CURRENT YEAR: 2018 - 2019 PROGRAM: ELECTRONIC & ELECTRICAL TECHNOLOGY (EET)

CLUSTER: WORKFORCE DEVELOPMENT LAST YEAR CPPR COMPLETED: 2017

NEXT SCHEDULED CPPR: 2020 CURRENT DATE: 3/25/2019

The Annual Program Planning Worksheet (APPW) is the process for:

- reviewing, analyzing and assessing programs on an annual basis
- documenting relevant program changes, trends, and plans for the upcoming year
- identifying program needs, if any, that will become part of the program's resource plan
- highlighting specific program accomplishments and updates since last year's APPW
- tracking progress on a Program Sustainability Plan if established previously.

Note: Degrees and/or certificates for the <u>same</u> program <u>may be consolidated</u> into one APPW.

This APPW encompasses the following degrees and/or certificates:

A.S. Electrical Technology, C.A. Electronics and State Electrician, and C.S. Power and Instrumentation, C.S. Nuclear Energy Systems.

GENERAL PROGRAM UPDATE

Describe significant changes, if any, to program mission, purpose or direction. *If there are not any, indicate: NONE.*

Over the (2017-2018) cycle the EET Department completed the full INSTRUCTIONAL COMPREHENSIVE PROGRAM PLANNING AND REVIEW (CPPR), etal. Prior to that cycle, the EET Department converted the Associates Degree in Electrical Technology from a single-track degree pattern to a dual track degree pattern. Track 1 is designed for individuals seeking emphasis and preparation for the state general electrician journey-person certification/licensure and/or employment as an electronic/electrical technician. This trade category is projected to have the highest growth of all trades thru 2025 by the state of CA. Median income for electricians in SLO county is over \$70,000 per year for 2018. Track 2 is designed for individuals seeking emphasis and preparation for employment as a local or global Nuclear Maintenance Technician (new). As described in the 2017 -2018 ICPPR, the technical course requirements for the A.S. in Electrical Technology degree are virtually identical to the technical course requirements for the C.A. in Electronics and State Electrician. Historically, the vast majority of students have elected to only satisfy the state requirements to sit for general electrician journey-person certification/licensure meeting the electrical C.A. and C.S. requirements. As a result, total A.S. degrees awarded has been low. Once certified by the state as an interim journey-person electrician, students are enticed into high demand, high wage employment with little or no initial incentive to complete the G.E. requirements for their A.S. degree. The EET department is working with our industry advisory committee to better educate and motivate students/employees about the long-term advantages of completing the requirements for their A.S. degree. Regarding the C.S. Nuclear Energy Systems, the program is so new, data analysis will not be presented until next cycle.

PROGRAM SUSTAINABILITY PLAN UPDATE

Was a Program Sustainability Plan established in your program's most recent Comprehensive Program Plan and Review?

Yes \square If yes, please complete the Program Sustainability Plan Progress Report below.

No ⊠ If no, you do not need to complete a Progress Report.

If you selected yes, please complete the Program Sustainability Plan Progress Report below after you complete the Data Analysis section. That data collection and analysis will help you to update, if necessary, your Program Sustainability Plan.

DATA ANALYSIS AND PROGRAM-SPECIFIC MEASUREMENTS

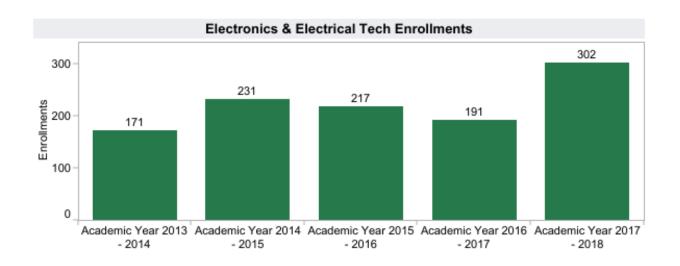
Your responses to the prompts for the data elements below should be for the entire program. If this APPW is for multiple degrees and/or certificates then you MAY want to comment on each degree and/or certificate, or discuss them holistically for the entire program being sure to highlight relevant trends for particular degrees and/or certificates, if necessary. Responses in this document need only reference the most recent year's available data.

