Santa Rosa Junior College
Program Resource Planning Process

Dean II STEM 2017

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 transfer to four-year universities, general education, and 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 Technology, Geospatial Technology and Surveying, Electronics/Mechatronics, and Engineering (transfer major).

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:

- Engineering & 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 Scince Lab Instructional Assistants (SLIAs) to improve student outcomes in science laboratory courses.
- 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, Earth Sciences, 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:

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

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 program.

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.

Bussman Service Center :
BSC serves: The academic department of Engineering and Applied Technology, 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 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 Hall 1496 and 1494, M-F 8 am -5 pm
Dean's Office (Victor Tam) Bussman 1494
Administrative Assistant III (Tami Meraz), Bussman 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 approximately 70% of 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 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 roughly 10 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 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

STEM Dean's Office

Abstract: The accounts overseen by the STEM Dean's office are used primarily to support the academic departments of the Cluster, while also fund the administrative operations of the Dean's Office and Bussman Service Center. The STEM Dean's Office also is dedicated to developing new programs that support student success and equity, by forming parternships with other areas in SRJC as well as community organizations. The Dean's Office does not directly generate revenue, but does pursue applicable grant solicitiations such as those from the NSF, categorical funding sources at both the state and federal level (e.g., Strong Workforce), or other sources.

Budget Analysis (required categories): The total expenditures for the STEM Dean's Office was $357,121.29 in fiscal year 2015-2016 (most current data available), which is 0.25% of total District expenditures. A majority of the spending was to pay for salaries and benefits of the Dean and Administrative Assistant III.

Budget Analysis (discretionary categories): In the 2016-2017 fiscal year, a significant portion of the STEM Dean's budget was used to support STNC positions in various departments.

- In Engineering and Applied Technology, two SLIA's were funded to provide program support. One SLIA was assigned to the CEGST program to assist with lab support and equipment handling. This position will be phased out and replaced with a permanent SLIA supported by categorical CTE money (Strong Workforce Program). A second SLIA was assigned to support the Mechatronics Program. This position will also be phased out and replaced with the same permanent SLIA position funded by Strong Workforce money.

- Also in Engineering and Applied Technology, the Physics SLIA was paid 5 hours of over time (totaling approx. $6500 over the past year), to provide support for the Materials Engineering course, which has never had a permanent SLIA support.

- Additionally, due to the large amount of curriculum updating and changes needed in the Engineering and Applied Technology Department, various faculty (both full-time and adjunct) were compensated to complete edits to course outlines (CORs) in order to bring the District within Title V compliance, or help establish new program pathways. (approx. $4500)

Taken together, the Engineering & Applied Technology Department has required a substantial amount of financial assistance in order to properly function and provide student support. The small budget allocated to E&AT was not sufficient to pay for any of the activities listed above.

Beyond the personnel costs above, the Dean's Budget was utilized to augment academic department supply budgets to purchase critical equipment for classroom instruction. The STEM Cluster continues to experience enrollment growth and student demand, and supplies and staffing budgets must reflect this increase. As each additional course section is added, this increases the cost of chemicals, equipment, and other supplies to each department. Experiments are mandated in Course Outlines of Record. If individual department budgets are not augmented with additional funding, funding can be directed to the Dean's discretionary budget to cover expenses that arise due to enrollment growth. Approximately $12,000 was transferred to departments to augment budgets in the 2016-2017 fiscal year. Of note, from the total above, $4,700 went directly to the E&AT buget, again to provide much needed supplies and equipment.

Budget Requests: Despite the current dire financial situation of the District, the STEM Dean's Office is requesting the following augmentation of funds:

- Multiple departments within the Cluster have established research internships with various organizations in the North Bay. These internships number over 20+ with minimal financial support given to students. Research internships have been proven to help with student retention and success, by providing valuable experience as students pursue opportunities with employers and at 4-year transfer institutions. The Dean's Office is requesting $10,000 to fund research internships for students. This will pay student salaries, supplies, and transportation costs. By eliminating this financial burden, this will permit students to participate in valuable research internships versus working a job that does not relate to their field of study.

- Additional funds to augment Dean's supplies and equipment budgets, which can be distributed to academic departments when emergencies occur due to equipment failure or when critical needs arise. Based on the previous year's usage and cuts already made to individual departments to balance the structural deficit, $5,000 to $10,000 would be an appropriate amount. Engineering & Applied Technology would be most heavily impacted if augmentation is not funded.

