Santa Rosa Junior College
Program Resource Planning Process

Civil and Surveying Technology 2015

1.1a Mission

1.1
The mission of the Civil EngineeringTechnology, Surveying Technology and Geospatial Technology programs is to increase the knowledge, improve the skills and to prepare students for a career in the civil engineering, surveying and mapping professions. The program accepts its responsibility in the following areas:

- Provide a superior program for students interested in the fields of civil engineering, surveying and geospatial technology.
- Recruit, secure and retain qualified instructors to educate our students.
- Maintain a high level of instructional quality and integrity by fostering an atmosphere for student success.
- Provide superior instructional support services such as well-maintained facilities, state of the art technology, equipment and curriculum to meet the learning objectives of the program.
- Challenge students to achieve to the maximum of their abilities, making sure each understands their responsibility for their own success and encouraging life long learning.
- Manage the resources of the program, anticipating future needs, and forcefully advocating for necessary resources to meet those needs.
- Provide counseling, tutorial and communication to assist the student in their educational and occupational goals.

1.1b Mission Alignment

1.2

The District's mission is: SRJC passionately cultivates learning through the creative, intellectual, physical, social, emotional, aesthetic and ethical development of our diverse community. Since 1965 the Civil Engineering, Surveying and Geospatial Technology Programs (formerly known as Drafting, Industrial, Engineering, Civil Engineering, Civil & SurveyingTechnology or Geographic Information Systems) has trained and educated students from the greater bay area for careers in the civil engineering, land surveying and mapping professions. The program continues to supply local firms and agencies with qualified technicians in these disciplines.

The Program Missions are in alignment with the District's mission and institutional goals and initiatives. For example, the Civil Engineering Tech. and Surveying programs are in the process of re-engineering to reflect changed community needs. All programs participate in the assessment of Student Learning Objectives.

1.1c Description

The Civil Engineering, Surveying and Geospatial Technology program currently offers three certificate and degree options. At this time all three programs are two-year, 4 semester offerings that prepare students for technical positions in the civil engineering, surveying and mapping professions. The program sequence typically begins in the fall semester, however, a student may choose to begin the program by enrolling in required courses offered in the spring and summer semesters.

Currently the first year of the program consists of core courses dedicated to equipping students with the basic skills necessary for successful job performance. Prior to the second year of the program, students choose an emphasis–either Civil Engineering, Land Surveying or Geospatial technology. Courses in this half of the program allow students to specialize in a particular discipline within the Civil Engineering, Surveying or Geospatial Technology fields. The revitalization of these programs is underway during the 2014-15 academic year, and it is not known at this time whether the existing pattern will continue.

All three programs are endorsed and guided by the Civil Engineering, Surveying and Geospatial Technology Program Advisory Committee, and that is not expected to change since they are involved with the revision effort. The committee includes prominent local representatives from public agencies, private industry, the American Society of Civil Engineers, the California Land Surveyor's Association, American Council of Engineering Companies, North Coast Builders Exchange, Association of General Contractors and Engineering Contractor's Association.

At the present time students may earn an Associate of Science degree and/or a Certificate of Achievement in Civil Engineering Technology, Surveying Technology or Geospatial Technology. That is not expected to change although the content of the revised programs may dictate changes in this area. The curriculum is organized so that students may meet the requirements for an Associate of Science degree in four semesters. Students who do not desire to complete all the requirements for an Associate of Science degree may earn a Certificate of Achievement upon fulfillment of all the certificate requirements with a grade of "C" or better.

1.1d Hours of Office Operation and Service by Location

The Civil Engineering, Surveying and Geospatial Technology program offers courses in Civil Engineering, Surveying, and Geospatial Technology. Program traditionally begins in the Fall semester, however students may wish to take courses in the preceding summer session. We offer courses day, evening and even some weekends. Because of limited number of students, we offer a comprehensive program that follows a strict sequence of courses. Each course builds on the previous course and therefore prerequisites follow an intuitive pattern. There are only a few “stand alone” courses without prerequisites.

90% of our courses have a lab component. Most of the lab components are computer based. The department has two 24-seat computer labs available for the student 6 days a week from 7:30 a.m. to 10:00 p.m. on the SR campus. We also have a 30 seat lab available to students on the Petaluam campus. This lab however, is not avaialble to students outside of their scheduled class time. There are some older PC's available in

the two electronics labs and the Agriculture lab. We also share a service center to assist faculty, staff and students.

There was one full time faculty member until 2012 when he moved to administration, and 7 adjunct faculty members who rotate teaching various courses currently staff the discipline. We have an addtional 5 adjuncts in our pool to offer teaching assignments when the need arises. We offer all of our classes at the Santa Rosa campus and just the geospatial courses at the Petaluma Campus.

The sequence of courses is set up to allow the students a successful education with a limited number of sacrifices to their daily routine. We may need to offer more evening and possibly weekend courses to meet expanding needs. Instruction of courses makes this less practical of an option. We are currently researching distance learning, online or hybrid courses to allow another option to the lecture portion of the curriculum.

1.2 Program/Unit Context and Environmental Scan

The labor market in the past few years has been dismal - due to the recession and the major impact it has had on the construction industry, which the disciplines in these program areas serve. Enrollments declined during this period and the program suffered from lack of a full-time faculty member to assess needed changes and provide leadership. In addition there is some evidence that, at least in the civil engineering technology area, there are fewer jobs for technicians as increased use of advanced technology is replacing some work formerly done by technicians.

2014-15 will see a complete review of curriculum and re-examination of content and sequences within programs to respond to changing industry needs. Keeping up with equipment and technological advances will be a great challenge and expensive endeavor. These programs rely heavily on CTEA funding to meet technology needs. If this funding is reduced or eliminated, it will be difficult to keep up with the industry standards.

It is becoming more aparent that a new laboratory facility is necessary to provide the education for our students. We along with Agriculture, Viticulture, Natural Resouce Management, Horticulture, Interior Design, Engineering, Architecture, Digital Media and Construction share many of the same software, hardware and equipment. A collaboration between all these programs and departments will allow for much needed educational facilities.

