# 1. Assessment Plan - Four Column

## PIE - Natural Sciences: Chemistry Unit

## Narrative Reporting Year

### *2017-18*

**Contact Person:** Todd Clements
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**Program Planning Dialog:** Last year's goals were used since the PIE process was so late.
**External Conditions, Trends, or Impacts:** 1. Green chemistry principles are driving the usage or removal of certain chemicals, and we need to find alternative chemicals and processes as replacements
2. State funding fluctuates, making it difficult to predict enrollment needs and to budget effectively
3. State of California is offering the opportunity for community colleges to offer bachelor degrees, which may require developing and offering new courses
4. Compliance with Global Harmonizing System (GHS) requirements requires complete re-labeling of containers for all chemicals for all courses
5. Accreditation requirements and frequent changes to Outcomes Assessments requires significant additional time and effort
6. OSHA & Cal/OSHA standards for laboratory safety must be considered for the laboratory curriculum
7. C-ID and AS-T degree programs affect our decision-making
8. It has become increasingly difficult to find highly qualified adjunct faculty

**Internal Conditions, Trends, or Impacts :** 1. The Departments desires to maintain a modern, rigorous and consistent lecture and lab curricula
2. High demand for our courses has created hiring, scheduling and budget challenges.
3. Inadequate facilities to accommodate our recent growth. We are operating near or at maximum capacity for most of our lecture and laboratory classrooms. Our dedicated lecture classrooms for CHEM 10, CHEM 40, CHEM 50 and CHEM 51 are reaching maximum capacity. We have been unsuccessful in scheduling CHEM 80 or CHEM 81 or CHEM 20 classes into appropriately equipped lecture classrooms.
4. Room 7-2123 is currently underutilized because it is not properly equipped to safely run organic lab classes.
5. insufficient College support for interviewing, hiring, mentoring, training and evaluating the large number of adjunct faculty required to teach our courses. The process generates a considerable workload for full-time faculty. The Department had 37 adjunct faculty that were supervised by 14 full time faculty. Three of those full time faculty are probationary who must also be mentored, trained and evaluated.
6. We do not have adequate office space for our current full-time, adjunct faculty and classified staff.
7. Frequent changes in the contract evaluation forms and processes occur during, rather than before the beginning of the academic year causing unnecessary additional confusion and paperwork.
8. Not enough availability of time in CTC for students to use computers, due to many classes wishing to schedule in that facility.

**Critical Decisions Made by Unit:** 1. The Department will be pursuing two new FT faculty positions to accommodate growth. This will decrease the tremendous workload

created by the interviewing, hiring, training and mentoring the high number of adjunct faculty currently in our Department, allowing the full time faculty to focus more on teaching.

2. The Department will refrain from increasing the number of sections due to limited availability of facilities and increased dependency on adjunct faculty.
3. The Department will be implementing the new data acquisition systems into the general chemistry curriculum will occur over the fall and spring semesters.

**Notable Achievements for Theme A: To Advance Academic Excellence and Student Achievement:** 1. Professor Thang Nguyen received tenure.

2. Professor Masoud Roueintan was nominated for Educator Recognition Award by UCI office of Teaching and Learning.
3. Professor Jenny Chen was approved for sabbatical leave 2018-2019.
4. Professors Ana Mayo and Steven Bernard were recognized by the Department as Outstanding Adjunct Faculty.
5. Professor Yin Luo was one of eight professors nominated by Mt. SAC F-1 visa (International) students for the first annual Outstanding Teacher Recognition.
6. Professor Todd Clements was elected Chair for the 2018 – 2019 school year.
7. Funding was approved by Mt. SAC student equity for the 1st Summer Chemistry STEM Boot Camp starting in Summer 2018. The boot camp will be directed by Prof. Roueintan, with assistance from Profs. Doshi, Kidane, Kung, and Technician Jane Ho.
8. The Marie Curie Chemistry Scholarship was awarded for the second time.
9. The Department used royalties from Department-authored lab manuals to present awards to outstanding students in all courses.
10. A student was selected for the Orange County American Chemical Society (ACS) Outstanding Chemistry Student award (April 2018). Professor Truttmann attended the recognition ceremony with the student.
11. 12 out of 14 FT faculty attended conferences; two faculty (Iraj Nejad and Charles Newman) presented at conferences.
12. The Department is up to date on SLO assessments.
13. Dr. Iraj Nejad, Dr. Charles Newman and Dr. Thang Nguyen completed NSF (Mt. SAC STEM TP2) grant activities. Link to video: http://atetv.org/video/mt-san-antonio-college-stem-tp2-program/

**Notable Achievements for Theme B: To Support Student Access and Success:** 1. Completed mentoring and evaluations for three probationary full-time faculty.

2. Evaluated 37 adjunct faculty, including classroom visits, student evaluations, compiling and summarizing information and faculty conferences
3. Interviewed, hired, trained and mentored 8 new adjunct faculty member.
4. Received final approval to offer CHEM 9.
5. Received final Distance Learning approvals for CHEM 9, CHEM 50, CHEM 50H.
6. In final stages of developing CHEM 55 – Chemistry for Engineers.

**Notable Achievements for Theme C: Secure Human, Technological, & Financial Resources:** 1. Completed the hiring process for 2 new full-time faculty (Dhaval Doshi and Alvin Kung) for the 2018-2019 school year to replace 1 faculty member who will be retiring at the end of the current school year and one who took another position (also mentioned below).

2. Hired 1 part time stockroom technician, increasing staffing to 4, which provides coverage for day and evening courses in both buildings, for the first time.
3. Purchased replacement equipment for MeasureNet data acquisition systems (3 laboratories).
4. Received augmented funds for supplies, including one-time lottery funds.
5. Voted to use royalties from Department-authored lab manuals to support The Marie Curie Chemistry Scholarship

**Notable Achievements for Theme D: To Foster an Atmosphere of Cooperation and Collaboration:** 1. Held the second successful Department retreat in 2 years, focused on the transition from CHEM 40 to CHEM 50.

