

Santa Rosa Junior College

Program Resource Planning Process

Electronics 2015

1.1a Mission

It is the mission of the Electronic Technology program to provide students with a broad-based curriculum that starts with electrical fundamentals and then exposes students to the breadth of technology as it continues to evolve and change in our society. The goal is generally not to train a technician for a specific job but to give entry level skills necessary to enter the job market. However, it is becoming more necessary to provide more specific training to meet specific skills of the local job market. To accomplish this, the program accepts responsibility in the following areas:

- Provide a superior program for students interested in all professions requiring knowledge of electricity and electronics at various levels. In order to train students for the variety of career paths, there are currently four certificates in the Electronics Program: Electronic Technology, Solar Photovoltaics, Electromechanical Maintenance Technician, and Automated Test and Controls. The Mechatronics Certificate program will be developed and ready to implement by Spring 2016.
- Recruit, secure and retain qualified instructors to educate our students.
- Providing superior instructional support services such as state-of-the-art instructional test equipment and curriculum to meet the objectives of the program.
- Encourage students to achieve superior performance by ensuring each student understands his/her responsibility for success and to encourage life-long, continuing education.
- Manage resources of the program and anticipate future needs to meet current and future program goals by advocating for the necessary resources to meet those needs.
- Assist students in achieving their educational and vocational goals by providing instruction, advising, tutorials, and individual help.

1.1b Mission Alignment

The District's mission is to increase knowledge, improve skills and enhance lives. Since the beginnings of the program in the 1960's the department has trained and educated students from Sonoma County and the greater bay area to become qualified entry level as well as advanced level electronics technicians and in some cases, engineers. The program continues to provide people in both traditional and non-traditional electronics-related careers. The program has been and continues to be supported in the best interest of the students.

The 7 College initiatives and how our program is aligned:

1. Community Outreach, Development & Involvement: We have an extensive outreach program. We provide a student scholarship. We maintain relationships with community organizations by being members of various service groups and professional groups within the local area. We also participate in and interact with members of our advisory committees, we do outreach instruction for both elementary and high school groups, we participate in the international space station program by providing training and equipment as necessary. We also participate in career fairs and informational booths to promote the program and careers in electricity and electronics.

2. Multi-Campus Coordination

- The electronics program is based at the Santa Rosa campus, but we have provided input for future expansion to the Petaluma Campus. We offer a Photovoltaics class at the Southwest Center

3. Institutional Planning

- Our planning is directly related to budgetary support. What we are able to do is related directly to student numbers, funding and support. Most of our funding and support have come from CTEA and donations of equipment from local organizations. There have been some past grants which have helped in equipment support and funding.

4. Accreditation

5. Student Learning Outcomes and Assessments

- We are current reviewing our Active Course curriculum and providing both curriculum updating and SLO's as needed so that as we progress through the next few semesters, all courses will become current and meet standards. In the Fall of 2012, we will begin assessment of SLO's in all our courses.

6. Basic Skills/immigrant Education

- We address math skills in our Elec60A class with algebra review and right-angle trigonometry instruction within the context of electronics instruction. In the lab component, we do instruction in technical writing, and provide practice in writing of lab reports.

7. Enrollment Management and Retention.

We offer classes at times that will be convenient for our students. Most of our classes are in the evening to accommodate working students, with our Photovoltaic class offered on Saturdays. Our retention of students remains around 75%.

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1.1c Description

The Electronics Technology program has been revised to meet current needs which are lower than in the past. To do this the number of units required for the Electronic Technology certificate have been reduced from 49 to 24. The reduction in units allows students to complete the certificate in less time, and it fulfills the needs of current employers and allows a student to move ahead faster.

Students typically begin the program in the fall semester with a course that includes electronics mathematics at levels required for the topics being taught, direct current (DC) and alternating (AC) theory, and electronic/electricity laboratory practice. It then progresses with a basic electronic devices courses for semester two. The second year provides for two courses in advanced circuits and systems that must be taken sequentially.

To train students for the varied careers in electronics, we have established three certificates which cover area that were not part of the traditional technician training.

The Solar Photovoltaic certificate (17 units) has been active since the Fall 2012 semester. Two students have completed the requirements this year, and we expect more next year, since we can have been publicizing the program.