Bussman Service Center (BSC)

The BSC serves as a printing and resource hub for many departments and programs under the STEM Cluster, primarily Mathematics and Engineering and Applied Technology. Continual efforts have been made to reduce the number of copies (Graphics Art budget) made on the local machine, and reductions have been made in office supply orders. Going paperless has been a primary initiative. Despite these efforts, the allocated Graphics Art budget does not appropriately support the printing/copies demand on BSC. This is most likely due to the increased enrollment in Math and E&AT. A budget augmentation of $2,500 is requested to cover increasing printing costs.

Additionally, increased funding is requested to lease a more efficient and faster copy machine. The current copy machine is relatively slow and frequently jams. Additional funding to lease a more advanced copy machine will increase efficiency, as well as reduce paper jams (and wasted paper, effort, and frustration). An augmention of up to $10,000 is requested to cover the cost of an improved lease.

2.1b Budget Requests

Rank	Location	SP	M	Amount	Brief Rationale
0001	ALL	02	01	$10,000.00	Funds to develop and support student research internships, which has been shown to effectively increase student retention and success.
0002	ALL	01	01	$10,000.00	Funds to augment academic department budgets for purchase of supplies and equipment. With STEM Cluster enrollment continually increasing, additional funding is needed to support new sections of science labs.
0003	Santa Rosa	08	06	$2,500.00	Augmentation of budget to cover the increasing cost of copies and printing in the Bussman Service Center.
0004	Santa Rosa	07	06	$10,000.00	Increased funding for a new lease to support a more efficient, faster, and non-jamming copy machine.

2.2a Current Classifed Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Administrative Assistant III	40.00	12.00	Assists Dean in operational support of the office, manages Dean calendar, provides support in faculty evaluation process, enrollment management, managing cluster curriculum updates, schedule development, communication to chairs and admins, budget management of Dean accounts, and assistance in various departments and program coordinators meetings.
Administrative Assistant II (Bussman Center)	30.00	12.00	Assists students, faculty, staff and community at large with the academic forms, procedures, district policies, and all administrative office support functioning of Engineering & Applied Technology.

2.2b Current Management/Confidential Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Dean of STEM	40.00	12.00	Provides support and resources to the STEM departments and programs. Oversees schedule development, enrollment management, and budget development, and Measure H-funded construction projects. Participates in faculty and staff hiring and evaluations. Coordinates curriculum development and SLO reporting. Establishes partnerships with various organizations to provide opportunities for students. Seeks funding opportunities from grant work and outside agencies, and collaborates with Student Services to support students.

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's Office

The STEM Dean provides adminsitrative oversight to the entire Cluster. Demands on the position's time are heavy with steadily increasing workload. Due to holding/delaying the Planetarium Specialist position for up to 1-2 years, management of the Planetarium has fallen to the STEM Dean. A committee made of Astronomy faculty and staff will be assembled to help provide oversight and guidance, but recruitment of the Planetarium Specialist position should be prioritized when construction and fiscal constraints permit. Additionally, re-launching the Solar Photovoltaic and Construction Management Programs will be a priority for the STEM Cluster. Due to the lack of faculty and support in the E&AT Department, much of the burden will shift to the STEM Dean's Office. Funding to support professional experts and consultants to help re-launch, hire, and guide faculty/staff during the re-building of these programs warrants consideration.

The Administrative Assistant III position provides adequate support to the STEM Dean's Office. However, current initiatives include supporting more grant oversight (e.g., NSF CURES grant), applying for more grants (e.g., NSF or NIH), and supporting student research internships within the Cluster (over 20+ currently exist throughout different departments). Administrative support to help manage internships, develop STEM community resources like a LinkedIN alumni network, and CTE Advisory Committee newsletters, is requested.

Bussman Service Center

The BSC is currently supposed by and Administrative Assistant II, 75% FTE. This allocation meets the minimal needs of the E&AT Department; however, with additional CTE funding anticipated in the coming year (e.g., Strong Workforce, Prop 39) as well as the launch of two new programs (Solar Photovolatic and Construction Management), additional FTE is requested to permit for increased support.