2. Supported activities of A.P.P.L.E. (Association of Pre-Pharmacy Learners and Educators) and Chemistry Club

3. Supported activities in N.S. Division Debbie Boroch Science Discovery Day (May 2017) with 2 presentations
4. Planned and hosted activities for Family Science Festival, where over 200 students from the community attended.
5. Revived the General Chemistry Competition.
6. Collaborated with Bio professor in a student research project.

**Contributors to the Report:** Terri Beam - Chemistry
Jenny Leung - Chemistry
Jenny Chen - Chemistry
Iraj Nejad - Chemistry
Todd Clements - Chemistry
Charlie Newman - Chemistry
Eileen DiMauro - Chemistry
Thang Nguyen - Chemistry
Kenny Huang - Chemistry
Tatiana Lopez - Chemistry
Dhaval Doshi- Chemistry

| *Unit Goals* | *Resources Needed* | *Where We Make an Impact: Closing the Loop on Goals and Plans* | |
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| **Laboratory program -** Maintain modern state-of-the-art laboratory program in preparatory, allied health, general and organic chemistry classes<br>**Status:** Active<br>**Goal Year(s):** 2016-17<br>**Date Goal Entered (Optional):** 09/01/2016 | **In Progress -** 6 Top-loading balances<br>**Describe Plans & Activities Supported:** Measurement is an essential skill in chemistry. Weighing is critical to many of the experiments done throughout the curriculum. This type of balance is used for the lower level courses (CHEM 10 and CHEM 40), which have undergone a significant amount of growth in the past few years. These classes have now expanded into a second laboratory which is not equipped for them. There are not enough balances to accommodate students, which leads to reduced time that students can spend completing the lab. Ideally, 12 balances would provide sufficient support for students, however, we can get by | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>We did not receive any funding this year to replace balances. They are still needed. (05/06/2018)<br>**Related Documents:**<br>top loading balances.pdf<br>measurements and metric units_2017_2018.pdf | **:** The new balances are much simpler to use than the analytical balances that were replaced. This has reduced the bottleneck that occurred when students need to weigh reagents for an experiment. The top-loading balances are also much less expensive that the balances they replaced. Since the organic chemicals used in this lab tend to destroy the delicate mechanisms of the analytical balances, the new top-loading balances should last longer. (06/27/2017) |

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| | with 6.<br>**Lead:** Todd Clements, Tatiana Lopez<br>**One-Time Funding Requested (if applicable):** 6000<br>**Type of Request:** Instructional Equipment<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** Success would be very short lines in the balance room, resulting in on-time completion of the experiment. Students would be able to complete their experiments and turn in the report before leaving class.<br>**Documentation Attached?:** Yes<br>**Related Documents:**<br>top loading balances.pdf | |
| | **In Progress -** Training and any needed accessories to implement the 2 modular spectrometers previously purchased into the curriculum.<br>**Describe Plans & Activities Supported:** We have purchased the 2 systems, but still need training to use them effectively in class. We may also need some accessories to increase the effectiveness of them.<br>**Lead:** Todd Clements<br>**Type of Request:** Instructional Equipment, Professional Development<br>**Planning Unit Priority:** Medium<br>**What would success look like and how would you measure it?:** To be able to implement this technology in allied health (CHEM 10), preparatory (CHEM 40) and general (CHEM 50) courses. This will require providing | **Reporting Year:** 2017-18<br>**% Completed:** 50<br>We have purchased the two systems during the spring 2017 semester. We have not successfully implemented them into the curriculum. We still need training on how to use the systems. (05/06/2018)<br>**Related Documents:**<br>Light, Electron Configuration, and Periodic Trends F15.pdf |
| | | **:** We need to train full-time and adjunct faculty to use these system before that can be effectively implemented into the curriculum. (06/27/2017) |

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| | training to at least 30 faculty. The spectra generated by these units help students understand the structure of atoms.<br>**Documentation Attached?:** Yes | |
| | **Full Funding Requested -** Continue to purchase a service contract for the 2 FTIR instruments purchased during the 2014-2015 school year. This is a recurring, annual expense that will prevent downtime that interrupts the lab curriculum in the organic chemistry program (CHEM 80, CHEM 81 and CHEM 20).<br>**Describe Plans & Activities Supported:** This item should be part of our budget, since it is a yearly reoccurring expense.<br>**Lead:** Todd Clements, Jane Ho<br>**On-Going Funding Requested (if applicable):** 10000<br>**Type of Request:** Instructional Equipment<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** The funding for this item is added to our annual budget. This will avoid the stress caused when the bill arrives and everyone scrambles to find the funding to pay it.<br>**Documentation Attached?:** Yes<br>**Related Documents:**<br>MT Sac Agreement_IR Quote-66286.pdf | **Reporting Year:** 2017-18<br>**% Completed:** 100<br>This needs to be added to our budget as it is an annual recurring expense. These instruments are critical for the CHEM 20, CHEM 80 and CHEM 81 curriculum. Both instruments worked perfectly for the entire school year. These instruments are essential for the organic laboratory curriculum. Their frequent breakdowns created a great deal of stress as faculty and technicians had to continually adapt the lab schedule. (05/06/2018)<br>**Related Documents:**<br>MT Sac Agreement_IR Quote-66286.pdf<br><br>**Reporting Year:** 2016-17<br>**% Completed:** 100<br>The service contract was purchased for the spring semester. Both instruments worked perfectly for the entire semester for the first time since the warranty expired. These instruments are essential for the organic laboratory curriculum. Their frequent breakdowns created a great deal of stress as faculty and technicians had to continually adapt the lab schedule. (06/27/2017) | **:** The implementation of the service contract has kept both instruments functioning smoothly. The instruments are now receiving regular maintenance which should increase their dependability in the future. (06/27/2017) |
| | **In Progress -** Increase supply budget (to maintain supplies for growth)<br>**Describe Plans & Activities Supported:** An increase in our basic supply budget will allow for much | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>There has been no progress on this goal. We received additional one-time funding towards the end of the school year that allowed us to purchase needed items, but it would | |

