

## NAU SES URGE Pod: Admissions and Hiring Policies

The following includes the results of our investigation into advertising, admissions, and hiring practices within the School of Earth and Sustainability (SES). Due to our limited group membership (almost all graduate students), we were not able to comprehensively analyze hiring practices, or admissions for all degree programs. Nevertheless, the information below is a useful starting point for identifying biases and contemplating ways to improve existing procedures. There is a focus on graduate school admissions, as information regarding requirements and processes is more readily available than for faculty hiring. Our department has four graduate degree programs: an MS in Geology (GLG MS), an MS in Environmental Science & Policy (ES&P MS), a non-thesis / non-research / applied MS in Climate Science & Solutions (CSS MS), and an interdisciplinary PhD program in Earth Science and Environmental Sustainability (summarized in the table below). Some of the descriptions in this document are particular to individual degree programs. It was very difficult to get in-depth information about faculty and other hiring processes.

**Table - Summary of requirements for admission to each graduate program in SES**

<b>Requirements for all SES Graduate Programs</b>				
NAU Graduate College Requirements	Undergrad degree from an accredited institution			
	Cumulative GPA of at least 3.0 out of 4.0			
	Undergraduate and any graduate transcripts			
	Application fee of \$65			
Graduate College Requirements for International Students	Original & English translation of transcripts			
	English proficiency via TOEFL (>80), DuoLingo (>105), or IELTS (>6.5)			
<b>SES Individual Program Requirements</b>				
<i>Degree program:</i>	Earth Sciences & Environmental Sustainability PhD	Geology MS	Environmental Science & Policy MS	Climate Science & Solutions Professional MS
Recommendation Letters	3	3	3	3

Resume or CV	Yes	--	Yes	Yes
Personal Statement	Yes	--	--	Yes
Writing Sample	Yes	--	Yes - communicating science and/or policy and/or management ideas	--
GRE scores	Yes	No	No	No
Prerequisite Courses	--	<ul style="list-style-type: none"> <li>• Physical Geology</li> <li>• Historical Geology</li> <li>• Mineralogy</li> <li>• Petrology</li> <li>• Stratigraphy / Sedimentation</li> <li>• Structural Geology</li> <li>• Field Camp</li> <li>• Calculus I</li> <li>• Calculus II</li> <li>• Physics I</li> <li>• Physics II</li> <li>• Chemistry I</li> <li>• Chemistry II</li> </ul>	Science prerequisites include at least one undergraduate chemistry, biology, or ecology course with a lab, though it is possible to be admitted provisionally while completing foundational coursework	--
Can prerequisite courses be taken during the program?	--	No (... "no" on paper, though exceptions are made)	Yes	--
Faculty advisor contact	Yes	Yes	Yes	n/a

**Advertisements for graduate student admissions:**

There is no clearly articulated strategy in place for attracting and/or recruiting applicants. Graduate student positions generally are not advertised, though some individual faculty members may do so within their circles, on social media, etc. Graduate student applicants primarily apply to NAU because they are pursuing a specific faculty advisor, and they choose to reach out to that faculty member. This means that the majority of our graduate students (in the research-based programs) are aware of the "hidden curriculum" of academia, where it is expected that prospective students contact advisors prior to admission. The assumption and inherent expectation for this knowledge could introduce bias by favoring applicants who have existing background and/or mentorship in academic circles. Some students apply to our

graduate programs without a specific advisor in mind, and advisors are then assigned later in the admissions process if the student is accepted.

Should a prospective student get in touch with an advisor then self-identify as an applicant who adds to diversity within SES, the prospective advisor is notified. In the ES&P program, there are funds newly (as of the current admissions cycle) available to help with some aspects of recruiting these students (e.g., adding to their offer by paying for some fees and/or a stipend for a semester), but similar funding does not exist for the GLG, PhD, or CSS program (see table above). It is unclear whether these funds could be used to recruit students in these other programs as well, partially because the funding opportunity is new.

### ***Evaluation and ranking of applicants:***

For admissions decisions within our department, there is a graduate committee that oversees most processes. The graduate committee does not “assign” students to different advisors, so to some extent all faculty members are on the graduate student admissions committee. Faculty members choose the student(s) they are interested in from the applicant pool, many of whom have previously been in contact with their advisors.

Students who have self-identified as non-White are “pointed out” in admissions discussions, but it seems that there is no standard procedure for how demographics figure into admissions decisions, and that there are no strategies in place to address potential biases.

There are the fewest application requirements for the GLG MS program (though there is a large number of prerequisite courses compared to all other degree programs). Three letters of recommendation are required for applicants to any program; for the CSS and ES&P MS programs, and for the PhD program, there are requirements for personal statements, CV’s resumes, and/or writing samples. GRE scores are required only for the PhD program.

