Santa Rosa Junior College
Program Resource Planning Process

Dean II STEM 2015

1.1a Mission

The STEM Dean provides leadership and support for the various Science, Technology, Engineering, & Mathematics (STEM) departments and programs in providing high quality math and science lower division courses that satisfy the requirements for general education, as well as math and science majors and pre allied health students. The STEM Dean provides leadership and support for those departments that prepare students for transfer to four-year institutions. The STEM Dean also supports a variety of career technical programs that provide high quality education and training to serve the students, employers and the community. The STEM Dean's office assures quality through participation in the PRPP process, the SLO initiatives, faculty evaluation, and curriculum review.

Bussman Service Center (BSC) : BSC is committed to providing efficient academic customer service and administrative support to students, faculty, staff and the community of lifelong learners. We assist students and faculty in attaining their educational and curricular goals for the following 2-year, AA degree, transfer programs, and certificate programs at the departmental level: Applied Technology, Architecture and Construction Management, Civil Engineering, Geospatial Technology and Surveying, Environmental Technology, Electronics, Engineering and Physics.

1.1b Mission Alignment

The Dean of Science, Technology, Engineering and Mathematics (STEM) supports the mission of Santa Rosa Junior College in the following ways:

1. Preparing students for transfer

The Dean of Science, Technology, Engineering and Mathematics supervises the general education and transfer degree programs and the following departments and programs:

- Applied Technology
- Mathematics
- Life Sciences
- Earth & Space Sciences
- Chemistry and Physics
- MESA
- Planetarium

The dean prepares students for transfer by:
- Assuring that all transfer majors at the college align with the lower division requirements of the transfer institutions;
- Works with all transfer disciplines on their Associate Degree for Transfer (ADT) majors, designed to transfer seamlessly to CSU campuses;
- Participates in the departmental hiring committees for both tenure-track and adjunct positions, helping ensure the continuing excellence of STEM faculty.

2. Comprehensive range of student development and student support.

The Dean of Science, Technology, Engineering and Mathematics promotes student success by:

- Supporting comprehensive scheduling within and among departments to allow students efficient and timely access to STEM courses. STEM students typically take multiple lab courses simultaneously, and hence need careful course scheduling among departments to accommodate their tightly-constrained needs.
- Supporting laboratory equipment upgrades, repair and replacement to keep labs functioning.
- Support updating curriculum and programs to stay current with industry needs, especially in CTE disciplines.

3. Supports economic vitality, social equity, and environmental stewardship of our region

The Dean of Science, Technology, Engineering and Mathematics focuses on the transfer pathways of the college, helping to assure that students develop a solid foundation for transfer in the traditional academic science disciplines of chemistry, physics, engineering, and Life Sciences. The Dean of Science, Technology, Engineering and Mathematics also supports a rigorous CTE program to prepare students for technical employment in the region, in an expanding high-tech economic sector.

4. Promotes personal and professional growth, cultivates joy at work, and in lifelong learning

The Dean of Science, Technology, Engineering and Mathematics

- Supports STEM faculty professional development by providing opportunities to attend workshops, professional meetings, on-campus and off-campus training, and other professional development opportunities.
- Encourages collegial relationships between faculty, classified staff, and between departments

5. Fosters critical and reflective civic engagement

- Encourages and promotes scientific literacy among College students and the general population through offering both General Education and majors classes in the sciences and engineering and through public outreach.
- Engage with local high schools, civic organizations, and educational institutions to support science outreach events and activities such as North Bay Science Discovery Day, Career Days at local high schools, serves on advisory committees for CTE programs and neighboring 4-year institutions, etc.
- Support and maintain the SRJC Planetarium as an important ongoing community science/outreach mechanism.

6. We constantly assess, self-reflect, adapt, and continuously improve.

The Dean of Science, Technology, Engineering and Mathematics

- Stays current in a wide range of science and math disciplines, including developments in educational pedagogy, such as Maker-style project-based learning.
- Encourages and supports STEM faculty in pursuit of professional development opportunities, and encourages innovation in the classroom.
- Promotes the assessment of new instructional methods and techniques in the STEM fields for possible adoption at SRJC.