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| | more efficient planning. We currently spend the majority of our budget early in the summer and fall semester as we restock and resupply for our lab curriculum. This leaves us with few resources for most of the rest of the year. Lottery money and other one-time funds occur later in the year, with incredibly quick deadlines. We are never sure how much we will receive, making it difficult to reliably provide resources for the end of the school year. There have been years when we have run out of chemicals and glassware before the end of the spring semester.<br>**Lead:** Todd Clements<br>**On-Going Funding Requested (if applicable):** 5000<br>**Type of Request:** Instructional Supplies<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** Success will be an increase in the supply budget commensurate with the percentage of growth the Department has experienced in recent years. | make planning much more efficient to have an adequate budget at the beginning of the school year. (05/31/2018)<br><br>**Reporting Year:** 2016-17<br>**% Completed:** 0<br>There was no increase in our annual budget, but the College provided a very generous one-time lottery fund allottment of $45000. This allowed the Department to restock and replace depleted chemicals and equipment resulting from the rapid growth over the last three years. (06/26/2017) | **:** Receiving the one-time lottery allotment allowed the Department to replace chemicals and equipment needed due to the 30% increase of sections offered in the last 3 years. The Department will have difficulty planning expenditures knowing it has inadequate supply funding and does not know if and how much lottery funding it will receive during the year. (06/30/2017) |
| | **Full Funding Requested -** Acid Cabinets for stockroom (major safety issue):<br>(1) Stand-alone corrosive proof acid cabinet that is used to store large amounts of concentrated acids.<br>(2) Acid Cabinet Under the Hood to store smaller amounts of acids<br>**Describe Plans & Activities Supported:** Stand-alone corrosive- | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>There was no progress on this critical safety item. The existing cabinets have no structural integrity and are not reparable. (05/31/2018)<br><br>**Reporting Year:** 2016-17<br>**% Completed:** 25<br>The damaged cabinets have been removed, but there is no timeline on when new cabinets will be build and/or installed. (06/27/2017) | **:** There is not enough safe storage space in the stockroom for the chemicals that damaged the original cabinets. (06/30/2017) |

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| | proof acid cabinet that is used to store large amounts of concentrated acids. The previous one was damaged when the roof leaked last year and flooded the stockroom. A new one is needed to hold our current stock of acids.<br><br>Acid storage compartment located directly beneath the fume hood. Allows for easy access for corrosive acids. 10 year warranty and service included.<br>**Lead:** Todd Clements. Tatiana Lopez<br>**One-Time Funding Requested (if applicable):** 3000<br>**Type of Request:** Instructional Equipment<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** These critical items needed for safety will be purchased and installed as soon as possible. Chemicals must be stored according to a very strict protocol. We are currently out of compliance due to the lack of the proper cabinets.<br>**Documentation Attached?:** Yes<br>**Related Documents:**<br>under hood acid cabinet.pdf<br>stand alone acid cabinet.pdf | |
| | **In Progress -** Replace Obsolete Data Acquisition system.<br>Automated, computerized data acquisition system is an essential part of modern chemistry practice both in academia and industry. Our plan is to replace an obsolete data acquisition system in three of our | **Reporting Year:** 2017-18<br>**% Completed:** 50<br>Funding was approved. Vendors were invited to demonstrate systems. We have purchased the equipment needed and are eagerly anticipating delivery over the summer. Th e next phase is to rewrite the experiments that use this equipment. This will begin during the fall semester, after the equipment has been received. (04/05/2018) |

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| | general chemistry laboratories in order to enhance students' learning experience, improve the quality of our teaching, and prepare our students for future laboratory courses after they transfer to a four-year university. Initially, several cutting edge data acquisition systems on the market will be tested within our lab curriculum. We will then choose the most technologically advanced and reliable system for our needs, and purchase for 2018-2019 academic year.<br>**Describe Plans & Activities Supported:** Initial trials will involve purchase or rental of: Vernier, Pasco, and other competitive systems including pH, colorimeter/spectrophotometer, temperature, drop counter, pressure sensors, and voltage probes.<br><br>During spring and summer 2018, purchase 3 sets of systems, full set of probes, and charging stations.<br><br>Once the equipment has been purchased, the current experiments that use the data acquisition technology will be adapted and new experiments will be developed. This process will begin during the fall 2018 semester.<br><br>**Lead:** Todd Clements, Masoud Roueintan, Dhaval Doshi<br>**One-Time Funding Requested (if applicable):** 1000 | **Related Documents:**<br>EMD Titrating WA SB F2015.pdf<br>EDM Integrated Rates Experiment_15 16.pdf<br>EDM InitiaRates ExperimentF15.pdf<br>EDM Electrochem Experiment.pdf<br>C50_Calorimetry_Year_2014-2015.pdf<br><br>**Reporting Year:** 2016-17<br>**% Completed:** 0<br>We had planned to purchase probes for the MeasureNet data acquisition system currently used in 3 laboratories. The system has been so undependable that we decided to not spend the money on the old system, but to begin the process of researching a replacement system instead. (06/27/2017) |
| | | **:** The downtime caused by MeasureNet malfunction severely impacted the general chemistry curriculum this semester. It is obvious that the MeasureNet system will not last much longer, critically impacting the general chemistry curriculum.The search is on for a new, modern data acquisition system. We have decided to select several systems that will meet our needs and test them ext year. We will then select the most compatible system to be purchased and implemented in 2018-2019. (06/30/2017) |

