2016-17

PIE - Natural Sciences: Earth Sciences & Astronomy Unit

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External Conditions, Trends, or Impacts: We are expected to increase our offerings, but our classrooms at near full capacity. We need one or two additional multiuse Geoscience / astronomy lab space. Also, enrollment is down state-wide, making continued growth difficult.

During 2016-2017, only 57% of the astronomy classes were taught by full time faculty members as part of their regular load. We would like to increase astronomy sections, especially now we will have Astr 11 and looking in to astronomy AA degree. However, finding quality adjunct instructors has been very difficult. As it nearly impossible to find new adjunct (we conducted 6 adjunct interviews in last 2 years and hired one), we need to hire a full time faculty member.

During 2016-2017, only 41% of the classes were taught by full time faculty members as part of their load. When there are too many sections taught by adjunct, it is possible for the quality of instructions to start to slip. We need to hire one or two full time faculty members to accomodate for the recent increase in number of sections offered in GeoScience.

We have been trying to hire new adjunct faculty members this school year, with great difficulty. We have been able to find a small number of new Earth Science instructors, but the small number of qualified astronomy instructors has meant that, despite our best efforts, we have not been able to hire any new part time astronomers. We would like to increase our course offerings, and have the enrollment to support more sections of astronomy, but we simply don't have anyone to teach the classes.

Internal Conditions, Trends, or Impacts: Change in evaluation process mid year affected our ability to properly evaluate our adjunct faculty members in a timely fashion.

The new online version of the PIE document being available so late in the year makes our reporting difficult, especially due to the large number of other demands on faculty members' time at the end of the semester.

Our department's student assistant budget has not changed in several years despite the increase in minimum wage from $8 to $10.50, and the further increase to $11 in January 2018. We have increased our class offerings, yet we effectively have a 38% decrease in our student assistant budget. This lower level of student support is not sustainable, and we need the college to increase our budget at least to match the increase in minimum wage.

With increase in the number of sections we offer, we would like our supply budget to increase accordingly.

Due to a lack of funding for work study students, the planetarium has started hiring from the SSEED program for student worker help. These students have little to no employment experience and come from disadvantaged backgrounds. Unfortunately this has lead to a higher student employee turnover rate and a great deal of time was spent training new student workers instead of working on planetarium production projects.

Notable Achievements for Theme A: To Advance Academic Excellence and Student Achievement: Mike Hood has continued to be a member of the CAMPARE and Cal-Bridge program, giving our students access to these extremely beneficial programs. One of our astronomy students was chosen for the very selective CAMPARE program, which will give her the opportunity to do astronomical research over the summer.

Our department hosted the spring meeting of the Consortium of California Colleges for Weather and Climate Education. The meeting was attended by over 30 faculty, students, and National Weather Service personnel from around Southern California and included a tour of the South Coast Air Quality Management District’s headquarters in Diamond Bar.

As part of Becca Walker’s NSF grant, Field based professional development for ESTEM Undergraduates, 10 Mt. SAC students
were selected to participate in the 2017 ESTEM program, a field and career preparation program in geology, geomorphology, hydrology, and ecology.

As part of Dave Mrofka and Becca Walker’s work as SAGE 2YC Faculty Agents of Change, a workshop for community college geoscience faculty and counselors was convened at Mt. SAC in December 2016, Supporting Academic Success in the Geosciences and 2-year Colleges in Southern California.

Conference presentations at Geological Society of America meeting:

Becca Walker and Sarah Hall (College of the Atlantic) co-authored an instructional module for the GETSI (Geodesy Tools for Societal Issues), Surface Process Hazards. The module is in final preparation and will be published in summer 2017.

Craig Webb helped organize the Science Night at La Fetra elementary school in Glendora, CA. He continued to be the defacto "geologist" to assist faculty at the school with the earth science curriculum.

ASTR99 students John Quinones and Christina Vides presented their work (done with Dr. Robert Nelson and Mark Boryta) at the annual meeting of the AGU in Dec 2016. The work centered on reflectance properties of planetary surface analogs.

Fall, 2016: Tania Anders organized a gescience speaker series, inviting as the first speaker Dr. Brian Murray to speak about research on volcanoes in Mexico.

Mt. SAC astronomical society studnets, Christina Vides and John Quinones have organized lecture - Stand For Science Lecture, with the help Of Dr. Nelson, Mark Boryta and Breanna Binder (former student at Mt. SAC currently a Cal Poly Postdoc in astrophysics)

Kepler Scholarship this year was great success with Steven Levin from Juno mission as our keynote speaker. Our scholarship contributors and studnets were exposed to the newest data (not yet published) during the event. Kepler scholarship event also included student poster session - we had 4 current Mt. SAC students and 2 former studnets presented at the poster session. Notable Achievements for Theme B: To Support Student Access and Success: We completed a full SLO cycle, through the Use of Results stage, for 17 courses this year.