The Electromechanical Maintenance Technician Certificate (17 units) has been approved for Fall of 2013, as has the 9 unit Automated Test and Controls Certificate. These two certificates have been developed with the guidance of, and to meet the needs of, our industry partners, and were constructed almost exclusively using existing classes.

The program(s) are endorsed by the Electronics Program Advisory Committee. The committee is composed of members representing the industries we serve. The Solar Photovoltaic certificate has a separate advisory committee because of the nature of the field and the content of the courses.

1.1d Hours of Office Operation and Service by Location

The Electronic Technology program offers courses in electricity, electronics and electric machinery. The range of courses are from the most elementary to near engineering level in scope and content. The basic

program generally begins in the fall. We typically offer one or two courses in summer which may be used to create interest and be used for electives later. Most of our courses are now being offered in the later afternoon and evenings. An exception is the introductory Photovoltaics class, which has been offered on Saturday to take advantage of daylight hours.

We currently have one full time and three adjunct faculty.. Most of our courses are currently offered only on the Santa Rosa campus, with the exception of our Elec 156, Photovoltaic Design and Installation, which is offered at the Southwest Santa Rosa Center.

We are currently offering classes Monday through Thursday on the Santa Rosa campus, and Saturday at the Southwest Center, with times scheduled to make the classes available to the maximum number of students. Our attempts previously at the Petaluma campus have met with mixed results. Because of equipment and lab space necessary for Electronics classes, it is very difficult to conduct classes in Petaluma.

1.2 Program/Unit Context and Environmental Scan

Within the past two years, the Electronics program has been overhauled for the purpose of better meeting current needs of the industry as reflected by recent hiring outcomes. This has meant that many courses have been retired and new ones written. It has been a painful but necessary process in view of staffing and other limitations. With the new course line up and a just-in-time learning approach to the subject matter, the student will be well prepared to enter the modern work place in jobs that did not exist just a few years ago.

Many of these jobs will exist in the alternative energy and maintenance fields, as well as the traditional jobs that cannot be exported overseas, or that support design and prototyping functions which remain onshore.

2.1a Budget Needs

Operational budget monies for office, phone, copies and business material are adequate. However, we currently have no budget for classified staff to perform equipment repair and maintenance, student assistance in the labs, or to maintain the stockroom.

We have a large backlog of equipment that needs repair, calibration and/or replacement to enable classes to operate efficiently and effectively. The Instructor has to leave the classroom if students need parts or equipment from the stockroom. This has a negative effect on student performance. We previously had a full time person to keep equipment calibrated and in repair but when he retired we were not allowed to restaff the position. Similarly, when our long-time lab assistant retired, we could not hire a replacement. We have a pressing need to have 16 hours of Lab Assistant time to preparation and assistance for our Electronics labs, and an additional 14 hours for calibration and repair of lab equipment and to maintain the stockroom.

With the changing of the program and the general aging of the laboratory test equipment there is a major need to replace equipment and add new teaching devices to all of the labs. The need is especially acute for courses such as the PhotoVoltaic class and Programmable Logic Controllers, and the new Mechatronics and Robotics courses.

2.1b Budget Requests

Rank	Location	SP	M	Amount	Brief Rationale
0001	ALL	00	00	\$30,000.00	PLC lab training station and control software
0002	ALL	00	00	\$24,000.00	LabVIEW and Multisim Department License renewal for 3 years
0003	ALL	00	00	\$6,000.00	Industrial Robotic Arm with Teaching Pendant
0004	ALL	00	00	\$10,000.00	Lab test equipment replacement.
0005	ALL	00	00	\$5,000.00	Faculty training, Solar and PLC, Mechatronics
0006	ALL	00	00	\$3,000.00	Staff travel, professional development
0007	ALL	00	00	\$3,000.00	Light table (e.g., Elmo) for rooms 1447, 1452, and 1453.

2.2a Current Classified Positions

Position	Hr/Wk	Mo/Yr	Job Duties
	0.00	0.00	

2.2b Current Management/Confidential Positions

Position	Hr/Wk	Mo/Yr	Job Duties
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2.2c Current STNC/Student Worker Positions

Position	Hr/Wk	Mo/Yr	Job Duties
STNC Lab Assistant	20.00	6.00	Setup Electronics Labs with required materials for Electronics Labs in Bussman 1447 and 1452. Clean and organize storeroom. Check parts inventory

2.2d Adequacy and Effectiveness of Staffing

In order to meet all of the demands of an electronics laboratory for students and faculty, the department needs a technician that can calibrate and repair test equipment. This position could be shared with another discipline, but this need has gone unfilled for several years, and is a continuing problem. Some maintenance, repair, and general upkeep has been done by faculty on a volunteer basis, but much of it has gone undone.