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| | **Type of Request:** Instructional Equipment<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** Three laboratory rooms will have a fully functioning classroom set of data acquisition systems (probes and controllers) which will teach our students how to properly collect larger and more sophisticated scientific data, and train our students to use more modern technologies used in chemistry laboratories specifically in university setting research laboratories and industry.<br><br>The current data acquisition experiments will be adapted for the new equipment. New experiments will be developed.<br>**Documentation Attached?:** Yes | |
| | **In Progress -** Instrutor Molecular Model Set. Molecular modeling kits are an integral part of general chemistry education. Students and instructors make great use of kits for solving problems related to molecular structures and for demonstration. Having large, demonstration-sized kits would make molecular modeling demonstrations much easier for the instructor. It would allow a walk-through type process where instructors can take students through the oft-difficult modeling process, step-by-step. The large size of the kit would allow for easy visualization by the students and | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>There was no progress on this. (05/30/2018) |

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| | could greatly enhance the effectiveness of lectures on these topics.<br><br>**Describe Plans & Activities Supported:** Seven sets of Large Molecule Teaching Models from Indigo Instruments would allow for one kit in each of the primary Chemistry lecture rooms and one for the Chemistry Computer Lab (CTC)<br><br>**Lead:** Todd Clements, Parisa Majhoor<br>**One-Time Funding Requested (if applicable):** 1200<br>**Type of Request:** Instructional Equipment<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** Kits will be used routinely by all faculty that teach General<br>Chemistry in any of the primary Chemistry lecture rooms.<br>**Documentation Attached?:** No | |
| | **Full Funding Requested -** Classroom set of sand baths for use in the organic chemistry curriculum (CHEM 20, CHEM 80 and CHEM 81).<br>**Describe Plans & Activities Supported:** These items are used in two different locations. Having another classroom set will eliminate the need to move these back and forth.<br>**Lead:** Todd Clements, Jane Ho<br>**Type of Request:** Instructional Equipment<br>**Planning Unit Priority:** High | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>This request is for next year, so there is no progress at present (05/31/2018)<br>**Related Documents:**<br>Sand Baths.pdf |

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| | **What would success look like and how would you measure it?:** The equipment would be present in the room when needed by students for an experiment.<br>**Documentation Attached?:** Yes<br>**Related Documents:**<br>Sand Baths.pdf | |
| | **Partial Funding Requested -** Funding to support initial development/testing of new experiments and techniques. Depending on the outcome of the activities, additional funding will be requested to invest in updated/additional instrumentation in the next PIE cycle.<br>**Describe Plans & Activities Supported:** The 2018-2019 school year will be spent reviewing and evaluating the organic chemistry curriculum (CHEM 20, CHEM 80 and CHEM 81). Experiments will be reviewed for "green chemistry" principles and safety considerations. The overall curricula will be evaluated and compared to other institutions for articulation purposes. The Department will determine if new equipment needs to be purchased and new experiments need to be developed.<br>**Lead:** Todd Clements<br>**On-Going Funding Requested (if applicable):** 2000<br>**Type of Request:** Instructional Equipment, Professional Development<br>**Planning Unit Priority:** High<br>**What would success look like and** | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>This request is for next year, so there is no progress at present, (05/31/2018) |

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| | **how would you measure it?:** The Department will have produced a plan to update the organic lab curriculum. Any instrument purchases will be agreed upon by the Department and entered into the next PIE cycle.<br>**Documentation Attached?:** No | |
| **Technology -** Continue to expand use of technology in teaching and learning<br>a. To increase utilization of the major instrumentation (IR,, NMR, etc.) currently within the department, obtain additional training for faculty and staff.<br>b. To comply with ADA regulations regarding accessibility, caption all departmental videos.<br>c. To temporarily resolve scheduling conflicts between sections needing to use technology for student learning<br>d. To resolve long-term scheduling conflicts and increase technology use across the curriculum, obtain space and funding for an additional computer/technology facility.<br>e. To maintain current level of technology-based instruction in the classroom, renew current and purchase additional software, licenses, spare accessories, and update all computers<br>**Status:** Active<br>**Goal Year(s):** 2016-17<br>**Date Goal Entered (Optional):** 09/01/2016 | **In Progress -** Mathematica (1 copy)<br>**Lead:** Todd Clements, Kenneth Huang<br>**One-Time Funding Requested (if applicable):** 300<br>**Type of Request:** Non-Instructional Supplies<br>**Planning Unit Priority:** Medium<br>**Documentation Attached?:** No | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>There was no progress on this item. (05/06/2018)<br><br>**Reporting Year:** 2016-17<br>**% Completed:** 0<br>There was no progress on this request. (06/20/2017) |
| | **In Progress -** Mnova software site license.<br>**Describe Plans & Activities Supported:** The Mnova software will be installed on all student computers in the Department. Faculty will be trained to use this software in conjunction with the acquisition of the new NMR instrument(s). Students will use this software to process the signals created by the NMR instrument into readable chromatograms.<br>**Lead:** Todd Clements, Jenny Leung<br>**Type of Request:** Professional Development<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** The software will be available to organic chemistry students on on Department computers. Students will use this | **Reporting Year:** 2017-18<br>**% Completed:** 25<br>The software has been installed on both instruments. There are still some user issues with the software. More training and consultation is needed with the vendor to increase usage by students. (05/26/2018)<br><br>**Reporting Year:** 2016-17<br>**% Completed:** 75<br>The software has been purchased. It was installed in the NMR systems and on some student computers late in the spring semester. Since this is new software, training is required to implement this into the curriculum. The plan is to arrange for faculty training either in the summer or early enough in the fall semester so use of the software for NMR spectra analysis can be fully implemented for the 2017-2018 school year. (06/20/2017) | **:** The new NMR software (MNova) was installed during Spring 2017 and will allow students in both Chem 80 (10 sections, 240 students) and Chem 81 (5 sections, 100 students) to more quickly process NMR data into analyzable spectra. The new software is compatible with Apple computers, unlike the currently used software which is only supported on PCs. The new software will allow students to spend less time generating NMR spectra and more time analyzing |

