

Reducing Barriers to Equitable Access to Transformative Field Education via Microgrants

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1. Project Abstract

Field-based courses in the geosciences and other natural sciences fields can provide invaluable and transformational experiences for students. Although extra course fees are not charged for these courses, the hidden costs of acquiring the necessary personal equipment for fieldwork can often represent a significant financial barrier and source of inequity for students. As one prong of an effort to eliminate this barrier, we (Trower and the GEOL BAJEDI Committee) have been developing a microgrant program to enable students enrolled in GEOL field courses to purchase necessary field equipment for personal use including hiking boots, waterproof jackets, backpacks, etc. Here, we request funding that will enable us to support and grow this program as we work to build a sustainable and long-term funding model.

2. Project Summary

Field courses form an integral and required part of the curriculum in the Department of Geological Sciences (GEOL): these courses offer capstone experiences in which students can practice real-world applications of concepts introduced in previous courses. Although these courses, and other field experiences (e.g., experiences related to research) can be, at their best, transformative and invaluable pathways for learning, growth, team building, and empowerment (P. J. Stokes et al., 2015), they can also be a significant source of inequity (Giles et al., 2020). Three of the most significant sources of inequity in both access to and experience in field courses are: (1) the high financial costs associated with personal field equipment necessary to create a safe and comfortable learning environment; (2) the lack of accessibility of some field sites, particularly for students with disabilities; and (3) the potentially unsafe and unwelcoming conditions at some off-campus field locations, the impact of which is most significant for BIPOC and LGBTQ students (Giles et al., 2020; John & Khan, 2018). The project proposed here focuses on overcoming the first challenge, but we acknowledge that the second and third issues are also deeply important and require distinct solutions (Anadu et al., 2020; Demery & Pipkin, 2021; A. Stokes et al., 2019).

Unlike many other programs at peer institutions, the Department of Geological Sciences at CU Boulder does not charge course fees for its field courses; the median field course fee for in-state students at US-based institutions in 2017 was \$3,850 (Kelleher, 2017). However, all field courses (including those in GEOL at CU Boulder) include hidden costs in the form of: (1) the cost of personal field gear, (2) the potential costs of lost wages, and (3) the potential costs of childcare (Abeyta et al., 2021). The latter two types of hidden costs are somewhat minimized for CU Boulder students due to GEOL's alternative field curriculum structure, which requires students to take one introductory field course and two advanced field modules. This is in contrast with the 4-6-week-long intensive summer field course that many peer institutions require. Both introductory and advanced field courses run by GEOL are offered during Fall and Spring semesters (in addition to Summer terms) and include a variety of course modes, including some that require no overnight off-campus stays and no commitments on weekends. However, the hidden costs of personal equipment still represent a significant barrier for CU Boulder students. In fact, CU Boulder GEOL students report that the inequities represented by personal equipment field costs may be magnified for them relative to students at peer institutions because some CU Boulder students have significant prior experience in outdoor recreation. Therefore, they already own more appropriate field equipment than the typical undergraduate, while some CU Boulder students enter the program with little to no outdoor equipment or experience. Conversations with students in GEOL field courses have emphasized to us the significance of these financial barriers. Students who struggle

with these hidden costs consistently request more support and information to know what they need (and how to afford it) rather than requesting that field course requirements be dropped.

Abeyta et al. (2021) estimated that the median investment in typical personal field equipment needed for a geoscience field course was \$478 in 2021 (25th percentile: \$262, 75th percentile: \$759, 95th percentile: \$1,528). This analysis included personal equipment including boots, rain gear, backpack, field notebook, writing implements, water bottle, sunscreen, etc., but did not include camping equipment that is sometimes needed (i.e., tent, sleeping bag, sleeping pad) since those items can more easily be borrowed and rented. However, we note that buying, rather than renting or borrowing, camping equipment can add significant cost. Abeyta et al. (2021) also noted that, due to the “pink tax” effect, comparable women’s equipment costs more than men’s equipment (typical added cost of \$61 to \$182 in their analysis) and plus sized women’s clothing increased the cost even more (typical added cost of \$25 to \$63 in their analysis).