1.1c Description

Dean's office: The administrative office of STEM provides support and serves the leadership and administration of STEM departments and career/technical programs.
STEM Dean's Office

Below is a list of services provided:

- practices efficient enrollment management in collaboration with the department chairs and program coordinators;
- manages the completion of all staff/faculty evaluations processes;
- manages the operation functions (budget/program review/instructional equipment or facilities request/faculty and staff requests) of Cluster departments and vocational programs;
- acts as a resource for staff development opportunities and policy interpretation/development/implementation;
- acts as a liaison to various campus functions & committees, to STEM industries, and the community;
- participates in the hiring and evaluation of faculty;
- provides support to the SAREX shuttle communication station, the program sponsored by NASA, the American Radio Relay League (ARRL) and the Radio Amateur Satellite Corporation (AMSAT) who communicates with NASA shuttles in the 37th and 57th latitudes.
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Bussman Service Center :
BSC serves: The academic departments of Applied Technology and Engineering and Physics, and provides assistance to the STEM Dean and the STEM Dean's Assistant. The BSC serves 1 Department Chair, 5 Program Coordinators, 3 Lab Assistants and their staff, 2 STNC Lab Assistants and over 50 Adjunct Faculty, as well as the current and prospective students in those departments. BSC plans and implements at least 2 Advisory Committee meetings per semester. And, BSC assists with the preparation for administration of the NABCEP exam, and Electronics program Green event participation. Further, BSC supports, when requested, STEM Dean office work and the work of other Dean's and program coordinators in the STEM cluster on an ad hoc basis. BSC also offers mail, copy, meeting room and other services to Counseling, Schools Relations, Academic Senate, Articulation, CTE, and more.

1.1d Hours of Office Operation and Service by Location

Dean's office :
Bussman 1496 and 1494, M-F 8 am -5 pm
Dean's office, 1494
AAIII, 1496

Bussman Service Center :
Bussman Hall 1470 & 1472
Bussman Hall Mailroom 1474
(also service Bussman Lounge 1478)
AAII Classified Staff, 75%, 30 hrs/wk works:
Hours vary, but the center is open 5 days per week.

No student assistants at BSC.

1.2 Program/Unit Context and Environmental Scan

Degree programs, transfer majors, general education, and basic skills:

- Have there been any changes in the transfer requirements for this major, particularly at CSU or UC campuses or at other common transfer destinations in this discipline? If so, describe those.

Transfer requirements established by the UC and CSU systems are relatively stable for the major academic majors, such as Biology, Chemistry, and Physics. The lower division curricula of these established scientific fields do not change significantly over time frames of years. Hence, transfer requirements remain relatively stable.

- Are there trends in industry or technology that could affect this discipline or major?

Changing macroeconomic conditions reverberate through industries on a cyclic basis, affecting student employment prospects, but STEM academic majors change slowly in terms of curriculum. Technological evolution frequently makes scientific laboratory instrumentation obsolete, which requires colleges to update their equipment to make sure students are gaining experience on the analytical equipment they are likely to encounter after they leave SRJC.

- Are there new trends in general education or basic skills that affect courses in this discipline or major?

The prominence of math in most scientific disciplines, coupled with math requirements for both graduation from SRJC and transfer to UC or CSU campuses, is a significant impediment for many students. New pedagogies and classroom methods (flipped classrooms, on-line tutoring, etc.) in math education are likely to see wider and wider implementation, if perhaps on an experimental basis (se Section 6.3). All STEM students would benefit from coming to SRJC with a high level of preparedness for college math. Given that many students need remediation, ways to accomplish this quickly need to be explored and tested. Many students delay satisfying their math requirement until the end of their stay at SRJC, much to the detriment of their learning in the meantime, and much to their chagrin when they repeatedly stumble on college math.

- What partnerships or cooperative ventures exist with local employers, transfer institutions, or other community colleges?

SRJC has a well-developed transfer pipeline to Sonoma State, UC Davis, and UC Berkeley in many STEM disciplines. We have a long history of successful STEM students at UCB, including a Ph.D. student in Biology who came to SRJC with an unrelated B.S. degree, studied biology at SRJC, and was granted admission straight from SRJC to UCB. We have a similar pipeline to Sonoma State in Physics, Engineering and Electrical Engineering,

<u>Career and Technical Education (CTE) certificates or majors:</u>

- What significant changes have occurred in the labor market that might impact demand for these courses, certificates or majors?

