prepare them for further education in law, business, or (with certification) secondary science education.

In addition, the requirements in social sciences can ease the path for students to participate in double majors and/or minors in these fields, some of which are complementary to geosciences (such as environmental studies).

UA's mission is to "continuously improve how we educate and innovate, so we can lead the way in developing adaptive problem-solvers capable of tackling our greatest challenges." Creating a B.A. degree in Geosciences and Society is one way the department of geosciences can adapt to the changing interests and career goals of modern students who are passionate about the grand challenges we face and interested in gaining a working knowledge of the Earth to be applied to careers that intersect with society, in order to help inform about and solve these important problems. This degree will also provide students with a more flexible pathway to graduation, allowing them to pursue more than one passion or discipline.

Arizona University System

NBR	PROGRAM	DEGREE	#STDNTS	LOCATION	ACCRDT
1	Earth and Environ Studies	BA	14	Arizona State University	N

Peer Comparison

The intended audience for the UA Geosciences BA in Geosciences and Society seems in line with peer programs, aiming to target students who have an interest in understanding the basic science of the Earth but not necessarily in pursuing post-secondary education or a career in geosciences. All program descriptions include that these BA degrees are meant to be good preparation for careers in other areas, including teaching, policy, law, journalism, and resource management. They all require students take at least some courses in basic foundational science (e.g., chemistry, physics, biology), some mathematics, and several courses in the general area of earth and space sciences, while providing ample flexibility for students to take courses in related or unrelated areas. All seem to have the common goal of providing a solid understanding of geoscience and the process of science, along with freedom for exploration of other areas that students may either have a passion for or want to eventually pursue a career in. Faculty expertise is quite diverse, even within geoscience departments, but curriculum in all above BA programs is delivered by geosciences faculty, in the same departments as their BS offerings, thereby exposing students pursuing BA degrees to geoscience faculty, research, and foundational knowledge.

The main difference of the UA Geosciences BA in Geosciences and Society from other BA programs in geoscience is that it requires students to choose one track (i.e., emphasis) and take 12 units of courses from that emphasis area. The idea is to provide students with enough exposure to one of the three emphases (law, policy, or science communication) for them to be able to decide if it is a career path they are interested in pursuing, and perhaps choose to double-major or minor in that area, providing them with sufficient knowledge in that chosen emphasis and hence preparing them for future jobs or graduate programs in related fields. The only peer institution that does something similar is University of Washington in Seattle, where students must take 15 units in either Science Communication, Business, Education, Law and Policy, or Interdisciplinary Science.

Faculty & Resources

Faculty

Current Faculty:

INSTR ID	NAME	DEPT	RANK	DEGREE	FCLTY/%
01666703	Peter Decelles	1205	Professor	Doctor of Philosophy	.25
02576708	Mauricio Ibanez Mejia	1205	Assit. Prof	Doctor of Philosophy	.25
02578385	Luke Mcguire	1205	Assit. Prof	Doctor of Philosophy	.25
02592138	Diane Thompson	1205	Assit. Prof	Doctor of Philosophy	.25
03106455	George Gehrels	1205	Professor	Doctor of Philosophy	.25

INSTR ID	NAME	DEPT	RANK	DEGREE	FCLTY/%
03601471	Andrew Cohen	1205	Professor	Doctor of Philosophy	.25
07707557	Paul Kapp	1205	Professor	Doctor of Philosophy	.25
11309493	Jon Pelletier	1205	Professor	Doctor of Philosophy	.25
15205128	Joellen Russell	1205	Professor	Doctor of Philosophy	.25
15304403	Jessica Kapp	1205	Assoc. Prof. Pract.	Doctor of Philosophy	.25
22051619	Barbara Carrapa	1205	Professor	Doctor of Philosophy	.25
22065602	Jessica Tierney	1205	Assoc. Prof	Doctor of Philosophy	.25
22070746	Christopher Harig	1205	Assit. Prof	Doctor of Philosophy	.25
22071606	Amanda Hughes	1205	Assit. Prof. Pract.	Doctor of Philosophy	.25
22087400	Ananya Mallik	1205	Assit. Prof	Doctor of Philosophy	.25
22095573	Advait Jukar	1205	Lecturer	Doctor of Philosophy	.25

Additional Faculty:

No additional faculty needed.

Current Student & Faculty FTE

DEPARTMENT	UGRD HEAD COUNT	GRAD HEAD COUNT	FACULTY FTE
1205	181	63	29.50

Projected Student & Faculty FTE

	UGRD HEAD COUNT			GRAD HEAD COUNT			FACULTY FTE		
DEPT	YR 1	YR 2	YR 3	YR 1	YR 2	YR 3	YR 1	YR 2	YR 3
1205	10	20	30	0	0	0	.50	1.50	.50

Library

Acquisitions Needed:

None, as they are taking classes that already exist and have materials.

Physical Facilities & Equipment

Existing Physical Facilities:

Facilities are adequate.

Additional Facilities Required & Anticipated:

None.

Other Support

Other Support Currently Available:

In-department advisor, Hilda Aboytia.

Other Support Needed over the Next Three Years:

Increase in temp teaching budget to support additional TAs for larger sections of CORE classes. Should be supported by AIB funding model.

Comments During Approval Process

11/29/2022 4:09 PM

JKAPP

Comments
Letters were also requested from English and Law. English responded that they are happy to have our students in their classes, but did not attach a letter. Law has not responded.

11/29/2022 4:54 PM

JKAPP

Comments
English provided a letter. It is included above.

11/30/2022 11:56 AM

JKAPP

Comments
There was some confusion about requesting letters of support. We believed LAW classes were covered by SGPP, but they informed us they are not. A request was sent directly to LAW Nov. 30, 2022. We hope to get a letter from them soon.

11/30/2022 3:40 PM

BCARRAPA

Comments
Approved.

1/30/2023 2:12 PM

MELANIECMADDEN

Comments

Uploaded updated version of Additional Information document incorporating CA feedback

1/30/2023 2:13 PM

MELANIECMADDEN

Comments

Approved.

2/1/2023 9:14 AM

RGOMEZ

Comments

Approved.

2/1/2023 10:06 AM

MELANIECMADDEN

Comments

Approved.



ACADEMIC PROGRAM – ADDITIONAL INFORMATION FORM

To be used once the preliminary proposal has been approved.