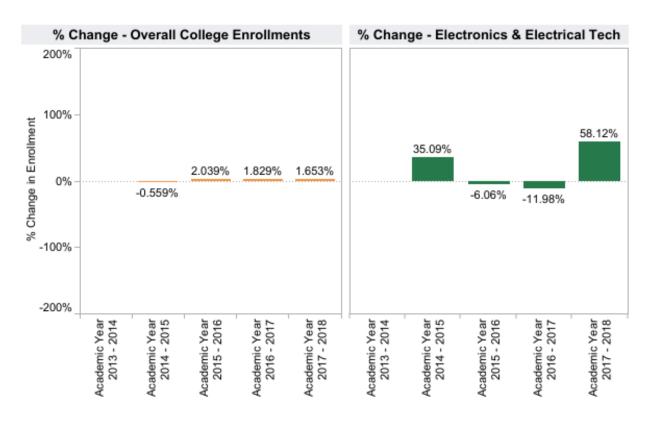
The EET Department has experienced a 6.06% and 11.98% internal decrease in overall enrollments during 2015 – 2016 and 2016 -2017 respectively. During 2017 – 2018 overall enrollments in the EET Department were up by 58.12% compared to an overall college enrollment increase of 1.635%. We primarily attribute the recent increase in EET enrollments to increased demand for state Electrician Trainees and various marketing outreach efforts. Enrollment graphics are displayed on the following page.

General Enrollment (Insert Aggregated Data Chart)

SLOCCCD Program Review Data - Enrollment

Department: Course: Dual Enrollment: Prison: Electronics & Electrical Tech All All All





Enrollment: Duplicated count of students who completed greater than 0 units in positive attendance courses or were present on census for all other accounting methods.

Insert the data chart and explain observed differences between the program and the college.

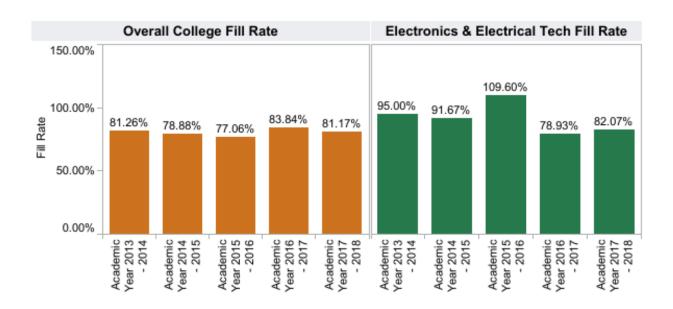
General Student Demand (Fill Rate) (Insert Aggregated Data Chart)

Comparison of general student demand (fill rate) between the EET department and the college has seen its only variant during the 2016 – 2017 academic year. From 2013 thru 2016 the EET department has maintained 10%+ above the overall college fill rate. During the 2016 -2017 academic year, the EET department was below the college by 4.92%. During the 2017 -2018 academic year the EET department was 1% above the college average. We attribute this partially to some course resequencing aimed at increasing awarded A.S. degrees and certificates. Student Demand (Fill Rate) graphics are displayed on the following page.

SLOCCCD Program Review Data - Student Demand (Fill Rate)

 Department:
 Course:
 Dual Enrollment:
 Prison

 Electronics & Electrical Tech
 All
 All
 All



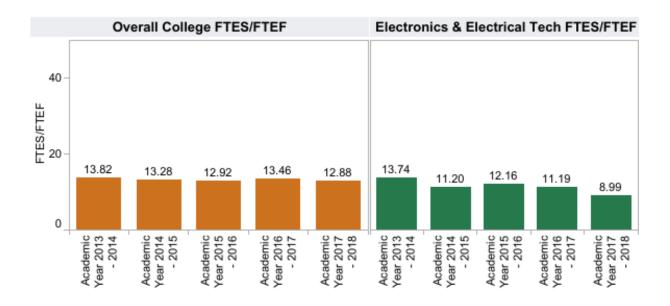
Fill Rate: The ratio of enrollments to class limits. Cross listed class limits are adjusted appropriately.

