MT. SAC
Mt. San Antonio College

# managerPIE 2014-15 2015-16 2016-17 2017-18

## Planning for Institutional Effectiveness

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*NOTE: This PIE Form is optimized to be used in Acrobat 10 or later.*

# Introduction:

## I. Institutional Mission

***The mission of Mt. San Antonio College is to support students in achieving their full educational potential in an environment of academic excellence.***

*Your area's program review will be recorded on this form summarizing the current year and documenting planning for the next 3-year cycle.*

*TracDat is the college's database for recording outcomes. Please update your outcomes work regularly. http://tracdat.mtsac.edu/tracdat*

## II. Division and Division Units: *Select your Area or Division*

| | | |
|---|---|---|
| DIVISION | Natural Sciences | Units: Agriculture, RVT, Biology, Physics & Engineering |
| Dean | Matthew Judd | Units: Histotechnician, Chemistry, Earth Sciences & Astronomy |
| E-mail / Extension | mjudd@mtsac.edu / 909-274-4711 | Units: Mathematics & Computer Sciences, Marc & T-Marc |

## III. Division Mission

***Enter your Division Mission Statement here.***

# IV. College Themes and Goals

College themes and goals allow the campus to focus on critical issues. Articulated by the President's Advisory Council and approved by the Board of Trustees, they guide institutional planning and assessment processes.

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| Theme A: To Advance Academic Excellence and Student Achievement | |
| College Goal #1 | The college will prepare students for success through the development and support of exemplary programs and services. |
| College Goal #2 | The college will improve career/vocational training opportunities to help students maintain professional currency and achieve individual goals. |
| College Goal #3 | The college will utilize student learning outcome and placement assessment data to guide planning, curriculum design, pedagogy, and/or decision-making at the department/unit and institutional levels. |
| Theme B: To Support Student Access and Success | |
| College Goal #4 | The college will increase access for students by strengthening recruitment opportunities for full participation in college programs and services. |
| College Goal #5 | Students entering credit programs of study will be ready for college level academic achievement. |
| College Goal #6 | The college will ensure that curricular, articulation, and counseling efforts are aligned to maximize students' successful university transfer. |
| Theme C: To Secure Human, Technological, and Financial Resources to Enhance Learning and Student Achievement | |
| College Goal #7 | The college will secure funding that supports exemplary programs and services. |
| College Goal #8 | The college will utilize technology to improve operational efficiency and effectiveness and maintain state-of-the-art technology in instructional and support programs. |
| College Goal #9 | The college will provide opportunities for increased diversity and equity for all across campus. |
| College Goal #10 | The college will encourage and support participation in professional development to strengthen programs and services. |
| College Goal #11 | The college will provide facilities and infrastructure that support exemplary programs and the health and safety of the campus community. |
| College Goal #12 | The college will utilize existing resources and improve operational processes to maximize efficiency of existing resources and to maintain necessary services and programs. |
| Theme D: To Foster an Atmosphere of Cooperation and Collaboration | |
| College Goal #13 | The college will improve the quality of its partnerships with business and industry, the community, and other educational institutions. |
| College Goal #14 | The college will improve effectiveness and consistency of dialogue between and among departments, committees, teams, and employee groups across the campus. |

# SectionOne: Where We Are—An Analysis and Summary of the Current Year

## I. Planning Context: Division Goals for: Natural Sciences

a. *Identify the overarching goals (informed by Unit goals) that guided your Division's work for the 2014-15 year (from your 2013-14 PIE form) in the following table and connect those goals to the College Themes. Add rows (+) as needed. Delete rows (X). (limit 10 goals)*

*Roll-Over to see "overarching goal" example*

| Division Goal Name | Division Goal | College Theme |
|---|---|---|
| Culture of Assessment | 1. Continue to encourage and support a culture of assessment across the Division, encouraging data driven decisions that result in changes in instruction | A: Academic Excellence |
| Customer Service | 2. Provide excellent "customer service" to students, faculty, and staff – continue to be the "last stop" for those seeking help | D: Cooperation/Collaboration |
| Support for Events | 3. Support department, campus, and community events such as, Debbie Boroch Science Day, Caduceus Club Health Professions Conference, Kepler Scholarship Program, Farm Day, Robotics Team, and other events sponsored by one or more departments within the Division | B: Access and Success |
| Manage Resources | 4. Effectively manage resources within the Division, such as Wildlife Sanctuary, Agriculture Farm, Meek Museum, Redinger Exploration Center, Randall Planetarium, Observatory Dome, Ag Literacy Trail, and develop program to recycle 100% of the College's green waste and manure | C: Secure Resources |
| STEM Center | 5. Increase student success and achievement in science, technology, engineering, and mathematics (STEM) courses, particularly for underrepresented students, by creating and staffing a STEM center | C: Secure Resources |
| Enrollment Management | 6. Continue to respond to student needs for courses within the Division through targeted growth and effective enrollment management | B: Access and Success |
| Cutting Edge | 7. Develop, support, and implement innovative programs for students utilizing cutting edge equipment and technology | A: Academic Excellence |
| Undergraduate Research | 8. Support undergraduate research across the Division | D: Cooperation/Collaboration |

## II. Notable Achievements for: Natural Sciences

*Enter a brief summary of your Division's successes for the 2014-15 year in the field below followed by a listing , by theme, of the Notable Achievements. This provides opportunity to highlight your Division's proudest moments for this year. Text boxes will expand as needed. Add rows (+), delete rows (-).*

*Roll-Over to see Achievement example*

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| a. Narrative Summary | Faculty and students from Robotics, Turf Teams, Livestock and Horse Show Teams were recognized for their outstanding achievements. The first year of the NSF grant, “Mt. SAC STEM Teacher Preparation”, was successful and faculty were awarded three FIG grants. Three new faculty members were successful in their first probationary year and four new full-time faculty will begin teaching in fall. Nineteen courses were submitted for C-ID approval, three new AA-T degrees were proposed, four new certificates were approved, the Addendum to the Master Educational Plan: The Farm was completed, new courses ranging from Conservation Biology, Immunology, and Field studies, were offered for the first time; multiple 99 courses were offered throughout the division providing instruction, support, and access to research for students. Thousands of students, faculty, staff, and community members attended events hosted by the division including viewing planetarium shows, touring the Wildlife Sanctuary, observing the solar eclipse, and visiting the Meek Collection. The STEM Center hosted student programs and planned for a fall opening. |

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| Add Notable Achievement Theme | Organization / Process |
| Mt. SAC Educational Master Plan Addendum: The Farm - The Agriculture Department completed an addendum to the Master Educational Plan outlining their vision and plan for the future of their department and the farm facilities | |
| Add Notable Achievement Theme | Program Success |
| Add Notable Achievement Theme | Select Achievement Theme |
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| Add Notable Achievement Theme | Select Achievement Theme |
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The Agriculture Department revised 12 courses for C-ID alignment, created two new transfer degrees, and four new certificates were approved; BIOL 25, Conservation Biology, and MICR 26, Immunology, were offered for the first time; the Biology Department submitted 7 courses for C-ID approval; AA-T in Anthropology was developed; a new course, ANTH 4, was approved by the EDC; a proposal was submitted to develop a bachelor's degree in Histotechnology (unfortunately, it was not approved); the Chemistry Department developed a new course: CHEM 51H; GEOL 29, Special Topics in Field Geology, was offered for the first time and Mt. SAC students had the opportunity to study geology in the field during an 18-day field trip to Idaho (Craters of the Moon National Monument and Darlington Hills), Wyoming (Yellowstone and Grand Teton National Parks), and Utah (Capitol Reef, Bryce Canyon, and Zion National Parks) ; MATH 110S, Integrated Statistics, received UC IGETC approval and articulation as college level statistics at several CSU campuses; the Mathematics Department partnered with the Bridge Program and Pathways to provide support and alternative paths to student success; the Physics & Engineering Department created new courses in Physical Science, Physics, Engineering, and Surveying that will be offered for the first time in the next academic year; PENG collaborated with M&CS to better serve engineering students; faculty in the Mathematics Department, working with Basic Skills, developed and implemented Math Placement Test Prep Workshops to help students better understand the placement tests

| Add Notable Achievement Theme | Funding |
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| Add Notable Achievement Theme | Select Achievement Theme |

