Introduction: NASA’s Science Mission Directorate (SMD) Education and Public Outreach (E/PO) Forums work closely with the SMD education and public outreach community in a coordinated effort to enhance the coherence and efficiency of SMD-funded E/PO programs. The Forums foster collaboration between scientists with content expertise and educators with pedagogy expertise. Within the forums are working groups to support those working with different audiences. The Higher Education Working Group supports students and faculty of two- and four-year institutions, and examines how NASA can best serve these communities and provides useful instructional resources to US schools of higher education.

Survey of Two-Year College Faculty: The Higher Education Working Group (HEWG) conducted a survey of Earth and space science faculty in two-year/community colleges in 2012. The purpose of the study was to understand the challenges and needs of community college faculty teaching in STEM and how NASA could best support their efforts. Major findings included the need for more professional development in STEM content, teaching online courses, assessment, grant writing, and fostering research projects for undergraduate students. A summary report of the full study has been submitted for publication, and will be posted online with other resources for higher education faculty.

Lessons Learned in Working with Diverse Students: In 2014, the HEWG conducted a survey of exemplary college programs who serve under-represented students in STEM in higher education. We present lessons learned from this effort, including challenges and barriers in serving these students.

A challenge for this work was that for many funded programs, diversity outcomes are difficult to find because they are usually not reported on in the published literature and only appear in project final reports which can be cumbersome to obtain. Project directors often find it difficult to track outcomes for these students in any meaningful way. Successful projects are those which not only make a significant recruitment effort, but include efforts to fill under-represented students’ preparation gaps and help them navigate the higher education system through strong faculty and peer mentoring programs, and administrative support. Finally, resources must be devoted to tracking these students and intervening early to help students navigate specific hurdles such as gateway courses and qualifying exams.

Resources for Astro 101 Courses: Started by members of NASA’s Astrophysics missions, multiple Forums are now collaborating to bring the cutting-edge NASA discoveries in Space Science into college classrooms. Currently provided by the Astrophysics Forum, there is a pilot series of slide sets to help Astronomy 101 instructors incorporate new discoveries in their classrooms. The “Astro 101 slide sets” are presentations 5-7 slides in length on a new development or discovery from a NASA Astrophysics mission relevant to topics in introductory astronomy courses. These slide sets are intended to help Astronomy 101 instructors include new developments (discoveries not yet in their textbooks) into the broader context of their courses. Find these slide sets at https://www.astro Society.org/education/resources-for-the-higher-education-audience/.

These were particularly inspired by work of the Division of Planetary Sciences (DPS), which has developed Discovery slide sets, which are 3-slide presentations that can be incorporated into college lectures to keep classes apprised of the fast moving field of planetary science. Each slide set includes a description of the discovery, a discussion of the underlying science, and a presentation of the big picture implications of the discovery, with a fourth slide includes links to associated press releases, images, and primary sources. Topics span all subdisciplines of planetary science, and sets are available in Farsi and Spanish. The NASA SMD Planetary Science Forum has recently partnered with the DPS to continue producing the Discovery slides and connect them to NASA mission science. Find these slide sets at http://dps.aas.org/education/dpslide.

NASA Wavelength: NASA Wavelength (nawavelength.org) is a collection of digital peer reviewed Earth and space science resources for educators of all levels – from elementary to college, to out-of-school programs. All resources were developed through funding of the NASA Science Mission Directorate (SMD) and have undergone a peer-review process through which educators and scientists ensure the
content is accurate and useful in an educational setting. We also offer support for those interested in submitting resources for higher education to be included in NASA Wavelength.

Other Resources for Higher Education Faculty:
Additional resources are available to college faculty including professional development at science meetings (e.g. before LPSC, DPS), as well as short guides linking instructors to resources for teaching earth and space sciences.

Additional Information: This work is provided through funding by the Science Mission Directorate. For more information, visit the SMD E/PO community workspace at http://smdepo.org.