Also, courses with zero class limits are excluded from this measure.

General Efficiency (FTES/FTEF) (Insert Aggregated Data Chart)

SLOCCCD Program Review Data - Efficiency (FTES/FTEF)

Department: Course: Dual Enrollment: Prison: Electronics & Electrical Tech All All All All



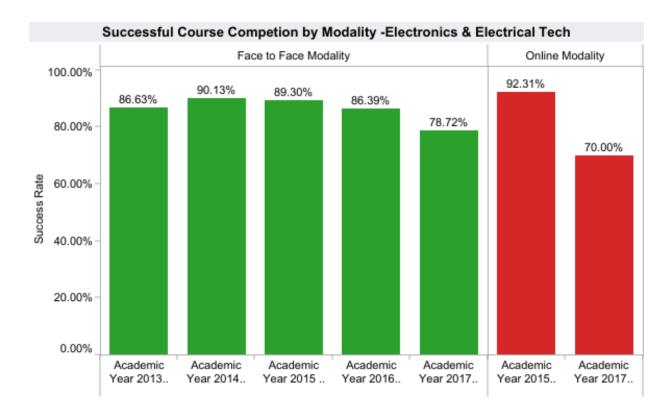
FTES/FTEF: The ratio of total FTES to Full-Time Equivalent Faculty (SXD4 Total-Hours/17.5)/XE03 FACULTY-ASSIGNMENT-FTE)

The overall college efficiency has historically been approximately 1.6 above the EET department efficiency. Between 2013 - 2017 the average overall college has been 13.27. Over the same timeframe, the average EET department efficiency has been 11.46. Although we recognize that FTES/FTEF efficiency is critically important and carries high visibility; our primary hurdle to noticeably increasing EET efficiency is student safety. The vast majority of EET courses involve students building, testing, and in close proximity to energized electrical circuits. This dramatically limits our ability to increase hybrid and traditional course caps involving face-to-face laboratories with energized electrical circuits. For the few courses that do not expose students to energized electrical circuits, we have increased course caps and work to safely accommodate students in the program to increase and maximize efficiency.

Student Success—Course Modality (Insert Data Chart)

SLOCCCD Program Review Data: Successful Course Completion

Select Department: Course: Legend:
Electronics & Electrical Tech All Face to Face Modality
Online Modality



Successful Course Competion by Modality Table - Electronics & Electrical Tech						
		Academic Year 2013 - 2014	Academic Year 2014 - 2015	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018
Face to Face Modality	Department Success Rate	86.63%	90.13%	89.30%	86.39%	78.72%
	Total Department Enrollments	172.0	233.0	215.0	191.0	282.0
Online Modality	Department Success Rate			92.31%		70.00%
	Total Department Enrollments			13.0		20.0

The EET department has been offering EET-213 (Electronic Fundamentals) as a hybrid course for over seven years consecutively. The institutional data only reflects successful course completion by online modality for the academic years 2015 (92.31%) and 2017 (70.0%). The only current hybrid courses offered by the EET department are EET-119 and EET-213. All students are required to complete both the face-to-face modality as well as the online modality for each course in order to receive a passing grade. Based on the institutional data available, successful course completion by modality averages over 86.24% since 2013. Our experience with hybrid courses in the program has been positive and student feedback has been predominantly positive.