The Agriculture Department used Perkins Grant funding to purchase equipment used across multiple lab classes; this provided students with hands-on experience with updated equipment and improved safety

| Add Notable Achievement Theme | Faculty Success |
|---|---|

Brian Scott received the Dr. William Danielson Foundation award for Teacher of the Year for his work with the sports turf management teams; Chaz Perea received the Mt. SAC Burning Bright award for adjunct faculty for his team involvement

| Add Notable Achievement Theme | Student Success |
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| Add Notable Achievement Theme | Select Achievement Theme |

Turf Teams placed 2nd and 3rd at the STMA National Student Competition; Livestock Show Teams bred and raised championship sheep and cattle; Horse Show Team won reserve high point team at the Cal Poly show with one student moving forward to regionals; the Robotics team competed in four national competitions and won numerous awards; a chemistry student was awarded the American Chemical Society Outstanding Chemistry Student award in spring

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| Add Notable Achievement Theme | Staffing |
| Add Notable Achievement Theme | Select Achievement Theme |

The Agriculture, Chemistry, and Mathematics Departments all hired new full time faculty members who successfully completed their first probationary year; Earth Science & Astronomy, and Physics & Engineering Departments each hired a new faculty member and the Mathematics Department hired two new faculty members who will begin teaching in fall; the Biology Department hired a new half-time laboratory technician and recently received approval to convert the half-time position to full time lab tech position; the Physics and Engineering Department hired a new full-time laboratory technician; the Natural Sciences Division hired a new half-time clerical specialist and a new Division Administrative Assistant

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| Add Notable Achievement Theme | Grants |
| Add Notable Achievement Theme | Select Achievement Theme |

The first year of NSF STEM grant, “Mt. SAC STEM Teacher Preparation” was successful; three FIG grants were awarded within the division, “Increasing Stereochemical Understanding in Organic Chemistry through Hands-On 3-D Modeling”, “Improving Student Learning Success in Organic Chemistry”, “Astronomy Student Learning”, and a fourth FIG grant utilized our planetarium, “Architecture in the Planetarium” (partnership)

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| Add Notable Achievement Theme | Organization / Process |

Multiple planning sessions to establish a STEM Center on campus were attended by students, faculty, and staff. The STEM Center hosted two events: “Battle Plans for Final Exams” in time for spring finals and “Planning for the Hurdles Ahead” just before fall registration. The faculty mentor positions were filled late spring and plans are underway to bring the STEM Center fully operational. A design plan is being developed to renovate the space.

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| Add Notable Achievement Theme | Special Student and Community Events |
| Add Notable Achievement Theme | Select Achievement Theme |
| Add Notable Achievement Theme | Select Achievement Theme |
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| Add Notable Achievement Theme | Select Achievement Theme |
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The departments in our division hosted events for students and the community: Horticulture Career Night, Fall into Agriculture, Ag Field Day, Pet First Aid and CPR, Pet Dental Seminar, Farm Day (over 1,000 visitors), Caduceus Club Health Professions Conference (over 700 students), Earth Week activities (280 attendees for the event in our Wildlife Sanctuary), Pre-Health Careers Institute, Health Careers Outreach Day for High School Students (280 high school students attended), Family Science Day (Mole Day), Kepler Scholarship, and Astronomy Observing Nights in the Mt. SAC Observatory. Over 3,000 students utilized the Planetarium during class time and 141 public planetarium shows were offered. 12,000 Mt. SAC students and community members toured the Wildlife Sanctuary. The Meek Collection and The Redinger Science Exploration Center in Building 61 attracted over 5,000 visitors. The October Solar Eclipse Event was attended by over 300 students, staff, and community members. The Debbie Boroch Science Day was attended by 200 students from 82 schools.

*Enter Notable Achievement Here*

## III. Tracking Conditions, Retention & Success, Critical Decisions and Outcomes Assessment for: Natural Sciences

*Enter a brief summary for each section based on the 2014-15 year followed by information provided in your Units' PIE forms. Add rows (+), delete rows (-).*

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| a. External Conditions Summary | Our CTE programs are impacted by external conditions such as Advisory Committee recommendations, accrediting bodies, and changes to regulations in the USDA and AVMA.<br><br>Academic areas have found recruiting adjuncts challenging. In areas such as physics, a small number of candidates graduating each year with a Master's degree, severely limits the pool. Other departments have found that with increased full-time offerings in the geographical area, there are fewer candidates available. With the improving economy some adjuncts are finding employment outside of teaching limiting the adjunct teaching pools.<br><br>Regulations from the CCCCO including C-ID, transfer degrees, and repeatability have influenced planning.<br><br>Recent thefts and power outages have highlighted our deficiencies in security and the need for card readers at access points. |

| Student Demand | *Roll-over to see example* | Data Source |
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| Agricultural programs at other local community colleges have been discontinued in recent years, expanding our service area. | | Direct communication with colleges |

| Accreditation | *Roll-over to see example* | Data Source |
|---|---|---|
| New USDA regulations for the care and use of agricultural animals in teaching will effect the operation of classes and farm units | | USDA and AVMA requirements for accreditation |

| Regulation / Policy | *Roll-over to see example* | Data Source |
|---|---|---|
| Regulation for film chemicals is changing to ban the use of certain chemicals, which will necessitate the replacement of radiographic equipment with digital equipment | | EPA requirements |
| CSU system is accepting engineering students for transfer with high GPAs who have not completed significant coursework in the discipline in preference to students with lower GPAs who have completed the pre-engineering curriculum. | | calstate.edu |

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| Chancellor's Office repeatability policies have impacted students' ability to easily repeat required work experience courses | | CCCCO |
| Green chemistry principles are driving usage or removal of certain laboratory chemical reagents | | Journal of Chemical Education |
| C-ID alignment and AS-T degrees require revision or modification of current course offerings | | CCCCO |
| Recent definitions of student success present new challenges to tracking Agriculture program success. | | CCCCO |
| Economy / Budget | *Roll-over to see example* | Data Source |
| Improved college budgets have allowed continued growth, allowing us to come closer to meeting student demand for our courses. | | Enrollment management data, budget data |
| Drought has impacted the availability of feed for our animals, and increased feed costs. | | Farm account budget |
| Minimum wage increased in July impacting our labor budget. | | State minimum wage requirements |
| Industry Changes | *Roll-over to see example* | Data Source |
| Ongoing need to meet the requirements and recommendations of our advisory committees (Registered Vet Tech / Animal Science, and Horticulture; Histotechnology) | | Advisory Committee meeting minutes |
| Staffing | *Roll-over to see example* | Data Source |
| 75% decline in astronomy adjunct staffing from 14-15 to 15-16. Finding and retaining high-quality astronomy adjunct faculty is challenging. | | ES&A internal data |
| Between 2004 and 2012, 33 Master's Degrees in physics were awarded, on average, per year in Southern California. This is an extremely limited source for adjunct faculty. | | "Trends in Exiting Physics Master's" American Institute of Physics |
| Adjunct engineering faculty are recruited from the technical sectors in the greater Los Angeles basin. In these tech sectors, the job turnover is high, which translates to a constant turnover in the adjunct pool. This creates a significant amount of recruitment and training for adjunct faculty. | | hrjobs.edu |
| Security | *Roll-over to see example* | Data Source |