Staff and professional development are very important. Faculty need to continue to attend conferences and seminars to keep connected to the industries we serve and the trends occuring there. The costs associated with education and training of our faculty and staff is difficult when there are virtually no funds allocated to do so. We pride ourselves, as instructors, on being knowledgeable, highly trained and professional in our chosen disciplines. Our practical and professional experience allows us to deliver an exceptional "package" for students looking for a career in the civil engineering, surveying and mapping professions.

Student services in discipline specific tutorial, basic skills, counseling, assessment and internships is vital to their success. The ability to communicate effectively with an ever changing student population is essential. We looking forward to the future and the challenges it may bring.

2.1a Budget Needs

Operational monies for office, phone, copies, and business materials are satisfactory. This money is effectively and efficiently used by the program. We make do with what we get. In the past few years we have implemented electronic distribution of course materials to students, resulting in a reduction of cost to the District.

As for staff development, training and equipment, which is essential for all CTE instructors and programs, budgeted monies are non-existent. Faculty and staff are constantly paying out of pocket for essential education and development. As with all occupational programs, instructors maintaining an acceptable level of expertise is vital to the strength, success and recruitment of a program. Our instructors maintain their currency in their areas of expertise at their own expense and effort.

Equipment and some of the training has been awarded through grants from CTEA. Maintenance and repair of equipment has not been performed in over 16 years. We must calibrate, clean and maintain our scientific equipment in order to instruct with properly operating tools. It is apparent that we are using equipment that is woefully tired and in need of servicing and/or replacement from the results we are seeing in classes.

Outside funding from CTEA, grants, foundation funds and local donations allow us to offset a minor amount of expenditures. Without these funds we would have a difficult time functioning at the level of expertise expected by the community, industry, students and faculty.

According to the core data: expenditures are down for these programs form 2011-12, approximately 60% in the 4000 and 5000 budget codes. Total expenditures are down 81% (primarily due to the vacant full-time faculty position) and currently account for 0.04% of the District total. Salary and benefits is 0.15% of the District total, while the non-personnel costs are only .0.02%.

2.1b Budget Requests

Rank	Location	SP	M	Amount	Brief Rationale
0001	ALL	02	01	$8,000.00	Faculty training and professioanl development
0002	ALL	04	07	$4,000.00	Equipment Maintenance and Repair

2.2a Current Classifed Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Lab Assistant II	40.00	10.00	Assistant to the coordinator of department PC labs - this is a position for ALL programs in the department

2.2b Current Management/Confidential Positions

Position	Hr/Wk	Mo/Yr	Job Duties
NA	0.00	0.00	

2.2c Current STNC/Student Worker Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Student Lab Assistants	10.00	12.00	Currenlty there are no student lab assistants - but the programs need this assistance in the computer labs for the three programs in THIS part of the department for approximately 15 hours per week

2.2d Adequacy and Effectiveness of Staffing

The program shares all the classified, management, STNC and, when we have them, student workers with the 12 different programs in the department.

Student lab assistants are not always approved, which puts a burden on all in the department, and service center support are minimal - barely meeting the needs of the departments and programs.

Current classified and management employees are being utilized beyond the fullest. Consideration should be given to increasing the workload of the administrative assistant to 40 hours per week.

2.2e Classified, STNC, Management Staffing Requests

Rank	Location	SP	M	Current Title	Proposed Title	Type
0001	Santa Rosa	01	01		Student lab assistants CESGT ONLY	Classified

2.3a Current Contract Faculty Positions

Position	Description
none	

2.3b Full-Time and Part-Time Ratios

Discipline	FTEF Reg	% Reg Load	FTEF Adj	% Adj Load	Description
CET	0.0000	0.0000	0.5600	100.0000	This includes both the Santa Rosa and Petaluma campuses
GIS	0.0000	0.0000	1.3300	100.0000	This includes both Santa Rosa and Petaluma campuses
SURV	0.0000	0.0000	0.2700	100.0000	This includes Surveying technology courses for F2010 and S2011

2.3c Faculty Within Retirement Range

There are currently no full time faculty in this discipline. 3 adjunct faculty members have retired from full time positions outside the district and teach part time. They may decide to retire from part time teaching in the next 3 years.

Impact of retiring full-time faculty:
Overall for the Department:

1. 8: 2011-12: there were 13 separate programs and 8 full-time faculty - one from these faculty left to become an administrator
2. 7: 2012/13 there were 13 separate programs and 7 full-time faculty members associated with this department, down one from the previous year due to a faculty member's migration to adminstration.
3. 4: 2014/15 The Physics program move to Chemistry reducing this by 3 full-time faculty member and one program leaving 12 separate programs. The department experienced difficulty in completing adjunct evaluations, PRPPs and curriculum review.
4. 3: As of December 2014 another faculty member will retire, leaving 3 full-time faculty members (one of which is on a reduced load). Still 12 progarms... still the same amount of work - just fewer people to do it, likely less will be done.
5. 2: In Dec. 2015 another faculty member plans to retire, and the full-time Engineering facuty member will be on sabbatical leave in Spring 2016. Still 12 programs...
6. 1: In May 2016 another full-time faculty member plans to retire, leaving one full-time faculty member. Still 12 programs...
7. One full-time faculty member for the entire department. It is unlikely that any college work will be done...

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

It is very difficult to recruit in these disciplines - it is difficult to get instructors because of industry workload, part time faculty compensation and class room workload. When the economy is good, it is especially difficult to find instructors. When the economy is down, there are more professionals available as instructors, but usually for a short period of time.

Recent recruitments have added adjuncts to both the Civil Engineering Technology and Surveying Technology programs. The program presently has a need to fill adjunct faculty pools in all three disciplines and a recruitment is scheduled for Fall 2015.

It is essential to replace the full-time position vacated by Jerry Miller with a more general Civil Engineering Technologies/Construction ManagementTechnology position. The rationale below is from the Construction Management Technology PRPP - prepared by the Department Chair:

Background: The Applied Technology Department merged with the Engineering/Physics Department in 2011, and Electronics before that. The Physics program moved to the Chemistry department effective Fall 2014. The current configuration of the Department consists of 4 full-time faculty members and over 40

adjunct instructors teaching 12 different programs. There is one full-time faculty coordinator for the Design/Drafting Tech courses and Animation program (retiring Dec. 2015), one for the Engineering program, one for the Electronics and Solar Photovoltaics program (retired Dec. 2014), while the Architecture and Construction Management programs share a full-time (albeit reduced load) faculty coordinator (retiring May 2016).