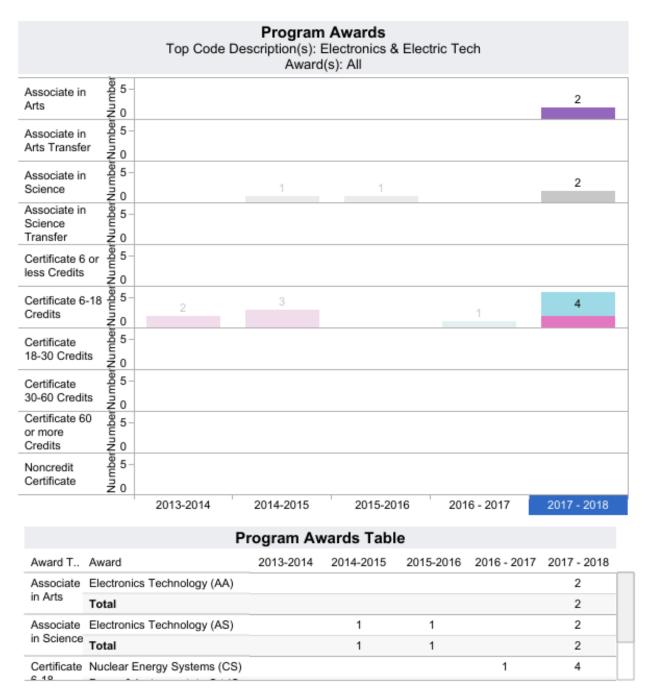
Degrees and Certificates Awarded (Insert Data Chart)

Insert the data chart and explain observed differences between the program and the college.

SLOCCCD Program Review Data: Degrees and Certificates Awarded

Program: Award Type:

Electronics & Electric Tech A



Program Awards: The number of degress and certificates awarded by program type

Both awarded degrees and certificates in the EET program have been historically low. During 2017 – 2018 the EET department has awarded only 1 less degree/certificate that were awarded over the previous 4 academic years. This is a significant improvement for the 2017 – 2018 academic year however, overall degrees and certificates awarded needs to be improved and is being addressed.

We attribute this statistically painful trend to the fact that our average student obtains their electrician trainee certification during their first course in the curriculum. Typically, students are quickly recruited by local electrical contractors due to the demand as well as the fact that electrical contractors may not employee trainees who are not certified by the Division of Labor Enforcement (per CLC 108 – 108.5). Due to the fact that the EET program at Cuesta is the only state certified program within 100 miles, our entry-level students find initial employment quickly at \$15 to \$18 per hour or more depending on experience, work ethic, soft skills, etc. Electrical contractors may not legally allow electrician trainees to work alone or supervise others. As a result, contractors typically encourage/pressure EET students to take and pass the state general electrician journey-person exam as soon as they are eligible. Our statistics to date show that we have a first-time pass rate of approximately 95% thru 2017. The statewide average first-time pass rate has been less than 53%. As a result of the foregoing, students typically do not even apply to be awarded their certificate of completion for which all requirements must be met in order to sit for the state general electrician exam. One of the problems we are addressing with our advisory committee is that there is currently little or no financial or short-term promotional incentive for students to demonstrate they have been awarded a certificate or degree from Cuesta. The primary incentive for students is to qualify to sit for the general electrician exam and pass. We are working to encourage local contractors to provide an incentive for students to initially submit their application for their earned Cuesta certification(s) and emphasize longer-term promotional opportunities for students to complete their general education requirements to receive their Associate of Science in Electrical Technology.

General Student Success - Course Completion (Insert Aggregated Data Chart)

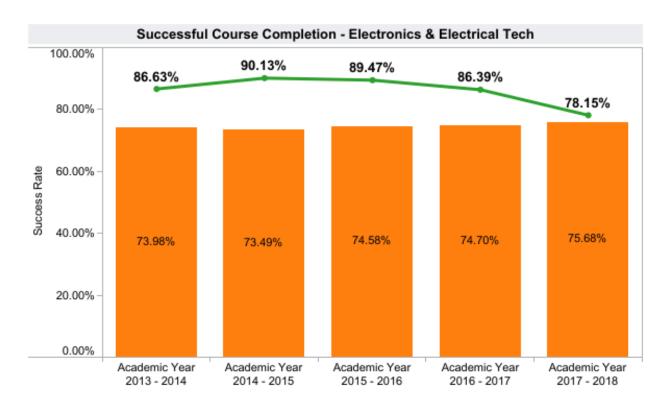
Review the <u>Disaggregated Student Success</u> charts; include any charts that you will reference. Describe any departmental or pedagogical outcomes that have occurred as a result of programmatic discussion regarding the data presented.