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| Recent losses due to theft highlight the vulnerabilities of our facilities and the equipment contained in them. Card readers installed at all entry points would provide greater security. | Campus-wide communication |
| Power outages have caused stockroom doors to be locked, keeping personnel locked out. Likewise, emergency services may be prevented from accessing the stockroom and providing assistance to personnel within. | Reported by laboratory technicians, faculty, managers |

| Technology | *Roll-over to see example* | Data Source |
|---|---|---|
| Rapid advances in technology are being made on a constant basis, changing the way the agriculture industry functions. | | Advisory Committee meetings |
| Students expect to have technological access 24/7 to faculty, notes, grades, homework and resources. Students are transitioning to using new technologies to record their class experience such as making videos of lectures, taking images of boards and using laptops in class. This impacts their expectations of how we deliver content. | | Faculty observations |

| Training | *Roll-over to see example* | Data Source |
|---|---|---|
| Faculty and laboratory technician licensing is required to allow us to legally operate and maintain our RVT program. | | USDA, AVMA, State and County licensing requirements |

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| b. Internal Conditions Summary | The driving internal condition for the Natural Sciences Division has been growth. The division as a whole has grown over 10% from fall 2012 through summer 2015. Smaller departments within the division have experienced growth up to 25%. As a result, we have been able to serve nearly 1,000 additional full-time equivalent students. This explosion of growth has stressed our resources. In order to maintain and even exceed our current levels of growth we need augmentation to our supply budgets, instructional equipment, clerical support, laboratory support, new faculty, and facilities.<br><br>Along with growth is the need to support the students in the classes. Continuing to fund the STEM Center, including additional clerical and laboratory technician support, will be critical to student success. Expanded funding of Supplemental Instructors to keep pace with increased class offerings in targeted growth areas is crucial. |

| Student Demand | *Roll-over to see example* | Data Source |
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| Engineering is introducing the first new engineering courses in 25 year in order to modernize the curriculum and address student needs. | Department minutes, schedule of classes |
| Completion of the Addendum to the Educational Master Plan: The Farm, shows there is a need for growth. Curriculum will need to be revised along with degree and certificate modifications. | Addendum to the Educational Master Plan: The Farm |
| During this time of growth, course offerings are not always aligned with student demand. Communication, including marketing, to students, potential students, faculty, and counselors regarding the course offerings within our division is needed. | Enrollment management reports |
| Computer lab facility in Building 80 does not have enough stations to accommodate the number of students in the courses. Furniture and computers are needed for 8 additional stations, which will allow for increased enrollment in the high demand classes. | Addendum to the Educational Master Plan: The Farm |
| Funding for SI positions has not been sufficient to meet the number of sections in disciplines across the division that could benefit from these services . | Unfunded SI requests |
| To support growth in courses with high student demand, additional evening and weekend courses are and will be offered. This creates a need for additional evening and weekend IT support and support services for faculty and students | Enrollment data |
| Total number of credit sections for Mathematics & Computer Science exceeded 2010 levels (457). Gains achieved in total credit enrollment for M&CS at census: 16,737 in 2014 -15 compared to 16,669 in 2013 - 2014. Enrollment approaching enrollment achieved during 2010 - 11(17,130). High percentages of students enrolled in M&CS courses were maintained: Summer '14: 90.98%, Fall '14: 105.00%, Winter '15: 96.45%, Spring '15: 101.95%. However, percentage enrolled showed a small decline compared with the previous year. | ARGOS SSR0039-A<br>ARGOS SFR0004-B |

| Regulation / Policy | *Roll-over to see example* | Data Source |
|---|---|---|
| Course prefixes in the Schedule of Classes and College Catalog identify all courses in the Agriculture Department as AG instead of by discipline within the department. This makes finding appropriate classes and registering challenging for students. | | Addendum to the Educational Master Plan: The Farm |
| Our students have diverse educational goals, and tracking the completion of these goals on a continual basis is challenging, since not all students have the goal of completing a certificate or degree | | Department meeting minutes, Advisory Committee minutes |
| Work experience policies have changed, impacting students' ability to register for and complete required work experience courses. | | CCCCO |
| Certificates and degrees are not auto-awarded. Many students do not ever apply for certificates because they believe they will automatically receive their degree or certificate. | | Mt. SAC Admissions and Records |

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| Chemistry Department laboratory curricula are undergoing revisions to provide their students with a cohesive, unified approach to lab. | | Department minutes |
| Campus committees, faculty senate, and campus governance committees are scheduled is such a way that it is difficult for lab instructors to participate. In particular, Senate has scheduled their meetings to overlap both the morning and afternoon blocks for laboratory science classes. | | Schedule of classes, campus shared governance committee meetings |
| Economy / Budget | *Roll-over to see example* | Data Source |
| Current funding for supply budgets across the division, particularly with laboratory courses, cannot meet the needs of increased course offerings to accommodate growth and high student enrollment in most classes. New courses offered in engineering requires an augmentation to their supply budget. Recent one-time lottery fund allocation for laboratory classes across the division will support growth for this year. | | District supply budget, department meeting minutes |
| Although instructional equipment funding has increased in the past two years, instructional equipment needs have out paced funding. | | District supply budget |
| Staffing | *Roll-over to see example* | Data Source |
| Part-time classified positions that support the farm units and laboratory activities need to be expanded to full-time positions to maintain current course offerings, sustain growth, and allow for the development of revised programs in Agriculture. Some restructuring of existing positions is also needed. | | Addendum to the Educational Master Plan: The Farm |
| Clerical support within the division is limited. One additional full-time clerical position will allow us to serve our customer base and provide much needed support for faculty and chairs. | | Department Chair Meetings, Division Operations Meetings |
| Hourly student workers are used throughout the division to support farm operations, teaching laboratories, tours of the Meek, the Wildlife Sanctuary, and resource rooms for student study. Increasing the budget for hourly student workers will allow us to serve student more effectively. | | District budget, Department Chair Meetings, Division Operations Meetings |
| Continued growth in the RVT program will require an additional full-time Veterinary Professor and an additional full-time Classified RVT. | | Enrollment data |
| Increased growth has created a demand for new adjunct faculty across the division. | | Enrollment data |
| Oceanography offerings this academic year declined due to staffing difficulties. (This will be resolved when the new faculty member begins in fall 2015). | | Enrollment data, class schedules |
| Two new full-time faculty were hired in Mathematics this year. One additional full-time faculty member still needs to be replaced. | | Department minutes, request to fill documents, HR information |