I. MAJOR REQUIREMENTS – UNDERGRADUATE

Total units required to complete the degree	120
Upper-division units required to complete the degree	42
Foundation courses	
Second language	4th Semester Proficiency
Math	Moderate –Math 107 or equivalent
General education requirements	<p>Entry course/1 unit – UNIV 101</p> <p>4 courses/12 units: Exploring Perspectives (one course from each domain required)</p> <ul style="list-style-type: none"> - Humanist - Artist - Social Scientist - Natural Scientist <p>3 courses/9 units: Building Connections</p> <p>Exit course/1 unit – UNIV 301</p>
Pre-major? (Yes/No). If yes, provide requirements. Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.	No
List any special requirements to declare or gain admission to this major (completion of specific coursework, minimum GPA, interview, application, etc.)	No special requirements.
Major requirements	
Minimum # of units required in the major (units counting towards major units and major GPA)	34
Minimum # of upper-division units required in the major (upper division units counting towards major GPA)	27
Minimum # of residency units to be completed in the major	18
Required supporting coursework (courses that do not count towards major units and major GPA, but are required for the	-Math 163 or 263 (3) Basic Statistics or Intro to Statistics and Biostatistics



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major). Courses listed must include prefix, number, units, and title. Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.

Complete 1 of the following:

- GEOS 280 (3) Programming and Data Analysis in Earth Sciences
- GEOS 285 (3) Python
- Math 107 (3) Exploring and Understanding Data
- Math 112 (3) College Algebra Concepts and Applications
- Math 113 (3) Elements of Calculus
- Math 121A (3) Precalculus I
- Math 121B (3) Precalculus II
- Math 122A (3) Functions of Calculus
- Math 122B (3) First semester Calculus
- Math 125 (3) Calculus

Complete 1 of the following:

- Chem 130 (3) Chemistry for Allied and Public Health
- Chem 141 (3) Gen Chem I: Quantitative
- Chem 151 (3) Chemical Thinking I
- Chem 161 (3) Honors Chemical Thinking
- Phys 102 (3) Intro Physics I
- Phys 141 (3) Introductory Mechanics
- Phys 161H (3) Honors Introductory Mechanics

Complete TWO of the following:

- GEOS 302 (4) Sedimentology and Stratigraphy
- GEOS 304 (4) Structural Geology
- GEOS 306 (3) Mineralogy
- GEOS 342 (3) History of Earth's Climate
- GEOS 346 (3) Mineral and Energy Resources
- GEOS 388 (3) Biosphere 2: Science from Wonder to Discovery
- GEOS 403 (3) Physics of the Solar System
- GEOS 411 (3) Geology and Geophysics of the Solar System
- GEOS 415 (2) Geological Hazards
- GEOS 439A (3) Intro to Dendrochronology
- GEOS 453 (3) Glacial and Quaternary Geology



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	<ul style="list-style-type: none"> -Anth 301 (3) Conservation and Community -Anth 307 (3) Ecological Anthropology -Anth 332 (3) Environmental Archaeology -Anth 512A (3) Geoarchaeology -EVS 304 (3) Water, Environment and Society -EVS 461 (3) Environmental and Resource Geography -EVS 468 (3) Water and Sustainability -Geog 362 (3) Environment and Development -Geog 416A (3) Computer Cartography -Geog 530 (3) The Climate System
<p>Major requirements. List all major requirements including core and electives. If applicable, list the emphasis requirements for each proposed emphasis*. Courses listed count towards major units and major GPA. Courses listed must include prefix, number, units, and title. Mark new coursework (New). Include any limits/restrictions needed (house number limit, etc.). Provide email(s)/letter(s) of support from home department head(s) for courses not owned by your department.</p>	<p>Core (minimum 19 units)</p> <ul style="list-style-type: none"> -GEOS 251 (4) Physical Geology -GEOS 255 (4) or GEOS 260 (3) Historical Geology or Intro to Gems -GEOS 300 (3) Earth Surface Processes (req for Law and Policy tracks) OR -GEOS 308 (3) Paleontology (required for Sci Comm track) -GEOS 342 (3) OR GEOS 346 (3) History of Earth’s Climate or Mineral and Energy Resources -GEOS 412A (3) Ocean Sciences -GEOS 478 (3) Global Change <p>Complete 1 of the following:</p> <ul style="list-style-type: none"> -Geog 403 (3) Applications of Geographic Information Systems -Geog 417 (3) Geographic Information Systems for Natural and Social Sciences -GEOS 330 (3) Intro to Remote Sensing <p style="text-align: center;">*Select one emphasis from:</p> <ul style="list-style-type: none"> Law Science Communication Public Policy



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	<p>Law Emphasis - Complete 12 units from the following:</p> <ul style="list-style-type: none">-ACBS 411 (3) Agricultural, Environmental, and Legal Issues-Law 445 (3) Applied Environmental Law-Law 454 (3) Environmental Law and Policy-Law 459 (3) Public International Environmental Law-PLG 460 (3) Land Use Planning Law-Geog 462 (3) Environmental Law, Geography, and Society-RNR 480 (3) Natural Resources Policy and Law <p>Science Comm Emphasis – Complete 12 units from the following:</p> <ul style="list-style-type: none">-Sci 401 (3) Science Communication-Jour 305 (3) Full STEM Ahead: Science and the News-Jour 455 (3) Environmental Journalism-Jour 465 (3) Issues in Covering Science and the Environment-Jour 472 (3) Science Journalism-Engl 302 (3) Magazine Article Writing Workshop-Engl 308 (3) Technical Writing-Engl 313 (3) Intro to Professional and Technical Writing-Comm 325 (3) Argumentation-Glo 405/505 (3) Media and Climate Change-Glo 450/550 (3) Media and the Environment-Glo 465/565 (3) Science Misinformation, Disinformation, Media and the Public <p>Public Policy Emphasis – Complete 12 units from the following:</p> <ul style="list-style-type: none">-Pol 301 (3) Methods of Political Inquiry-Pol 373 (3) Political Geography-Pol 404 (3) Experimental Political Science-Pol 409 (3) Causes and Consequences of Public Opinion-Pol 424A (3) Political Ecology-Law 454 (3) Environmental Law and Policy
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	-Glo 465/565 (3) Science Misinformation, Disinformation, Media and the Public
Internship, practicum, applied course requirements (Yes/No). If yes, provide description.	No
Senior thesis or senior project required (Yes/No). If yes, provide description.	No
Additional requirements (provide description)	None
Minor (specify if optional or required)	Optional
Any double-dipping restrictions (Yes/No)? If yes, provide description.	Up to 2 courses/6 units of Geosciences general education

*Emphases are officially recognized sub-specializations within the discipline. [ABOR Policy 2-221 c. Academic Degree Programs Subspecializations](#) requires all undergraduate emphases within a major to share at least 40% curricular commonality across emphases (known as “major core”). Total units required for each emphasis must be equal. Proposed emphases having similar curriculum with other plans (within department, college, or university) may require completion of an additional comparison chart. Complete the table found in Appendix B to indicate if emphases should be printed on student transcripts and diplomas.