A once-healthy electronics technical program was decimated by changing hiring needs of the Sonoma County high-tech community a few years ago, and is currently being revitalized to meet the needs of a broader range of potential employers. Similarly, the 2008-2012 recession had powerful negative impacts on the building industry-related fields, such as construction management, architecture, and surveying. The construction management field is likely to experience a resurgence of demand for new employees, and the program is being revamped.

- Are there any requirements of licensing/accrediting agencies related to this program? If so, please explain.

The solar photovoltaic program is seeking certification from state and national licensing agencies. Students who complete the surveying curriculum have a very high pass rate in their state licensing exam.

- What partnerships or cooperative ventures exist with local employers, transfer institutions, other community colleges, or local high schools?

SRJC has a long-standing symbiotic relationship with Agilent Technologies (now Keysight Technologies) to support student internships, and provide scholarships and advice though advisory committees to numerous on-campus programs. New relationships with other Sonoma County companies are being pursued.

- Has there been an increase or decrease in outside funding resources and/or industry/business support?

There has been an overall decline in external support for CTE programs from local companies, but regional and state funding opportunities seem to have increased.

Other programs/units

Describe any changes in the social, business, cultural, educational, technological or regulatory environment that could impact your program/unit over the next three years.

The advent of the Common Core mathematics instruction in high school is likely to have a noticeable effect on the math capabilities of incoming high school students. We expect changes, but it is unclear at this point how to best identify and anticipate these changes, and adapt our curriculum to changing student needs.

2.1a Budget Needs

Dean's Office : The accounts overseen by this office (4965, 6019, 4990) are used effectively throughout the year to support the dean's office, Bussman Service Center, and the academic departments. In comparison to the district-wide range, we account for 0.24% of the district's expenditure. The office primarily provides administrative support and does not directly generate any revenue.

The Dean's budget has been used to augment the supplies, equipment and support staff (lab technicians, etc.) necessary for academic programs as needed. The Dean's budget was reduced as part of the cost savings for 2010. This impact continues to be felt, particularly for support for instructional equipment and laboratory support staff. The equipment and supply heavy departments such as Life Sciences and Chemistry are in need of additional funding, and the dean's office has traditionally provided additional funding to them. There is a great need to increase the funding for support staff, laboratory equipment and supplies, and field trip support across the STEM disciplines. Additional support for supplies is requested.

Bussman Service Center : BSC serves as a hub for many departments and programs under the STEM cluster. Efforts have been made to cut back the number of copies made on the local machine and reductions have been made in supply orders. We have maintained an ongoing effort to minimize expenses by going paperless as much as possible, despite continuing to offer more services with fewer resources. A budget augmentation is requested.

2.1b Budget Requests

Rank	Location	SP	M	Amount	Brief Rationale
0001	ALL	00	00	$15,000.00	Funding to allow the STEM Dean to support SLIA positions across the STEM Cluster.

2.2a Current Classifed Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Administrative Assistant III	40.00	12.00	Assist dean in operational support of the office, manage dean calendar, provide support in faculty evaluation process, enrollment management, managing cluster curriculum updates, schedule development, communication to chairs and admins, budget management of Dean accounts, assistance in various departments and program coordinators meeting internal or district wide deadlines, and supporting study abroad.
Administrative Assistant II	30.00	12.00	Assist students, faculty, staff and community at large with the academic forms, procedures, district policies, and all administrative office support functioning of the following programs Applied Technology, Architecture and Construction Management, Civil Engineering and Surveying, Environmental Technology, Electronics, Engineering and Physics. In addition, as time allows the AAII is also assisting with study abroad.

2.2b Current Management/Confidential Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Dean II	40.00	12.00	Provides support and resources to the STEM departments and programs. Oversees schedule development, enrollment management, and budget development. Participates in faculty and staff hiring and evaluations. Coordinates the cluster tech review process to assist cluster in curriculum development and assists with the development and assessment of student learning outcomes. Serves on district wide committees and task forces.

2.2c Current STNC/Student Worker Positions

Position	Hr/Wk	Mo/Yr	Job Duties
	0.00	0.00	

2.2d Adequacy and Effectiveness of Staffing

STEM Dean position
A permanent dean has been hired for the STEM cluster. This should adequately fulfill the administrative needs of the cluster.

Dean's office: The dean's office no longer supports the study abroad program, and the classified staffing (100% AAIII) is now adequate.

