

# Santa Rosa Junior College

## Program Resource Planning Process

### Dean II STEM 2014

#### 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 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 access to STEM courses
- 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, 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
- 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 2 Department Chairs, 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

AAII, 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 (see 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 both Sonoma State 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,

#### Career and Technical Education (CTE) certificates or majors:

- 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 through 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
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### 2.2a Current Classified 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.
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## 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% AAII) is now adequate.

**Bussman Service Center:** The current AAII 0.75 FTE appears sufficient for the current needs of the departments.

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 should 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 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
	0.0000	0.0000	0.0000	0.0000	

## 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 2014-2015.

Math: Two retirements are anticipated in Santa Rosa in Spring 2015.

Chemistry: A retirement in Spring 2013 was not replaced during the 2013-2014 faculty staffing process.

Physics: A retirement is expected in Physics in Spring 2015.

Applied Technology: One faculty is retiring in Fall 2014 and two more faculty are expected to retire within the next three years.

## 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 2014-2015 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 needed. All of the positions that will be presented by the Dean to the Faculty Staffing Committee in Fall 2014 are

### STEM Position Requests (unranked)

Math (Petaluma) -- current retirement

Math -- previous resignation

Chemistry -- previous retirement

Chemistry -- previous resignation

Physics -- current retirement

Life Sciences -- medical resignation

Civil Surveying/Construction Mgt -- vacancy left by faculty who became an administrator

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

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
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## 2.5a Minor Facilities Requests

Rank	Location	SP	M	Time Frame	Building	Room Number	Est. Cost	Description
0001	Santa Rosa	00	00	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.

### 3.1 Develop Financial Resources

### 3.2 Serve our Diverse Communities

#### Dean's office and the Bussman Service Center:

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.

### 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.

### 3.4 Safety and Emergency Preparedness

Reina Martinez

### 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.

### 4.1b Program Student Learning Outcomes Assessment

### 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

<b>Rank</b>	<b>Location</b>	<b>SP</b>	<b>M</b>	<b>Goal</b>	<b>Objective</b>	<b>Time Frame</b>	<b>Progress to Date</b>
0001	ALL	06	00	Become familiar with SRJC policies and procedures, in particular faculty staffing and evaluation, budgeting and financial management, course scheduling and enrollment management	1) learn to use SIS 2) become familiar with AFA contract and Board policies 3) Become familiar with EMS 4) Become familiar with individual department course rotations, scheduling challenges, and enrollment problems 5) Become familiar with individual department staffing issues.	7/1/13 - 6/30/14	1) I am now comfortable with using SIS. 2) I am becoming familiar with the AFA contract and the Board Policy Manual as issues arise. 3) I am becoming more comfortable with EMS. 4) I am familiar with department course rotations and other course scheduling issues, and work with chairs to solve problems. 5) I have become familiar with individual faculty who frequently have problems, and I have learned a lot about dealing with them successfully.
0002	ALL	02	00	Support maintenance and modernization of department equipment and instrumentation	1) Replace outdated and worn out microscopes - Like Sciences 2) Replace outdated and malfunctioning GC/MS - Chemistry 3) Replace electronic measurement equipment - Physics Labs 4) Acquire new software and measurement equipment - Electronics labs		Every STEM Department received funding for their highest - priority need in the current Instructional Equipment funding program, and may be able to request 2nd ranked equipment later.
0003	ALL	01	00	1) Revitalize Electronics Program 2) Support the Physics program to move out of the APTEC Department 3) Support and assist the articulation effort for the Architecture program 4) Support curriculum updates in GIS and surveying programs	1) Research other electronics programs and design a curriculum framework for a new Mechatronics program 2) Manage the move of Physics to Chemistry, creating the new combined Chemistry and Physics Department 3) Assist in the communication between 4-year institutions and the SRJC Architecture faculty to achieve articulation 4) Provide support for GIS and surveying curriculum updates.		1) Assist the development of a new MEchatronics curriculum and begin the Policy 3.2.2 process for creating a new program 2) Physics and Chemistry have been successfully combined, improving the morale and functionality of the Physics program. 3) To date our efforts have not been successful in achieving articulation for Architecture. 4)
0004	ALL	04	00	1) Participate in new STEM facilities design 2) Support repairs to Bech Hall and Shuhaw Hall HVAC systems	1) Create a STEM New Building Committee of faculty and classified staff 2) Maintain habitability in Bech and Shuhaw Halls		1) Committee is constituted and meets on an as-needed basis prior to the Bond election 2) Shuhaw Hall has a new HVAC system, Bech Hall is limping along with portable AC units.
0005	ALL	03	00	1) Engage in outreach activities in Sonoma County	1) Manage/recruit STEM program participation in the 2013 North Bay Science Discovery Day 2) Manage/recruit STEM participation in 2013 Day Under the Oaks event; serve as a member of the DUO Steering Committee 3) Participate in the April, 2013 Expanding Your Horizons event at Sonoma State.		1) Recruited 7 STEM departments/programs to participate in the 2013 North Bay Science Discovery Day 2) 2013 DUO was a success 3) Delivered a brief speech to middle-school student participants about careers in science. 4) Recruited 9 STEM departments/programs to participate in the 2014 North Bay Science

					4) Manage/recruit STEM program participation in the 2014 North Bay Science Discovery Day 5) Serve on the external advisory committee for the Sonoma State Electronics Department		Discovery Day, as well as a participant from the Computer Studies program of SRJC. 5) Attended meetings at Sonoma State, co-wrote a short document about recruiting students from high schools and from community colleges
0006	ALL	07	00	Seek external funding for program support	1) Co-author MESA NSF S-STEM proposal, Summer/Fall 2013 2) Lead author/P.I. NSF IUSE proposal, Winter 2014, with Pepperwood, UCB, UCSB 3) Co-Author DOL CTE water/water treatment proposal with Shyline College and Department of Ag, SRJC 4) Co-author MESA NSF S-STEM proposal resubmission, Summer 2014 5) Lead author/P.I. NSF IUSE proposal, Fall 2014		All proposals were submitted successfully; 3 were declined for dunding, 2 are in review

## 6.2a Program/Unit Conclusions

Location	Program/Unit Conclusions
Other	NA
Other	Continuous analysis of course scheduling and enrollment patterns, faculty staffing, and facilities utilization (particularly lab utilization), the two largest challenges 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. Chemistry, 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

STEM continues to face serious challenges by not offering enough sections to meet student need, largely due to lack of instructors and inadequate facilities. I encourage the dean to continuously seek out adjunct faculty, expand recruitment efforts, to advocate to fill positions, and to seek out new facilities as needed.

Dean, Liberal Arts and Sciences

## 6.3a Annual Unit Plan

<b>Rank</b>	<b>Location</b>	<b>SP</b>	<b>M</b>	<b>Goal</b>	<b>Objective</b>	<b>Time Frame</b>	<b>Resources Required</b>
0001	ALL	04	00	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 2) Proactive recruitment 3) Provide opportunities for math faculty to learn about new developments in teaching, provide assigned time for developing new curriculum and teaching techniques, and provide support for data gathering and analysis to quantitatively track the results of any innovations implemented
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 faculty to evaluate new programs and develop new curriculum, provide 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