II. CURRENT COURSES–

Course prefix and number (include cross-listings)	Units	Title	Pre-requisites	Modes of delivery (online, in-person, hybrid)	Typically Offered (F, W, Sp, Su)	Dept signed party to proposal? (Yes/No)
GEOS 251	4	Physical Geology		In person	F,Sp	Yes
GEOS 255	4	Historical Geology	GEOS 251	In person	Sp	Yes
GEOS 260	3	Intro to Gems		In person	F	Yes
GEOS 280	3	Programming and Data Analysis in Earth Science		In person	F	Yes
GEOS 285	3	Python		In person	Sp	Yes



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GEOS 300	3	Earth Surface Processes	GEOS 251	In person	Sp	Yes
GEOS 302	4	Sedimentology and Stratigraphy	GEOS 251 and Phy 102, 141, or 161	In person	F	Yes
GEOS 304	4	Structural Geology	GEOS 251 and Phys 102 or 141	In person	Sp	Yes
GEOS 306	3	Mineralogy	GEOS 251 and Chem 151	In person	F	Yes
GEOS 308	3	Paleontology	GEOS 251 or GEOS 212 or Ecol 182R+Ecol 182L	In person	F, Sp	Yes
GEOS 330 (=Geog, Envs, Gen, Gist, SW, Swes, Wsm)	3	Intro to Remote Sensing		In person; online	F, Sp, Su	Yes
GEOS 342	3	History of Earth's Climate		In person	F	Yes
GEOS 346	3	Mineral and Energy Resources	Junior standing	In person	Sp	Yes
GEOS 388	3	Biosphere 2: From Wonder to Discovery		In person	F	Yes
GEOS 403	3	Physics of the Solar System		In person	Sp (odd years only)	Yes
GEOS 411	3	Geology and Geophysics of the Solar System		In person	Sp (even years only)	Yes
GEOS 412A	3	Ocean Sciences	1 year of science	In person	Sp	Yes
GEOS 415	2	Geological Hazards	GEOS 251	In person	?	Yes
GEOS 439A (= Anth, Geog, Wsm)	3	Intro to Dendrochronology		?	?	Yes
GEOS 453	3	Glacial and Quaternary Geology		?	?	Yes
GEOS 478	3	Global Change	Upper division standing and intro class in bio or phys	In person	F	Yes
Geog 304 (= Evs)	3	Water, Environment, and Society		In person	F,Sp	Yes
Geog 362 (=Envs)	3	Environment and Development		In person	Sp	Yes
Geog 403 (= Rnr)	3	Applications of Geographic Information Systems		In person	F, Sp, Su	Yes



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Geog 416A	3	Computer Cartography		In person	Sp	Yes
Geog 417 (= Rnr)	3	Geographic Information Systems for Natural and Social Sciences		In person; online	F, Sp, Su	Yes
Geog 462 (= Envs)	3	Environmental Law, Geography, and Society		In person	F	Yes
Geog 468 (= EVS)	3	Water and Sustainability		In person	Sp	Yes
Geog 530	3	The Climate System		In person	F, Sp	Yes
Anth 301	3	Consevation and Community		In person	F (odd years only)	Yes
Anth 307	3	Ecological Anthropology		In person	F, Sp, Su	Yes
Anth 332	3	Environmental Archaeology		In person	Sp	Yes
Anth 512A	3	Geoarchaeology		In person	Sp	Yes
Evs 461	3	Environmental and Resource Geography		In person	Sp	Yes
ACBS 411	3	Agricultural, Environmental, and Legal Issues		In person	Sp	Requested
Law 445	3	Applied Environmental Law		?	?	Requested
Law 454	3	Environmental Law and Policy		In person	Sp	Requested
Law 459	3	Public International Environmental Law		In person	Sp	Requested
PLG 460	3	Land Use Planning Law		In person	Sp	Requested
Rnr 480	3	Natural Resources Policy and Law		In person	Sp	Yes
Sci 401	3	Science Communication		In person	F	Yes
Jour 305	3	Full STEM Ahead: Science and the News		In person	Sp (even years only)	Yes
Jour 455	3	Environmental Journalism		In person	Sp	Yes
Jour 465	3	Issues in Covering Science and the Environment		In person	F (odd years only)	Yes
Jour 472	3	Science Journalism		In person	F	Yes
Engl 302	3	Magazine Article Writing Workshop	Engl 101 and 102	?	?	



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Engl 308	3	Technical Writing	Freshman English Composition	In person; online	F, Sp, Su	
Engl 313	3	Intro to Professional and Technical Writing	Freshman English Composition	In person; online	F	
Comm 325	3	Argumentation		In person	F, Sp	Yes
Pol 301	3	Methods of Political Inquiry		In person	Sp	Yes
Pol 373	3	Political Geography		In person	F, Sp	Yes
Pol 404	3	Experimental Political Science		In person	F, Sp	Yes
Pol 409	3	Causes and Consequences of Public Opinion		In person	F, Sp	Yes
Pol 424A	3	Political Ecology		In person	F	Yes
Glo 405/505	3	Media and Climate Change		Online	F,Sp	Yes
Glo 450/550	3	Media and the Environment		Online	F,Sp	Yes
Glo 465/565	3	Science Misinformation, Disinformation, Media, and the Public		Online	F,Sp	Yes



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III. NEW COURSES NEEDED – None

IV. FACULTY INFORMATION- complete the table below. If UA Vitae link is not provided/available, add CVs to a Box folder and provide that link. UA Vitae profiles can be found in the [UA directory/phonebook](#).