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| Physics needs a full-time, permanent department laboratory technician to support instruction. This need was recently met when a full-time lab tech was hired. Increased course offerings in the evening create a need for an additional half-time Physics and Engineering Department lab technician. | BOT agenda<br>Enrollment data |
| Physics and Engineering have increased their course offerings by 31 sections from 2009-2010 to 2013-1014. This has increased the demand for a new full-time faculty member. This need will be mitigated by the recent hiring of a new full-time faculty member. | Class schedules, ARGOS reports |
| The space in 61-3316 has been repurposed as a support center for students majoring in science, technology, engineering, and mathematics (STEM). The purpose of the center is to improve success and retention rates for students in STEM majors. There is a particular need for students that are underrepresented in these fields. To support the STEM center there is an ongoing need to provide faculty mentors, counselors, and tutors. In addition to the current staff, it is clear there is a need for a laboratory technician, similar to the role lab techs serve in the MARC and T-MARC, and clerical support for the STEM Center activities. | STEM Center operational meetings |

| Facilities / Maintenance | *Roll-over to see example* | Data Source |
|---|---|---|
| Insufficient laboratory facilities to meet growth needs and student demand throughout the division including biology, chemistry, physics, and engineering lab classes. | | Schedule of classes, room usage report, enrollment data |
| Additional lab teaching space is needed for new course offerings, particularly in engineering. ENGR 50A (robotics team project development—6 hours of lab per week per section) curriculum has been submitted for approval. Once ENGR 50A is accepted 50B and 50C courses will be submitted. | | Department minutes, curriculum submissions |
| Funding is needed to complete the Small Animal Care Facility. Construction of dog kennels to support the RVT program need to be relocated to a more suitable area. The original proposed site needs to be repurposed. | | Addendum to the Educational Master Plan: The Farm |
| Wi-Fi signal in the Natural Sciences complex is weak making it difficult to take advantage of internet resources in the classroom. | | Division chairs meetings, personal experience |

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| As a result of the substantial growth in the Chemistry Department, lab space and lecture space are at a premium. Modification to existing facilities will allow for additional growth. Convert rooms 7-2114 and 7-2122 into three rooms: (a) 24 station o-chem lab with 12 chemical hoods; (b) 28 seat general lecture classroom with instructor demonstration table; (c) 30 seat "special class lab" – 30 computer stations – irregularly scheduled to analyze data, access modeling programs, associated with classroom or laboratory work conducted elsewhere. Convert 7-2123 into multiuse flexible lab space with 3-4 additional hoods. Remodel 7-2117 to add stock room to support 7-2123 multiuse flexible lab and add office space for a laboratory technician. Add 24-28 student lab drawers to 7-2111 to allow increased sections to be offered in the lab. This will allow the Chemistry Department to continue to grow. | Enrollment data, room utilization study, meetings with architects, faculty, and Deans |
| Construction space for robotics team is needed in the vicinity of the PENG department. The team is only able to serve 20% of the students who wish to participate. | Department meeting minutes |
| An outdoor engineering space is needed for construction of large projects that support classroom and laboratory instruction. | Department meeting minutes, discussions with facilities |
| Buildings within the NSD Complex are not adequately maintained. Classroom and laboratory floors are not clean and require weekly sweeping. Restrooms are not serviced adequately. The custodial staff is responsive and helpful whenever action is required; however, there is insufficient staff to support regularly scheduled maintenance. This creates unsanitary conditions in the common areas and the restrooms which negatively affects student and employee morale. To support college growth, the buildings must be supported, including increasing custodial support. | Number of requests for custodial support within the division; number of EIWOS and SchoolDude requests; ongoing requests for support in Unit PIEs |
| Plans for major renovations to 61-3316 to provide space for a new STEM Center are underway. Until the renovation occurs, a door partitioning a portion of the space for storage of models, laptops, and other supplies is needed. White boards need to be installed in the space. Access point for stronger Wi-Fi connection is needed. | STEM Center plans |

| Technology | *Roll-over to see example* | Data Source |
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| Digital x-ray computer needs used in RVT program needs to be replaced. It runs on Microsoft Windows XP, which is no longer supported by the campus. This computer runs the digital X-ray machine. | | Agriculture Department meeting minutes, IT deparments |
| Ongoing need for computer replacement plan to replace and/or update existing computers. Every department in our division has a need for updated computers for lab and content delivery. | | Department meetings, Division meetings |

| Training | *Roll-over to see example* | Data Source |
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| Support for attending conferences has improved due to increased travel and conference funds in POD. | | District budget |

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| c. Retention and/or Success | The Natural Sciences Division has maintained high success and retention rates. Comparing data from primary terms (fall and spring) for 2012-13, 2013-14, and 2014-15 academic years, the success rate has remained relatively strong ranging from 72-74%. Retention rates are also strong at 86%. During this time period, the division experienced substantial growth, nearly 1,000 FTES. Some of the smaller departments experienced growth rates up to 25%. The consistently strong growth and retention rates provide reassurance that growth has not come at the expense of student success. We have been able to maintain high quality programs for students while responding to student needs for growth.<br><br>Students in our CTE programs requiring national exams (RVT, HT, and HTL) for employment have consistently outperformed the national average. This provides evidence that our programs set the standards for excellence. |

| Student Demand | *Roll-over to see example* | Data Source |
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| Between the 2009-2010 and 2013-2014 academic years, enrollment in the Agricultural Sciences Department increased 6.7% due in part to a 16.2% increase in the number of sections offered. At the same time, the retention rate increased from 93% to 94%. The statewide retention rate for Agricultural Science courses is 90%, so their retention rate is excellent. | | Addendum to the Educational Master Plan: The Farm |
| Anatomy 10A success rate fell to 37% in spring 2012. It spiked up to 62% the next semester, was 50-55% for three semesters in a row, and then fell again to 35% in fall 2014. Even at 50% it was the lowest success rate course in the Biology department. The overall success rate for the Biology Department ranged from 78-82% over the past three academic years. | | ARGOS SHR0012-A, ARGOS grade distribution report |
| Faculty teaching Astronomy courses have developed a FIG project to study the outcomes in their courses. The purpose is to establish baseline data to determine what students are learning and if that is consistent among faculty. Ultimately they will develop strategies and techniques to improve student outcomes. Faculty participating in the project will share what they have learned with their colleagues. | | FIG project proposal |
| Math department success rates have remained stable showing virtually no change compared to the prior year. 62.64% success rate in 2014-2015 versus 62.83% success rate in the previous year. This occurred even though the department experienced substantial growth. Computer science department success rates show a very small drop. 89.74% success rate in 2014-2015 versus 93.62% success rate in the previous year. However, the success rate remains very high even though this discipline experienced substantial growth.<br>Retention rate is very stable in the Computer Science courses, with 89.93% retention in 2014-2015 versus 89.53% retention in the previous year. Again, retention rates have remained high while the number of sections added increased. Retention rate is very stable in the Math department, with 85.16% retention in 2014-2015 versus 84.90% retention in the previous year. Again, retention rates have remained high while the number of sections added increased. | | ARGOS SHR0012-A |