Administrative Support Throughout STEM Cluster

Although each individual Department will address their own staffing adequacy and effectiveness, since Adminsitrative Assistants work closely with the Dean's Office, the following is noted:

- All STEM Cluster Administrative Assistants meet monthly with the STEM Dean to discuss any issues and share best practices.

- Life Sciences & Earth and Space Science: An AAII (100%) is currently shared between these two departments, with nearly 75% devoted to the Life Sciences Department. Staffing seems appropriate at this time, but see Department PRPP for specific requests.

- Chemistry & Physics: An AAII (75%) currently supports both departments and staffing seems appropriate at this time. If weekend and evening section offerings continue to increase, an analysis will be implemented to determine if an FTE increase is warranted. See Department PRPP for specific requests.

- Mathematics: An AAII (100%) currently supports this very large department. A request to have this position converted to an AAIII (100%) position has been made so that it is commensurate to the English Department. Currently, a request for this position to be a "work out of class AAIII" has been approved and will begin in July 2017. The hope is that all Administrative Assistant positions will be examined and studied to better

determine their classification (if warranted). If this occurs in the 2017-2018 academic year, this will resolve the "work out of class" situation.

- Engineering & Applied Technology: See Bussman Service Center above.

- Planetarium: Starting July 1, 2017, the STNC AAI will officially be converted to a permanent AAI (42.5%) position. Ticket sales completely support this position, with no District funds.

- MESA: For over many years, MESA has lacked administrative support. Funding must come from the District (not from MESA state funds) for a permanent Administrative Assistant position. The program serves over 100+ students utilizing a case management style program to assist first generation, under-represented students, transfer to 4-year institutions in STEM majors. The program has been extremely successful, only because the current MESA Director works many hours beyond what is reasonable. Administrative support is requested urgently.

2.2e Classified, STNC, Management Staffing Requests

Rank	Location	SP	M	Current Title	Proposed Title	Type
0001	Santa Rosa	02	01	None	STEM Internship Coordinator	Classified
0002	Santa Rosa	01	07	None	Solar Photovoltaic Expert or Coordinator	Management
0003	Santa Rosa	01	07	None	Construction Management Expert or Coordinator	Management

2.3a Current Contract Faculty Positions

Position	Description
See Departmental PRPPs	See Departmental PRPPs

2.3b Full-Time and Part-Time Ratios

Discipline	FTEF Reg	% Reg Load	FTEF Adj	% Adj Load	Description
Applied Trechnology	0.9100	42.0000	1.2500	58.0000	Despite three new hires, the Engineering and Applied Technology still has too few full-time faculty to accomplish departmental duties.
Architecture	0.2000	100.0000	0.0000	0.0000	The 0.20 FTE is a portion of Robert Grandmaison's total FTE
Astronomy	1.5700	40.0000	1.4000	60.0000	
Biology	6.1300	68.0000	2.9500	33.0000	
Chemistry	5.1700	45.0000	5.5000	55.0000	
Civil & Surveying Technology	0.2700	47.0000	0.3100	54.0000	
Construction Management Technology	0.2000	100.0000	0.0000	0.0000	The 0.20 FTE is a portion of Robert Grandmaison's total FTE
Earth and Space Sciences	0.1600	74.0000	0.0200	27.0000	
Electronic Technology	0.7000	100.0000	0.0000	0.0000	This program is discontinued, to be replace by the Mechatronics program.
Engineering	0.8000	47.0000	0.9000	53.0000	
Environmental Science	0.4100	50.0000	0.4000	49.0000	
Geographic information Systems	0.2700	99.0000	0.0000	0.0000	
Geography	0.0000	0.0000	1.4200	100.0000	
Geology	1.5000	82.0000	0.3300	18.0000	
Mathematics	25.9700	60.0000	13.9700	40.0000	
Meteorology	0.0000	0.0000	0.3500	100.0000	
Microbiology	0.9300	50.0000	0.9300	50.0000	
Physics	3.8000	82.0000	0.7300	19.0000	
Physiology	1.6000	80.0000	0.0000	20.0000	
Surveying	0.3300	101.0000	0.0000	0.0000	
Waste Water Treatment	0.0000	0.0000	0.3700	100.0000	
Water Treatment	0.0000	0.0000	0.6800	100.0000	

2.3c Faculty Within Retirement Range

See individual Department PRPPs.