Possibly, the department realignment to include Engineering will allow for some sharing of lab assistant help, but it would require an increase in hours for the current staff. A fifty percent position to maintain the Bussman labs and equipment would be a minimum to provide service to students.

Also, there is a need for a part-time stockroom attendant to stock and order tools and components for labs, and to assist students. This position could be filled by a student employee or an STNC, but would be best served by the continuity of a permanent lab assistant. The restoration of the 10 hours per week STNC time that was eliminated in 2009 in the budget reduction would help us as well.

2.2e Classified, STNC, Management Staffing Requests

Rank	Location	SP	M	Current Title	Proposed Title	Type
0001	ALL	00	00		Lab Assistant, Electronics/Engineering 50%	Classified
0002	Santa Rosa	00	00		Lab Assistant, Electronics	STNC

2.3a Current Contract Faculty Positions

Position	Description
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2.3b Full-Time and Part-Time Ratios

Discipline	FTEF Reg	% Reg Load	FTEF Adj	% Adj Load	Description
Electronics	0.0000	0.0000	1.3300	61.0000	The ratio of FT to PT is roughly 0:4

2.3c Faculty Within Retirement Range

The sole full-time faculty retired at the end of the Fall 2014 semester.

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

The Applied Technology Department merged with the Engineering/Physics Department in 2011. In 2014 the Physics Department merged with The Chemistry Department. The department is now called "Engineering and Applied Technology". The previous "Applied Technology" department consisted of 4 full-time faculty members and approximately 20 adjunct instructors. All four of the full-time instructors (Gary Pasqualetti, Deborah Sweitzer, Ed Sikes, and Jerry Miller) will be retired or moved to administration within 2 years. Current full-time Engineering and Physics instructors will be in-place for the foreseeable future.

Jerry Miller is currently a Dean, with no teaching load. He previously coordinated our Civil/Survey, Geospacial, Water Utilities, and Wastewater certificates and majors. These coordination duties have been split between two adjunct instructors. Reg Parks coordinates the Civil/Survey and Geospacial program and MJ Olivieri coordinates the Water Utilities, and Wastewater programs.

Gary Pasqualetti will be retiring in Fall 2015, and probably work a reduced load before then. He coordinates our Drafting/Design and Animation courses.

Ed Sikes was the Electronics and Solar Voltaics programs coordinator and retired at the end of the Fall 2014. MJ Papa is the adjunct coordinator and she will be responsible for the Electro-mechanical Maintenance Technician and Automated Test and Controls certificate programs. She is currently working on developing curriculum for the recently approved Mechatronics Certificate, which will be in effect as of Fall 2016, and the retooling of the existing electronics theory courses.

Deborah Sweitzer (60% reduced load) leads our Architecture Transfer program, and is currently working on establishing a Construction Management Transfer program.

Jerry Miller's position needs to be filled/replaced ASAP. The other three full-time positions will be vacant in the very near future. With the advent of a Construction Management Transfer program and all that has been left behind with Jerry's move to administration, the college could be best served by a new "**Construction Management**" instructor. This "umbrella" position can oversee and coordinate disciplines related to the construction industry.

A second "umbrella" **Architecture** Instructor position can hopefully be filled within the next few years. This position will oversee the Architecture Transfer program, Drafting/Design offerings, the 3D Modeling and Animation certificate and major, and possibly an array of architecture-oriented programs that exist within other departments (Interior Design, Landscape Design).

A third **Mechatronics** Instructor position will be needed due to the recently approved Mechatronics Certificate Program and would coordinate the Electronic Technology, Mechatronics and Solar Photovoltaic certificates and majors.

Net results have four full-time faculty positions being replaced with three positions, and a more cohesive **Architecture/Engineering/Construction Department** that is truly within the CTE mainstream and organized to adapt to future industry changes.