### Additional detail for the GLG MS procedure:

Applicants are evaluated on a rubric, but this rubric is not made public. This rubric assigns 45% of the decision to grades, and 55% to letters of recommendation. Within the grades category, 45% of the weight is on the undergraduate geology GPA, 30% on overall GPA, and 25% on GPA in the supporting sciences (i.e., mathematics, chemistry, and physics).

### Barriers and biases in these requirements and procedures:

#### *Graduate College*

The Graduate College requirement of a 3.0 cumulative GPA can be a barrier for students who had other responsibilities during undergrad, such as work, family, and caregiving responsibilities. The application fee of \$65 can be difficult for low income students, especially if

they are applying to multiple programs. This barrier can be lowered or removed with fee waivers, but they are not currently advertised so students must know to ask for them. The GRE requirement for the PhD program is costly (\$195 per sitting) and not a good predictor of student success, but rather a predictor of student race and gender (Ledford et al., 2020, [Eos](#); Miller et al., 2019, [Science Advances](#); Miller & Stassun, 2014, [Nature](#)).

#### *For all SES programs*

While very promising that NAU SES has “GRExit-ed” for the MS programs, it would be best to eliminate the GRE requirement for the PhD program; numerous studies show that the GRE is an inequitable indicator of academic performance.

In general, it is interesting that the requirements vary so widely for the different degree programs. Though we were not able to investigate it thoroughly in these two weeks, it is striking that some degree programs would require writing samples, personal statements, and/or CVs, but not other programs. It might be expected that a PhD program would have different requirements compared to MS programs, but it is not clear why two “sister” research-based MS programs would differ. It would be interesting to compare requirements and admission processes for those two programs and compare/contrast them directly. It would also be interesting to see which process tends to result in a more diverse cohort of graduate students, if either.

#### *For the GLG MS program*

The fact that letters of recommendation are assigned so much weight may be a barrier to admissions, because recommendation writers’ reputations, the reputations of their institutions, and any comments that may be ambiguous and read into by the admissions committee could be a large part of acceptance or rejection, and those metrics perpetuate elitism. Additionally, letters are subjective and hard to compare among applicants. The importance of grades in geology courses and in the supporting sciences relies heavily on the assumption that all institutions offer those courses, and students were required to take them for their major. Especially for smaller liberal arts colleges, this may not be feasible for some undergraduate applicants, and much more weight will be assigned to fewer courses (that is, if they are not denied for not having the proper prerequisites).

The coursework requirements for the Geology MS can be a significant barrier as many may not be degree requirements for undergraduate geology majors, and taking all of the math, physics, and chemistry requirements would require planning from a much earlier stage than many students start to think about graduate school. Many smaller undergraduate departments do not offer all of the geology courses required for entrance, especially field camp. Field camps are also a barrier as they often require extra fees, tuition, gear, and time away from work and family (Abeyta et al., 2021, [Earth ArXiv preprint](#)). Allowing flexibility in course prerequisites so that students could take one or two required courses during their MS, or waiving requirements that are less relevant to a student’s research interests would lower this barrier.

### ***Equal Employment Opportunity statements and other inclusion statements for hiring:***

A postdoctoral job description for SES NAU includes the following statement at the end of the document:

Northern Arizona University is a committed Equal Opportunity/Affirmative Action Institution. Women, minorities, veterans and individuals with disabilities are encouraged to apply. NAU is responsive to the needs of dual career couples.

[EEO is the Law Poster and Supplements](#)

NAU is an Employer of National Service. AmeriCorps, Peace Corps, and other National Service alumni are encouraged to apply.

The link redirects to NAU's Human Resources web page which contains various documents related to equal employment. One such resource is the Equal Employment Opportunity poster which details the various national laws and regulations regarding race, color, religion, sex, and national origin (Title VII of the Civil Rights Act of 1964), disability (Title I and Title V of the Americans with Disabilities Act of 1990), age (Age Discrimination in Employment Act of 1967), sex ( Equal Pay Act of 1963), and genetics (Title II of the Genetic Information Nondiscrimination Act of 2008). The poster is also translated into Spanish.

The "how to apply" section of the advertisement contains extra information for applicants with disabilities:

If you are an individual with a disability and need reasonable accommodation to participate in the hiring process please contact the Office of Equity and Access at: 928-523-3312/TDD - 928-523-1006 or PO Box 4083, Flagstaff AZ 86011.

An exploration of postdoctoral job advertisements for other schools at NAU highlighted the same EEO statements, indicating the language is more than likely standardized across the university.