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

Current Overview: Student enrollment in STEM disciplines continues to grow despite a larger enrollment downturn overall for the entire District. The STEM Cluster has not been able to adequately staff courses in high demand with full-time or adjunct faculty, due to retirements, resignations, and a competitive job market both in academia and private industry. Despite holding adjunct hiring committees in nearly all STEM departments both in the Fall and Spring semesters, almost all departments have empty adjunct faculty pools. Fill/efficiency rates in most STEM courses exceed 100%, but the lack of faculty does not permit the addition of sections to meet student demand or generate additional FTES for the District. With all disciplines being extremely impacted with students, additional full-time positions are an effective tool to attracting more faculty to SRJC.

Faculty Staffing Requests:
The following positions will be presented by the STEM Dean to the Faculty Staffing Committee in Fall 2017:

1. **Engineering & Applied Technology (E&AT)**; emphasis in Engineering transfer, focus on Civil Engineering and Civil Engineering Technology. **This request is for a retirement hire.** The E&AT Department is tied with having the lowest FT/PT faculty ratio in the STEM Cluster (42% FT vs. 59% PT). In addition to Engineering, there are 10 CTE sub-disciplines which are mostly staffed by adjunct faculty. Student who major in engineering take courses in all STEM disciplines, usually completing all advanced course sequences in multiple departments. In other words, engineering students generate the most FTES per individual student and take the most units/credits in STEM. Due to the lack of Engineering FT faculty, it has been difficult to staff necessary engineering courses for transfer students. Nearly all engineering adjunct faculty members hold full-time jobs at local companies, making their availability limited and their turnover high. An additional full-time faculty would permit offering robotics courses and other project-based classes on top of staffing existing courses. Additionally, a FT faculty member with a Civil Engineering background can help further support the Civil Engineering Technology program, as well as help revitalize the Construction Management program.

Below is the narrative summary of last year's request to the Faculty Staffing Committee:

> The Engineering & Applied Technology Department is requesting a full time faculty member to support the departments programs related to Civil Engineering. This position would anchor Petaluma's Water & Wastewater Technology programs as well as the Civil & Environmental engineering portions of the existing Engineering Transfer Program (Santa Rosa). The position would also support the existing Civil Engineering Technology program that currently is coordinated by a full time faculty member from the surveying discipline. The position is also required for the restoration of a Construction Management program. This position would also be our anchor for the Petaluma Campus (currently no full time faculty load in Petaluma). This position has been previously described in PRPP's, yet represents a new formulation that reacts to the spate of retirements and new hires and addresses our most urgent need for a civil engineer for the above programs and to have a full time Petaluma presence. There has been significant growth in the engineering transfer program over the past decade, but this is a replacement position. This will consolidate adjunct positions, but is a replacement position.

The number of adjunct in the department has fluctuated markedly over the past two years because of 4 retirements, a sabbatical, and 3 hires. The currently active faculty list has 40 adjunct faculty, 22 of whom are teaching this semester (7 in Petaluma). Finding adjunct faculty is always a challenge because of the diversity of disciplines and our reliance on professionals in engineering related fields. Almost all of our faculty have full time jobs and most only teach for a few years before career or family demands pull them away. We have no 60% adjuncts with years of stable teaching experience but must instead rely on a churning pool of excellent professionals willing to teach only one class (currently only one adjunct faculty member in these disciplines is teaching above a 20% load). The department averages more than one screening/interview cycle each semester and has had a half dozen emergency hires in the past couple years. The department was forced to suspend a program (Solar Photo-voltaic Technician) for this year because of the resignation of the adjunct faculty lead. We currently have a "staff" course in civil engineering tech for proof #2 for the Spring, with plans to conduct an adjunct screening starting next month.

The department has FT/PT load ratio of 43%/57%. We currently have 4 full time faculty to serve 13 certificates and 11 majors in 9 disciplines with industry and SRJC administration requesting new and renewed programs in another 4 areas. The department has lost 5.4 faculty in the last 7 years (Sullivan, Miller, Sikes, Pasqualetti, Ataiiyan [40%], and Sweitzer). The department has gained only 3 faculty members (Parks, Grandmaison, and Papa). The department has never had a Petaluma FT presence, and this position would meet that need.