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| Fall 2014, spring and summer of 2015 PENG increased the Physics 2AG sections to four – more than have been offered in previous years. This will immediately increase the demand for Physics 4A and Physics 2BG sections. During the same time period Physics and Engineering 99 courses expanded substantially. The increased student engagement in these courses in turn increases the need for physics and engineering courses across the disciplines. Historically, participation in the robotics team supports and improves retention across the curriculum. Within the Physics and Engineering program, in courses other than physical science, student success has been consistently around 78%-80%. This is attributed in part to SI support (and of course, excellent teaching). Physical Science courses have had lower success than the PENG department average. Previously, there have been no prerequisites for these courses. Beginning fall 2015 all physical science courses will have English and Math prerequisites. The success and retention data for these courses will be observed carefully to determine the impact of the prerequisites on student success. | Enrollment data, internal department analysis, ARGOS SHR0012-A, department meeting minutes |
| The faculty mentor positions for the STEM center have been filled by one of our Physics and Engineering faculty members and one of our Biology faculty. This strong faculty presence from both the physical sciences and biological sciences in the development of the future STEM center is significant for the students in our division. The center will increase retention and success rates across the disciplines within the division. | STEM Center proposal, Internal analysis |
| The Chemistry Department has grown tremendously in the past three years, serving a larger number of students while maintaining high success and retention rates. From Fall 2012/Spring 2013 to Fall 2014/Spring 2015, the total number of students enrolled in Chemistry courses increased 27% (2155 to 2744). During that same time span, both success and retention rates consistently remained high at 85%-86% and 87.7%, respectively. | ARGOS SHR0012-A |

| Accreditation | *Roll-over to see example* | Data Source |
|---|---|---|
| The number of students in the RVT program taking the Veterinary Technician National Exam for the first time increased from 5 students in 2012-2013 to 39 students in 2014-2015. The pass rate for Mt. SAC students was 83% in 2012-2013, 100% in 2013-2014, and 82% in 2014-2015. The national average for all candidates tested was 58.01%. Mt. SAC students are well prepared for the national exam. | | Veterinary Technician National Exam data |
| The Histotechnology program students' pass rate for the Histotechnology National Exam (technician level, HL) was 88% for 2014, one of the program's lowest success rates. In 2013 the pass rate was 94%. The overall cumulative pass rate for Mt. SAC students since 2003 was 95%. The national average is approximately 70%. For students taking the technologist level national exam (HTL) Mt. SAC students have a 100% cumulative pass rate. The national average for this exam is approximately 66%. | | American Society for Clinical Pathology Board of Certification |

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| d. Critical Decisions | The Natural Sciences Division made critical decisions in enrollment management. Courses were added where student demand was greatest and cancelled where they were least needed. Where possible cancelled classes were converted – using the same teacher, time, and room – to a class that would meet student need. As a result, the division grew significantly. From fall 2012 to summer 2013, the enrollment was 6,371.10 FTES division-wide. From fall 2014 to summer 2015, enrollment increased to 7,133.25 FTES. This resulted in 10.68% increase in FTES.<br><br>Responding to current studies and trends the Agriculture Department decided to make significant changes to their existing programs; the Biology Department applied to the CCCCO bachelor's degree pilot program to develop a degree in Histotechnology (B.S. Histotechnology); the Mathematics Department developed the Math Placement Test Information Sessions, maintained support for Pathways and Bridge Program courses, continued to support Math Bootcamps (part of ARISE program), and requested articulation for Math 110S as college/transfer level Elementary Statistics; the Physics & Engineering Department made their first substantial change in curriculum in 25 years and developed a robotics course; the Chemistry Department developed an in-house lab manual.<br><br>Four new faculty were hired in the division: two mathematicians (replacement positions), one oceanographer (replacement for failed probationary candidate), and one physicist/engineer (growth position). The division also hired a new administrative assistant and a half-time clerical assistant (replacement positions).<br><br>Two faculty members have accepted the faculty mentor position for the STEM Center, one from the physical sciences and one from the biological sciences. |

| Student Demand | *Roll-over to see example* | Data Source |
|---|---|---|
| As a result of the Addendum to the Educational Master Plan: The Farm, the Agriculture Department decided to make significant changes to their existing programs. | | Addendum to the Educational Master Plan: The Farm, |
| The Biology Department applied to the CCCCO bachelor's degree pilot program to develop a bachelor's degree in Histotechnology (B.S. Histotechnology). If approved this would be the only such program in the state. This proposal was not approved at this time. The department remains interested in offering this degree. | | Distribution of HTL programs in the country, HT employer survey, HT graduate survey, CCCCO |

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| The Mathematics department responded to students needs in their area. The Math Placement Test Information Sessions were developed to assist students in appropriate placement in mathematics courses; they maintained the support for the successful Pathways and Bridge Program courses; they continued support for the Math Bootcamps for placement test preparation (part of ARISE program); they requested articulation for Math 110S at key, local CSU campuses for articulation as college/transfer level Elementary Statistics. | Basic Skills, meeting with articulation officers, department meeting minutes |
| Responding the needs of transferring students and changes in the engineering field, the Physics & Engineering Department developed new engineering and physics courses. This is the first substantial change in curriculum in 25 years. In addition, the robotics course was developed to support the robotics team. This will allow students to implement physics and engineering course concepts in a practical context. | Curriculum reports, department meeting minutes |
| The Natural Sciences Division made critical decisions in enrollment management. Courses were added where student demand was greatest and cancelled where they were least needed. Where possible cancelled classes were converted – using the same teacher, time, and room – to a class that would meet student need. As a result, the division grew significantly. From fall 2012 to summer 2013, the enrollment was 6,371.10 FTES division-wide. From fall 2014 to summer 2015, enrollment increased to 7,133.25 FTES. This resulted in 10.68% increase in FTES. | ARGOS report SSR0037 |

| Staffing | *Roll-over to see example* | Data Source |
|---|---|---|
| Four new faculty were hired in the division: two mathematicians (replacement positions), one oceanographer (replacement for failed probationary candidate), and one physicist/engineer (growth position). The division also hired a new administrative assistant and a half-time clerical assistant. | | Request to Fill documents |
| Two faculty members have accepted the faculty mentor position for the STEM Center, one from the physical sciences and one from the biological sciences. Both have committed substantial time to moving the project forward. | | Student Equity Plan, internal analysis |

Outcomes assessment through "Use of Results" has been completed for 80.77% of the programs offering degrees and certificates within the Natural Sciences Division. Of the 26 degrees and certificates offered in the division, five are missing one or more steps in the process (outcome created, summary of data, use of results). One of these degrees, AS-Chemical Laboratory Technician, has not been offered recently. Rather than deactivate the degree, we are considering modifying it to include a wider range of laboratory technician positions consistent with labor market data. Currently, the courses are not being offered and assessment data is not being collected or analyzed. The AA-Liberal Arts Emphasis Natural Sciences has not

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| e. Progress on Outcomes | been assessed. Historically, these AA-Liberal Arts degrees were created by the Academic Senate rather than by departments or divisions. As a division, we will collaborate with the Outcomes Committee to determine how we can best support assessment for this degree. The AS-T-Mathematics degree has not been assessed. Currently this degree is undergoing modification to align the courses with C-ID and the CCCCO transfer model curriculum. Once this process is complete, this degree will be assessed. Two degrees with robust programs, Registered Veterinary Technology and Histologic Technician Training, have not completed their assessment cycle. The Associate Dean will work with both program directors on creating program level outcomes and mapping those to institutional level outcomes.<br><br>Student learning outcomes were developed for 90.78% of courses offered in the division, summary of data has been completed for 81.07% of courses, and use of results completed for 78.64% of courses. For most of our six departments, the courses that have not been assessed are the Special Projects 99 courses. This year at our Division meetings with the department chairs, we will develop outcomes for our 99 courses. The Biology department is the exception. Less than 50% of courses offered have completed the assessment process through summary of data or use of results. The chair of the department plans to teach one less class in spring in order to provide leadership in developing and assessing outcomes. The Associate Dean will assist the chair and faculty with outcomes assessment beginning in September. |

| Accreditation | Link to Outcomes report<br>*Roll-over to see example* | Data Source |
|---|---|---|
| The Agriculture Department has completed outcomes assessment for 97.01% of their courses, completed summary of data for 95.52% of courses, and completed use of results for 95.52% of their courses. | | Outcomes Assessment Report |
| The Biology Department has completed outcomes assessment for 85.11% of their courses, completed summary of data for 46.81% of courses, and completed use of results for 42.55% of their courses. The Associate Dean will begin working with the department in September to provide support and direction. | | Outcomes Assessment Report |
| The Chemistry Department has completed outcomes assessment for 100% of their courses, completed summary of data for 88.89% of courses, and completed use of results for 88.89% of their courses. The only course that is missing outcomes data is CHEM 99. The department reports they will assess CHEM 99 in summer 2015. The department also reports that they have a regular cycle of assessment | | Outcomes Assessment Report, department PIE report |