SLOCCCD Program Review Data: Successful Course Completion

Select Department: COURSE Measure Names

Electronics & Electrical Tech All Department Success Rate

Overall College Success Rate



Electronics & Electrical Tech Success Rate Table

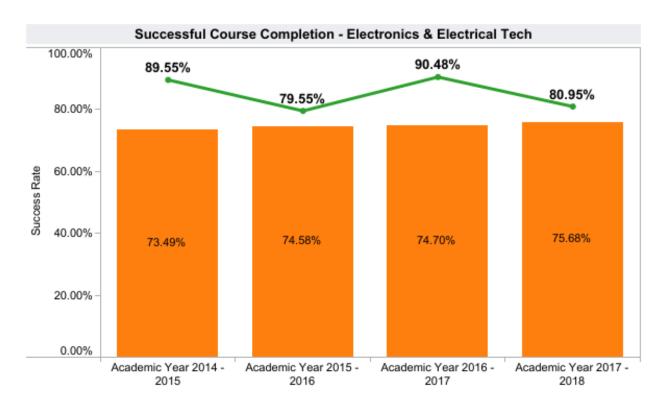
	Academic Year 2013 - 2014	Academic Year 2014 - 2015	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018
Department Success	86.63%	90.13%	89.47%	86.39%	78.15%
Total Enrollments	172	233	228	191	302

SLOCCCD Program Review Data: Successful Course Completion

Select Department: COURSE Electronics & Electrical Tech EET119 Measure Names

Department Success Rate

Overall College Success Rate



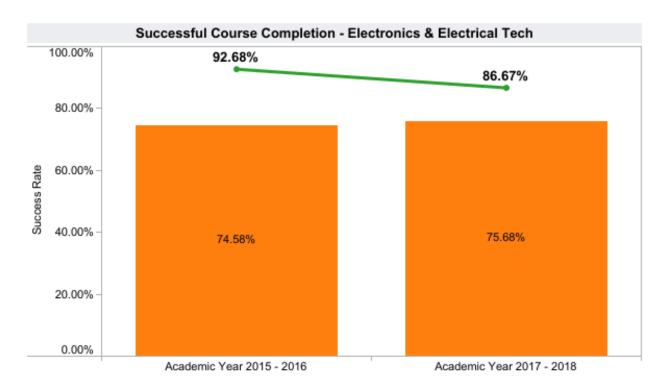
Electronics & Electrical Tech Success Rate Table

	Academic Year 2014 -	Academic Year 2015 -	Academic Year 2016 -	Academic Year 2017 -
	2015	2016	2017	2018
Department Success	89.55%	79.55%	90.48%	80.95%
Total Enrollments	67	44	21	42

SLOCCCD Program Review Data: Successful Course Completion

Select Department: COURSE
Electronics & Electrical Tech
EET183

Measure Names
Department Success Rate
Overall College Success Rate



Electronics & Electrical Tech Success Rate Table

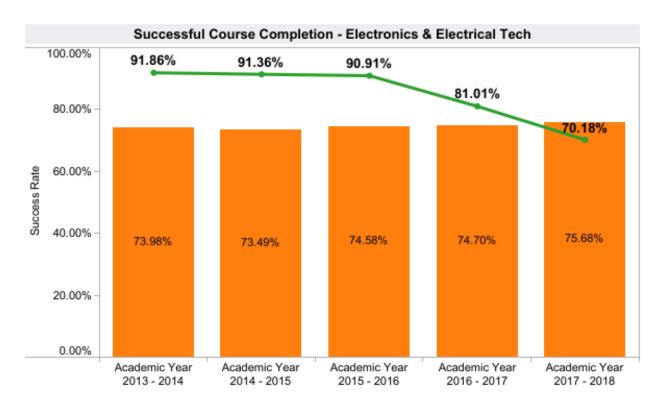
	Academic Year 2015 - 2016	Academic Year 2017 - 2018
Department Success	92.68%	86.67%
Total Enrollments	41	15