Neither of the water programs has a full-time faculty coordinator. Nor do the Civil Engineering Tech., Surveying Tech. and Geo-Spatial Tech. programs. Since the full-time coordinator of the Electronics and Solar Photovoltaics program is retired Dec. 2014 - that will add two more programs without a full-time faculty coordinator. The lack of full-time leadership has had a negative impact on these programs. However wonderful the adjunct faculty are (and the ones in this department are outstanding) they cannot be expected to understand how the system works or to participate fully in the life of the institution, or complete the work of the college (evaluations, planning, curriculum, etc...). They do, however, provide a needed contact for students in their programs.

But it gets worse... This department is experiencing exigent circumstances due to loss of faculty, since one former department member has become a Dean, one full-time faculty member will retire in December 2014, one in December 2015 and one in May 2016. Leaving only one full-time faculty member. And, only one full-time faculty member will be teaching in Spring 2016 because the continuing full-time faculty member will be on sabbatical. There have been no new full-time hires in the department since 1993 (other than in the Physics program which is no longer part of our department).

A department cannot function with 12 programs, 50+ adjunct faculty and one full-time faculty member, or practically speaking even with 2 or 3. The department already is experiencing the impact, and extreme stress, of fewer people to do the work of the college.

Vision for the future:
The original Applied Technology department was the "construction industry" department, home to most of the SRJC programs related to design, building and infrastructure, now including Engineering, Architecture, Construction Management, Civil Engineering Tech., Drafting Tech. (CADD), Geospatial Tech., Solar Photovoltaics, Surveying Tech., Water Utility OperationsTech. and Wasterwater Treatment Operations Tech. (Related programs in other departments include Interior Design and Landscape Design - which we would welcome). The construction industry is a vital part of Sonoma County's economy a reconfigured department with adequate full-time faculty can address industry needs. Under this model the Electronic Tech program may be better suited in the Trade Tech. department.

The department, however, cannot quite agree on a name. Architecture, Engineering and Construction might very well be the appropriate name for our department, as we move forward, or possibly Engineering, Architecture and the Built Environment, or perhaps Engineering, Architecture and Related Technologies. We need help in reaching a decision...

Needed Full-time Positions:
One position needs to be filled/replaced ASAP. Three other full-time positions will be vacant in the very near future.

With the implementation of a Construction Management Transfer program, the college could be best served by a new "umbrella" position of a **"Engineering Technologies/Construction Management"** instructor who is qualified to teach in one or more of the following fields: construction management tech., civil engineering tech., surveying tech., geospatial tech., solar photovoltaics tech., water utilities operations tech. or wastewater operations tech..

This "umbrella" position can oversee and coordinate the related disciplines identified above. Note: once the construction managment program is implemented there will sufficient courses for a faculty member to teach in that discipline. Likewise a sufficient load exists in combination of the other disciplines. The disciplines the faculty member is qualified to teach will determine the final assignment. Essentially this position can be considered a very delayed replacement, or as a consolidation of adjunct assignments.

Position for next year: A second "umbrella" position for "**Architecture/Drafting Technology"** needs to be filled 2015-16 or 2016-17 at the latest. This position will coordinate the Architecture Transfer program, Drafting/Design offerings, the 3D Modeling and Animation certificate and major (assuming it remains in the department and is not moved to Computer Studies), and possibly an array of architecture-oriented programs that currently exist within other departments (Interior Design, Landscape Design), if they are moved to this department. This is ONE replacement position TWO current full-time faculty memebrs: drafting technology AND architecture - both of whom are planning to retire by Dec. 2015 and May 2016 respectively. An architect should occupy this position in order to maintain articulation relationships with transfer institutions. Either program can sustain a full-time load, although an architect faculty member would likely be qualified to teach in both areas.

New Duties Engineering: The electronics program could be coordinated by the coordinator of the Engineering program until the Electronics program revitalization process is completed, then a full-time faculty member will be needed in this area. Or until the program is moved to Trade Tech. if that is deemed approppriate.

The net result of this reconfiguration would be that four full-time faculty positions are being replaced with two "umbrella" positions currently with one more to be added later, and a more cohesive and functional department would emerge. As programs grow and consolidate within the department additional position can be sought - for example computer animation, interior design or landscape architecture may emerge as a viable independent program with needs significantly different from the other programs in the department.

Impact release time etc:
Lack of full-time faculty member for program coordination in the Civil Engineering Tech., Surveying Tech, and Geospatioal Tech. area as well as for both of the water programs and soon in the Electronics area, is impacting these requests. There is too much for a part-time facuty member to do without functional knowledge of the institution or adequate compensation.

2.3e Faculty Staffing Requests

Rank	Location	SP	M	Discipline	SLO Assessment Rationale
0001	ALL	02	07	Engineering Technologies/Construction Management	Needed for the general maintenance of excellence in the programs
0003	ALL	02	06	Architecture/Drafting Technology	Needed for the general maintenance of excellence in the programs

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

Instructional equipment is the most essential aspect of this program. All of our equipment is in dire need of maintenance, repair and servicing. In some cases our equipment is not meeting the needs of the faculty and students. We must take extreme measures to work around the inadequacies. We also need training on new products to remain current in the industry.

Existing Equipment being used by the programs:
8 Topcon Total Stations (5 Sokkia Total Stations are available but are virtually inoperable).
8 Auto Levels
8 ProMark 2 Static GPS receivers
9 Topcon HiPer Ga GPS Receivers (3 Base & 6 Rovers)
8 Trimble GeoXH Mapping Grade GPS Receivers
12 Topcon FC-250 Data collectors
6 Topcon FC-100 Data Collectors.
Assorted steel tapes, pocket tapes, compasses, rods, prisms, tripods and walkie talkies.

