

Collaborations for Building Michigan Geology Talent

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Project Summary

The increase in the number and quality of high school science courses and the establishment of more credit by exam courses provides the geosciences with a new opportunity to elevate the stature of our science and potentially reach a new generation of students, increase the number of students selecting geoscience careers, and add diversity within our workforce.

The proposed project will:

- Train teachers from throughout Michigan to teach the High School Advanced Geology (HSAG) course developed by Mattox and Bolhuis at the 12th grade level, and
- Demonstrate that completing a high quality HSAG course can attract diverse students to geoscience programs, and
- Expand the existing consortium of eight colleges and universities that award college credit to students who pass the HSAG Exam.

We will provide up to 15 high schools with an opportunity to teach an AP-like HSAG class in their own school and have it count for credit at most universities in Michigan. We will support the teachers with content knowledge, guidance on pedagogy, and the equipment needed to properly teach the class. Our specific goals are:

Goal 1: Increase the number and diversity of high school students taking a geology course.

Goal 2: Demonstrate that a HSAG course can attract diverse students to the geosciences.

Goal 3: Increase the level of geology subject-area training of participating teachers.

Goal 4: Increase high school students' geoscience literacy.

Goal 5: Make the HSAG course as attractive to students as existing AP science courses.

Goal 6: Have students take advantage of school/university agreements to provide college credit for students who pass the HSAG Exam.

Goal 7: Increase the number of students enrolling in advanced college geoscience courses.

Our target audiences are grade 12 students and their teachers. We will focus on Michigan teachers that already have a Master's in Science Education or Earth Science (Education) with at least an equivalent of a minor in Earth Science. We will seek teachers in Wayne County that has a total high school student population of 85,289 students and a minority student population that exceeds 45%. In 2010, PI Rutherford obtained a Memorandum of Understanding from several high schools in Wayne County to participate in this program. We will continue to target additional districts with high student diversity, such as McComb County and the city of Pontiac.

At the end of year 3, about 750 students will have taken the HSAG Exam and we will have reached at least 375 students per year. If we can approach the success rate of Hudsonville High School (80% pass rate with 14% selecting geosciences programs) the Collaborations for Building Michigan Talent program could be adding 50 students per year to the geosciences workforce pipeline, with many of these students coming from underrepresented groups. As more school districts learn of about this successful program they too will want the HSAG course.

By the end of the grant period the broader impact of the proposal will show the geology departments across Michigan that there is value in maintaining the program since they will have received more majors. Eight Michigan state colleges and universities have already signed formal agreements to award credit by exam for the HSAG exam and two more are currently guiding agreements through administrative approval. This means that the universities themselves will begin to embrace this project and ensure that students' receive credit from the HSAG course. This intellectual merit of the proposal will advance geoscience literacy across the spectrum of different audiences.