SLOCCCD Program Review Data: Successful Course Completion

Select Department: COURSE Measure Names

Electronics & Electrical Tech EET213 Department Success Rate

Overall College Success Rate



Electronics & Electrical Tech Success Rate Table

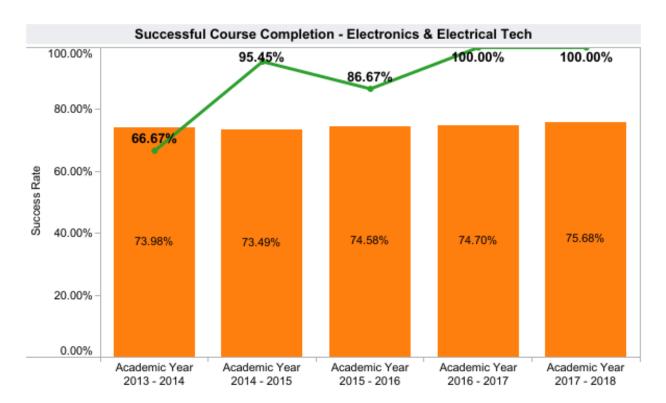
	Academic Year 2013 - 2014	Academic Year 2014 - 2015	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018
Department Success	91.86%	91.36%	90.91%	81.01%	70.18%
Total Enrollments	86	81	77	79	57

SLOCCCD Program Review Data: Successful Course Completion

Select Department: COURSE Electronics & Electrical Tech EET224 Measure Names

Department Success Rate

Overall College Success Rate



Electronics & Electrical Tech Success Rate Table

	Academic Year 2013 - 2014	Academic Year 2014 - 2015	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018
Department Success	66.67%	95.45%	86.67%	100.00%	100.00%
Total Enrollments	12	22	15	18	18

Success: The Percentage of student enrollments resulting in a final grade of "C" or better

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Upon reviewing the overall successful course completion for the EET program as well as successful course completion for many of the required A.S., C.A., and C.S. curricula; the EET successful course completion is approximately 18% above the college average overall. We attribute this margin partially to the fact that the program attracts students who are focused on preparing to pass the state general electrician exam on their first attempt. There is also an ongoing financial incentive for students to complete courses due to the fact that they must complete 150 academic hours per year in order to renew their state electrician training certification and maintain employment in the electrical/electronic field(s).

OTHER RELEVANT PROGRAM DATA (OPTIONAL)

Provide and comment on any other data that is relevant to your program such as state or national certification/licensure exam results, employment data, etc. If necessary, describe origin and/or data collection methods used.

The EET program is the only state certified electrician training program within 100 miles of Cuesta's main campus. Additionally, the program is rated at the highest level of certification through the Division of Labor Enforcement, Electrician Certification Unit (per California labor code sections (108 – 108.5) Neither Cal poly nor Hancock is certified and the 2 closest certified institutes known are: Santa Barbara city College (south) and Hartnell Community College (north). Both of these mentioned certified electrician training institutes maintain the lowest (Residential) certification whereas Cuesta College maintains the highest (Whole General Electrician Curriculum) certification. Certifications are determined through an extensive audit process by the state Division of Labor Enforcement, Electrician Certification Unit. Screenshot from state website:

147 Cuesta College - Open to the public

Approved to Offer Whole General Electrician Curriculum

San Luis Obispo County

To date, approximately 92% of EET students who have completed the required coursework to sit for the General Electrician Exam have passed on their firse attempt. This is based on student feedback to faculty but due to the fact that the EET program is not a cohort and confidentiality issues, it is difficult to track exactly. The state average is below 52% for first time attempts according to the Division of Labor Standards Enforcement, Electrician Certification Unit

PROGRAM OUTCOMES ASSESSMENT CHECKLIST AND NARRATIVE

CHECKLIST:

	\boxtimes	SLO	assessment	cvcle	calendar	is u	p to	date
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All courses scheduled for assessment have been assessed in eLumen.