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| | software to process the signals<br>**Documentation Attached?:** No | and comparing the spectra. The new software directly supports the following course measurable objectives and student learning outcomes for Chem 80 and Chem 81: demonstrate competency in the use of a common organic laboratory instrument (NMR), use appropriate instrumentation (NMR) to analyze the products of synthesis reactions, and deduce the structure of a given organic compound from spectroscopic data (1H-NMR, 13C-NMR. NMR analysis is currently used in three experiments in Chem 80 and 7 experiments in Chem 81. (06/23/2017)<br>: This will be addressed after the faculty are trained on the software and it is implemented into the curriculum (06/23/2017) |
| | **In Progress -** In order to be able to implement instructional technology in all lecture and lab rooms: 7 laptop computers for instructor use (1 per laboratory), 1 ELMO projector for 7-1201, 12 switching boxes to easily choose device for projection.<br>**Describe Plans & Activities Supported:** Each Department lecture and lab room would have a dedicated computer and switching box to easily transition between devices as needed. All lecture rooms would have an ELMO projector.<br>**Lead:** Todd Clements<br>**Type of Request:** Instructional Equipment, IT Support<br>**Planning Unit Priority:** High | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>The Department has updated their plans for the use of media in lecture rooms. The desktop computers are not part of the new plan. (05/26/2018)<br>**Reporting Year:** 2016-17<br>**% Completed:** 0<br>There has been no progress on this request. (06/20/2017) |

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| | **What would success look like and how would you measure it?:** Instructors would be able to walk into any classroom and easily be able to connect to the classroom projector.<br>**Documentation Attached?:** No | |
| **Curriculum -** Continuously improve curricula in courses guided by assessment and collaborative faculty projects and input<br>a. Re-establish appropriate pre-requisites for our courses<br>b. Continue cycle of assessment and analysis of SLOs<br>c. Development of new courses or designation of existing courses as teacher prep or honors<br>d. Develop new experiments/activities for existing courses<br>**Status:** Active<br>**Goal Year(s):** 2016-17<br>**Date Goal Entered (Optional):** 09/01/2016 | **In Progress -** Purchase Spartan software site license for all Department computers.<br>**Describe Plans & Activities Supported:** Funding to purchase software.<br>IT personnel to install and maintain software on Department computers.<br>**Lead:** Todd Clements, Tatiana Lopez<br>**One-Time Funding Requested (if applicable):** 6000<br>**Type of Request:** Instructional Equipment<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** Software will be available on all Department computers without any service break. | **Reporting Year:** 2017-18<br>**% Completed:** 100<br>The Natural Science Division was able to fund the purchase. Since Spartan is an essential part of our curriculum and the cost reoccurs annually, the price of this software should be included in our annual budget. It is extremely stressful and disruptive to the curriculum when the bill comes in October and we have to scramble and beg to get the funds to pay it. If it is not paid on time, the software becomes inactive on November 1 and students are not able to perform the Spartan experiments, disrupting the lab curriculum. (05/26/2018)<br><br>**Reporting Year:** 2016-17<br>**% Completed:** 100<br>The site license was purchased. (06/20/2017) |
| | **Completed -** Purchase and administer ACS exams to Chem 50, 51, 80, and 81 students.<br>**Describe Plans & Activities Supported:** support to administer exams.analyze and report results<br>**Lead:** Todd Clements, Masoud Roueintan<br>**One-Time Funding Requested (if applicable):** 1000<br>**Type of Request:** Instructional Supplies<br>**Planning Unit Priority:** Medium<br>**What would success look like and** | **Reporting Year:** 2017-18<br>**% Completed:** 100<br>The American Chemical Society General Chemistry, 2nd Term Exam (GC14S) was given to 23 students in one CHEM 51 section in Spring 2017 as part of the lecture final. The results below shows that our CHEM 51 students performed above the National Norms on this exam. Item analysis of student answers on the exam provided valuable feedback to the instructor regarding areas where students are doing well and where they are struggling. This data, along with data gathered in future semesters, will guide the department in the discussion of CHEM 51 curriculum. |

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| | **how would you measure it?:** Mt. SAC chemistry students score in the 70th percentile.<br>**Documentation Attached?:** Yes | The American Chemical Society Organic Chemistry Exam (OR16) was given to 14 students in one CHEM 81 section in Fall 2017 as part of the lecture final. The results below shows that our CHEM 81 students performed above the National Norms on this exam. Item analysis of student answers on the exam provided valuable feedback to the instructor regarding areas where students are doing well and where they are struggling. This data, along with data gathered in future semesters, will guide the department in the discussion of CHEM 81 curriculum.<br><br>(05/29/2018)<br>**Related Documents:**<br>American Chemical Society Chemistry Exams.docx<br><br>**Reporting Year:** 2016-17<br>**% Completed:** 100<br>All exams were purchased. The exams were administered as part of the final exam in some sections of CHEM 50, CHEM 80 and CHEM 81. Since this just occurred last week, the results have not been tabulated and analyzed.<br>(06/20/2017)<br><br>**:** American Chemical Society (ACS) Examinations Institute develops quality assessment materials which are taken by thousands of students nationwide in over 70 different colleges. Our department has employed the ACS exams for CHEM 80 and CHEM 81courses. According to the results of these assessments our students' performance as well as our department's standards significantly exceed the national norms. The Chemistry Department faculty would like to implement the use of ACS exams for CHEM 50 and CHEM 51 courses as well to more effectively assess the scope and depth of our students' learning outcomes compared to the national norms. Furthermore, using the more recent versions of the ACS exams enhances our awareness of recent |