Bussman Service Center : The current AAII 0.75 FTE appears sufficient for the current needs of the departments. A STNC currently fills this position; a search is ongoing to hire a permanent replacement in this position.

The remainder of the cluster is currently understaffed, and the distribution of staff between programs is uneven. The needs and requests are delineated in the individual departmental PRPPs and are also summarized here.

AA support

Life Sciences: currently shares a 100% AA II with Earth and Space Sciences, supposedly divided up 75%/25%. This increased level of staffing appears to satisfy the needs of both Life Sciences and ESS.

Chemistry: now has a 75% AA II. As the Chemistry program continues to expand to Friday and weekend course offerings, the AA II workload will be evaluated to determine whether an increase to 100% is justified.

Earth and Space Sciences: Currently they are assigned 25% of the 100% AA II that also works for Life Sciences. 25% is presently sufficient support for this department.

Planetarium: The planetarium currently employs an STNC AA I for 25 hours per week. This position is funded by planetarium revenues. This position needs to be converted to a Classified position from an STNC position, as it is a permanent need of the Planetarium.

MESA: The MESA center has suffered major staffing cuts over the past several years due to budget shortfalls. In order for the center to function properly and to allow the director to accomplish the parts of her job that have her away from supervising students, a 100% MESA center specialist needs to be hired. This position is in the process of being implemented.

New Position Request To fulfill the needs of the Planetarium the cluster is proposing a 60% position for the Planetarium. The Planetarium position is to be partly funded out of Planetarium revenues.

2.2e Classified, STNC, Management Staffing Requests

Rank	Location	SP	M	Current Title	Proposed Title	Type
0002	Santa Rosa	02	05		Planetarium Administrative Assistant	Classified

2.3a Current Contract Faculty Positions

Position	Description

2.3b Full-Time and Part-Time Ratios

Discipline	FTEF Reg	% Reg Load	FTEF Adj	% Adj Load	Description
Applied Trechnology	0.9800	41.0000	1.3800	59.0000	Applied Technology has too few full-time faculty to accomplish departmental duties. Their situation will be further exacerbated by two retirements in December 2015, and another in May, 2016.
Architecture	0.4000	40.0000	0.6100	60.0000	The single contract faculty will retire in May, 2016.
Astronomy	2.0100	49.0000	1.8100	51.0000	
Biology	5.0000	53.0000	2.4000	47.0000	
Chemistry	4.1600	3.6000	38.0000	62.0000	
Civil & Syrveying Technology	0.0000	0.0000	0.2700	100.0000	
Construction Management Technology	0.0000	0.0000	0.2600	100.0000	
Earth and Space Sciences	0.0000	0.0000	0.1100	100.0000	
Electronic Technology	0.9000	44.0000	56.0000	0.9300	This program is dioscontinued, to be replace by the Mechatronics program.
Engineering	0.3300	26.0000	0.8200	74.0000	
Environmental Science	0.8000	80.0000	0.2000	20.0000	
Geographic information Systems	0.0000	0.0000	0.5300	100.0000	
Geography	0.4000	22.0000	1.4000	78.0000	
Geology	0.9300	64.0000	0.3300	36.0000	
Mathematics	23.4300	55.0000	12.3300	45.0000	
Meteorology	0.0000	0.0000	0.7300	100.0000	
Microbiology	0.0000	0.0000	1.6900	100.0000	
Physics	2.1300	52.0000	1.0000	48.0000	
Physiology	1.2000	60.0000	0.2700	40.0000	
Surveying	0.0000	0.0000	0.8200	100.0000	
Waste Water Treatment	0.0000	0.0000	0.5700	100.0000	
Water Treatment	0.0000	0.0000	0.2700	100.0000	

2.3c Faculty Within Retirement Range

Several departments in STEM have retirements expected within the next several years. We plan to take this into consideration during our faculty staffing prioritization for 2015-2016.

Math: Two retirements occurred in Santa Rosa in Spring 2015, and 11 additional math faculty are currently within retirement range. Off-cycle math faculty recruitment during the Fall 2014 semester resulted in three new faculty hires for Spring 2015. An additional Math faculty position is #1 ranked by the cluster for Fall 2015 hiring.