Redinger grant; we received eight applications (a record) and the grant was awarded to two students for a project in the Salton Sea area (Adam Fuentes) and also a project designed to create learning activities for the Exploration Center (Chelsea Adelman). As part of Chelsea Adelman’s research project, she presented to the Debbie Day studnets. Chelsea’s project will be part of this year’s S2E2 summer middle school summer camp program. Chelsea will be studying the learning gain of hands on demos and activities with S2E2 studnets, along with other Mt. SAC studnets.

Kepler Scholarship research student of 2016-2017, Eli Martinez has conducted research with Dave Mrofka.

Kepler Scholarship again had great application pool and 2 studnets were awarded the scholarship. Chelsea Adelman ($1000), Cristian Ramirez ($750)

We continued to collect data for the Intro to Astronomy student learning research. Our data from this year includes assessments of students’ understanding of astronomy concepts and their improvement throughout the semester for 37 different sections of astronomy lecture courses.

Earth Science Resource center consistently more than 50 student visitors per week. Students are taking advantage of the space to study, to make up assignments, attend study sessions, work on group assignments and more.

Exploration center often has more than 50 visitors each week. It is wonderful to have the interest by students to visit the facility, however we need budget to have more qualified student worker to be the museum guide and for upkeep / new material for exhibit.
Mt SAC students were served by the planetarium/observatory during 2016-2017.

May 2017, Hilary Lackey and Tania Anders led two ocean science sessions for 4-6 graders at Deborah Boroch Science Discovery Day; several Mt. SAC students from our geoscience classes volunteered.

**Notable Achievements for Theme C: Secure Human, Technological, & Financial Resources:** The Kepler Scholarship dinner event was again a huge success this year. In addition to raising funds for future scholarships, this event gave our students the chance to present their research to an interested audiences and also allowed us the opportunity to show benefactors the work we are doing in our department. We have raised $13,000+ from the event this year.

We purchased a set of new 8-inch telescopes, allowing us to continue to utilize our on-campus observing capabilities while at the same time making equipment available for off-campus field trips.

Becca Walker is a co-PI on an NSF-Geopaths Extra project, Field based professional development for ESTEM Undergraduates.

Becca Walker submitted a grant proposal to the National Science Foundation in conjunction with the GETSI (Geodesy Tools for Societal Issues) project. The proposal is expected to be funded and will commence in early 2018.

Financial resources: Procurement of $60,000 in Strong Workforce Initiative funds to establish a Geotechnician Certificate Program and improve a field studies site in the Joshua Tree area.

Over $46,000 earned from planetarium reservations during 2016-2017

Astrophotography equipment purchased for new astronomy lab and new ASTRO 99 course.

July 2016, Hilary Lackey received NSF funds to participate in "Geo-Needs: Stakeholder Needs Assessment for Broadening Participation in the Geoscience Workforce" at the Earth Science Educators Rendezvous, Madison, WI

The planetarium participated in providing activities for Debbie Discovery Science Day. Key Planetarium/Observatory staff members also attending the 2016 Riverside Telescope Makers Conference in Big Bear, CA and the 2016 Small Telescope Science Symposium in Ontario, CA. Important contacts were made at Telescope Science Symposium conference that could help expand the observatories research efforts into new areas such as research on double stars.

**Notable Achievements for Theme D: To Foster an Atmosphere of Cooperation and Collaboration:** Mark Boryta, along with students in the astronomy club, helped organize a "Stand For Science Lecture" featuring talks by JPL Senior Scientist Dr. Robert Nelson, Post-doctoral researcher (and former Mt. SAC student) Dr. Breanna Binder, and Mt. SAC geologist Dr. Mark Boryta. The event was very well attended, as the audience entirely filled the large Astronomy Lecture Room in room 61-1420.

Planetarium has hosted Japanese planetarium show for Japanese club (collaborated event with World language department). We will reach out to Spanish program to offer similar opportunity to students in spanish program as well.

Dave Mrofka and Becca Walker are collaborating with Elizabeth Nagy-Shadman (Pasadena City College) as the Southern California Faculty Agents of Change team. We are meeting with the other Change Agents teams from around the country in Tacoma, WA in June 2017.

Over 13,000 students from local schools visited the planetarium for a field trip during 2016-2017

**Contributors to the Report:** Heather Jones

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