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| | | national curriculum decisions, course level and rigor, and national expectations and standards which will enable us to make more effective curriculum decisions for the organic and general chemistry courses.<br><br>The exams were administered as part of the final exam in some sections of CHEM 50, CHEM 80 and CHEM 81. Since this just occurred last week, the results have not been tabulated and analyzed. The results of this request will be addressed in the next PIE cycle. (06/23/2017) |
| | **Full Funding Requested -** Digital subscription to the Journal of Chemical Education.<br>**Describe Plans & Activities Supported:** Faculty will use the Journal as a resource for curriculum development including: experiments for data acquisition equipment, active learning activities, and the information about the latest pedagogical techniques in chemical education.<br>**Lead:** Todd Clements, Jenny Chen<br>**One-Time Funding Requested (if applicable):** 300<br>**Type of Request:** Instructional Supplies, Professional Development<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** The faculty will use the current and archived issues to adapt our current experiments to the new data | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>This goal is for next year so no progress has been made. (05/31/2018) | |

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| | acquisition equipment.<br>**Documentation Attached?:** Yes<br>**Related Documents:**<br>J CHEM Ed Quote.pdf<br>**Full Funding Requested -** The STEM center has become an essential resource for our students. They especially appreciate the coaching, available materials, access to computers and food.<br>**Lead:** Todd Clements<br>**Type of Request:** Staffing<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** The STEM center will continue to provide resources for our students.<br>**Documentation Attached?:** No | |
| **Outreach -** Continue to support chemistry/science events outside of the classroom and outstanding chemistry achievement within the classroom that engage students and members of the community in enrichment activities.<br>**Status:** Active<br>**Goal Year(s):** 2017-18<br>**Date Goal Entered (Optional):** 09/01/2016 | **Completed -** To respond to a critical shortage of qualified middle school and high school math and science teachers, Mt. SAC Chemistry Professors, Drs. Iraj Nejad and Charles Newman received funding, a three-year grant in the amount of $624,668 awarded in 2015, from the National Science Foundation (NSF) to develop, implement and assess a sustainable STEM teacher preparation program designed to help students succeed in their STEM courses and seamlessly transfer to a baccalaureate teacher preparation program to earn their teaching credentials. The program activities are offered in close collaboration with the Cal Teach Program at the University of California, Irvine (UCI). The primary goal of the project, | **Reporting Year:** 2017-18<br>**% Completed:** 100<br>Grant Activities (2017-2018):<br>1. Presented the program at the annual ATE PI meeting in Washington DC<br>2. Submitted the annual report to the NSF.<br>3. Held 4 Family Science nights at three different elementary schools<br>4. Conducted our third Summer S2E2<br>5. Held two meetings with participants from six different community colleges and four four-year universities to explore replication of the Mt. SAC STEM TP2 at other two-year institutions.<br>6. Held an Advisory Committee meeting.<br>7. Recruited a fourth cohort of participants in the program.<br>8. Link to video: http://atetv.org/video/mt-san-antonio-college-stem-tp2-program/<br>(05/31/2018) |

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| | titled Mt. SAC STEM Teacher Preparation Program (or STEM TP2), is to develop a program that will recruit, counsel, and direct likely students that have the desire and potential to become highly-qualified middle school and high school math and science teachers. Program strategies include student counseling and advising, teaching opportunities for students in a Summer Science Exploration Experience (S2E2) and as a supplemental instructor, after-school tutoring, free tuition enrollment in teaching and research methods courses at UCI and authentic STEM research experiences. In 2017, Drs. Nejad and Newman received additional funding in the amount of $105,843 from the NSF to help initiate a process to replicate the program at other local community colleges and to establish transfer pathways to local four year institutions in the greater Los Angeles area.<br><br>Presently we are in the third year of the three-year program. To date, we have assisted 25 students through the 15-month summer-to-summer grant supported program. We have selected another cohort of 12 math and science majors to participate in the last year of the program. Of the 35 total cohort students, 19 are Hispanic, 22 are first generation college students and 19 are female. Of the first two cohorts of 25 students, 17 have already | |

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| | transferred to four-year institutions to earn their baccalaureates degree and teaching credentials.<br><br>**Describe Plans & Activities Supported:** Support for faculty<br>**Lead:** Iraj Nejad, Charles Newman<br>**Type of Request:** Professional Development<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** This program will serve as a model to develop STEM teachers.<br>**Documentation Attached?:** Yes<br>**Full Funding Requested -** Chemistry-relevant displays and materials in the Exploratorium.<br>**Describe Plans & Activities Supported:** The Chemistry Department uses this facility for our main community outreach event; the Family Science Festival. It has very interesting displays, but nothing directly related to chemistry. It would be beneficial to our students to develop exhibits that are focused on chemistry.<br>**Lead:** Todd Clements, Eileen DiMauro<br>**Type of Request:** Staffing, Non-Instructional Supplies<br>**Planning Unit Priority:** Medium<br>**What would success look like and how would you measure it?:** We would be able to take our students to the facility to explore an exhibit that is relevant to the material that they are studying.<br>**Documentation Attached?:** No | |