We need to generate revenue by selling off old equipment i.e., 8 Theodolites (4 Wild T-16, 4 Wild T-1A) & Sokkia Total Stations (T-1100 & T-1600) or trading in old outdated technology/equipment on new technology/equipment. Funding sources are difficult to come by and this may be a working solution.

Equipment needed in the next three to five years to effectively and efficiently instruct students in new technology:
24 radio communication systems
8 digital levels and rods
Survey grade GPS receivers (1 base and 8 rovers with controllers)
3-D Laser Scanner and software

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	walkie talkies	24	$25.00	$600.00	Jerry Miller	1775 Shuhaw Hall	Jerry Miller
0002	ALL	00	00	digital Levels	8	$4,500.00	$36,000.00	Jerry Miller	1775 Shuhaw Hall	Jerry Miller
0003	ALL	00	00	RTK GPS system - 1 base, 8 rovers w/controllers	1	$154,400.00	$154,400.00	Jerry Miller	1775 Shuhaw Hall	Jerry Miller
0004	ALL	00	00	3D Laser Scanner and software	1	$250,000.00	$250,000.00	Jerry Miller	1775 Shuhaw Hall	Jerry Miller

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

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

2.5a Minor Facilities Requests

Rank	Location	SP	M	Time Frame	Building	Room Number	Est. Cost	Description

2.5b Analysis of Existing Facilities

There is a growing need for modern lab faciltites to adequately serve the students of these, and other Applied Technology programs. Currenlty the labs are adequate.

3.1 Develop Financial Resources

NA

3.2 Serve our Diverse Communities

We recruit faculty primarily through industry contacts, advisory committee members, and professional organizations. The faculty is a direct reflection of the industry.

We are seeing an increase in our female, Hispanic and Asian populations. We continue to be sensitive to the diversity and population trends and discuss recruitment and cultural diversity at program, department, cluster and advisory committee meetings.

3.3 Cultivate a Healthy Organization

We encourage our classified staff to go to all the training they feel necessary to perform the duties of their job. Likewise adjunct faculty are encouraged to apply for CTEA funding to support professsional development.

3.4 Safety and Emergency Preparedness

BUILDING AND AREA SAFETY COORDINATORS						
Bldg #/Name	**BSC Area**	**ASC Area**	**Department**	**Name**	**Responsible Area**	**Phone**
Applied Technology, Engineering & Physics **- Bussman Hall**						
Bussman Hall #1400				To Be Decided	Bussman Hall	Employee Phone #
Bussman Hall #1400		Bussman South Offices	Bussman Service Center	Vacant	Bussman Hall rm. 1471-1478	707-524-1535
Bussman Hall #1400		Bussman Classrooms	STEM Dean (Asst.)	Lynn Dolce	Bussman Hall rm. 1447 - 1454	707-527-4400
Applied Technology, Engineering & Physics **- Shuhaw Hall**						
Shuhaw Hall #1700		Shuhaw North Wings	Applied Technology, Engineering & Physics (ATEP	Greg Davis	Shuhaw Hall rm. 1751 - 1799	707-527-4750

3.5 Establish a Culture of Sustainability

Sustainable practices are addressed in our curriculum, and most faculty have migrated to electronic communication of class materials.

4.1a Course Student Learning Outcomes Assessment

Student Learning Outcomes have been reviewed, updated and approved for all courses in the three certificate/majors within the program.

We have only assessed two courses in our program CEST 85 CAD for Civil Engineers and ApTech 90A Applied Mathematics. Addtional course are identified for assessment this year. It is difficult to expect adjunct faculty to complete these on their own, without leadership of discipline expertise and adequate program coordination.

We are currently setting up a schedule to assess all courses within the three disciplines.

4.1b Program Student Learning Outcomes Assessment

All three programs have course and program SLO's reviewed and approved.

We are in the process of developing a schedule to assess our course and program SLO's

4.1c Student Learning Outcomes Reporting

Type	Name	Student Assessment Implemented	Assessment Results Analyzed	Change Implemented
Course	CEST 192 Non-Tech skills	N/A	N/A	N/A
Course	CEST 51 Civil Draft. Tech.	N/A	N/A	N/A
Course	CEST 63 Subd Planning	N/A	N/A	N/A
Course	CEST 64 Publ Wks Insp Tst	N/A	N/A	N/A
Course	CEST 65 Estimating and Pln Rdg	N/A	N/A	N/A
Course	CEST 81 Engr Const Dsgn	N/A	N/A	N/A
Course	CEST 85 CAD for Civil Engr	Spring 2012	Spring 2011	N/A
Course	GIS 40 Intro to GIS	N/A	N/A	N/A
Course	GIS 51 Intrm GIS	N/A	N/A	N/A
Course	GIS 52 Adv GIS	N/A	N/A	N/A
Course	GIS 53 Cartography	N/A	N/A	N/A
Course	GIS 54 Data Acquisition	N/A	N/A	N/A
Course	GIS 55 GIS Earth Sci.	N/A	N/A	N/A
Course	GIS 56 GIS Land Planning	N/A	N/A	N/A
Course	SURV 50 Intro to Plane Surv	N/A	N/A	N/A
Course	SURV 51 Plane Surv Apps	N/A	N/A	N/A
Course	SURV 53 Route Surv and Dsgn	N/A	N/A	N/A
Course	SURV 56 Intro to GPS	N/A	N/A	N/A

Course	SURV 57 Adv GPS	N/A	N/A	N/A
Course	SURV 58 Evid and Proc	N/A	N/A	N/A
Course	SURV 59 Bndry Cntrl	N/A	N/A	N/A

