AMG is a yearlong learning community designed to accelerate students into STEM fields by providing intensive math preparation, counseling, tutoring, and opportunities for exploring ideas with hands-on projects and labs. Successful participants will be ready for Calculus I in fall 2015, completing all prerequisites in two semesters, rather than the usual 3-4 semesters. AMG combines 9 units of mathematics in fall 2014 (Math 60 Intermediate Algebra, Math 97 Exploring Geometry and Trig, and Math 47B AMG Supplemental Instruction), as well as 9 additional units of mathematics in spring 2015 (Math 115 Trigonometry, Math 135 Precalculus, and Math 197 AMG Supplemental Instruction). Similar programs in California have demonstrated that when students compress their math requirements this way, their retention and success rates in mathematics and their target STEM disciplines are much higher.

The AMG course format is based on an active-learning, inquiry-based pedagogical approach. In a typical class session, about half of the time is devoted to group work on directed learning activities. Since less time is allocated to lectures than in a traditional format, students have a greater responsibility to fill in gaps in order to complete out-of-class assignments. To facilitate students with this responsibility and to retain students who are struggling, AMG provides ample resources outside of class--for example, SI sessions, an embedded tutor, and a student support specialist.

About half of the SI class sessions are devoted to providing academic support for the primary 8 units of classroom instruction. The other half focus on hands-on projects that explore mathematical relationships in the physical world. For example, students have already completed a lab on the law of reflection using lasers, and have modeled the physics of bungee jumping using Barbie dolls attached to links of rubber bands.

In accordance with the hands-on approach of AMG, we plan to go on 3-5 field trips during this academic year to businesses involved in engineering and/or manufacturing, and to academic institutions. Attached is a photograph of our recent visit to D&K Engineering, a local design and manufacturing service provider based in Rancho Bernardo. We also plan to offer internship placement services for our students as summer approaches, following the example of similar programs in California, which have placed students in internships at prestigious institutions such as Jet Propulsion Laboratory.