Faculty Member	Involvement	UA Vitae link or Box folder link
Dr. Barbara Carrapa	Teach GEOS 255, 302	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Andy Cohen	Teach GEOS 302, 412A	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Peter DeCelles	Teach GEOS 302	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. George Gehrels	Teach GEOS 251, GEOS 255	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Chris Harig	Teach GEOS 280	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Amanda Hughes	Teach GEOS 304, GEOS 346	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Mauricio Ibanez-Mejia	Teach GEOS 306	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Advait Jukar	Teach GEOS 308	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Jessica Kapp	Teach GEOS 255	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Paul Kapp	Teach GEOS 251, 304	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Marcus Lofverstrom	Teach GEOS 285	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Ananya Mallik	Teach GEOS 260	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Luke McGuire	Teach GEOS 280	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Jon Pelletier	Teach GEOS 300	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Joellen Russell	Teach GEOS 478	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Diane Thompson	Teach GEOS 412A	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk
Dr. Jessica Tierney	Teach GEOS 342, 412A	https://arizona.box.com/s/qw3x411wfxiv8vn386422og9i1p0tzk

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Semester 1		Semester 2		Semester 3		Semester 4	
Course prefix and number	Units	Course prefix and number	Units	Course prefix and number	Units	Course prefix and number	Units
GEOS 251	4	CHEM I or PHYS I	4	GEOS 342 or 346	3	GEOS 300	3
MATH 163 or 263	3	GEOS 255 or 260	4	Additional Math	3	GEOS 412A	3
ENGL Composition	3	2 ND Language	4	GEN ED	3	2 ND Language	4
UNIV 101	1	ENGL Composition	3	GEN ED	3	GEN ED	3
GEN ED	3			Free electives	3	Law/SciComm/Policy	3
Total	14	Total	15	Total	15	Total	16

Semester 5		Semester 6		Semester 7		Semester 8	
Course prefix and number	Units	Course prefix and number	Units	Course prefix and number	Units	Course prefix and number	Units
GEOS 478	3	Add. Sci. Electives	3	Law/SciComm/Policy	3	Upper div electives	14
THEME I	3	GEN ED	3	Free electives	9	UNIV 301	1
GEN ED	3	GEN ED	3	Add. Sci. Electives	3		
2 nd Language	4	Law/SciComm/Policy	3				
Law/SciComm/Policy	3	2 nd Language	4				
Total	16	Total	16	Total	15	Total	15



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VI. Curriculum Map and Assessment Map – OIA Assessment plan (same as our BS plan) and info can be found here:

<https://www.taskstream.com/ts/bsGeosciences/ProgramAssessment>

Program: BA Geosciences and Society

Learning Outcome #1: Earth Materials – Graduates will demonstrate a working knowledge of common Earth materials including their composition, origin, and uses.
Concepts: Students will develop understanding of what Earth materials are made of, how they form and change, and how they are used.
Competencies: Students will demonstrate ability to work with and identify rocks and minerals, soils, resources, and geology topics.
Assessment Methods: This outcome will be assessed in homework, exams, and exit exam upon graduation.
Measures: Questions 1-8, 11-13, 15, 16, 22, 27, 30, 31, 38, 56, 64, 69, 75, 103, and 109 of exit exam
Learning Outcome #2: Surface Processes – Graduates will be able to describe how Earth surface processes operate and how they impact humans.
Concepts: Students will develop understanding of sedimentary systems, interaction of earth surface with oceans and atmosphere, geomorphological processes, climate and climate change, and environmental geology.
Competencies: Students will demonstrate their knowledge of how the earth’s surface forms and changes over time.
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.



ACADEMIC PROGRAM – ADDITIONAL INFORMATION FORM

To be used once the preliminary proposal has been approved.

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

VII. PROGRAM ASSESSMENT PLAN-

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

VIII. ANTICIPATED STUDENT ENROLLMENT-complete the table below. What concrete evidence/data was used to arrive at the numbers?

5-YEAR PROJECTED ANNUAL ENROLLMENT					
	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
Number of Students	10	20	30	35	40

Data/evidence used to determine projected enrollment numbers:

These projections are estimates of non-science major student interest in the degree, based on number of students inquiring about majoring/minoring in Geosciences in general education courses. We also looked at enrollment in BA degrees at peer institutions. Increases from year to year are ambitious and will require active recruitment both on and off campus.



ACADEMIC PROGRAM – ADDITIONAL INFORMATION FORM

To be used once the preliminary proposal has been approved.

IX. ANTICIPATED DEGREES AWARDED- complete the table below, beginning with the first year in which degrees will be awarded. How did you arrive at these numbers? Take into consideration departmental retention rates. Use National Center for Education Statistics College Navigator to find program completion information of peer institutions offering the same or a similar program.

PROJECTED DEGREES AWARDED ANNUALLY					
	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
Number of Degrees	0	0	0	10	20

Data/evidence used to determine number of anticipated degrees awarded annually:

These numbers are simply estimated using our estimated enrollment numbers above.

X. PROGRAM DEVELOPMENT TIMELINE- describe plans and timelines for 1) marketing the major and 2) student recruitment activities.

Our goal is to begin offering this degree in fall 2023. As such, marketing for the major will begin this spring 2023. Our primary target for marketing is our general education Geoscience classes, where we often have students who do not want to pursue B.S. degrees indicating that they have a deep interest in Geosciences and would like to take more courses. These students are of particular interest to us in our marketing and recruiting efforts, as we would have an option for them that would satisfy their desire to continue taking Geoscience courses while also pursuing another career path. In spring 2023 we will have seven Geosciences general education classes running concurrently, including one for UA Online and one as an icourse – all of these courses will be targeted for marketing of the Geosciences and Society B.A., with instructors introducing the degree using multiple sources of information, such as informational slides and hand-outs, at the beginning of class periods early in the semester. Instructors will also send emails to all students enrolled in these gen eds with links to more information as well as how to contact the Geosciences department if interested. We will also ask our college of science colleagues who teach general education courses this spring to advertise the B.A. degree in their courses. Once the degree is approved, we will work with UA to distribute information about the upcoming B.A. in Geosciences and society on centralized platforms that will potentially reach more students. We will reach out to the Daily Wildcat and ask them to include information about the new degree in an issue. Instructors of our Geosciences gen eds will remind students about the B.A. option toward the end of the semester, before summer break, and encourage those who are interested to speak with the department as soon as possible.

Student recruitment will be focused on our Geoscience general education courses but will also extend to local high schools. Once the degree is approved, we will send information and fliers to local high schools and offer to come in and speak to their students about the



ACADEMIC PROGRAM – ADDITIONAL INFORMATION FORM

To be used once the preliminary proposal has been approved.

new degree and what careers it could prepare them for if they choose to enroll. We will also have information available at our largest outreach events in spring 2023, the Tucson Gem and Mineral Show in February 2023 (where we host a Junior Education are and interact with thousands of people every year), as well as the Tucson Festival of Books Science City in March 2023.

We intend to work with UA marketing to develop the best plan for marketing this new degree to our target audience.