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
AP Tech 45 Man Drftg	X	X	X	X	X		X	X	X	X	X	X				X
APTECH 46 Intro to CAD	X	X	X	X	X		X	X	X	X	X	X				X
APTECH 90A & B Ap Math	X		X	X	X		X	X	X	X	X	X				X
CEST 192 Non-Techni			X	X	X	X		X	X			X	X	X	X	X
CEST 51 Civil Drafti	X	X	X	X	X		X	X		X	X	X				X
CEST 63 Subdivision	X	X	X	X	X		X	X	X		X	X				X
CEST 64 Public Works Inspection and Test	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
CEST 65 Public Works Plan Interp and Est	X	X	X	X	X		X	X	X	X	X	X				X
CEST 81 Engineering	X	X			X		X	X		X	X	X				X
CEST 85 CAD for Civi	X	X			X		X	X		X	X					X
GIS 40 Intro to GIS	X	X	X	X	X		X	X	X	X	X	X	X		X	X
GIS 51 Intrm GIS	X	X	X	X	X		X	X	X	X	X	X	X			X
GIS 52 Adv GIS	X	X	X	X	X		X	X	X	X	X	X	X			X
GIS 53 Cartography	X	X	X	X	X		X	X	X	X	X	X	X			X
GIS 54 Data Acq	X	X	X	X	X		X	X	X	X	X	X	X			X
GIS 55 GIS Ap Earth Sci	X	X	X	X	X		X	X	X	X	X	X	X			X
GIS 56 Land Plng GIS	X	X	X	X	X		X	X	X	X	X	X	X			X
SURV 50 Intro to Pla	X	X	X	X	X		X	X	X	X	X					X
SURV 51 Plane Survey	X	X	X	X	X		X	X	X	X	X					X
SURV 53 Route Survey	X	X	X	X	X		X	X	X	X	X					X
SURV 56 Intro to GPS	X	X	X	X	X		X	X	X	X	X					X
SURV 57 Adv GPS	X	X	X	X	X		X	X	X	X	X	X	X			X
SURV 58 Evid & Proc	X		X	X	X		X	X	X	X	X	X				X
SURV 59 Boundary Con	X		X	X	X		X	X	X	X	X	X				X

4.2b Narrative (Optional)

5.0 Performance Measures

The civil engineering, surveying and geospatial technology program has served the county and greater bay area for over 60 years. Virtually every firm and local agency within our disciplines has at least one employee from our graduates. Some of these firms and local agencies have staffs consisting of 100% graduates for our program.

The downturn in the economy has hit these programs very hard and student enrollments have drastically fallen. The job market indicators show that recovery is not too far off and our numbers will grow and return to meet the needs of the profession. This has become the perfect time to re-examine all the programs in this area to determine the changing needs of industry and how these programs can best meet them. It is expected that major changes will be made as a result of this process scheduled to be completed during the 2014-15 academic year.

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

Program sequences are set up to allow the student to complete in four semesters and achieve an Associates Degree and/or a Certificate of Achievement. Typically courses are offered at least once per year. However, the recent drop in enrollments required a re-calibration of the program and that typical pattern is not able to be honored with inadequate student enrollment. As a result the programs are under review and are being re-vitalized to respond to changing industry needs.

Facilities and equipment sometimes limit the number of students enrolled into a class. In the past, additional sections have been added to accommodate students in the program. Resizing courses and schedules has shown an increase in student success.

There continues to be a demand for the “latest and greatest” in technology. We continue to offer the courses that meet the needs of the community and profession. The expansion of the program to included geospatial technology is just one of the way we have accomplished this. We relay very heavily on the advisory committee to guide us in our decision-making.

We continue to concentrate our offering at the Santa Rosa campus. We will continue to look for the best available locations to offer courses as well as times and days. We are looking into offering some of our courses on-line and via the internet with pod casting. Since there is a lab component associated with the majority of the courses it is difficult to accommodate on-line and non-traditional instruction. We are looking into the distance learning or hybridized lecture of our courses.

5.2a Enrollment Efficiency

This data does not show any GIS courses at the Santa Rosa or Petaluma campuses

ALL Locations (Combined totals from ALL locations in the District)

Discipline	X2010	F2010	S2011	X2011	F2011	S2012	X2012	F2012	S2013	X2013	F2013	S2014
Civil & Surveying Technology	0.0%	102.4%	91.7%	0.0%	64.5%	53.1%	0.0%	0.0%	0.0%	0.0%	71.1%	
Surveying	0.0%	64.3%	48.8%	0.0%	56.7%	53.6%	0.0%	87.5%	50.0%	0.0%	48.1%	
ALL Disciplines	**0.0%**	**85.6%**	**74.5%**	**0.0%**	**61.0%**	**53.3%**	**0.0%**	**87.5%**	**50.0%**	**0.0%**	**63.7%**	

As can be seen, enrollment efficiencies reflect the downward enrollment trends... In addition since beginning classes are in the fall semester, enrollments are generally highrer in the fall and less in the spring as some students do not contiue their education. Revitalization of the program will address this issue.

5.2b Average Class Size

This data does not show any GIS courses at the Santa Rosa or Petaluma campuses

ALL Locations (Combined totals from ALL locations in the District)

Discipline	X2010	F2010	S2011	X2011	F2011	S2012	X2012	F2012	S2013	X2013	F2013	S2014
Civil & Surveying Technology	0.0	31.8	22.0	0.0	20.0	12.8	0.0	0.0	0.0	0.0	20.3	
Surveying	0.0	15.8	13.0	0.0	14.8	15.0	0.0	21.0	12.0	0.0	13.0	
ALL Disciplines	**0.0**	**23.8**	**18.6**	**0.0**	**17.4**	**13.5**	**0.0**	**21.0**	**12.0**	**0.0**	**17.8**	

The trend of decreased enrollments is reflected in this data as well. Again successful re-vitalization of these programs will address this issue.

5.3 Instructional Productivity

This data does not show any GIS courses at the Santa Rosa or Petaluma campuses

ALL Locations (Combined totals from ALL locations in the District)

Civil & Surveying Technology		X2010	F2010	S2011	X2011	F2011	S2012	X2012	F2012	S2013	X2013	F2013	S2014
	FTES	0.23	13.49	16.43	0.00	9.43	7.07	0.00	0.67	0.87	0.00	8.99	
	FTEF	0.00	0.76	1.20	0.00	0.76	0.93	0.00	0.00	0.00	0.00	0.89	
	Ratio	**0.00**	**17.65**	**13.69**	**0.00**	**12.34**	**7.58**	**0.00**	**0.00**	**0.00**	**0.00**	**10.13**	

Surveying		X2010	F2010	S2011	X2011	F2011	S2012	X2012	F2012	S2013	X2013	F2013	S2014
	FTES	0.00	10.80	6.59	0.00	10.37	4.28	0.00	4.34	2.40	0.00	4.31	
	FTEF	0.00	1.00	0.80	0.00	1.13	0.53	0.00	0.33	0.33	0.00	0.60	
	Ratio	**0.00**	**10.80**	**8.24**	**0.00**	**9.15**	**8.03**	**0.00**	**13.02**	**7.20**	**0.00**	**7.18**	

The trend of decreased enrollments is reflected in this data as well. Again successful re-vitalization of these programs will address this issue.