2.3e Faculty Staffing Requests

Rank	Location	SP	M	Discipline	SLO Assessment Rationale
0001	Santa Rosa	00	00	Civil Engineering/Construction	
0002	Santa Rosa	00	00	Architecture/CAD/3D Animation	
0003	Santa Rosa	00	00	Electronics/Mechatronics	

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

The heart of a technical technician program is the test equipment and apparatus that a student has to work with and work on. Most of our test equipment is more than 10 years old in an industry that is fast moving and dynamic. While most of it works, it does not reflect current industrial testing systems and equipment. Much of our major equipment is not what the student will be working with on the job. The major problem is that the equipment is in need of calibration and repair.

In the past year, through Proposition 39 grant funding, CTEA funding and industry contributions, we have been able to enhance the the Solar Photovoltaic classroom lab so that students can be effectively taught. The installation of the equipment in the lab was made possible by a lot of volunteer work on the part of the instructor (Kevin Byrne) and his students. We are applying for a CTEA grant to provide equipment and faculty training for the advanced classes that are part of the Solar Photovoltaic certificate.

While the state of the test equipment in our labs is a major issue, our highest priority is to obtain equipment which is vital to instruction in our newest certificate programs in ElectroMechanical Maintenance Technician and Automated Test and Controls. The courses were designed, implemented, and scheduled to provide instruction in one of the fastest-growing segments of the electronics industry.

In order to effectively teach Programmable Logic Controller (PLC) technology we need to replace the aging and failing controllers with current reliable equipment. This will require an investment of about \$30,000 for hardware and software, which we hope to obtain with a CTEA grant request. The PLC class is a requirement for both of our new certificates.

We have offered our Digital Tools course, part of the Automated Tests and Controls Certificate, in the Spring of 2014 and 2015. In order to continue offering this course, we are applying for a CTEA grant to cover the cost of a 3-year site license renewal for the Labview and Multisim software for the laboratory classrooms. This hardware and software will also be used by Engineering program students.

Our recently approved certificate program, Mechatronics, will require PLC and other robotic hardware and software in order to provide hands-on instruction in these technologies.

Proposition 39 funding was also awarded to the Electronics program to support the development of the Mechatronics certificate program. Some of the funds were used to purchase sensor kits which will interface with Arduino controllers and LabVIEW myDAQ devices in preparation for the Mechatronics and Robotics courses that will be developed in Fall 2015.

2.4c Instructional Equipment and Software Requests

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0001	Santa Rosa	00	00	Allen Bradley PLC Teaching Pendant	2	\$500.00	\$1,000.00	Ed Sikes	1448	Ed Sikes
0001	Santa Rosa	00	00	Programmable Logic Controllers	10	\$700.00	\$7,000.00	Ed Sikes	1452	Ed Sikes
0004	Santa Rosa	00	00	LCD PROJECTOR (PORTABLE)	1	\$3,000.00	\$3,000.00	Ed Sikes	1447	Ed Sikes
0005	Santa Rosa	00	00	Hewlett Packard multimeter 3435A, used	10	\$100.00	\$1,000.00	Ed Sikes	1448	Ed Sikes
0006	Santa Rosa	00	00	Tables for 1447 and 1452	20	\$0.00	\$0.00	Karen Frindell-Teuscher	1447/1452	Karen Frindell-Teuscher
0007	Santa Rosa	00	00	NIELVIS II+LEARNING CENTERS	18	\$3,100.00	\$55,800.00	Ed Sikes	1447	Ed Sikes
0008	Santa Rosa	00	00	pony brake for testing electric motors	1	\$1,000.00	\$1,000.00	HERB SULLIVAN	1452	Ed Sikes

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

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

Rank	Location	SP	M	Time Frame	Building	Room Number	Est. Cost	Description
0001	Santa Rosa	00	00	Urgent	Bussman	1447/1452	\$20,000.00	Remove lab benches and replace with tables in order to accommodate more students and different types of classes in these two rooms.
0002	Santa Rosa	00	00	Urgent	Bussman	1447	\$2,000.00	Reroute power and data wiring from wall to instructor desk; safety hazard.

2.5b Analysis of Existing Facilities

The two electronics labs, 1447 and 1452 need to be modernized in order to better serve electronics students as well as other students at the college. These rooms are under-utilized, and a minor remodel can be made to make the rooms useful for many more classes. The electronics department has come up with a plan for the remodel.

The lab benches in 1447 and 1452 Bussman are too bulky and make it difficult to see and interact with students, and the general setup makes it difficult to use the room for classes other than electronics. If those benches are removed and the furniture is replaced with regular tables, other types of classes with computer requirements could be held in the two labs. Also, more students will be able to use this room at a time (currently there are 20 seats, and we hope to bring it up to 24 or 25).