This faculty member would be a civil engineering generalist able to teach: ENGR (3 classes) WTR & WTR (8 classes), CEST (6 classes), CONS (TBD), APTECH (3+). The faculty member would also interface with local industry and represent the college at regional conferences and initiatives related to civil engineering. The class size and enrollment efficiencies vary depending on the disciplines above, as do the enrollment demand. Engineering has had extremely strong demand and enrollment these past three years, with added sections. This growth would have been even larger if we had had adequate lab staffing. Student demand in some of the department's CTE disciplines has suffered because full time faculty were not replaced in a timely manner. You can't run successful programs without full time anchor faculty.

Engineering drives enrollment in math, chemistry and physics, with engineering students making up majority of the enrollment in the calculus level courses in those departments. Engineering's approximately 70 transfer students a year is about a third of the transfer students in STEM. Dr. Ataiiyan's recent retirement leaves this essential program with only one full time faculty member. This position is also essential to merge the Engineering and Applied Technology halves of the department. The department is striving to transition to a new mode of functioning, in which faculty have overlapping spheres of expertise so they can effectively support one another. The department is behind in curriculum, programs, SLO assessments, and faculty evaluations because we do not have sufficient full time faculty to manage the 100+ courses, 13 certificates, 11 majors, and 40 adjunct faculty. The department cannot realistically implement the proposed Construction Management program until this position gets filled. Similarly, some course offerings in Engineering are on hold until we can meet the staff and faculty needs. The department would like to also add its engineering GE class to build on its successful architecture GE classes. If we delay this essential hire, we also delay growth and strength in the T&E half of STEM.

Engineering has awarded 47 AS degrees these past three years, but has also transferred ~200 students. Water/Wastewater has awarded 13 AS degrees and 24 certificates these past three years. Civil Engineering Technology has awarded 3 AS degrees and 3 certificates these past three years. Demand for employees in both the local and statewide

civil engineering related disciplines is soaring for both technicians and engineers. If the College is to meet this demand, we need to move this positon. Thank you for your consideration.

2. **Chemistry: This is a retirement hire.** A full-time chemistry faculty member will be retiring after Spring 2018. The current FT/PT ratio for the chemistry department is 45% versus 55%, which is on the lower end when compared to other STEM disciplines. Loss of 1 FTEF without replacement would drop this ratio below 40% FT faculty. The Chemistry Department continues to expand with an increase of offerings on Fridays, weekends, and evenings. Additionally, with the proposed Petaluma Science Wing, additional chemistry courses will be offered in the south county, in which faculty from the Santa Rosa campus may rotate into to provide support. No adjunct faculty pool exists for chemistry despite conducting adjunct hiring this past year. Due to the limited number of chemistry companies in the area, there is an extremely limited supply of professional chemists to draw from. Noteworthy, five current adjunct faculty members commute to SRJC from outside of Sonoma County. Allocation of another FT faculty member will help to maintain FTES growth and support additional high demand courses (e.g., CHEM 60, CHEM 42, CHEM 1A) at a time when the department is experiencing growth.

3. **Mathematics: This is a retirement hire**. A full-time mathematics faculty member officially retired in Spring 2017. (Of note is that recent hires of FT math faculty do not make up for the number of retirements in recent years so the department has been continually running at a FT faculty deficit.) Demand for Math courses is extremely high and enrollment has continually been growing. Nearly all math courses have fill rates exceeding 100%, and many courses close during priority registration or first day of open registration. In Spring 2017, three FT positions were solicited, with only two positions being filled. The two new FT faculty members however are current adjuncts, which means there was only a 0.67 FTEF increase overall by filling two of the three FT positions. Although the third position (assigned to the PET campus) is being rolled over to 2017-2018, there is not sufficient full-time faculty to support student demand. Hiring and retaining adjunct faculty is difficult with no faculty currently in the adjunct pool -- despite holding adjunct hiring committes in both Fall 2016 and Spring 2017. Due to the difficulty in hiring adjunct faculty, and with 9 FT faculty within retirement range (that is 36% of the FT faculty total), the Math Department is in a dire situation. Allocation of a FT position is warranted and highly suggested.

Below is the narrative summary submitted to the Faculty Staffing Committee last year:

1. **Position Requested Introduction**
    - The Math Department is requesting **<u>two</u>** ***additional*** FT faculty positions for Fall 2017.
    - These two additional positions would be primarily assigned to the Santa Rosa Campus. This request is in addition to the current approved FT faculty search, in which 2 positions are allocated to Petaluma and only 1 to the Santa Rosa campus.
    - This position was mentioned in the previous PRPP.
    - This is not a growth position, as it is requested to keep up with the current rate of retirements and unmet student demand.
    - This position will teach primarily credit courses and can also assist the math department in working with student equity and basic skills programs.