5.4 Curriculum Currency

The 2014-15 academic year will see the review of all curriculum, and the programs they belong to, to verify that it is meeting the needs of the industry. Curriculum changes also reflect the technology changes and advisories from the field, and the advisory committee.

Our software is updated every other year, and hardware every five years.

We are participating in curriculum devlopment and research with other state programs and community colleges with similar programs.

5.5 Successful Program Completion

This is the data from the Fact Book:

Degrees by program:

	7/8	8/9	9/10	10/11	11/12	12/13
0957.3 2017 Civil and Surveying Technology: Land Surveying	6	6	6	4	0	1
0957.3 2016 Civil and Surveying Technology: Civil Engineer	3	2	4	6	0	0
2206 2053 Geospatial Technology	0	0	0	1	0	0

Certificates by Program:

0957.3 3267 Civil and Surveying Tech: Civil Engineering T	na	7	13	11	2	0
0957.3 3268 Civil and Surveying Tech: Land Surveying T	na	9	8	3	2	0
220610 3003 Geospatial Technology T	na	0	0	0	1	0

Receiving a degree requires the completion of general education classes in addition to the discipline courses.

The data for degrees and certificates in the fact book do not reflect the data we keep in our programs files., which reflects more completerrs of certificates....

Approximately 1% transfer to a four-year institution. We also have a very high % of students passing the first of their licensing exams. 75% of those taking the exam pass the first time as compared to the national average 34%.

5.6 Student Success

This data does not show any GIS courses at either campus.

Retention

ALL Locations (Combined totals from ALL locations in the District)

Discipline	X2010	F2010	S2011	X2011	F2011	S2012	X2012	F2012	S2013	X2013	F2013	S2014
Civil & Surveying Technology	100.0%	88.3%	81.9%	0.0%	70.0%	81.3%	0.0%	100.0%	85.7%	0.0%	72.8%	
Surveying	0.0%	68.6%	87.2%	0.0%	74.1%	75.0%	0.0%	87.5%	66.7%	0.0%	73.1%	
Both Disciplines	**100.0%**	**81.1%**	**83.2%**	**0.0%**	**71.7%**	**78.9%**	**0.0%**	**89.5%**	**73.7%**	**0.0%**	**72.9%**	
ALL Disciplines in District	**85.9%**	**76.4%**	**77.3%**	**85.1%**	**77.9%**	**78.6%**	**84.0%**	**77.3%**	**77.3%**	**84.0%**	**76.3%**	

Sucessful Course Completion

ALL Locations (Combined totals from ALL locations in the District)

Discipline	X2010	F2010	S2011	X2011	F2011	S2012	X2012	F2012	S2013	X2013	F2013	S2014
Civil & Surveying Technology	100.0%	85.0%	79.3%	0.0%	70.0%	81.3%	0.0%	100.0%	71.4%	0.0%	69.1%	
Surveying	0.0%	64.3%	79.5%	0.0%	69.0%	75.0%	0.0%	78.1%	66.7%	0.0%	73.1%	
Both Disciplines	**100.0%**	**77.4%**	**79.4%**	**0.0%**	**69.6%**	**78.9%**	**0.0%**	**81.6%**	**68.4%**	**0.0%**	**70.1%**	
ALL Disciplines in District	**82.5%**	**71.5%**	**72.9%**	**81.7%**	**73.2%**	**74.0%**	**80.9%**	**72.6%**	**72.8%**	**80.1%**	**71.8%**	

Grade point Average

ALL Locations (Combined totals from ALL locations in the District)

Discipline	X2010	F2010	S2011	X2011	F2011	S2012	X2012	F2012	S2013	X2013	F2013	S2014
Civil & Surveying Technology	4.00	3.00	2.86	0.00	2.72	3.38	0.00	4.00	3.22	0.00	2.44	
Surveying	0.00	2.20	2.64	0.00	2.55	2.49	0.00	2.73	2.70	0.00	2.38	
Both Disciplines	**4.00**	**2.66**	**2.79**	**0.00**	**2.63**	**3.01**	**0.00**	**2.93**	**2.89**	**0.00**	**2.42**	
ALL Disciplines in District	**2.53**	**2.56**	**2.60**	**2.60**	**2.63**	**2.65**	**2.64**	**2.64**	**2.63**	**2.50**	**2.62**	

5.7 Student Access

Ethnicity: Primarily white

Civil & Surveying Technology	Ethnicity	2010-11	Percent	2011-12	Percent	2012-13	Percent	2013-14	Percent
	White	132	62.3%	64	61.0%	8	66.7%	83	63.8%
	Asian	26	12.3%	5	4.8%	0	0.0%	2	1.5%
	Black	1	0.5%	5	4.8%	1	8.3%	10	7.7%
	Hispanic	20	9.4%	17	16.2%	0	0.0%	27	20.8%
	Native American	11	5.2%	1	1.0%	0	0.0%	0	0.0%

	Pacific Islander	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	Filipino	1	0.5%	2	1.9%	0	0.0%	0	0.0%
	Other Non-White	0	0.0%	0	0.0%	0	0.0%	7	5.4%
	Decline to state	21	9.9%	11	10.5%	3	25.0%	1	0.8%
	ALL Ethnicities	**212**	**100.0%**	**105**	**100.0%**	**12**	**100.0%**	**130**	**100.0%**