The labs also lack current instructional media equipment and thus have projector cords that are a tripping hazard for instructors.

The organization and removal of older equipment from these labs is an ongoing project. Within this academic year, there will be room for the photovoltaic demo equipment and the photovoltaic classes will move back from the Southwest Center and use this room as well.

3.1 Develop Financial Resources

3.2 Serve our Diverse Communities

Faculty are recruited as needed from industry contacts, advisory committee members and general announcements. The faculty reflects the current workforce wherever possible. Faculty is currently majority white male and 1 female. It is difficult to achieve greater diversity in the full-time faculty, as retiring faculty positions have not been replaced. It appears that greater diversity, at least in the near future, can only be addressed through the adjunct pool.

3.3 Cultivate a Healthy Organization

Not applicable at this time, as the program does not have classified staff.

3.4 Safety and Emergency Preparedness

BUILDING AND AREA SAFETY COORDINATORS						
Bldg #/Name	BSC Area	ASC Area	Department	Name	Responsible Area	Phone
<i>Applied Technology, Engineering & Physics - Bussman Hall</i>						
Bussman Hall #1400				To Be Decided	Bussman Hall	Employee Phone #
Bussman Hall #1400		Bussman South Offices	Bussman Service Center	Reina Martinez	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

The Photovoltaics certificate program educates our students on how to design, install, and sell solar PV units. This will lead to more sustainable sources of energy in our community.

4.1a Course Student Learning Outcomes Assessment

We have graduates at most of the major electronic employers and independent providers in the area. We maintain a close relationship with many of the employers to ensure access to and success of the student on the job, and to aid in the development of effective Student Learning Outcomes for our classes.

In section 4.1c of this document, we have attempted to schedule a realistic pattern to complete outcomes for all our courses in the next two years.

We have identified outcomes for new courses, and for courses that come up for review. Our goal is to have SLO's identified for all the classes that remain active by the Fall semester.

In fall, 2011, the department will review all courses and establish a regular assessment cycle so that all courses will be evaluated within each 6 year period.

4.1b Program Student Learning Outcomes Assessment

Electronics program SLO's will be submitted by the end of this semester.

4.1c Student Learning Outcomes Reporting

Type	Name	Student Assessment Implemented	Assessment Results Analyzed	Change Implemented
Course	ELEC 60A	Fall 2010	N/A	N/A
Course	ELEC 60B	Spring 2011	N/A	N/A
Course	ELEC60C	Fall 2010	N/A	N/A
Course	ELEC60D	Spring 2011	N/A	N/A
Course	ELEC156	Summer 2010	N/A	N/A
Course	ELEC180	Spring 2014	N/A	N/A
Course	ELEC53.12	N/A	N/A	N/A
Course	ELEC53.13	N/A	N/A	N/A
Course	ELEC53.14	N/A	N/A	N/A
Course	ELEC53.15	N/A	N/A	N/A
Course	ELEC50A	N/A	N/A	N/A
Course	ELEC51A	N/A	N/A	N/A
Course	ELEC88.81	N/A	N/A	N/A
Course	ELEC88.82	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
ELEC 180 Programming	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ELEC 53.12/13 PLC Pr	X	X	X				X	X	X	X	X	X				X
ELEC 53.14 Basic Rot	X	X	X				X	X	X	X	X	X				X
ELEC 53.15 Controls	X	X	X				X	X	X	X	X	X				X
ELEC 60A DC/AC Theory	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ELEC 60B Basic Devices	X	X	X	X			X	X	X	X	X	X				X
ELEC 60C Adv Devices1	X	X	X	X			X	X	X	X	X	X				X
ELEC 60D Adv Devices2	X	X	X	X			X	X	X	X	X	X				X
ELEC 88.1 Comp Hdw 1	X	X	X	X			X	X	X	X	X	X				X
ELEC 88.2 Comp Hdw 2	X	X	X	X			X	X	X	X	X	X				X
ELEC156	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ELEC50A	X	X	X	X			X	X	X	X	X	X				X
ELEC51A	X	X	X	X			X	X	X	X	X	X				X

4.2b Narrative (Optional)

The Electronics Technology Program has, in the past year, created two new certificate programs and several new classes for those certificates. WE have created SLO's for all but four of our active courses, and should complete those by the fall semester.