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| The Earth Sciences & Astronomy Department has completed outcomes assessment for 82.61% of their courses, completed summary of data for 82.61% of courses, and completed use of results for 69.57% of their courses. | Outcomes Assessment Report |
| The Computer Science courses within the M&CS Department have completed outcomes assessment for 81.82% of their courses, completed summary of data for 81.82% of courses, and completed use of results for 81.82% of their courses. Of the Mathematics courses, have completed outcomes assessment for 92.86% of their courses, completed summary of data for 92.86% of courses, and completed use of results for 92.86% of their courses. They have a regular cycle of assessment for their courses. MATH 70S and MATH 110S have not been assessed (or have not been entered into TracDat) | Outcomes Assessment Report, department PIE report |
| The Physics & Engineering Department has completed outcomes assessment for 90.48% of their courses, completed summary of data for 90.48% of courses, and completed use of results for 90.48% of their courses. Only their PHYS 99 and ENGR 99 courses have not been assessed or have not been recorded in TracDat. The department reports in their PIE that they have assessed both courses and reported on their results. | Outcomes Assessment Report, department PIE report |

## IV. Closing the Loop; Alignment and Progress on College Goals: Natural Sciences

*This section serves as a "reporting" function to describe how your area closes the loop and connects planning to budget allocation: How did the prioritized college resources connect to your area's outcomes over the past year? What progress has your area made with the resources provided? Please include progress on plans that did not require new resources if applicable.*

*Roll-Over to see a "Closing the Loop" example*

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| a. Narrative Summary | The Natural Sciences Division was allocated over $227,000 for instructional equipment. This was used to update laboratory technology across the curriculum, increase hands-on instruction, and improve operations. These resources had a significant impact on instruction ranging from chemistry students identifying unknown compounds through the use of Fourier Transform Infrared Spectrometers to students viewing the solar eclipse through new telescopes.<br><br>An additional $62,000 was secured from the Perkins Grant to update laboratory technology specific to the Agriculture Department, expand opportunities for students to use industry standard equipment, increase safety, and improve operations.<br><br>Four new faculty members were hired and the NSD hired a new Division Administrative Assistant and part-time Clerical Assistant. |

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| Closing the Loop Theme | Student Success |
| The Agriculture Department was allocated $2,086.01 to purchase Goldie K9 Breath/Heart Simulator. “Goldie” was used to reproduce heart sounds for the RVT medical class and for student testing of required skills.<br>able Achievement Here | |
| The Agriculture Department was allocated $10894.55 to purchase a Walk Behind Trencher. Students in the irrigation, turf, and construction classes are trained to operate this updated equipment and use it to install drains and water lines for class projects. The trencher will also be used by students in equipment classes. Students will learn how to maintain and operate the trencher. | |
| The Biology Department obtained a replacement color printer from the NSD when theirs failed. Certain color images for Bio 2 labs are critical for students. | |
| The Chemistry Department was allocated $5447.24 in lottery funds to purchase supplies such as adapters, test tubes, and glassware. Chemistry students were able to use this equipment during lab classes across the curriculum. | |

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| Closing the Loop Theme | Faculty Success |
| Closing the Loop Theme | Select Activity Theme |

| Closing the Loop Theme | Select Activity Theme |
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The Earth Sciences & Astronomy Department developed a FIG project which was funded through POD. This allowed them to assess all Astr5 and Astr8 students from winter '15 and spring '15 terms using pre- and post-tests. This data will be used to assess student learning across the various sections, allowing faculty to compare successes and identify places for improvement among differing faculty, courses, class meeting times, and hybrid vs. in-class sections. Two new activities were developed to address concepts that students struggled with during the testing in fall '14. The results of the post-tests have not been analyzed yet, but testing throughout the semester is promising and indicates these activities have indeed improved students' understanding of these concepts.

| Closing the Loop Theme | Facilities |
|---|---|

Facilities installed shades for the glass classroom door for room 61-1418 for the Computer Sciences courses. 61-1418 is the instructional lab for CSCI, with computers for students in class. The glare made it difficult for students sitting in the back row to view their computer monitors at certain times of the day. This has mitigated the problem.

| Closing the Loop Theme | Organization / Process |
|---|---|

The Agriculture Department was allocated $18000 to purchase a manure spreader. The existing manure spreader was non-operational. This equipment allows us to properly spread manure on pastures for fertilizer and reduce campus waste expenses.

The Biology Department was allocated $2212.7 to purchase the TRUE-T-23 refrigerator for Microbiology. All Microbiology cultures required for student use in lab can now be accommodated, making storage safer and more convenient. This better serves the students in these courses.

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| Closing the Loop Theme | Technology |
| Closing the Loop Theme | Technology |
| Closing the Loop Theme | Select Activity Theme |
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| Closing the Loop Theme | Select Activity Theme |
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| The Biology Department was allocated $63916.73 to purchase 16 Advanced Human Physiology Teaching Kits and an additional $19565.93 to purchase 16 HP Elite 850 Laptops Computers which interface with the kits. Anatomy and Physiology faculty underwent training on the system during finals week of spring 2015. The department is transitioning from the outdated system to the new one. Faculty must rewrite the lab manual for the new exercises utilizing the new iWorks system. This process is underway and the department will begin using the new iWorks this fall with plans to transition completely to iWorks by spring 2016. This will impact students in 12 sections of Anat 10B and 14 sections of Anat 36 each year. | |
| The Biology Department was allocated $8382.8 to purchase the Gel Doc System with Sample Trays. Students in Bio 8 labs used the system reducing class time needed for imaging and analyzing results. Bio 8 faculty will meet to discuss whether there is enough time savings to add curricula, which will increase student hands-on experience in lab. Image quality for GMO lab has improved. Bio 8 faculty are working with lab techs this summer to see if the superior imaging abilities of the Gel Doc system is sufficient to replace the carcinogen ethidium bromide with a safer alternative for DNA staining in the GMO lab. | |
| The Chemistry Department was allocated $28841.4 to purchase two Fourier Transform Infrared Spectrometers. Students were able to use these instruments in lab classes in Chem 80, Chem 81, Chem 20, and Chem 51 courses. | |
| The Chemistry Department was allocated $10255.54 to purchase 5 top loading balances and 5 analytical balances. Students were able to use these instruments in lab classes in Chem 10, Chem 40, Chem 50, and Chem 51 courses. | |
| The Chemistry Department was allocated $22011.67 to purchase 18 HP EliteBook 850 laptops. Students and faculty use the laptop computers during lecture and also during lab for data analysis. | |
| The Earth Sciences & Astronomy Department was allocated $12189.29 to purchase Meade 8' LX200 & 10' LX90-ACF telescopes with telescope filters. These telescopes made it possible to offer on-campus observing nights as well as off-campus field trips or observing sessions. The different sizes of telescopes were used to teach students the observable difference in light gathering power on different size telescopes. The addition of the 10” scope allowed the students see fainter objects and to directly compare what they observed through the 8” scope with what they saw through the 10” scope. (These telescopes were put to use during the solar eclipse viewing event for the campus and the community) | |
| The Earth Sciences & Astronomy Department was allocated $708.23 to purchase 11X-80X Inspection Zoom Microscope with Coaxial Light. This is used with Geology 8 students to allow them to study mineralogy and fabrics of different rock types. Students will be able to better understand the different components of rocks. | |

| Closing the Loop Theme | Select Activity Theme |
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The Earth Sciences & Astronomy Department was allocated $22011.67
to purchase 18 HP EliteBook 850 Laptops. With the new set of lab computers, students are able to access Google Earth and other online software, allowing faculty to develop updated lab assignments for students.