Surveying	Ethnicity	2010-11	Percent	2011-12	Percent	2012-13	Percent	2013-14	Percent
	White	68	70.8%	54	72.0%	32	82.1%	21	63.6%
	Asian	3	3.1%	5	6.7%	1	2.6%	0	0.0%
	Black	1	1.0%	0	0.0%	0	0.0%	2	6.1%
	Hispanic	16	16.7%	7	9.3%	3	7.7%	6	18.2%
	Native American	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	Pacific Islander	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	Filipino	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	Other Non-White	0	0.0%	0	0.0%	0	0.0%	2	6.1%
	Decline to state	8	8.3%	9	12.0%	3	7.7%	2	6.1%

GIS	Ethnicity	2010-11	Percent	2011-12	Percent	2012-13	Percent	2013-14	Percent
	White	59	62.1%	47	62.7%	44	68.8%	74	72.5%
	Asian	6	6.3%	3	4.0%	2	3.1%	3	2.9%
	Black	0	0.0%	0	0.0%	2	3.1%	0	0.0%
	Hispanic	8	8.4%	11	14.7%	5	7.8%	18	17.6%
	Native American	3	3.2%	2	2.7%	0	0.0%	3	2.9%
	Pacific Islander	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	Filipino	1	1.1%	0	0.0%	0	0.0%	0	0.0%
	Other Non-White	0	0.0%	0	0.0%	0	0.0%	3	2.9%
	Decline to state	18	18.9%	12	16.0%	11	17.2%	1	1.0%
	ALL Ethnicities	**95**	**100.0%**	**75**	**100.0%**	**64**	**100.0%**	**102**	**100.0%**

Gender: Primarily male

Civil & Surveying Technology	Gender	2010-11	Percent	2011-12	Percent	2012-13	Percent	2013-14	Percent
	Male	135	63.7%	77	73.3%	9	75.0%	120	92.3%
	Female	76	35.8%	22	21.0%	2	16.7%	8	6.2%
	Unknown	1	0.5%	6	5.7%	1	8.3%	2	1.5%
	ALL Genders	**212**	**100.0%**	**105**	**100.0%**	**12**	**100.0%**	**130**	**100.0%**

Surveying	Gender	2010-11	Percent	2011-12	Percent	2012-13	Percent	2013-14	Percent
	Male	77	80.2%	59	78.7%	38	97.4%	31	93.9%
	Female	19	19.8%	16	21.3%	1	2.6%	1	3.0%

	Unknown	0	0.0%	0	0.0%	0	0.0%	1	3.0%
	ALL Genders	**96**	**100.0%**	**75**	**100.0%**	**39**	**100.0%**	**33**	**100.0%**

GIS	Gender	2010-11	Percent	2011-12	Percent	2012-13	Percent	2013-14	Percent
	Male	73	76.8%	50	66.7%	42	65.6%	57	55.9%
	Female	18	18.9%	23	30.7%	18	28.1%	33	32.4%
	Unknown	4	4.2%	2	2.7%	4	6.3%	12	11.8%
	ALL Genders	**95**	**100.0%**	**75**	**100.0%**	**64**	**100.0%**	**102**	**100.0%**

Age: Primarily 21 - 35

Civil & Surveying Technology	Age Range	2010-11	Percent	2011-12	Percent	2012-13	Percent	2013-14	Percent
	0 thru 18	3	1.5%	2	1.9%	0	0.0%	0	0.0%
	19 and 20	6	3.0%	3	2.9%	2	18.2%	9	6.9%
	21 thru 25	33	16.3%	18	17.1%	2	18.2%	33	25.4%
	26 thru 30	43	21.3%	39	37.1%	3	27.3%	18	13.8%
	31 thru 35	23	11.4%	15	14.3%	1	9.1%	14	10.8%
	36 thru 40	18	8.9%	5	4.8%	0	0.0%	9	6.9%
	41 thru 45	26	12.9%	10	9.5%	1	9.1%	14	10.8%
	46 thru 50	27	13.4%	8	7.6%	1	9.1%	22	16.9%
	51 thru 60	23	11.4%	5	4.8%	1	9.1%	11	8.5%
	61 plus	10	5.0%	0	0.0%	1	9.1%	0	0.0%
	ALL Ages	**202**	**100.0%**	**105**	**100.0%**	**11**	**100.0%**	**130**	**100.0%**

Surveying	Age Range	2010-11	Percent	2011-12	Percent	2012-13	Percent	2013-14	Percent
	0 thru 18	6	6.4%	2	2.7%	2	5.4%	0	0.0%
	19 and 20	7	7.4%	5	6.8%	4	10.8%	3	9.1%
	21 thru 25	26	27.7%	22	30.1%	9	24.3%	11	33.3%
	26 thru 30	10	10.6%	13	17.8%	8	21.6%	3	9.1%
	31 thru 35	10	10.6%	8	11.0%	5	13.5%	6	18.2%
	36 thru 40	7	7.4%	5	6.8%	1	2.7%	0	0.0%
	41 thru 45	13	13.8%	4	5.5%	3	8.1%	6	18.2%
	46 thru 50	7	7.4%	8	11.0%	3	8.1%	3	9.1%
	51 thru 60	8	8.5%	6	8.2%	2	5.4%	1	3.0%
	61 plus	2	2.1%	2	2.7%	2	5.4%	0	0.0%
	ALL Ages	**94**	**100.0%**	**73**	**100.0%**	**37**	**100.0%**	**33**	**100.0%**

GIS	Age Range	2010-11	Percent	2011-12	Percent	2012-13	Percent	2013-14	Percent
	0 thru 18	5	5.3%	7	9.3%	9	14.5%	2	2.0%
	19 and 20	7	7.4%	5	6.7%	3	4.8%	2	2.0%
	21 thru 25	14	14.9%	16	21.3%	13	21.0%	26	26.5%

	26 thru 30	24	25.5%	16	21.3%	11	17.7%	25	25.5%
	31 thru 35	16	17.0%	17	22.7%	6	9.7%	13	13.3%
	36 thru 40	5	5.3%	1	1.3%	3	4.8%	6	6.1%
	41 thru 45	7	7.4%	4	5.3%	4	6.5%	2	2.0%
	46 thru 50	0	0.0%	3	4.0%	3	4.8%	10	10.2%
	51 thru 60	16	17.0%	6	8.0%	10	16.1%	12	12.2%
	61 plus	1	1.1%	0	0.0%	2	3.2%	4	4.1%
	ALL Ages	**94**	**100.0%**	**75**	**100.0%**	**62**	**100.0%**	**98**	**100.0%**