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| **Professional Development -** Attend conferences, symposiums, workshops to enhance our knowledge<br>**Status:** Active<br>**Goal Year(s):** 2016-17<br>**Date Goal Entered (Optional):** 09/01/2016 | **Report directly on Goal** | **Reporting Year:** 2017-18<br>**% Completed:** 75<br>During the 2017-2018 school year, 12 full time faculty members attended conferences that were totally or partially funded by the College. (05/26/2018)<br>**Related Documents:**<br>2017-2018 Conferences attended.docx |
| | **Full Funding Requested -** The Department needs a transparent, consistent process to access College funding for travel.<br>**Describe Plans & Activities Supported:** Faculty would like clear guidelines to apply for conference and travel funding that does not change from year to year.<br>**Lead:** Todd Clements<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** Faculty would submit applications for travel and receive feedback in a timely fashion. Criteria would not constantly change.<br>**Documentation Attached?:** No | |
| **Meeting Student Needs -** Increase student access to impacted courses by adding sections, safely and with stockroom and budget support<br>**Status:** Active<br>**Goal Year(s):** 2016-17<br>**Date Goal Entered (Optional):** 09/01/2016 | **In Progress -** Adjunct Faculty Mentor<br>**Describe Plans & Activities Supported:** Reassigned time for a full time faculty member to serve as a adjunct faculty mentor<br>**Lead:** Todd Clements<br>**Type of Request:** Facilities<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** Departments that have 30 - 39 adjuncts would receive some support from the College to help with the | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>There has been no progress on this goal. The College continues to provide no support for the extremely large work load created by the large number of adjunct professors needed for the Department's positive response to the College's request to add sections for growth. (05/29/2018)<br>**Related Documents:**<br>PER0007-A - Faculty Evaluation Report_20180410_115108.pdf |
| | | **Reporting Year:** 2016-17<br>**% Completed:** 0 |

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| | tremendous work load created by the high dependence on adjunct faculty.<br>**Documentation Attached?:** Yes | The union and college came to an agreement on providing 3 LHE for a department designee to act as a adjunct faculty mentor for departments with 40 or more adjuncts. Unfortunately, we do not qualify with only 37. The Department feels strongly that this item must be renegotiated to provide a sliding scale for departments with 30 or more adjunct . The adjuncts outnumber us 3 to 1 and it is incredibly challenging do a good job interviewing, hiring, mentoring, training and evaluating that many adjunct. The quality of our courses suffers due to the limited time the full-time faculty have to supervise adjuncts. (06/20/2017) |
| | **In Progress -** Clerical assistance<br>**Describe Plans & Activities Supported:** The Department Chair would be able to obtain clerical assistance from the Division for confidential types of tasks such as adjunct evaluations that cannot be done by student workers.<br>**Lead:** Todd Clements<br>**Type of Request:** Staffing<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** The Department Chair would receive College support and assistance with some of the tremendous clerical tasks that arise from the large number of adjunct faculty our Department is dependent on.<br>**Documentation Attached?:** Yes | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>No progress was made on this request. The College and Division do not provide any clerical support for our Department as they do for other departments. The Department has grown over 30% in the last 3 years. Adjunct faculty outnumber full time faculty ~ 3 to 1. (05/29/2018)<br><br>**Reporting Year:** 2016-17<br>**% Completed:** 0<br>No progress was made on this request. The College and Division do not provide any clerical support for our Department as they do for other departments. The Department has grown over 30% in the last 3 years. Adjunct faculty outnumber us 3 to 1. (06/20/2017) |
| | **Full Funding Requested -** We need at least 4 new full time faculty positions to accommodate past growth and to provide access to current students. While we were able to hire two new full-time faculty to replace a retiring faculty member and one who left to take another | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>There was no approval of a growth position. The two new faculty who were hired were replacement positions, (05/31/2018) |

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| | position, we have made no progress with adding desperately needed growth positions. According to California Community College Chancellor's website, 63% of Mt. SAC's LHE are taught by full time faculty, but the number for the Chemistry Department has been less than 40% for the past several years.<br>**Describe Plans & Activities Supported:** Hire at least 2 new full-time growth positions. These new hires will help get the Department LHE taught by full time faculty closer to the college average.<br>**Lead:** Todd Clements<br>**Type of Request:** Staffing<br>**Planning Unit Priority:** High<br>**Related Documents:**<br>Faculty Requests 2018-19 Form Growth 1.docx<br>Faculty Requests 2018-19 Form Growth 2.docx<br>PER0007-A - Faculty Evaluation Report_20180410_115108.pdf | |
| **Adequate Facilities to Accommodate Lecture, Lab, Classified Staff and Faculty -** In order to provide access to classes for students as demand increases, we need to<br>a. increase the number of appropriately located, properly equipped lecture rooms available to us (we are currently at maximum capacity).<br>b. increase and modify office space for full-time faculty, adjunct faculty, classified staff and clerical assistant (we are | **In Progress -** Facility modification on 7-2123 to safely house organic chemistry classes. This lab was designed for quantitative analysis, a course that is not longer taught. Meanwhile, our organic chemistry program has tripled in size and now requires an additional lab. The current configuration of 7-2123 is inadequate and unsafe for organic chemistry. The result is an underutilized room in close proximity to an overused room.<br>**Describe Plans & Activities** | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>There has been no progress on this goal. (05/31/2018) |