The Mathematics & Computer Sciences Department was allocated $6071.52
to purchase 6 HP Laserjet ENT 600 M601DN 45PPM Printers with 3 year support service agreements to serve students in the MARC/ T-MARC and CSCI labs.

IT replaced computers in the T-MARC and the CSCI lab. Students now have access to new machines compatible with the new software used in the laboratories.

The Physics & Engineering Department was allocated $9973.41
to purchase Vernier Physics Kits. Additional physics 2AG sections were added to serve more students in an additional laboratory classroom. 180 additional students were served using existing facilities.

The Physics & Engineering Department was allocated $23390.34
to purchase 16 MacBook Pro 13-inch Laptops with protection plan and 2 mobility carts. Replacement of 7 year old computers with modern machines allowed students to continue access to computer based laboratories

| Closing the Loop Theme | Funding |
|---|---|
| Closing the Loop Theme | Select Activity Theme |
| Closing the Loop Theme | Select Activity Theme |

| Closing the Loop Theme | Select Activity Theme |
|---|---|

The Agriculture Department was allocated $9091.85 from the Perkins Grant to purchase four Fertilizer Injectors. These injectors are used to demonstrate injector use in lab classes and provide hands-on experience work experience students.

The Agriculture Department was allocated $3754 from the Perkins Grant to purchase Portable Canopies for sales and events. Part of the Ag program includes plant sales and these canopies provide shade during plant sales. The canopies are also used at outreach events such as farm day. Outdoor lab classes utilize the canopies and they are put to use at show team

The Agriculture Department was allocated $5558.98 from the Perkins Grant to purchase two Reciprocating Air Compressors. These air compressors are used by students for laboratory activities in Agriculture construction classes.

The Agriculture Department was allocated $2582.90 from the Perkins Grant to purchase Livestock Blowers. Students use the blowers to prepare animals for livestock judging classes and to use for animals taken to livestock shows by students.

The Agriculture Department was allocated $2425.25 from the Perkins Grant to purchase a soil trailer. The soil trailer is used to convey different types of soil used by students in plant propagation classes and work experience.

The Agriculture Department was allocated $2945.61 from the Perkins Grant to purchase a pneumatic pruner. This equipment is used to demonstrate different types of pruning shears for arboriculture and horticulture classes. Students are trained to use this equipment, which is common in industry.

| Closing the Loop Theme | Select Activity Theme |
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| Closing the Loop Theme | Select Activity Theme |
| Closing the Loop Theme | Select Activity Theme |

| Closing the Loop Theme | Select Activity Theme |
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The Agriculture Department was allocated $7000 from the Perkins Grant to purchase a Rototiller. This is used in all landscape and turf classes. Before this purchase, the department had to rent a rototiller or manually till areas for instruction. This allows students to be trained on the industry standard.
The Agriculture Department was allocated $1800 from the Perkins Grant to purchase a Nursery Trailer. This allows plants to be moved for lab activities and work experience within the horticulture unit. The department is better able to meet the needs of students in their lab classes.
The Agriculture Department was allocated $10500 from the Perkins Grant to purchase Ketchum lambing gates and panels. An additional $3000 from the Perkins Grant was used to purchase Ketchum Sheep Sorting Panels and Chute The equipment provides for safe and effective handling of sheep in the dry lot during RVT and Animal Science classes such as Sheep Production, Handling / Restraint & work experience.
The Agriculture Department was allocated $1495.64 from the Perkins Grant to purchase a Bates Caprilli Close Contact Saddle. Use of the saddle for the horse ranch management classes provides additional riding and training opportunities for students in lab activities and work experience.
The Agriculture Department was allocated $8214.03 from the Perkins Grant to purchase a Stock Trailer. The trailer is used to transport livestock for lab activities and show team activities. Also used to provide student training in handling livestock in trailers.

The Agriculture Department was allocated $1000 from the Perkins Grant to purchase a Chest Freezer. This freezer provides a place to store samples and materials used in RVT classes.

The Agriculture Department was allocated $2716.14 from the Perkins Grant to purchase an ElectroEjaculator. This unit is used for student demonstrations in RVT labs and the breeding lab classes such as Artificial Insemination. This allows students to use the industry standard equipment.

| Closing the Loop Theme | Select Activity Theme |
|---|---|

*Enter previous activity and summarize progress and outcomes*

b. Strategic Objectives Assigned to : Natural Sciences

*Your Vice President has assigned the following Strategic Objectives for your area from the Mt. San Antonio College 2014-15 Strategic Plan and identified in the Process Map of Integrated Planning (see Roll-Over below). Not all areas will have a Strategic Objective assigned to them.*

*Click on the links below to address the components of the Strategic Objectives assigned.*

## I. Planning: Division Goals and Strategic Objectives for: Natural Sciences

a.*The following table contains your goals as noted in SectionOne-I for 2014-15. Review your area's goals and revise, add new goals or remove goals that are no longer relevant as appropriate for planning for 2015-16, 2016-17, and 2017-18. Add rows (+) as needed. Delete rows (X).*

| Division Goal Name | Division Goal | College Theme |
|---|---|---|
| *Culture of Assessment* | *1. Continue to encourage and support a culture of assessment across the Division, encouraging data driven decisions that result in changes in instruction* | *A: Academic Excellence* |
| *Customer Service* | *2. Provide excellent "customer service" to students, faculty, and staff – continue to be the "last stop" for those seeking help* | *D: Cooperation/Collaboration* |
| *Support for Events* | *3. Support department, campus, and community events such as, Debbie Boroch Science Day, Caduceus Club Health Professions Conference, Kepler Scholarship Program, Farm Day, Robotics Team, and other events sponsored by one or more departments within the Division* | *B: Access and Success* |
| *Manage Resources* | *4. Effectively manage resources within the Division, such as Wildlife Sanctuary, Agriculture Farm, Meek Museum, Redinger Exploration Center, Randall Planetarium, Observatory Dome, Ag Literacy Trail, and develop program to recycle 100% of the College's green waste and manure* | *C: Secure Resources* |
| *STEM Center* | *5. Increase student success and achievement in science, technology, engineering, and mathematics (STEM) courses, particularly for underrepresented students, by creating and staffing a STEM center* | *C: Secure Resources* |
| *Enrollment Management* | *6. Continue to respond to student needs for courses within the Division through targeted growth and effective enrollment management* | *B: Access and Success* |
| *Cutting Edge* | *7. Develop, support, and implement innovative programs for students utilizing cutting edge equipment and technology* | *A: Academic Excellence* |

| | | |
|---|---|---|
| *Undergraduate Research* | *8. Support undergraduate research across the Division* | *D: Cooperation/Collaboration* |

*The following Strategic Objectives are assigned to this area as identified in the Mt. San Antonio College 2014-15 Strategic Plan. They inform the planning process for action over the next two years (NOTE*Not all areas will have a Strategic Objective assigned to them.)*

b.