Surveying	Age Range	2008-09	Percent	2009-10	Percent	2010-11	Percent	2011-12	Percent
	0 thru 18	3	2.6%	0	0.0%	6	6.4%	2	2.7%
	19 and 20	22	19.0%	6	5.2%	7	7.4%	6	8.0%
	21 thru 25	20	17.2%	14	12.1%	26	27.7%	23	30.7%
	26 thru 30	18	15.5%	21	18.1%	10	10.6%	12	16.0%
	31 thru 35	12	10.3%	24	20.7%	10	10.6%	8	10.7%
	36 thru 40	8	6.9%	13	11.2%	7	7.4%	5	6.7%
	41 thru 45	13	11.2%	14	12.1%	13	13.8%	4	5.3%
	46 thru 50	9	7.8%	13	11.2%	7	7.4%	9	12.0%
	51 thru 60	11	9.5%	11	9.5%	8	8.5%	6	8.0%
	61 plus	0	0.0%	4	3.4%	2	2.1%	1	1.3%
	ALL Ages	**116**	**100.0%**	**116**	**100.0%**	**94**	**100.0%**	**75**	**100.0%**

5.8 Curriculum Offered Within Reasonable Time Frame

Our programs are intended to certify that students successfully completing the program are prepared to enter careers associated with the certificate or degree. The certificates or degrees usually take at two years to complete. These programs are approved by the California Community College Chancellor's Office.

Our programs prepare students for technical positions in the civil engineering, land surveying and geospatial professions. The program sequence typically begins in the fall semester. However, a student may choose to begin the program by enrolling in required courses offered in the spring and summer semesters. The first year of the program consists of core courses dedicated to equipping students with the basic skills necessary for successful job performance. The second year of the program, students choose an emphasis–either Civil Engineering, Land Surveying or Geospatial Technology. Courses in this half of the program allow students to specialize in a particular discipline within their chosen field.

Our recommended sequence of courses allows the students to progress through the four semesters and receive their certificate and/or degree. We have not had to rotate the course offerings during these cuts. We have been efficient in course offerings with an increase in student limits to accomodate their educational plans.

5.9a Curriculum Responsiveness

The civil engineering, surveying and geospatial technology program advisory committee officially meets twice a year in each semester. Unofficially members of the committee also are members of the professional societies of the three disciplines. This advisory committee is very active and committed to having the best programs, equipment, curriculum and instruction in the state. The committee includes prominent local representatives from public agencies, private industry, the American Society of Civil Engineers, the California Land Surveyor's Association, Association of Civil Engineering Companies, GIS Professionals, North Coast Builders Exchange, Association of General Contractors and Engineering Contractor's Association. All of our members have the distinction of hiring students from our program. Some of our members are former students of the college. All are very knowledgeable of the history of the program, quality of students coming out of the program and the guidance necessary to have such a program.

We invite all of our faculty to the advisoiry committee meetings. They are there as non-voting members and for informational refenerce only. We also invite key staff and administration formn the college to the meetings. Only one of the advisory committee members is also an adjunct faculty member. The diversity of the membership is a direct reflection of the diversity of the disciplines we represent.

Equipment, hardware, software and technology is an area of great interest to the committee. Our curriculum, courses, sequence and student learning outcomes are discussed frequently - 2014-15 is scheduled to be a major review for re-vitalization.

These programs do consult with similar programs at other community colleges.

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

We currently have articulation agreements with Piner high School for Geospatial Technology. Their Career Pathway will directly feed students into our certificaste or degree programs.

We have "unofficial" agreements with all the high schools in the county for manual drafting and intro to AutoCAD.

We are working on placement type exams to better assess the students knowledge, skills and abilities prior top enrolling in classes.

5.10 Alignment with Transfer Institutions (Transfer Majors ONLY)

We have an agreement with CSU Fresno and Oregon Institute of Technology for Geomatics Engineering. Most of the other CSU institutions have accepted all of our civil engineering, surveying and geospatial technology courses. We have been granted UC transferability to our introductory course in GIS. I expect other GIS courses to also be approved for UC transfer in the next couple of years. We are presently trying to get articulation agreements with Great Basin Community College for their Geomatics degree.

5.11a Labor Market Demand (Occupational Programs ONLY)

Civil Engineering, Surveying & Geospatial careers are emerging from established professions that use geospatial technologies or require specific skill competencies. Of the 21 high-growth occupations identified as civil engineering, surveying or geospatial related, more than half require a bachelors degree or higher, with the bulk of the remaining occupations needing associate degrees or post-secondary vocational education.

In Sonoma County for the time period of 2010-20 there will be 160 jobs for civil engineering technicians with an average of 6 new openings per year - though statewide there is a need for 150 technicains per year. In that same time period there are projected to be 80 jobs for surveying and mapping technicians at the rate of 2 new positions a year in Sonoma County with 100 needed per year in the state.. There was no data dealing specifically with GIS technicians.

5.11b Academic Standards

Periodic discussdion about academic standards are held at department meetings. Since these programs are being revised, additional discussions will be undertaken as the programs develop.

6.1 Progress and Accomplishments Since Last Program/Unit Review

Rank	Location	SP	M	Goal	Objective	Time Frame	Progress to Date

6.2a Program/Unit Conclusions

Location	Program/Unit Conclusions
ALL	Hiring of a full time faculty member to coordinate all engineering technology programs in the department, including: civil engineering technology, geospatial technology, surveying technology, construction management, water utility operations, wastewater treatment operations and solar photovoltaics.
Santa Rosa	Geospatial Lab - create a multi-discipline computer lab for geospatial technology. Departments/programs already in support include: NRM, AG, CEST, HORT, CAD, GIS, GPS

6.2b PRPP Editor Feedback - Optional

6.3a Annual Unit Plan

Rank	Location	SP	M	Goal	Objective	Time Frame	Resources Required