2. **Current Contract Faculty Considerations**
    - This position request is to maintain current course support levels.
    - There are approximately 30 adjunct faculty members with most on the SR campus.

- The availability of adjunct faculty in mathematics is extremely limited if non-existent. Sonoma County currently lacks large industry sectors to attract qualified individuals, and Sonoma State does not have a Master's granting program in Math.
- Interviews for adjunct positions have been performed every semester for the last three years. From these efforts, only four qualified applicants became adjunct faculty, and two of these became emergency hires.
- There is an extreme shortage of qualified applicants to fill necessary course offerings. The unavailability of eligible adjunct instructors has negatively impacted staffing.

3. Current Adjunct Faculty Considerations

- The current FT/PT ratio is 59%-to-41%.
- There are currently 26 contract faculty in the department. Two FT faculty members serve on AFA with a combined release time of 95%. Several FT faculty members take on unwanted overloads in order to serve students. For Fall 2016, FT faculty have a combined 62.54 units of ***overload*** at the Santa Rosa campus -- more than 4 FTEF.
- In the past six years, 10 faculty positions have been vacated (8 SR, 2 Pet) while at the same time 10 faculty members were hired (9 SR, 1 Pet); therefore, there has been no net gain of FT faculty while enrollment has increased. The department is also heavily impacted by sabbatical leaves starting Spring 2017 (1 approved). Every subsequent semester will potentially see two faculty members on sabbatical through the end of 2018-2019.

4. Instructional Impact

- The additional FT positions would teach the full range of courses in the math department. Demand has increased across the board at Santa Rosa campus, with a "clicks-after-close" report suggesting 18 additional sections should be offered to meet demand last semester.
- The average class size is 37.2 in Spring 2016, with a 6-semester average of 38.9. Note, class size is ordinarily 28 students, with faculty regularly accepting 6 additional students off the wait list. The fill rate averages 116% over the past 6 semesters.
- Demand is extremely high for the classes these new positions would teach. Student numbers have increased due to enrollment limitations in the UC and CSU and increasing college costs. Students needing higher-level mathematics courses have increased. Sections routinely close before open enrollment. New sections that would fill cannot be offered due to lack of staffing. In a time when student outreach and recruitment to SRJC are a priority, not serving students already on campus is a contradiction of objectives.
- Resources exist to support the courses that will be taught by these new faculty members.

5. **District and Departmental Need and Goals**
    - Degree completion and transfer are two primary goals of the department and District. Providing sufficient sections and faculty to teach classes in these pathways are imperative to achieving these objectives.
    - This request is to meet current unmet demand and address growing interest in STEM.
    - All curriculum review, SLO assessments, and faculty evaluations are current.
    - The situation in the math department is dire. Currently, a one-year FT emergency hire for 2016-2017 is being utilized as a stop-gap. Another full-time one-semester emergency hire was approved for Spring 2017 since 8 unstaffed sections existed. All adjunct faculty are at their load capacity. Emergency hires are not the solution to staffing needs. Of additional concern is the loss of adjunct faculty to FT positions at other colleges, and at least 4 FT faculty at retirement age who may retire simultaneously in the very near future.

6. **Degrees, Certificates, Prerequisites, and/or General Education**
    - The 3-year average for AA Degrees in Math is 18.33, and the ADT in Math is 15.67. These are strong numbers. It is noted that a majority of students taking math classes are fulfilling requirements for nearly all other programs at SRJC.
    - Math 155 (or equivalent) is a required GE course for all local AS/AA degrees. Additional faculty positions will help alleviate the bottleneck.

7. **CTE Positions – not applicable**
8. **Position Mandates – not applicable**
9. **District Impact – no additional comment**

2.3e Faculty Staffing Requests

Rank	Location	SP	M	Discipline	SLO Assessment Rationale
0001	ALL	01	01	See RANKED Spreadsheet & Rationale	

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

Instructional Equipment Requests: N/A

Non-Instructional Equipment Requests: N/A

2.4c Instructional Equipment and Software Requests

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0001	ALL	00	00	N/A	0	$0.00	$0.00			

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

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0000	ALL	00	00	N/A	0	$0.00	$0.00	N/A	N/a	

2.5a Minor Facilities Requests

Rank	Location	SP	M	Time Frame	Building	Room Number	Est. Cost	Description
0001	Santa Rosa	05	07	Urgent	Bussman Hall	1494	$0.00	Air condition/circulation for office

2.5b Analysis of Existing Facilities

The STEM Dean's Office and Bussman Service Center are located in the southwest corner of Bussman Hall. The facilities are adequate to support the academic and CTE programs in STEM.