Chemistry: A retirement in Spring 2013 was not replaced during the 2013-2014 faculty staffing process, but a successful search was conducted in the Spring of 2015,

Physics: A retirement is expected in Physics afer the Fall 2015 semester. Also, a new Physics faculty member was hired in the Spring 2015 semester. Physics is planning to recruit another physics instructor during the 2015-2016 academic year to replace the Fall 2015 retirement. A new physics position is ranked #2 by the cluster for Fall 2015 hiring.

Applied Technology: One faculty retired in Fall 2014 and two more faculty are expected to retire within the next three years. Applied Technology successfully recruited for a Construction Engineering Technology position during the Spring 2015 semester. However, Applied Technology must be proactive in recruiting to avoid gaps bewteen upcoming retirements and bringing in new hires.

2.3d Analysis of Faculty Staffing Needs and Rationale to Support Requests

The STEM cluster is not adequately staffed with full time faculty. There have not been sufficient faculty positions awarded to keep up with the pace of retirements, resignations, and vacancies due to not granting tenure. Demand for STEM classes has been increasing steadily for several years, exacerbating the effects of insufficient faculty. While some STEM disciplines are able to find qualified adjuncts, others are not, and lack of staffing has caused the departments to offer fewer classes, thereby holding students back from transferring. The cluster has been working diligently at developing requests for the 2015-2016 round of faculty staffing in order to make sure our needs are understood and that the necessary positions are granted. If STEM is to be given the priority suggested in President Obama's agenda and embraced by Dr. Chong, every vacancy must be replaced, and growth positions must be considered where justified by student demand. All of the positions that will be presented by the Dean to the Faculty Staffing Committee in Fall 2015 are of critical importance:

STEM Position Requests (unranked)

Math -- Santa Rosa retirement
Physics -- current retirement
Life Sciences -- replacement, faculty death
Mechatronics -- new program

Future positions - listed in PRPP but not presented in Faculty Staffing

Architecture/Drafting -- future retirement

2.3e Faculty Staffing Requests

Rank	Location	SP	M	Discipline	SLO Assessment Rationale
0001	ALL	01	01	Life Sciences	Needed to meet SLOs in anatomy and physiology, a particularly difficult area to find instructors.
0002	ALL	01	01	Physics	Needed to meet SLOs for physics courses and major. Without a large pool of potential Physics adjunct faculty in the region, it is very difficult to find adjunct instructors.
0003	ALL	01	01	Math	Needed to achieve SLOs in Math courses, which benefit GE pattern and many majors.
0004	ALL	01	01	Mechatronics	Needed to meet the SLO for courses in the new Mechatronics major and for foundational couses in electronics needed by several other disciplines.

2.4b Rational for Instructional and Non-Instructional Equipment, Technology, and Software

None

2.4c Instructional Equipment and Software Requests

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact

2.4d Non-Instructional Equipment, Software, and Technology Requests

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0001	ALL	04	07	Carpeting for Bussman Service Cener Hallways	1	$5,000.00	$5,000.00	Stephen Lewis	Bussman Svc Center	Stephen Lewis

2.5a Minor Facilities Requests

Rank	Location	SP	M	Time Frame	Building	Room Number	Est. Cost	Description
0001	Santa Rosa	04	07	Urgent	Bussman Service Center/Shuhaw Hall	All	$0.00	A cost and time effective means of reporting and controlling HVAC systems and their use.

2.5b Analysis of Existing Facilities

The Dean's office area of Bussman Hall is ADA compliant.

The HVAC problem reporting system and follow up has improved, but is still inadequate.

Addition of 4 new math faculty into the Bussman Service Center has resulted in a significant increase in conversational noise in the hallways, amplified by the acoustically lively linoleum floors. Hallway carpeting would greatly enhance the work environment in the Bussman Service Center.

3.1 Develop Financial Resources

The Bussman Service Center and the Dean of STEM do not produce revenue directly.