XI. **Program Fees and Differential Tuition (PFDT) Request – N/A**

Appendix A. Minor or Master's Requirements. N/A

Appendix B. Emphasis Print Information-if applicable, complete the table below to indicate if proposed emphases should be printed on transcript and diploma. Add rows as needed.

Emphasis	Print on transcript	Print on diploma
Law	No	No
Science Communication	No	No
Public Policy	No	No



ACADEMIC PROGRAM – ADDITIONAL INFORMATION FORM

To be used once the preliminary proposal has been approved.

Appendix C. ABOR Form

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

University: University of Arizona, Tucson AZ

Name of Proposed Academic Program: BA in Geosciences and Society
Academic Department: Geosciences
Geographic Site: Main Campus, Tucson, AZ.
Instructional Modality: In person
Total Credit Hours: 120
Proposed Inception Term: Fall 2023
Brief Program Description: 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.
Learning Outcomes and Assessment Plan:
Learning Outcome #1: Earth Materials – Graduates will demonstrate a working knowledge of common Earth materials including their composition, origin, and uses.

ACADEMIC PROGRAM – ADDITIONAL INFORMATION FORM

To be used once the preliminary proposal has been approved.

Concepts: Students will develop understanding of what Earth materials are made of, how they form and change, and how they are used.
Competencies: Students will demonstrate ability to work with and identify rocks and minerals, soils, resources, and geology topics.
Assessment Methods: This outcome will be assessed in homework, exams, and exit exam upon graduation.
Measures: Questions 1-8, 11-13, 15, 16, 22, 27, 30, 31, 38, 56, 64, 69, 75, 103, and 109 of exit exam
Learning Outcome #2: Surface Processes – Graduates will be able to describe how Earth surface processes operate and how they impact humans.
Concepts: Students will develop understanding of sedimentary systems, interaction of earth surface with oceans and atmosphere, geomorphological processes, climate and climate change, and environmental geology.
Competencies: Students will demonstrate their knowledge of how the earth’s surface forms and changes over time.
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.

ACADEMIC PROGRAM – ADDITIONAL INFORMATION FORM

To be used once the preliminary proposal has been approved.

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	Source(s) of Evidence	Data Collection Point(s)
Job Placement Statistics	Student/Alumni Survey	At graduation and as part of alumni survey
Academic Program Review	Reviewers' 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 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.



THE UNIVERSITY
OF ARIZONA

ACADEMIC PROGRAM – ADDITIONAL INFORMATION FORM

To be used once the preliminary proposal has been approved.

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

FOR CURRICULAR AFFAIRS USE ONLY

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.



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OF ARIZONA

ACADEMIC PROGRAM – ADDITIONAL INFORMATION FORM

To be used once the preliminary proposal has been approved.

Plan to Request Program Fee/Differentiated Tuition? YES NO

Estimated Amount:

Program Fee Justification:

Note: The fee setting process requires additional steps and forms that need to be completed. Please work with your [University Fees](#) office to complete a fee request.

Specialized Accreditation? YES NO



BUDGET PROJECTION FORM

Name of Proposed Program or Unit:

Budget Contact Person:	Projected		
	1st Year 20 23_ - 20 24	2nd Year 2024 - 20 _25__	3rd Year 20 25 - 20 26

METRICS			
Net increase in annual college enrollment UG	10	10	10
Net increase in college SCH UG	1,850	1,890	1,930
Net increase in annual college enrollment Grad	-	-	-
Net increase in college SCH Grad	-	-	-
Number of enrollments being charged a Program Fee	10	20	30
New Sponsored Activity (MTDC)	-	-	-
Number of Faculty FTE			

FUNDING SOURCES			
Continuing Sources			
UG AIB Revenue	5,350	5,390	5,500
Grad AIB Revenue	-	-	-
Program Fee Revenue (net of revenue sharing)	4,386	8,772	13,158
F and A AIB Revenues	-	-	-
Reallocation from existing College funds (attach description)			
Other Items (attach description)			
Total Continuing	\$ 9,736	\$ 14,162	\$ 18,658
One-time Sources			
College fund balances			
Institutional Strategic Investment			
Gift Funding			
Other Items (attach description)			
Total One-time	\$ -	\$ -	\$ -
TOTAL SOURCES	\$ 9,736	\$ 14,162	\$ 18,658

EXPENDITURE ITEMS			
Continuing Expenditures			
Faculty			
Other Personnel			
Employee Related Expense			
Graduate Assistantships			16,007
Other Graduate Aid			
Operations (materials, supplies, phones, etc.)			
Additional Space Cost			
Other Items (attach description)			
Total Continuing	\$ -	\$ -	\$ 16,007
One-time Expenditures			
Construction or Renovation			
Start-up Equipment			
Replace Equipment			
Library Resources			
Other Items (attach description)			
Total One-time	\$ -	\$ -	\$ -
TOTAL EXPENDITURES	\$ -	\$ -	\$ 16,007
Net Projected Fiscal Effect	\$ 9,736	\$ 14,162	\$ 2,651

FY23 Undergraduate \$/Metric

	Summe r/				
Metric	in Campu	Winter	Online	Distance²	Global Direct
\$/Degree	\$ 3,000		\$ 4,000	\$ 3,000	\$ 500
\$/Enrollm	\$ 350	\$ -	\$ 275	\$ 180	\$ 100
\$/SCH	\$ 185	\$ -	\$ 250	\$ 175	\$ 185

FY24 Undergraduate \$/Metric

	Summe r/				
Metric	in Campu	Winter	Online	Distance²	Global Direct
\$/Degree	\$ 3,000		\$ 4,000	\$ 3,000	\$ 500
\$/Enrollm	\$ 350	\$ -	\$ 275	\$ 180	\$ 100
\$/SCH	\$ 189	\$ -	\$ 255	\$ 179	\$ 189

FY25 Undergraduate \$/Metric

	Summe r/				
Metric	in Campu	Winter	Online	Distance²	Global Direct
\$/Degree	\$ 3,060		\$ 4,080	\$ 3,060	\$ 510
\$/Enrollm	\$ 357	\$ 357	\$ 281	\$ 184	\$ 102
\$/SCH	\$ 193	\$ 193	\$ 260	\$ 183	\$ 193



New Academic Program PEER COMPARISON

Select three peers (if possible/applicable) for completing the comparison chart from [ABOR-approved institutions](#), [AAU members](#), and/or other relevant institutions recognized in the field. The comparison programs are not required to have the same degree type and/or title as the proposed UA program. Information for the proposed UA program must be consistent throughout the proposal documents. Minors and Certificates may opt to include only 2 peer comparisons.