The only minor facilities request at this time is the following:

- The Dean's Office (1494) does not seem to receive any air conditioning or cool air through the central ventilation system. A maintenance ticket will be submitted with minimal cost expected for the District.

With the upcoming design of the Bech + Shuhaw Replacement Building, it is highly suggested that the Dean's Office be located near the bulk of faculty and staff offices to facilitate communication and collaboration. Preferably, a large conference room will permit collaborative meetings between the STEM Dean and individual departments.

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	Santa Rosa	04	07	Pre-design of Bech + Shuhaw Replacement Building with lab planning firm.	Lab planning firm RFD was selected by a shared governance committee to perform pre-programming for the Bech + Shuhaw Replacement Building. Four sets of two-day workshops (in collaboration with Petaluma) were conducted with multiple departments to develop new lab designs and discuss program needs.	Spring 2017	All planning workshops were completed by May 2017. Final design documents are currently being generated and will be submitted for admin, faculty, and staff approval in Fall 2017 by RFD.
0002	ALL	04	07	Develop plan for Planetarium redesign and new projection system.	Discuss design of new projector (analog v. hybrid v. digital) and select model and floor design for new projection capabilities. Discuss and consider new shows and goals.	Spring 2017 thru Spring 2019	Pending final Measure H funding, final selection of a projection system will take place in Fall 2017. A steering committee will be formed to help oversee the projector selection and design process. Professional experts will be hired to consult during the design and construction process.
0003	ALL	04	01	Design Baker Hall Improvements	Life Sciences faculty and staff will meet with a lab planning firm regarding innovations to meet near-term needs of Baker Hall.	Spring 2017 & ongoing	The Life Sciences Department has met with RFD four times to discuss renovations to spaces 1850 and 1805. Final design documents are being generated for final approval in Fall 2017. Funding needs to still be identified from Measure H monies.
0004	ALL	04	01	Collaborate on designing new Petaluma Science Wing	Collaborate with Petaluma to design new chemistry lab and stockroom as part of Measure H-funded project. Unify various STEM Cluster construction projects across both campuses.	Spring 2017 & ongoing	Petaluma participated in all lab planning activities and final documents from RFD are currently pending -- to be delivered at the start of Fall semester.
0005	ALL	01	01	Submit NSF S-STEM Grant Application	Submit an NSF S-STEM grant proposal for $650,000.	Spring 2017	At the end of March 2017, an NSF grant proposal was submitted for the NSF S-STEM program, which provides scholarships to students facing financial barriers. The proposal was prepared by faculty in STEM in conjunction with the Office of Strategic Planning and Instruction.
0006	ALL	07	07	Complete SEIU-identified STNC Conversions	Convert SEIU identified STNC positions to provide appropriate support for various STEM programs.	Spring 2017	Planetarium AAII position was coverted, with the PET CHEM SLIA position currently in process (pending funding). Two STNC SLIA positions were also converted to a permanent SLIA utilizing Strong Workforce funding.
0007	ALL	08	01	Facilitate STEM Cluster Enrollment Growth	Offer enough courses to meet student demand for STEM courses	Ongoing	The lack of faculty is a major barrier to offering additional STEM course sections. Departments assembled adjunct hiring committees each semester, as well as correspond more frequently with HR to monitor the size of applicant pools. For FT hiring campaigns, all local CSU, UC and CC

							STEM deans were contacted to spread the news of open SRJC faculty positions. STEM also participated in the adjunct hiring fair in October 2016.
0008	ALL	08	01	Reaffirm Pepperwood Preserve Partnership	Develop additional student internships at Pepperwood Preserve	Spring 2017 & Ongoing	A meeting between Pepperwood Preserve officials and SRJC STEM faculty was held in February 2017 to discuss potential joint research projects and collaborations. This meeting lays the ground work for any future research ideas or joint grant proposals.
0009	ALL	01	04	Offer UC Davis C-STEM Training Workshop	Utilize robotics and coding to help teach mathematics	Spring 2017	The UC Davis C-STEM Center offered a one-day workshop in April 2017 to SRJC faculty and local high school teachers to demonstrate how coding and robotics can be used to augment the teaching of mathematics. Ten faculty from STEM and Computer Science participated along with a local high school representative. One CS faculty member will be traveling to UC Davis to attend a more in-depth training in order to bring resources back to campus and the classroom.

