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## The Importance of Dual and Concurrent Enrollment Earth Science Courses

### Position Statement:

Offering rigorous Earth science courses at the high school level addresses critical needs in both geoscience education and future workforce needs. Members of the National Earth Science Teachers Association (NESTA) and National Association of Geoscience Teachers (NAGT) advise that it is time to establish new, strong collaborations between high schools and post-secondary institutions around dual credit and concurrent enrollment Earth science courses. These courses will attract high performing students to potentially fill the geoscience career pipeline, meet the rigors and spirit of the Next Generation Science Standards, continue to build strong post-secondary education geoscience departments, expand the diversity of the geoscience community, and increase the number of geoscience literate citizens who will be making informed decisions about Earth science issues in the future.

### Purpose:

The AGI Workforce Program has predicted a decrease in the number of geoscientists in the next decades while at the same time there is a forecast increase in the number of geoscientist jobs. With relatively few students majoring in the Earth sciences in college, there is a potential shortfall of future geoscientists. By improving the level of high school Earth science education with dual credit or concurrent enrollment courses, we can begin to address that workforce gap. During their high school experiences many top performing secondary school students in the United States are guided toward the more rigorous Advance Placement (AP) courses. Currently there is not an AP Earth Science course. Models need to be employed that address critical educational gaps by expanding the use of dual credit and concurrent enrollment courses to counterbalance. High school students need to be recruited and retained in the Earth sciences as they bridge over into higher education in pursuit of degrees.

Qualified high school students taking dual credit or concurrent enrollment courses can earn both high school and college credit simultaneously. Courses are taught either at a high school by qualified high school teachers (dual credit model) or at two year/four year post-secondary institutions by higher education faculty (concurrent enrollment model). Top performing high school students who seek AP science courses would be attracted to dual credit or concurrent enrollment Earth science courses because it allows them to complete a course in a required high school content area, while directly earning college credit with a possible higher weighted grade point average. College admission officers will recognize on the student's high school transcripts that the student has completed a college level course, and in addition, the high school student will be able to include a college transcript with his/her college application

Dual credit courses are modeled after a course at the collaborating post-secondary institution. The standards and academic rigor established for the course at the college. are maintained at the high school through close collaboration between the qualified high school teacher and the college faculty. Dual credit high school courses are typically taught during a full school year, thereby allowing sufficient contact time for the students to master the content taught in a corresponding post-secondary institution semester. The complementary concurrent enrollment model is one in which high school students are enrolled in single semester courses on a higher education campus. The college receives a number of benefits, among which is included a very important recruiting tool: students completing a course will receive a college transcript, giving them an incentive to apply to that college. This can be particularly compelling to students who may not have considered college as an option prior to their dual credit or concurrent enrollment experience.

### Recommendation:

NAGT and NESTA members probably already know geoscience educators who would be interested in establishing dual credit or concurrent enrollment program. They are usually just a quick e-mail or phone call away. We encourage members to reach out and begin this discussion.

## OPPORTUNITIES FOR ALL TO BROADEN DUAL AND CONCURRENT ENROLLMENT

NESTA and NAGT encourage the following actions:

### Secondary Faculty and Administration

- Identify local post-secondary institutions with Earth & Space Science Departments. Approach them about the possibility of a dual credit or concurrent enrollment collaborations which will have the potential to increase their enrollment, provide visibility for their department, and increase the number of students who may choose to major in the Earth & Space Sciences.
- Identify a departmental liaison who will be the point of contact for this project. Design a course syllabus that demonstrates that the course meets college standards as well as state high school graduation requirements.
- Approach appropriate local school district personnel, including the school guidance department. Establish the expectation that Earth science is a rigorous college level course that will challenge students at the high school level and provide them with college credits before entering college.
- Work with the departmental liaison to create special learning opportunities for the students such as guest speakers, field trips, and special projects, once the course is developed and approved.

### Post-Secondary / Higher Education Faculty

- Identify local secondary institutions and qualified faculty. Approach them about the possibility of establishing a dual credit or concurrent enrollment course promoting Earth science.
- Invite the local appropriate secondary science and mathematics faculty, guidance staff and administrators to post-secondary events highlighting the Earth sciences and the importance of Science, Technology, Engineering, and Mathematics (STEM) education efforts.
- Be involved in the collaborations by actively initiating these programs and implementations.

About NESTA: The **National Earth Science Teachers Association** ([www.nestanet.org](http://www.nestanet.org)) has served our membership with the vision to "...provide leadership and effective support to teachers so that all K-12 students receive quality Earth and Space Science Education" and mission "to facilitate and advance excellence in Earth and Space Science Education." NESTA leaders are often called upon to provide a nationally-recognized voice speaking to the future of Earth Science education at meetings of other scientific and school leadership organizations. NESTA collaborates with federal agencies and organizations seeking to advance geoscience education and literacy. Membership in NESTA is a must to K-12 teachers seeking to promote geoscience education nationally and take part in leadership at the national level.

About NAGT: The **National Association of Geoscience Teachers** ([www.nagt.org](http://www.nagt.org)) works to raise the quality of and emphasis on teaching the geosciences at all levels. We count among our members K-12 teachers and college and university faculty as well as educators working with the general public through outlets such as museums and science centers. NAGT's purpose is to foster improvement in the teaching of the Earth sciences at all levels of formal and informal instruction, to emphasize the cultural significance of the Earth sciences, and to disseminate knowledge in this field to the general public. The Association has been working towards three main goals: to improve geoscience education, to emphasize the relevance and cultural significance of the earth sciences, and to disseminate knowledge to educators