Program name, degree, and institution	University of Arizona BA in Geosciences and Society	Arizona State University BA in Earth and Environmental Studies	UT Austin BA in Geological Sciences	University of Washington BA in Earth and Space Sciences
Current number of students enrolled		14	14	12
Program Description	<p>“...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</p>	<p>“...provides a foundational understanding of the evolution of the earth system with an emphasis on the planetary context for sustainable human societies. The degree program includes broad training in the physical sciences, especially process-oriented geosciences that focus on Earth’s life-sustaining surface environment. This is designed as a liberal arts program with an emphasis on basic scientific literacy, not as a preparatory degree</p>	<p>“...allows students to complete two majors. It can be tailored to meet interests ranging from musical study or the liberal arts to upper division math, physics, or biology. While this degree forms an excellent starting point for other endeavors ... students can also use the major to specialize more deeply in particular areas of the geosciences.”</p>	<p>“...designed for undergraduates who wish to study earth sciences as a background for other careers...”</p>

	impacts of climate change, from the geoscientist perspective.”	program for graduate study in the natural sciences.”		
Target Careers	Science communication and/or journalism, environmental law, environmental policy, education.	Green energy career opportunities, such as education, environmental reporting, natural resource management, public planning, and sustainability.	Business management, environmental law, medicine.	Teaching, science journalism, environmental law, or policy.
Emphases? (Yes/No) List, if applicable	Yes: Science Communication; Law; Policy	No	No	Yes: Science Communication; Business; Education; Law and Policy; Interdisciplinary Science
Minimum # of units required	120	120	120	180 units (quarter system)
Level of Math required (if applicable)	Basic Statistics (Math 163 or 263) and one other math course	Precalculus	3 units of Mathematics (Core) – no level indicated	Math 135 (prerequisite for ESS courses), no other math required in BA degree
Level of Second Language required (if applicable)	2 nd semester proficiency	Completion of a language course at the intermediate (202 or equivalent) level	Two semesters foreign language (general education)	None
Pre-Major? (Yes/No) If yes, provide requirements.	No	No	No	No
Special requirements to declare/gain admission? (i.e. pre-requisites, GPA, application, etc.)	No	No	No	No
Internship, practicum, or applied/experiential requirements? If yes, describe.	No	No	No	No

Additional questions:

1. How does the proposed program align with peer programs? Briefly summarize the similarities between the proposed program and peers, which could include curriculum, overall themes, faculty expertise, intended audience, etc.

The intended audience for the UA Geosciences BA in Geosciences and Society seems in line with peer programs, aiming to target students who have an interest in understanding the basic science of the Earth but not necessarily in pursuing post-secondary education or a career in geosciences. All program descriptions include that these BA degrees are meant to be good preparation for careers in “other” areas, including teaching, policy, law, journalism, and resource management. They all require students take at least some courses in basic foundational science (e.g., chemistry, physics, biology), some mathematics, and several courses in the general area of earth and space sciences, while providing ample flexibility for students to take courses in related or unrelated areas. All seem to have the common goal of providing a solid understanding of geoscience and the process of science, along with freedom for exploration of other areas that students may either have a passion for or want to eventually pursue a career in. Faculty expertise is quite diverse, even within geoscience departments, but curriculum in all above BA programs is delivered by geosciences faculty, in the same departments as their BS offerings, thereby exposing students pursuing BA degrees to geoscience faculty, research, and foundational knowledge.

2. How does the proposed program stand out or differ from peer programs? Briefly summarize the differences between the proposed program and peers, which could include curriculum, overall themes, faculty expertise, intended audience, etc.

The main difference of the UA Geosciences BA in Geosciences and Society from other BA programs in geoscience is that it requires students to choose one track (i.e., emphasis) and take 12 units of courses from that emphasis area. The idea is to provide students with enough exposure to one of the three emphases (law, policy, or science communication) for them to be able to decide if it is a career path they are interested in pursuing, and perhaps choose to double-major or minor in that area, providing them with sufficient knowledge in that chosen emphasis and hence preparing them for future jobs or graduate programs in related fields. The only peer institution that does something similar is University of Washington in Seattle, where students must take 15 units in either Science Communication, Business, Education, Law and Policy, or Interdisciplinary Science.

3. How do these differences make this program more applicable to the target student population and/or a better fit for the University of Arizona?

The idea for this degree stemmed from numerous experiences in our general education geoscience courses, in which students tell our instructors they love the course material and would like to pursue geosciences but do not want to pursue a traditional geosciences degree because their interests are broader, and they often have reservations about the level of math and foundational science required in the BS tracks. Many of these students are highly aware of current grand challenges, such as climate change and the future of energy resources and want to learn more while still pursuing other career paths, often in areas of social science. With this in mind, we began looking for ways to create a degree that would provide a strong geoscience core education worthy of a geoscience degree while still allowing these students the freedom to pursue non-science career options. The three tracks proposed in the UA Geosciences BA in Geosciences and Society were chosen because there are ample course offerings in these areas that do not have restrictive prerequisite requirements. Students will be able to take four classes in either law, policy, or science communication classes without needing to declare a major or minor in those disciplines, and without completing specific prerequisite courses in those disciplines. While we wanted to also provide tracks in business and education, UA doesn't have the necessary courses available to students who are non-majors in those areas, which limited our ability to build more tracks. We would like to seek opportunities to partner with other entities in the future (e.g., Eller, Education), but we cannot provide pathways to graduation with business or education emphases with what is currently available.



THE UNIVERSITY OF ARIZONA

School of Anthropology

P.O. Box 210030
Tucson, AZ 85721-0030
Tel: 520.621.2585
anthropology.arizona.edu

November 18, 2022

To Whom it May Concern:

This memo is to grant permission for including the course(s) listed below from the School of Anthropology in the proposed BA degree in Geosciences. I agree to give regular access to these course(s) to students in the proposed degree:

- ANTH: 301 – Conservation in Community
- ANTH 307 – Ecological Anthropology
- ANTH 332 – Environmental Archaeology

Sincerely,

Diane E. Austin
Director
School of Anthropology



THE UNIVERSITY OF ARIZONA
COLLEGE OF SCIENCE
COLLEGE OF MEDICINE TUCSON
**Chemistry
& Biochemistry**

Craig Aspinwall, Ph.D.
Professor and Department Head
Chemistry & Biochemistry (CBC)
aspinwal@email.arizona.edu

1306 East University Blvd.
Biosciences West 368
Tucson, AZ 85721-0041
Tel: (520) 621-5672

November 13, 2022

Jessica Kapp, PhD
Associate Professor of Practice
Director of Undergraduate Studies
University of Arizona Department of Geosciences

Dear Dr. Kapp,

The Department of Chemistry & Biochemistry supports the inclusion of our general chemistry courses CHEM 130, CHEM 141, CHEM 151 and CHEM 161, as the one semester chemistry course in the proposed B.A. in “Geosciences and Society” major. These courses are offered every academic year and have the capacity to accommodate enrollments associated with this degree.