6.2a Program/Unit Conclusions

Location	Program/Unit Conclusions
ALL	For analyzing course enrollment, data from Datamine and EMS were accessed throughout the academic year. Usage data for the Math Lab was generated through SIS. Factors utilized in enrollment management included varying course offerings over day versus evening versus weekend. Additionally, student survey data was solicited in order to determine work schedules for planning CTE courses. Courses remain heavily impacted with fill rates exceeding 100%. Hiring both full-time and adjunct faculty still remain a challenge, making it difficult to offer enough courses to meeting demand. Math will be offering a hybrid section of Statistics to explore this new mode of content delivery and meeting student need.
ALL	Through anecdotes, faculty have seen the impact research internships have on students. Students report back to departments about the wonderful and eye-opening experience internships offer. Being able to institutionalize and support these opportunities is warranted. Further success tracking can be explored with OIR.

6.2b PRPP Editor Feedback - Optional

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6.3a Annual Unit Plan

Rank	Location	SP	M	Goal	Objective	Time Frame	Resources Required
0001	ALL	04	01	Oversee architectural planning for Bech + Shuhaw Replacement Building	Hire architectural firm to oversee construction of Bech + Shuhaw Replacement Building. Oversee process by managing faculty and staff involvement.	Fall 2017; Spring 2018; onward	Funding to support faculty participation and input (stipends or release time). A faculty/staff steering committee will be instituted which will do much of the heavy lifting.
0002	ALL	04	01	Oversee modernization of Planetarium	Form steering committee to help select new projection system and discuss new design. Develop new shows, schedules, marketing, and role for remodeled Planetarium in the community.	Fall 2017; Spring 2018	Funding to support faculty participation (stipends or release time). Funding to hire professional experts and consultants (Measure H).
0003	ALL	04	01	Oversee remodel of Baker Hall 1805 & 1850	Finalize design documents for proposed remodel and identify Measure H funding allocation.	Fall 2017	Measure H Funding ($500K to $1M)
0004	ALL	04	01	Complete renovation and develop programming for Maker Space	Showcase remodeled space and complete installation of equipment (e.g., laser cutters, 3D printers). Develop program and schedule to increase community and student involvement. Develop space as a resource for instruction and research.	Fall 2017	Funding for SLIA to maintain space and keep operational beyond course hours.
0005	ALL	08	01	Relaunch the Solar Photovoltatic Program	Offer Solar Photovoltaic program courses again; identify classroom space for hardware and panels; utilize Sonoma Clean Power funding; hire new adjunct faculty and potential coordinator.	Fall 2017	Funding to hire professional expert and program coordinator
0006	ALL	08	01	Relaunch the Construction Management Program	Offer Construction Management program courses again; hire new adjunct faculty and potential coordinator.	Fall 2017	Funding to hire professional expert and program coordinator
0007	ALL	08	01	Increase STEM course enrollment to meet student demand	Hire addition adjunct faculty in all STEM Departments, which are heavily impacted.	Fall 2017	
0008	ALL	02	01	Institutionalize existing STEM student research internships.	Organize and institutionalize STEM student research internship program in the STEM Dean's Office; identify financial resources for students; identify new community partners; institutionalize application process for students.	Fall 2017 & Spring 2018	Funding for internship coordinator to assist with organizing programs and facilitating communication and tracking with external research groups.
0009	ALL	07	01	Pursue additional grant funding opportunities	Work with Office of Strategic Planning to identify applicable grants.	Fall 2017 & Spring 2018	
0010	ALL	07	01	Implement new STEM fund raising opportunities	Work with Foundation and faculty to identify potential fund raising ideas to support students (e.g., STEM Gala similar to Academy of Science).	Fall 2017 & Spring 2018	Donations from local companies; assistance with marketing from Public Relations; contacts with potential donors from Foundation