| # Strategic Objective | *Strategic Objective* |
|---|---|
| | |

## II. Planning for the Next Three Years for: Natural Sciences

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|---|---|
| a. Narrative Summary | Plans for the next three years center on maintaining our growth and expanding opportunities for our students. Facilities modifications are needed in building 7 to accommodate growth in the Chemistry Department. A symbiotic relationship exists between the Robotics team and recruitment, success, and retention in the Physics and Engineering Department. A fabrication space and an outdoor construction space are needed for growth in these programs. The STEM Center will support students across the division. Long range planning includes creating a hub for all things math and science. Long range growth will depend on the addition of new science labs in an auxiliary building. These additional plans are part of the Campus Master Plan, and the labs will be critical to future growth in Chemistry, Anatomy & Physiology, and Microbiology, as well as Biology and Physics and Engineering.<br><br>The Agriculture Department will implement the Addendum to the Educational Master Plan: The Farm. This will require modifying curriculum including degrees and certificates. The equine unit will undergo major revisions to optimize herd health and size to support educational demands. Exploration will begin on developing a competitive Rodeo team. RVT course offerings will be expanded to accommodate student demand.<br><br>Additional faculty are needed in disciplines across the division to support student demand for courses. Laboratory technician support is needed for students in the additional growth sections. Another clerical position in the division would allow us to support the department chairs and faculty and one of our CTE areas, Histotechnology. The STEM Center needs a full-time lab technician to support the activities. Additional staff are needed to support the horticulture and animal science units. |

| New Plan or Activity | Student Success |
|---|---|

Three faculty FIG projects were funded. As faculty analyze the data they collected, they will report out, use the results, and plan appropriate changes to instruction.

Continue to encourage and support a culture of assessment across the division. The Associate Dean will meet with department chairs and faculty to support data driven decisions that result in changes in instruction.

The STEM Center will continue to plan activities that support student success and retention in all disciplines across the division, particularly students underrepresented in mathematics, science, and engineering.

| New Plan or Activity | Staffing |
|---|---|
| New Plan or Activity | Select Activity Theme |

| New Plan or Activity | Select Activity Theme |
|---|---|

Our division has experienced substantial growth. Smaller departments have grown by as much as 25%. To sustain this growth, additional faculty are needed in the next three years to continue to serve students. Physics and Engineering need a half-time laboratory technician to support their new engineering curriculum; Chemistry needs a half-time lab tech position converted to a full-time position to support students and will need a full-time lab tech dedicated to building 7 once the renovations are complete and they offer a full complement of labs in that building; an additional veterinary doctor is needed to expand the RVT program; additional laboratory technicians are needed to support students in the hands-on laboratory classes offered on the farm. The STEM Center needs ongoing faculty leadership provided through reassigned time. A full-time laboratory technician is needed to support activities on a day-to-day basis as well as tutors and student coaches

A full-time clerical specialist or secretary is needed in the Natural Sciences Division to support the activities in each department. This position would offer clerical support to the department chairs in Biology, Chemistry, Earth Sciences & Astronomy, Physics & Engineering, the Histotechnology Program (perhaps the only CTE program on campus without clerical support), and the STEM Center, in addition to serving the increased number of students and faculty in our division as a result of growth.

| New Plan or Activity | Facilities |
|---|---|
| New Plan or Activity | Facilities |
| New Plan or Activity | Select Activity Theme |
| New Plan or Activity | Select Activity Theme |

Modify facilities in chemistry to allow increased offerings in laboratory classes for CHEM 10/40 and CHEM 20/80/81.

Increased engagement in robotics drives increased demand for physics and engineering courses and improves student success and retention rates. The program needs a fabrication space for laboratory and robotics team use. A large outdoor construction space is needed for large engineering projects, such as a solar powered vehicle. Renovate the existing space for the STEM Center to support all STEM courses. Move the NSD computer lab in closer proximity to the STEM center.

Implement the Addendum to the Educational Master Plan: The Farm. This will require facilities modifications for the equine unit. The completion of the Dog Kennel relocation project, and the conversion of the Small Animal Education Unit (previously the raptor rehab center) are a priority for continued operation of the unit.

| New Plan or Activity | Select Activity Theme |
|---|---|

The Meek is utilized by biology laboratory classes, art classes, and is open during special events. This is a million dollar collection and needs to be preserved for future students. Some specimens in the collection are irreplaceable. A humidifier is needed to preserve the collection. When the facility was constructed, ducting for a humidifier was installed but a humidifier was never purchased. This is a valuable resource for our students and is part of our special events for students and community members.

Classroom instruction in astronomy utilizes the Astronomy Dome on top of building 60. The vibrations due to the operations of the building distort the images observed. This impacts instruction in the astronomy courses. In addition, students are provided the opportunity to conduct research, supported by 99 Special Projects classes. The student research is compromised due to the vibrations. The Astronomy Dome is also used in our special events for students and community members. All user groups, particularly students, would benefit from resolving the vibrations.

Long range growth will depend on the addition of new science labs in an auxiliary building. These additional plans are part of the Campus Master Plan, and the labs will be critical to future growth in Chemistry, Anatomy & Physiology, and Microbiology, as well as Biology and Physics and Engineering.

| New Plan or Activity | Technology |
|---|---|

With the increased growth, our laboratory equipment across the division has been used more frequently than planned. Equipment will need to be replaced. Other equipment has aged out and needs to be updated to remain relevant. This is particularly true of laptop computers used by students for data acquisition and processing. Faculty would like to include more internet resources in instruction and classroom/laboratory assignments. If the lack of WiFi access can be resolved, more faculty will include internet components in their instruction.

| New Plan or Activity | Program Success |
|---|---|

Expand course offerings in the RVT program. Explore using cohort model to provide student support and increase completion rate. Hire an additional veterinary doctor to support the program.

Work with our newly assigned Career Specialist to develop additional work experience sites for RVT and Histotechnology. Determine if the Histotech program can be expanded based on labor market data.

| New Plan or Activity | Select Activity Theme |
|---|---|

One of our goals division-wide is to support the special events offered in our division. We plan to continue to support and expand public outreach with the Debbie Boroch Science Discovery Day, Farm Day, Mole Day (Chemistry), Wildlife Sanctuary, Farm Tours, Meek Tours, Planetarium Shows, and Observation Nights.

## III. Budget Prioritization for: Natural Sciences

Budget prioritization for the 2015-16 cycle is intended to inform the Instruction Team's prioritization process each July.

1. Download the Budget Prioritization form to your computer using the button below.
2. Use "Save As" to rename the document "2015-16_PIErequests_your division name or acronym"
3. Save to your computer
4. When information on the spreadsheet is complete, click on the "Attach Documents" button below, navigate to the file on your computer, and save. The document will remain attached to your Manager PIE form.

# SectionThree: Recommendations for Improving the Planning Process

## I. What suggestions do you have for improving the planning process for your area?

We need to examine the timeline for submission so that it works more efficiently with other campus processes and timelines. Also, the forms must be made available earlier so that work can begin, and the forms have to be more user friendly to input and editing. In many divisions, both the Dean and the Associate Dean have input, and the document does not share well back and forth for editing.

## II. What additional information should the College provide to assist your area's planning?

*Summarize the requests for additional information your area requested to assist in planning*

Thank you for completing the Manager PIE form summarizing 2014-15, and summarizing your area's planning for the 2015-16, 2016-17, and 2017-18 three-year cycle.

Please save this form and forward to your Vice President by 08/01/ 2015.
Questions regarding this form? Send an email to Don Sciore, Associate Dean of Instruction, at dsciore@mtsac.edu
or Meghan Chen, Dean, Library & Learning Resources, at mchen@mtsac.edu.

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