STEM Dean efforts to gain grant funding development:

2014/15 MESA Renewal Grant - funded

2015/16 MESA Renewal Grant - funded

NSF IUSE North Bay Phenology, 2013 – not funded

NSF IUSE North Bay Phenology resubmission, 2014 – not funded

Dept. of Labor Trade Adjustment Assistance Community College and Career Training Grants Program (TAACCCT) Program, Urban and Rural Workforce Solutions, Consortium (SRJC, Solano Community College, Canada College, Skyline College, College of San Mateo, Gavilan College, Evergreen Valley College), June 2014 – not funded

3.2 Serve our Diverse Communities

<u>Dean's office and the Bussman Service Center:</u>
Our hiring practices conform to all state and federal laws, as well as SRJC policies and procedures. It is open and inclusive in our outreach and selection processes and welcome participation from underrepresented groups. As a member of all STEM faculty hiring committees, The STEM Dean is acutely aware of his role in achieving and maintaining diveristy in our hiring practises.

The STEM Dean administers and supports the MESA program, a program that supports first-generation science and engineering students, many of whom are from diverse backgrounds.

The STEM Dean organizes and coordinates STEM Cluster participation in Day Under the OAKS.

The STEM Dean has served as judge of science fairs in 2013 and 2014 for the Bellvue Union School District.

The STEM Dean attended and presented at the Roseland Accelerated Middle School Career Day, talking about careers in science, March 2015.

The STEM Dean has presented at the Expanding your Horizons science career program for female middle school students at Sonoma State in 2014 and at SRJC in 2015, where he also managed the event organization.

The STEM Dean recruits and manages cluster department participation in the annual North Bay Science Discovery Day event at the Sonoma County Fairgrounds. 2013 and 2014 participation by STEM departmetns were highlights of the entire event.

3.3 Cultivate a Healthy Organization

Dean's Office: Release time is granted for the staff's participation on district sponsored and ad-hoc committees. Reimbursement for necessary training costs.

Bussman Service Center : Staff attend on-campus safety and other training sessions.

The STEM Dean implemented several substantive program development activities:

Creation of a Mechatronics Program proposal and program outline.

Implementation of a Mathematics Education Symposium in April 2015.

3.4 Safety and Emergency Preparedness

Stephen Lewis, STEM Dean

The Bussman Service Center has inventoried and inspected our emergency supplies, and have begun working with Health & Safety to get our supplies updated.

3.5 Establish a Culture of Sustainability

The cluster is reducing paper copies.

4.1a Course Student Learning Outcomes Assessment

The Dean's office and the Bussman Service Center support the academic programs in defining and assessing their student learning outcomes.

STEM departments that achieved 100% SLO completion are Life Sciences, Chemistry and Physics, Mathematics, and Earth & Space Sciences.

4.1b Program Student Learning Outcomes Assessment

Thwe STEM Dean is not directly involved in SLO assessment, but has served as cheerleader to encourage STEM departments to complete their SLO assessments.

4.1c Student Learning Outcomes Reporting

Type	Name	Student Assessment Implemented	Assessment Results Analyzed	Change Implemented

4.2a Key Courses or Services that address Institutional Outcomes

Course/Service	1a	1b	1c	2a	2b	2c	2d	3a	3b	4a	4b	5	6a	6b	6c	7

4.2b Narrative (Optional)

5.0 Performance Measures

5.1 Effective Class Schedule: Course Offerings, Times, Locations, and Delivery Modes (annual)

Not applicable

5.2a Enrollment Efficiency

Not applicable

5.2b Average Class Size

Not applicable

5.3 Instructional Productivity

Not applicable

5.4 Curriculum Currency

Not applicable

5.5 Successful Program Completion

Not applicable

5.6 Student Success

not applicable

5.7 Student Access

not applicable

5.8 Curriculum Offered Within Reasonable Time Frame

not applicable

5.9a Curriculum Responsiveness

not applicable

5.9b Alignment with High Schools (Tech-Prep ONLY)

not applicable

5.10 Alignment with Transfer Institutions (Transfer Majors ONLY)

not applicable

5.11a Labor Market Demand (Occupational Programs ONLY)