Our focus now needs to turn to the assessment of SLO's for all our courses, and we will concentrate on that in the coming year.

5.0 Performance Measures

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

Core Data: Student Head Count Fall 2012 is 150. This has declined roughly 10% to the Spring 2014 semester.

Program sequence is set up to allow the student to, in 4 semesters, complete the classes required for the Certificate of Achievement and for the Electronic Technology Associate of Science Major.

The Certificate/Major required classes are offered only in the evening, and the Photovoltaic class on weekends. We like to offer day classes as well, but that would depend on demand and on the budget to allow for an expanded schedule.

While there is a demand for new certificates and advanced course offerings, the constraints of the budget crisis prevented us from offering classes requested by students and local industry. We rely on input from our advisory committee to help us foresee need. We hope that budget improvement in the future will allow us to meet that need.

We continue to concentrate our offerings on the Santa Rosa campus. The photovoltaic course is currently scheduled at the Southwest Santa Rosa Center.

Our core classes, as well as the classes in the other certificates, are a combination of lecture and lab hours, so that students can learn and demonstrate both knowledge of theory and the ability to test that theory using typical electronic measurement techniques and instrumentation. Our other classes are in a lecture format, with demonstration of hardware and software functions where appropriate.

5.2a Enrollment Efficiency

Our enrollment efficiency has remained in the range of 65-75%. While the number of classes we have offered has decreased, class sized remained stable, because most of our classes do not have multiple sections that can be combined, so the reduction was to eliminate courses from the schedule.

5.2b Average Class Size

Core Data: Average Class Size SP 10 = 17.6; FA 10 = 16.1

Average class has increased from the level of five years ago, currently about 17. We have two lecture classes which typically enroll forty or more students, while lab classes are typically limited at 18. The fact that we have set the limit for the larger lecture classes artificially high in order to draw students to the program means that, even though they increase our student head count, they don't increase the productivity number.

Because of laboratory and instructor/student interaction, lab classes need to be kept at a maximum of 18 students to prevent instructor overloading in the laboratory and the need to effectively and safely teach students the discipline.

Since most of our classes do not have multiple sections, the strategy of increasing individual class sized by reducing the number of sections is not available to us.

5.3 Instructional Productivity

Core Data:

Our productivity ratio has increased by around 50% over the last three years, due to tighter scheduling of our core courses and an increase in interest in our program. The Photovoltaic classes have also helped, because of the acute student interest in this field. While our FTES/FTEF ratio has increased to around ten, it is still well below the college-wide goal.

Because of the need for lab classes, with their necessarily lower class sizes, our productivity number will always be lower than the college-wide goal.

5.4 Curriculum Currency

All of our courses have SLO's, and we are working on the evaluation of SLO's.

We are developing new curriculum to serve the need for "green technology" training. In discussion with faculty and industry representatives.

The courses for the new certificates in Solar Photovoltaics, Electromechanical Maintenance Technician, and Automated Test and Controls were either new courses or courses that were brought up to date in the curriculum process in order to be included in the certificates.

As a part of the curriculum process, the content was also updated to current industry requirements.

5.5 Successful Program Completion

Since Spring 2011, we have seen 11-13 students receive their Certificates from the "new" four course, 24 unit, certificate program.

As a direct result of change to our certificate requirements, and curriculum changes in our classes, we expect to have twelve students earn our basic certificate this year, similar to the previous year. Some of the subjects.

Some of the subjects that were removed from the previous program are being combined into shorter, more specialized additional certificates. When we complete the development of those certificates, we expect to see larger overall certificate completion numbers, which will reflect improved job skill attainment on the part of our students.

In the first year of the Solar Photovoltaic certificate, we have two completers. We expect to have 10 or more per year as awareness of the program increases.

We expect a similar figure for the Electromechanical Maintenance Technician certificate which will start in Fall 2013.

5.6 Student Success

Core Data:

Retention = 70.2% (Fall 2010)

Successful Course Completion = 66.0% (Fall 2010)

GPA = 3.17 (Electronic Technology, Fall 2010)

5.7 Student Access

Core Data:

55.3% White

23.6% Decline to State

2.0% Asian

0.9% Black

16.1% Hispanic

0.9% Native American

1.2% Filipino

5.8 Curriculum Offered Within Reasonable Time Frame

We have the first dozen certificate completers this semester (SP 11) from the first student cohort to follow the four course, 24 unit, program.