☐ Program Sustainability Plan progress report completed (if applicable).

NARRATIVE:

Briefly describe program changes, if any, which have been implemented in the previous year as a direct result of the Program or Student Services Learning Outcomes Assessment. If no program changes have been made as results of Program or Student Services Learning Outcomes Assessment, indicate: NONE.

As a result of our program outcomes assessment in addition to our partnership with Pacific Gas and Electric / Diablo Canyon nuclear power plant, we formally modified our Associate of Science in Electrical Technology Degree from a singular Electrical Technology track to a dual track curriculum over 1 year ago. The degree requires 3 electrical courses of study (17 units) for either track then offers the option of either a 17-unit Electrical Technology track or a 22-unit Nuclear Maintenance Track.

This modification to the existing degree was largely due to the fact that the Diablo Canyon nuclear power plant is the largest private employer in San Luis Obispo County, currently employing over 1300 personnel. The nuclear power plant is slated to be decommissioned which is estimated to stretch approximately 2 decades once their permit to operate expires. This training is also applicable to the scores of nuclear power plants thru ought the U.S. and globally.

Additionally, the electrical technology track directly supports our general electrician trainee certification. The state of California projects that the electrician trade will be the fastest growing, highest demand, shortest supply of all craft trades through 2025 and beyond. Journey level electricians earned a median income of over \$71,000 per year in San Luis Obispo County during 2018. Several graduates of the EET program have well exceeded that income with 4 or more years of experience at the journey person level. The modified dual track A.S. curriculum is summarized on the following page.

Our program is approaching impaction and is seriously in need of additional funding for several instructional necessities. The EET Unit Plan describes specifics.

CUESTA COLLEGE PROGRAM OF STUDY

Proposed For: 2017-2018

ELECTRICAL TECHNOLOGY Associate in Science

This certification program presents a broad range of topics that will enable students to gain the skills and knowledge necessary to install, maintain and troubleshoot a variety of electrical and electronic control systems. These include residential wiring, commercial/industrial wiring and cabling, national electric code, troubleshooting and maintenance, motor controls and programmable logic controllers. The National Science Foundation (NSF) and local industry awarded significant grants and resources to construct three (3) separate Cuesta laboratories: a state-of-the-art polyphase power and control laboratory, a computer and network cabling laboratory, and a large all purpose wiring laboratory. The program provides students with theory and "hands-on" practical experience related to all aspects of electrical, transformer, and controls technology. Prior knowledge of electronics and the electrical trade is not required: however, successful students will master the skills required for success in the electrical trades and related electrical and electronic industries listed under "career opportunities".

This program of study leads to the Associate in Science degree. As such, general education courses are required as described in the Cuesta College Cataloge. Intermediate algebra is not listed under the core technical courses because the mathematics requirement is considered general education for Associate in Science degrees.

CALIFORNIA STATE APPROVED ELECTRICIAN PROGRAM:

California law requires that any individual working for an Electrical (C-10) Contractor be certified as an "Electrician Trainee", "Residential Electrician" or "General Electrician" by the California Division of Labor Standards Enforcement (per. 108-108.5 CLC). The Electrician Trainee Program in Cuesta's Electronic and Electrical Technology (EET) Department is the only fully certified non-union program within over a 100 mile radius of our main campus. Upon enrollment in one or more of the program courses, students will be able to immediately apply for their Electrician Trainee Certification number/card and legally work for contractors. After completion of the certificate, students will be eligible to take the California "General Electrician" and /or "Residential"

Electrician" Exam(s).