If there are any questions, please feel free to contact me directly.

Sincerely,

Craig Aspinwall, Ph.D.



10 November 2022

Jessica Kapp, PhD
Associate Professor of Practice
University of Arizona Department of Geosciences

Dear Dr. Kapp:

I am writing to express my support for the availability of COMM 325 (Argumentation) as a course option for the newly proposed Geosciences and Society BA. The Communication Department is happy to offer this class to your students and we wish you the best with this new degree program.

Sincerely,



Chris Segrin
Department Head



November 29th, 2022

To whom it may concern,

The **UA English department** fully supports students participating in the Geos BA degree program to take some English classes as part of their degree, if they choose the science communication emphasis. These courses include ENGL 302, ENGL 308, and ENGL 313.

Sincerely,

Dennis W. Wise

Dennis W. Wise
Director of Undergraduate Studies
English Department
University of Arizona



THE UNIVERSITY OF ARIZONA
COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES
**School of Geography,
Development &
Environment**

ENR2 Building, South 4th Floor
PO Box 210137
Tucson, Arizona 85721-0137
Ofc: 520-621-1652
Fax: 520-621-2889
geography.arizona.edu

10 November 2022

Jessica Kapp, PhD
Associate Professor of Practice
Director of Undergraduate Studies
Department of Geosciences
Campus

Dear Dr. Kapp,

With respect to the proposed BA in Geosciences, your students are welcome to take our classes in the School of Geography, Development & Environment.

Best regards,

Carl J. Bauer, Ph.D.
Professor & Director
School of Geography, Development & Environment
The University of Arizona
cjbauer@arizona.edu
520-621-1917





THE UNIVERSITY OF ARIZONA
COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES
School of Journalism

Marshall Building, 845 N Park Ave #334
PO Box 210158B Tucson AZ 85721-0158
Tel: (520) 621-7556 Fax: (520) 621-7557

November 21, 2022

To Whom it May Concern:

Please accept this letter to support the project of having the Department of Geosciences submitting a proposal for a new B.A. degree that will include elective courses from the School of Journalism.

Some of the available courses for this program are listed below:

JOUR 305 Full STEM Ahead: Science and the news
JOUR 307 Principles of multimedia
JOUR 455 Environmental journalism
JOUR 465 Issues covering science and the environment
JOUR 472 Science journalism
GLO 405/505 Media and climate change
GLO 450/550 Media and the environment
GLO 465/565 Science misinformation, disinformation, media and the public

Students can also take any other course in journalism that will benefit their academic preparation.

Sincerely,

Jessica Retis, PhD.
Director, School of Journalism
jessicaretis@arizona.edu



THE UNIVERSITY OF ARIZONA
COLLEGE OF SCIENCE

Mathematics

617 N. Santa Rita Avenue
Tucson, Arizona 85721
www.math.arizona.edu

November 14, 2022

Barbara Carrapa, Head
Department of Geosciences
University of Arizona

RE: Bachelor of Arts in Geosciences

Dear Dr. Carrapa,

I am writing to express the support of the Department of Mathematics for the proposed new Bachelor of Arts degree in Geosciences to be offered by your department. In particular, the Math Department supports the inclusion of the following courses as requirements for the new degree:

MATH 163 (Basic Statistics), or
MATH 263 (Introduction to Statistics and Biostatistics)

and the following courses as electives for the new degree:

MATH 107 (Exploring and Understanding Data)
MATH 112 (College Algebra Concepts and Applications)
MATH 113 (Elements of Calculus)
MATH 121A (Precalculus Functions and Models, Part I)
MATH 121B (Precalculus Functions and Models, Part II)
MATH 122A (Functions for Calculus)
MATH 122B (First-Semester Calculus)
MATH 125 (Calculus I).

We expect to offer these course each fall and spring, and if there are at most 20 students per cohort, we expect to be able to accommodate the additional students without any difficulties. Normal prerequisites and registration priorities will apply.

Sincerely,

Douglas Ulmer
Professor and Head

November 10, 2022

Jessica Kapp, PhD, Associate Professor of Practice
Director of Undergraduate Studies
Department of Geosciences
University of Arizona

Dear Professor Kapp,

The Department of Physics will support your BA Degree in Geosciences and agrees with including Physics 102, 141 or 161H classes in the course menu of options.

Sincerely,



Professor and Head
Department of Physics
The University of Arizona





COLLEGE OF SOCIAL AND BEHAVIORAL SCIENCES

School of Government
and Public Policy

School of Government & Public Policy
315 Social Science
P.O. Box 210027
Tucson, AZ 85721-0027
Tel: (520) 621-7600
Fax: (520) 621-5051
<http://sgpp.arizona.edu>

November 28, 2022

To Whom It May Concern:

The School of Government and Public Policy approves including the following courses in the proposed BA in Geosciences and Society degree: POL301, POL404, and POL409. Students selecting the program will be welcome to enroll in these three POL courses.

Sincerely,

A handwritten signature in black ink that reads "Edella Schlager". The signature is written in a cursive style and is contained within a light gray rectangular box.

Edella Schlager
Professor & Director
The Melody S. Robidoux Foundation Fund Chair



From: [Kapp, Jessica L - \(jkapp\)](#)
To: [Madden, Melanie Christine - \(melaniecmadden\)](#)
Subject: Support email from Keith Swisher, Law
Date: Tuesday, March 14, 2023 4:23:58 PM
Attachments: [image001.png](#)
[Outlook-Image.resu.png](#)

Hi Melanie,

See email chain below and response from Keith Swisher in Law. If we need a more formal letter please let me know and I will reach out to Keith.

