INTEGRATING A PLANETARY SCIENCE CURRICULUM INTO GEOLOGY AND ASTRONOMY CURRICULA. T. H. Burbine[1], M. D. Dyar[1], and C. M. Hamilton[2]. [1]Department of Astronomy, Mount Holyoke College, South Hadley, MA 01075, USA (tburbine@mtholyoke.edu; mdyar@mtholyoke.edu), [2]Department of Physics and Astronomy, Dickinson College, Carlisle, PA 17013, USA.

Introduction: The Astronomy Department at Mount Holyoke College offers a collaborative undergraduate major in astronomy through the Five College Department of Astronomy (FCAD), which includes Smith, Hampshire, and Amherst Colleges along with the University of Massachusetts. Over the past decade, student interest in planetary science courses has dramatically increased throughout the FCAD, and a growing number of geology students have also been attracted to the curriculum. In response to this demand, we are creating a new interdisciplinary program in planetary science. The courses include intellectual content that crosses the boundaries between geology and astronomy and is presented in an interdisciplinary fashion; many of the courses are counted toward either major. These courses model successful teaching practices and inspire students to undertake further study in related fields.

In support of the new courses, we sought and received support from the Course, Curriculum, and Laboratory Improvement (CCLI) Program from the National Science Foundation (NSF). The NSF funding was used to support course development, assessment, and "equipment" purchases, including meteorites for classroom teaching and 8" telescopes for student use. This abstract discusses courses that were developed or adapted for this planetary science curriculum to assist other institutions in developing planetary science programs that can serve to draw students into both astronomy and geology curricula.

Introduction to the Planets: Originally we taught planetary science only at the 200 level. However, the course was swamped with students from outside the astronomy major, and grew to an unmanageable size. As a result, we moved the course to the 100 level and recreated two sections with the same lectures but different homework sets: one for non-science majors and a second for science majors that requires calculus (and has an additional "fourth hour" meeting weekly. Students may take either course with a weekly laboratory that uses the 8" telescopes and provides hands-on experience with the sky (and, especially, planets).

Spectroscopy and Planetary Science: This intermediate-level course covers fundamentals of spectroscopy, remote sensing, and planets, including discussions of interiors, atmospheres, compositions, origins, and evolution of terrestrial planets, satellites, asteroids, comets and planetary rings. Course modules included: (1) theory of spectroscopy and its application to the planets and stars; (2) broad band imaging of planetary surfaces; (3) in-situ spectroscopy of planetary surfaces; (4) spectroscopic techniques used to search for exosolar planets, and (5) analysis of an unidentified spectrum. The goal of the course is to identify important absorption/emission features based on knowledge acquired throughout the semester. Student assignments are computer-intensive. This course now has a manageable size and reaches its intended audience of astronomy and geology majors.

Meteorites: The goal of this course is to give students an appreciation of meteorites as geologic objects. All aspects of meteorites from mineralogy, petrology, bulk chemistry, and isotopic systematics are covered. A variety of analytical equipment was used during the class including the petrographic microscope and the scanning electron microscope. Meteorites were observed in hand sample and in thin section. No prior knowledge of meteorites was assumed.

Comets and Asteroids: This course covers the relationship of comets, asteroids, and meteorites. Topics that were discussed included how asteroids, comets, and meteorites are named and classified, the composition of comets, spectroscopic measurements of asteroids, and how meteorites are transferred from asteroids to the Earth. Meteorites are used for discussing the mineralogy of asteroids.

Planetary Missions: A course during January term was developed to discuss planetary missions. The course has alternated discussing missions to asteroids and comets and missions to Mars. Each student is part of a team that does a presentation on a particular mission. Meteorites are used for discussing the mineralogy of planetary bodies.

Results: The initial feedback from these classes is overwhelming positive. Most students greatly enjoy hands-on experience with samples such as meteorites and with equipment such as the scanning electron microscope and telescopes. This curriculum is now attracting 2-6 students per year into the ranks of astronomy and geology majors. Most importantly, students are excited and enthusiastic about their hands-on experiences with meteorites and the coordinated telescope observing. We also undertook formal assessment of all our courses. Results were useful not only in helping the faculty improve their teaching skills, but also in shaping the content of these courses.