We will start the Solar Photovoltaic certificate this Fall 2011.

With the change that was effective Fall 2009, it is possible for those students who are currently in the program to complete the Electronic Certificate in four semesters.

If we offer Electronics 60A and 60C each Fall, and 60B and 60D each Spring, we can maintain a schedule that will allow students to advance to completion of the certificate in a clear and predictable time frame.

We have been offering, since Spring 2009, Electronics 156 Photovoltaic Design and Installation, offering it each semester and in the summer. We expect to continue this pattern, because of its popularity and perceived need. We will be offering an advanced class for the new Solar Photovoltaic certificate, and expect to see students completing that certificate next Spring.

Beginning in Fall 2013, we will offer on a rotating basis PLC's, Rotating machinery, Digital Tools for electronics, and Computer Hardware, which are part of the two new certificate programs.

5.9a Curriculum Responsiveness

We have the first dozen certificate completers this semester (SP 11) from the first student cohort to follow the four course, 24 unit, program. This bodes well.

We will start the Solar Photovoltaic certificate this Fall 2011.

We will also start the Solar Thermal certificate at some point in the next couple of years.

For many years, our curriculum in the Electronics program was static, with certificate requirements that were, if not dictated, at least greatly influenced by a single employer who wanted students to learn a very broad and extensive list of skill and knowledge sets. As a result, our certificate unit requirement had risen over time to nearly 50 units. When we offered day classes, students could complete those requirements in two years, but it took a minimum of four years for night students to complete the program.

When Agilent stopped hiring production technicians, the game changed. We could no longer offer day classes, and the skills needed to become an employable technician changed as well. Students began to perceive that it was no longer in their interest to take such a large number of units and classes, and invest so much time. In response, we overhauled our program.

We revamped the certificate courses to offer a more basic program, and rearranged the necessary curriculum into four six-unit classes, which can be taken in consecutive semesters, so that the certificate can be earned in two years in evening classes.

We also continue to develop new courses to serve students who want to add specialized skills such as LabView programming, and we are in the process of developing curriculum for emerging technologies such as Photovoltaic Design and Installation.

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

5.10 Alignment with Transfer Institutions (Transfer Majors ONLY)

This section is not applicable to Electronic Technology, as it is not a transfer major.

5.11a Labor Market Demand (Occupational Programs ONLY)

Market analysts and our Advisory Committee members agree that the need for production Electronic Technicians is in decline, because of the continuing movement of manufacturing offshore. However, there is projected slow growth in the need for engineering technicians, maintenance technicians, and computer support technicians, and we are striving to prepare our students for these jobs through our basic curriculum and additional courses and certificates. A new focus on Mechatronics is being created.

The outlook is most favorable for new jobs in Photovoltaic system design and installation, and in industrial controls.

We also expect to see a need for our classes from other certificates such as Instrument control and Electromechanical Maintenance Technician, and our program should benefit from the job opportunities in those areas.

5.11b Academic Standards

For the four of us who have been here for several years, we have monitored and discussed program and class standards over time, and the process is ongoing, through formal evaluations and student feedback, but also in discussion of curriculum development.

Our two newest adjunct faculty are also teaching a new course. They have each gone through their initial evaluations, where we have the opportunity to discuss the expected standards, and to help infuse the college expectations into their course requirements and standards. Both of these adjunct instructors were involved in development of the course they teach, along with a full-time instructor/mentor.

As a career technical program, we have always understood that we need to maintain high academic standards in order to protect the value of our certificate in the view of employers.

6.1 Progress and Accomplishments Since Last Program/Unit Review

Rank	Location	SP	M	Goal	Objective	Time Frame	Progress to Date
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6.2a Program/Unit Conclusions

Location	Program/Unit Conclusions
Other	

6.2b PRPP Editor Feedback - Optional

The Electronics area has needed to be re-vamped, updated and re-tooled to better meet the needs of industry. We believe we have begun to accomplish this by offering an updated version of the Eelctromechnical Maintenance Tech certificate and the certificate in Automated tests and controls. The department has received a \$30,000 CTEA grant to equip the lab with digital electronics equipment.

6.3a Annual Unit Plan

Rank	Location	SP	M	Goal	Objective	Time Frame	Resources Required
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