not applicable

5.11b Academic Standards

not applicable

6.1 Progress and Accomplishments Since Last Program/Unit Review

Rank	Location	SP	M	Goal	Objective	Time Frame	Progress to Date
0001	ALL	04	06	1) Improve/enlarge STEM facilities 2) Enlarge/replace STEM faculty 3) Improve math student retention and completion at the pre-algebra and algebra levels	1) Engage STEM faculty and managers in the design and construction of new bond-funded STEM facilities 2) Conduct successful faculty searches to both increase the number of faculty to meet student demand and replace retiring faculty 3) In conjunction with math department faculty, investigate new and innovative teaching techniques and methods that can improve student success in pre-algebra and algebra, and improve the rate of overall student success	5-10 years	1) Bond funding achieved; STEM Dean took an active role in bond campaign activities. 2) Proactive recruitment: Four new math faculty, one each new chemistry and physics faculty hired. 3) Provide opportunities for math faculty to learn about new developments in teaching, provide assigned time for deveoling new curriculum and teaching techniques, and provide support for data gathering and analysis to quantitatively track the results of any innovations implemented. Successful Math Education Symposium was planned and implemented in April, 2015, with significant math faculty attendance.
0002	ALL	04	00	1) Improve/enlarge STEM facilities 2) Enlarge/replace STEM faculty 3) Implement innovative programs with the Math Department to improve student success at the pre-algebra and algebra levels,	1) Engage STEM faculty and managers in the design and construction of new bond-funded STEM facilities 2) Conduct successful faculty searches to both increase the number of faculty to meet student demand and replace retiring faculty 3) In collaboration with math department faculty, identify and implement effective and innovative programs to increase student retention and success, with subsequent evaluation of improvements in student achievement.	5-10 years	1) Bond funding 2) Proactive recruitment 3) Provide opportunities for learning about new teaching methods and pedagogy, provide assigned time for fculty to evaluate new programs and develop new curriculum, provid support for follow-up evaluation of results.
0003	ALL	04	00	1) Improve/enlarge STEM facilities 2) Enlarge/replace STEM faculty	1) Engage STEM faculty and managers in the design and construction of new bond-funded STEM facilities 2) Conduct successful faculty searches to both increase the number of faculty to meet student demand and replace retiring faculty	5-10 years	1) Bond funding 2) Proactive recruitment

6.2a Program/Unit Conclusions

Location	Program/Unit Conclusions
Other	Continuous analysis of course scheduling and enrollment patterns, faculty staffing, and facilities utilization (particularly lab utilization), the two largest challeges going forward for the STEM cluster are faculty staffing levels and lab/classroom space. Unfortunately, there are no short-term solutions to these coupled problems. Most STEM departments/programs are impacted, for example the Math Department has roughly 120% efficiency at first census, meaning that faculty are over-enrolling their courses in order to try to accommodate student demand. Cemistry, Physics, Life Sciences, and Engineering are similarly impacted. It is becoming increasingly difficult to find adjunct faculty in these fields, as there are few local employers of these scientific disciplines locally, despite frequent adjunct searches. Full-time faculty are becoming increasingly difficult to recruit, with only 1 of four math positions filled by a Spring 2014 search. Retirements in the Math, Physics, and APTEC departments exacerbate the recruitment problem. STEM departments need successful faculty searches just to prevent faculty shrinkage over the next several years. Hopefully, the Proposition H bond measure will fund a new round of STEM (and other) facility construction on campus.

6.2b PRPP Editor Feedback - Optional

6.3a Annual Unit Plan

Rank	Location	SP	M	Goal	Objective	Time Frame	Resources Required
0001	ALL	04	00	1) Improve/enlarge/modernize STEM classroom and laboratory facilities	1) Engage STEM faculty and managers in the design and construction of new bond-funded STEM facilities 2) Assess teaching methods to inform the design and layout of teaching spaces (flipped classrooms, Maker Space, etc.) 3) Plan spaces and exhibits to encourage public outreach and education (Science on a Sphere, etc.)	5-10 years	1) Bond funding
0002	ALL	04	00	2) Enlarge/replace STEM faculty	1) Conduct successful faculty searches to both increase the number of faculty to meet student demand and replace retiring faculty 2) Increase the success rate of hiring the top candidates.	5-10 years	1) Proactive national recruitment 2) Provide travel funding for top candidates to interviews. Evaluate alternative formats for the interview process.Evaluate altrnative compositions for hiring committees.
0003	ALL	04	00	3) Improve math student retention and completion at the pre-algebra and algebra levels	) In conjunction with math department faculty, investigate new and innovative teaching techniques and methods that can improve student success in pre-algebra and algebra, and improve the rate of overall student success	5-10 years	Provide opportunities for math faculty to learn about new developments in teaching, provide assigned time for developling new curriculum and teaching techniques, and provide support for data gathering and analysis to quantitatively track the results of any innovations implemented