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| currently at maximum capacity)<br>c. increase the number of laboratories and modify modify 7-2123 to safely accommodate organic chemistry<br>d. modify chemical stockrooms for security, safety, increased capacity to prepare reagents and repair major leaks that occur during the rainy season.<br>e. provide facilities to properly collect and store laboratory waste.<br>**Status:** Active<br>**Goal Year(s):** 2016-17<br>**Date Goal Entered (Optional):** 09/01/2016 | **Supported:** Install at least three 8-foot fume hoods.<br>Reconfigure lockers to increase the capacity.<br><br>**Lead:** Todd Clements, Jane Ho<br>**Type of Request:** Facilities<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:**<br>Adequate hood space will be available so that students can efficiently complete experiments. Organic chemicals can be safely handled in an environment where the fumes are isolated.<br>**Documentation Attached?:** No<br>**In Progress -** Increase the number of appropriately located, properly equipped lecture rooms available to us (we are currently at maximum capacity).<br>The chemistry department currently has dedicated lecture rooms for Chem 10, Chem 40, Chem 50 and Chem 51. These dedicated classrooms are equipped with a periodic table, a whiteboard, document camera and assorted model sets. There are no dedicated lecture rooms for our organic program (Chem 20, Chem 80 and Chem 81). Classrooms assigned these courses are randomly located, do not have a periodic table, adequate whiteboards or model sets. Whiteboards are essential for problem solving in chemistry lecture rooms. Also, most of these classrooms do not support a reliable | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>There has been no progress on this goal. (05/31/2018) |

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| | internet connection which limits the ability of the professor to show videos or use programs that need internet connection. The rooms assigned are random each semester, making it difficult to properly equip them from semester to semester. They are frequently located outside of the natural science complex, making it difficulty to eat and transit between lecture and lab during the 20 minute passing period between classes. Having dedicated lecture rooms for Chem 20, Chem 80 and Chem 81 will enable us to equip the classrooms with basics needed for a chemistry lecture room which ultimately enhances the learning and success of our students.<br><br>**Describe Plans & Activities Supported:** Two or three classrooms convenient to buildings 7 and 60 that we can use regularly from semester to semester. We can them equip them properly with periodic tables and other items needed to support our curriculum.<br>**Lead:** Todd Clements<br>**Type of Request:** Facilities<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** We would be able to assign our classes to rooms that are properly equipped instead of the frantic search we currently undergo. The rooms would be close enough that faculty and students would be able to efficiently make the transition between lecture | |

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| | and lab.<br>**Documentation Attached?:** No | |
| | **In Progress -** Upgrade the structural integrity and security of both Chemistry Department stockrooms.<br>**Describe Plans & Activities Supported:** Repair severely leaking ceiling and resulting damage in building 7 stockroom<br>Repair/replace palm reader system in building 60 stockroom<br>Install security system for building 7 stockroom<br>Repair damage to building 7 stockroom from degradation caused by chemicals<br><br>**Lead:** Todd Clements, Tatiana Lopez, Jane Ho<br>**Type of Request:** Facilities<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** There will be significantly reduced downtime of technician productivity due to structural defects in the stockrooms, inadequate chemical storage cabinets or malfunctioning security devices.<br>**Documentation Attached?:** Yes | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>There has been no progress on this goal. (05/31/2018) |
| | **In Progress -** Adequate office adjunct professors and technical staff.<br>**Describe Plans & Activities Supported:** Properly equipped room(s) for adjunct faculty to meet with students during office hours.<br>Office space for classified staff that is convenient to both stockrooms.<br><br>**Lead:** Todd Clements | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>There has been no progress on this goal. (05/31/2018) |

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| | **Type of Request:** Facilities , Non-Instructional Equipment<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** Each adjunct faculty member will have a properly equipped space to meet with students outside of class, during their scheduled office hours. Classified staff will have safe office space in close proximity to the stockrooms.<br>**Documentation Attached?:** No | |
| | **In Progress -** The College will create a conveniently located facility with constant temperature control and proper ventilation to store chemical waste.<br>**Describe Plans & Activities Supported:** A temperature controlled, properly ventilated facility conveniently located to the stockrooms to safely store laboratory waste.<br>**Lead:** Todd Clements, Tatiana Lopez, Jane Ho<br>**Type of Request:** Facilities , Non-Instructional Equipment<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** Chemical waste will no longer accumulate in the stockrooms, creating cluttered and unsafe work conditions for technicians.<br>**Documentation Attached?:** No | **Reporting Year:** 2017-18<br>**% Completed:** 0<br>There has been no progress on this goal. (05/31/2018) |
| | **No Funding Requested -** Adequate classified staff to cover lab classes in both buildings at all times that classes are in session. | **Reporting Year:** 2017-18<br>**% Completed:** 100<br>With an increase in staff, we have been able to provide more streamlined labs for everyone. All labs are more up- |

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| | **Describe Plans & Activities Supported:** Hire enough lab technicians to have someone available in both buildings while lab classes are session. Lab classes are in session from 8:00 am to 10:10 pm in both buildings. For safety, there should be a technician available in each building when classes are in session.<br>**Lead:** Todd Clements<br>**Type of Request:** Staffing<br>**Planning Unit Priority:** High<br>**What would success look like and how would you measure it?:** One technician would not have to try to be in two places at once.<br>**Documentation Attached?:** No | to-date and organized. There is more time to fine tune the labs and do inventory checks on daily used items such as pipet pumps, ring stands, burets etc. The labs feel safer since all the prep-rooms have GHS sheets, GHS labels, and the safety showers/eyewashes checked on monthly basis. We have increased the amount of lab sections and reduced the amount of waste generated with the new dropper bottles. Waste collection is now cleaner with the addition of using Hazmat pig pads and funnels. Full coverage has helped us provide students and instructors with immediate help when needed. Abandoned glassware bins have helped to remind students to put glassware away.<br><br>Overall, we are all working together to improve every little thing we can. More signs have been created to direct students and instructors. This includes campus safety information, GHS label information, and where to locate items such as colorimeters and cabbage. Also, instruction manuals/directions for equipment (spec. 20's, pH meters, IR's, NMR) has been re-written to provide a more user friendly approach to instructors and students.<br>(05/31/2018) |