Starting in AY 2022/2023, we have been piloting a micro-grant program to reduce the burden of hidden costs of personal field equipment for students enrolled in GEOL field courses. We designed a streamlined application form asking for a requested amount (\$200 maximum) and a list of items for the micro-grant to be used on. We did not ask students to justify financial need but did explain that the program was meant to serve students for whom purchasing necessary equipment represented a financial burden. Applicants were asked to indicate their interest in being connected with peer mentors to help them identify high-quality yet affordable field equipment to purchase with their funds. In AY22/23, we gave out \$3,200 in micro-grants to 23 students (both undergraduate and graduate). Most requests were for items such as hiking shoes, non-cotton socks, rain gear, gaiters, and camping equipment (e.g., tent, sleeping bag, and/or sleeping pad). We chose to allow students to apply for micro-grants for camping equipment (even though these items can often be rented or borrowed) because it can be empowering for students to have their own camping equipment that they can re-use in the future. 100% of micro-grant recipients surveyed reported that the micro-grant program was “very helpful”. 86% of students reported that the \$200 budget maximum was sufficient, but 14% reported that the \$200 budget was not sufficient.

In AY22/23, the pilot micro-grant program was supported by a \$2000 grant to GEOL BAJEDI Committee chair Trower (as part of her participation in an NSF-funded field allyship program) and matching funds from the GEOL chair. So far, we are pleased that we have been able to fund every request in full, but we predict that demand will only increase as we improve our outreach efforts to students in field courses, and due to inflation. We also hope to increase the maximum allowable budget to \$400 to better align with the cost estimates from Abeyta et al. (2021), pending sufficient available funding, which we expect will increase the overall budget.

We request the support of the College of Arts and Sciences Dean’s Innovation Fund to help us support and grow the micro-grant program in AY24/25 as a bridge to seeking more diverse and sustainable long-term funding for the program. The requested budget will be used to fund micro-grants to students (administered as scholarships to each student’s Bursar Account so students do not have to pay costs up front). We will also assemble two slide decks of information about the program: (1) a standard set of slides to be shared with students enrolled in every field course at the beginning of the semester; and (2) a standard set of slides about the program and its benefits to be shared regularly with GEOL faculty to encourage them to consider writing micro-grant support into their NSF proposals as a broader impact and with GEOL’s alumni advisory board, which is deeply involved with fundraising to support the Department’s mission. Finally, we will also create a short video presentation that can be shared with students enrolled in field courses who are unable to attend course organizational meetings when we present on the micro-grant program.

Beyond AY23/24, we intend to achieve a more sustainable long-term funding model by: (1) encouraging GEOL faculty to consider writing micro-grant support into NSF grants that fund field-based research; (2) working with the GEOL Alumni Advisory Board to solicit donations to specifically support this program; and (3) building connections and collaborations with other departments to seek external grant funding to support equitable participation in field courses and other field experiences across a broader suite of disciplines.

The hidden financial costs of personal field equipment for field courses are a particularly significant barrier to students from underprivileged backgrounds, a group that commonly intersects with students with underrepresented identities. This project will enable students from all backgrounds to obtain equitable opportunities to succeed in, and benefit from, field experiences. The program will also help cultivate a culture of belonging amongst all GEOL students by providing them with resources to engage comfortably and safely with field experiences and outdoor recreation experiences that they had been excluded from due to lack of necessary personal equipment. Diversity in the geosciences has not increased in over 4 decades (Bernard & Cooperdock, 2018); our field micro-grant program will remove one important barrier that has historically excluded many from pursuing this field of study by expanding equitable access to transformative experiences in field courses (P. J. Stokes et al., 2015).

We will continue to survey micro-grant recipients at the end of each semester to track program effectiveness and shifts in financial need. We will also code and analyze the requested items from micro-grant applications to understand whether there are any widely needed items (e.g., field notebooks, hand lenses) that could be more efficiently purchased in bulk by the Department and provided to students.

3. Budget

We request \$10,000 to fund micro-grants in AY24/25. The entirety of funds will go directly to supporting micro-grants, with ~\$5,000 budgeted per semester.

4. References Cited

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