Thank you,
Jess

Jessica Kapp
Associate Professor of Practice, Department of Geosciences
Coordinator – Exploring Perspectives, Office of General Education
jkapp@arizona.edu
<https://www.jesskapp.com/>

From: Swisher, Keith - (keithswisher) <keithswisher@arizona.edu>
Date: Friday, December 2, 2022 at 5:16 PM
To: Gomez, Rebecca L - (rgomez) <rgomez@arizona.edu>
Cc: Kapp, Jessica L - (jkapp) <jkapp@arizona.edu>
Subject: Re: Action needed, please: Fw: Your help obtaining approval for use of SBS courses for the proposed BA in Geosciences

Hi Rebecca and Jess:

My apologies for the delay and for the late-Friday timing. Law is happy to include the following courses for your new degree, which sounds great. (The omitted courses would not work, primarily because we do not currently offer Law 303 and 489A and because Law 407/507 is typically not a good course to sample in isolation.) Please let me know if you could use any other information or a letter. Wishing you both a peaceful weekend, Keith

Law 411 (CALs/ACBS owns the course, which is cross-listed with Law; Law supports inclusion and the professors in the past have been welcoming of students from other disciplines, but ACBS will likely need to agree)

Law 445

Law 454

Law 459

Law 460 (Law 460 is owned by CAPLA and cross-listed with Law; the professor supports the inclusion of this course, but CAPLA would likely need to agree as well)

From: [Gondor, Anne - \(gondora\)](#)
To: [Ruyle, George B - \(gruyle\)](#); [Steklis, H Dieter - \(steklis\)](#); joewillishome82@gmail.com
Cc: [Madden, Melanie Christine - \(melaniecmadden\)](#)
Subject: RE: ACBS/LAW 411 & PLG/LAW 460: Request to include in proposed new curriculum
Date: Thursday, March 16, 2023 1:08:08 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)

Hi Dieter,

I agree with George. This is good news. Let me know if you want to review any of our course materials, etc.

Best regards,

Anne

From: Ruyle, George B - (gruyle) <gruyle@cals.arizona.edu>
Sent: Thursday, March 16, 2023 12:54 PM
To: Steklis, H Dieter - (steklis) <steklis@arizona.edu>; JWillis@SCHWABE.com; Gondor, Anne - (gondora) <gondora@arizona.edu>
Cc: Madden, Melanie Christine - (melaniecmadden) <melaniecmadden@arizona.edu>
Subject: Re: ACBS/LAW 411 & PLG/LAW 460: Request to include in proposed new curriculum

Hi Dieter. From my perspective this is good news. The course has been taught by Joe and Anne for several years. Celest Steen was instructor of record the first 2 years.

G

From: Steklis, H Dieter - (steklis) <steklis@arizona.edu>
Sent: Thursday, March 16, 2023 11:42 AM
To: JWillis@SCHWABE.com <JWillis@SCHWABE.com>; Gondor, Anne - (gondora) <gondora@arizona.edu>
Cc: Madden, Melanie Christine - (melaniecmadden) <melaniecmadden@arizona.edu>; Ruyle, George B - (gruyle) <gruyle@cals.arizona.edu>
Subject: FW: ACBS/LAW 411 & PLG/LAW 460: Request to include in proposed new curriculum

Hi Joe and Ann,

I am forwarding the request below to have *ACBS411 Agricultural, Environmental, and Legal Issues* included as an option in a new undergrad major, as it should be reviewed by you as the instructors of the course. To my knowledge the course has only been taught by law faculty, not by any ACBS faculty.

Best regards,

Dieter

H. Dieter Steklis, Ph.D.
Director Interim, School of Animal and Comparative Biomedical Sciences
Professor, School of Animal and Comparative Biomedical Sciences
Affiliate Faculty, Psychology
Affiliate Faculty, Family Studies & Human Development
Co-Director, Human-Animal Interaction Research Initiative (HAIRI)
University of Arizona

Emeritus Professor of Primatology
Rutgers University

“There is nothing I am not interested in. That’s my strength. My weakness is there is nothing I am not interested in.” (Stanley Hauerwas)

From: Madden, Melanie Christine - (melaniecmadden) <melaniecmadden@arizona.edu>

Date: Wednesday, March 15, 2023 at 8:35 AM

To: Steklis, H Dieter - (steklis) <steklis@arizona.edu>, Johnson, Lauri M - (ljohnson) <ljohnson@arizona.edu>

Cc: Kapp, Jessica L - (jkapp) <jkapp@arizona.edu>

Subject: ACBS/LAW 411 & PLG/LAW 460: Request to include in proposed new curriculum

Dear Colleagues,

The proposed new undergrad major [BA in Geosciences and Society](#) will have a subplan in Law and Policy (see page 11 of the PDF linked here). There is a request to include some courses which are housed in your respective Schools as **options** (not required courses) for the Law and Policy subplan of the BA in Geosciences and Society curriculum:

- Professor Steklis, does ACBS consent for *ACBS 411: Agricultural, Environmental, and Legal Issues* to be included as an option for students in this proposed new major & subplan?
- Professor Johnson, does the School of Landscape Architecture and Planning consent for *PLG 460: Land Use Planning Law* to be included as an option for students in this proposed new major & subplan?

Happy to answer any questions you have, or you may reach out directly to Professor Jessica Kapp in Geosciences (CC'd on this message).

Best,

From: [Johnson, Lauri M - \(ljohnson\)](#)
To: [Madden, Melanie Christine - \(melaniecmadden\)](#)
Cc: [Jensen, Laura Victoria - \(lvjensen\)](#); [Hollengreen, Laura H - \(laurah\)](#); [Kapp, Jessica L - \(jkapp\)](#)
Subject: Re: PLG/RED/LAW 460: Request to include in proposed new curriculum
Date: Tuesday, March 21, 2023 7:30:09 AM
Attachments: [image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)

Hi Madden,
Yes we are happy to support student enrolment in PLG/LAW 460.
Lauri

Sent from my iPhone

On Mar 20, 2023, at 1:49 PM, Madden, Melanie Christine - (melaniecmadden) <melaniecmadden@arizona.edu> wrote:

Dear Colleagues in the School of Landscape Architecture and Planning,

The proposed new undergrad major [BA in Geosciences and Society](#) (College of Science) will have a subplan in Law and Policy (page 11 on the linked proposal). There is a request to include PLG/RED/LAW 460 an **option** (not a required course) on this curriculum.

Does the School of Landscape Architecture and Planning consent for *PLG/LAW 460: Land Use Planning Law* to be included as an option for students in the proposed new Law and Policy subplan of the Geosciences and Society BA?

Best,

<[image002.png](#)> **Melanie C. Madden**

Program Manager
Curricular Affairs
Academic Administration
THE UNIVERSITY OF ARIZONA

Academic Administration West, 13
819 E 1st St | Tucson, AZ 85721

melaniecmadden@arizona.edu

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<[image003.png](#)>