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Career Opportunities in Electronics & Electrical Tech

Electrical Engineering Technologist, Industrial Electrician, Commercial Electrician, Utility Line Worker, Electronics Engineering Technologist, Electro-mechanical Technician, Electrical Inspector, Electrical Maintenance Technician, Quality Assurance Specialist (Electro-mechanical and/or Electronics), Solar Technician, Solar Installer, Utility Emergency Service Technician, Utility Line-Worker, Power Plant Electrician, Power Plant Control Room Operator, Environmental Engineer, Cathodic Protection Technician, Utility Electrical Mechanic, Electrical Crew Foreman, Utility Power Plant Superintendent, Electrical (C-10) Contractor

Required Cour	rses (14 credits)	Units
EET 213	ELECTRONICS FUNDAMENTALS	6
EET 224	INDUSTRIAL ELECTRONICS	4
EET 267	POWER SYSTEMS AND ROTATING ELECTRICAL MACHINERY	4
Choose one of	f the following tracks :	
Electrical Tech	nnology Track (17 credits)	Units
CTCH 163	CONSTRUCTION MANAGEMENT	3
EET 169	RESIDENTIAL WIRING	3
EET 181	NATIONAL ELECTRICAL CODE	3
EET 183	COMMERCIAL AND INDUSTRIAL WIRING SYSTEMS	4
EET 228	PLC AUTOMATION AND SOLAR MONITORING	4
Nuclear Mainte	enance Track (22 credits)	Units
EET 227	FLUID AND PNEUMATIC TECHNOLOGY	4
EET 257	COMPUTER INSTRUMENTATION AND CONTROL	4
EET 270	NUCLEAR POWER PROCESSES FOR TECHNICIANS	3
EET 271	NUCLEAR POWER FUNDAMENTALS	3
EET 272	NUCLEAR SYSTEMS MAINTENANCE I	4
EET 273	NUCLEAR SYSTEMS MAINTENANCE II	4
Total Units	5	31 - 36
		PID 756

PROGRAM PLANNING / FORECASTING FOR THE NEXT ACADEMIC YEAR

Briefly describe any program plans for the upcoming academic year. These may include, but are not limited to the following: (Note: you do not need to respond to each of the items below). If there are no forecasted plans for the program, for the upcoming year, indicate: NONE.

- A. New or modified plans for achieving program-learning outcomes.
- B. Anticipated changes in curriculum, scheduling or delivery modality
- C. Levels, delivery or types of services
- D. Facilities changes

There remains a pending (but in progress) need for two 60 inch (campus standard) monitors with wireless audio system and speakers in room: 4501 – D (Power Electronics Lab)

E. Staffing projections

Permeate part-time lab-aide (backfill – Bill Bauer) Top 10 E&T multiple years
Part-time adjunct faculty pool. (Position is currently posted and interviews are scheduled for April-2019.

F. Other

Electrical work-truck and/or trailer for state electrical program.

Electrical hand tools

Additional supply budget ~ + \$5,000. For Residential, Commercial & Industrial Wiring Courses Note: EET supply budget currently @ \$3,000 / year... Previously, ~ \$9,000. / year.

PROGRAM SUSTAINABILITY PLAN PROGRESS REPORT

This section only needs to be completed if a program has an existing Program Sustainability Plan. Indicate whether objectives established in your Program Sustainability Plan have been addressed or not, and if improvement targets have been met.

			Has	the
Area of Decline or	Identified Objective	Planning Steps	Improvement	
Challenge	(Paste from PSP)	(Check all that apply)	Target	Been
			Met?	
		\square Identified		
Enrollment		☐ Resources Allocated	Select one	
		☐ Implemented		
Ctudout Domond		\square Identified		
Student Demand		☐ Resources Allocated	Select one	
(Fill Rate)		☐ Implemented		
Tfficion ou		☐ Identified		
Efficiency (FTES/FTEF)		☐ Resources Allocated	Select one	
(FIES/FIEF)		☐ Implemented		
Ctudent Cuesess		☐ Identified		
Student Success –		☐ Resources Allocated	Select one	
Course Completion		☐ Implemented		
Charles Carres		☐ Identified		
Student Success—		☐ Resources Allocated	Select one	
Course Modality		☐ Implemented		
Degrees and		☐ Identified		
Certificates		☐ Resources Allocated	Select one	
Awarded		☐ Implemented		

If Program Sustainability Plan is still necessary, provide a brief description of how you plan to continue your PSP and update your PSP to remove any objectives that have been addressed and include any new objectives that are needed.