Nuclear Energy Systems Certificate of Achievement/Power and Instrumentation Certificate of Specialization (Electronics and Electric Technology TOP: 0934.00)

June 2019

Prepared by the South Central Coast Center of Excellence for Labor Market Research

Program Recommendation

This report was compiled by the South Central Coast[1] Center of Excellence to provide regional labor market data for the program recommendation – Nuclear Energy Systems Certificate of Achievement/Power and Instrumentation Certificate of Specialization. This report can help determine whether there is demand in the local labor market that is not being met by the supply from programs of study (CCC and non-CCC) that align with this occupation group.

Key Findings

- In the South Central Coast region, the number of jobs related to Electronics and Electric Technology is expected to decline for all related occupations except Electro-Mechanical Technicians, which will remain steady.
- Electro-Mechanical Technicians and Power Plant Operators are at high risk of automation, Electrical and Electronic Engineering Technicians are anticipated to experience a medium risk of automation, and Nuclear Equipment Operations Technicians are anticipated to experience a low risk of automation.
- In 2017 there were 14 regional completions in programs related to the occupations identified as related to Electronics and Electric Technology, and 172 openings, indicating an undersupply in this area.
- Typical entry-level education ranges from a high school diploma or equivalent for Nuclear Equipment Operations Technicians to an Associate's degree for Electrical and Electronic Engineering Technicians, Electro-Mechanical Technicians, and Power Plant Operators.
- Completers of regional Electronics and Electric Technology programs (TOP 0934.00) from the 2015-2016 academic year had a median annual wage upon completion of $31,776.
- 69% of students are earning a living.
- 75% of students are employed within a year after completing a program.

[1] The South Central Coast Region consists of San Luis Obispo County, Santa Barbara County, Ventura County, and the following cities from North Los Angeles County: Canyon Country, Castaic, Lake Hughes, Lancaster, Littlerock, Llano, Newhall, Palmdale, Pearblossom, Santa Clarita, Stevenson Ranch, and Valencia.

Occupation Codes and Descriptions

Currently, there are four occupations in the standard occupational classification (SOC) system that are related to Electronics and Electric Technology. The occupation titles and descriptions, as well as reported job titles are included in Exhibit 1.

Exhibit 1 – Occupation, description, and sample job titles

SOC Code	Title	Description	Sample of Reported Job Titles
17-3023	Electrical and Electronic Engineering Technicians	Apply electrical and electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, calibrate, and modify electrical components, circuitry, controls, and machinery for subsequent evaluation and use by engineering staff in making engineering design decisions.	Digital Tech (Digital Technician), Electrical Technician, Electronics Engineering Technician, Electronics Technician, Engineering Technician (Engineering Tech), Failure Analysis Technician (FA Technician), Refurbish Technician (Refurb Tech), Senior Electronics Technician, Technician, Test Technician
17-3024	Electro-Mechanical Technicians	Operate, test, maintain, or calibrate unmanned, automated, servo-mechanical, or electromechanical equipment. May operate unmanned submarines, aircraft, or other equipment at worksites, such as oil rigs, deep ocean exploration, or hazardous waste removal. May assist engineers in testing and designing robotics equipment.	Electro-Mechanic, Electro-Mechanical Technician (E/M Technician), Electronic Technician, Engineering Technician, Laboratory Technician (Lab Technician), Maintenance Technician, Mechanical Technician, Product Test Specialist, Test Technician, Tester
19-4051.01	Nuclear Equipment Operations Technicians	Operate equipment used for the release, control, or utilization of nuclear energy to assist scientists in laboratory or production activities.	Auxiliary Operator, Equipment Operator, Licensed Nuclear Operator, Non-Licensed Nuclear Equipment Operator (NLO), Non-Licensed Nuclear Plant Operator (NLO), Nuclear Auxiliary Operator, Nuclear Equipment Operator (NEO), Nuclear Plant Equipment Operator (NAPEO), Operations Technician, Systems Operator
51-8013	Power Plant Operators	Control, operate, or maintain machinery to generate electric power. Includes auxiliary equipment operators.	Auxiliary Operator, Control Operator, Control Room Operator, Multicraft Operator (MCO), Operations and Maintenance Technician (O & M Technician), Plant Control Operator, Power Plant Operator, Senior Power Plant Operator, Station Operator, Unit Operator

Source: O*NET Online

Current and Future Employment

In the South Central Coast region, the number of jobs related to Electronics and Electric Technology is expected to decline for all related occupations except Electro-Mechanical Technicians, which is projected to remain steady. Exhibit 2 contains detailed employment projection data for these occupations.

Exhibit 2 – Five-year projections for Electronics and Electric Technology in the South Central Coast region

SOC	Occupation	2018 Jobs	2023 Jobs	2018-2023 Change	2018-2023 % Change
17-3023	**Electrical and Electronic Engineering Technician**	1,337	1,309	-28	-2%
17-3024	**Electro-Mechanical Technicians**	95	96	1	1%
19-4051 (19-4051.01)	**Nuclear Technicians (Nuclear Equipment Operations Technicians)**	20	17	-3	-15%
51-8013	**Power Plant Operators**	235	212	-23	-10%

Source: Economic Modeling Specialists International (EMSI)

Earnings

In the South Central Coast region, the average wage for the listed occupations is $34.77 per hour.

Exhibit 3 contains hourly wages and annual average earnings for this occupation. Entry-level hourly earnings is represented by the 25th percentile of wages, median hourly earnings is represented by the 50th percentile of wages, and experienced hourly earnings is represented by the 75th percentile of wages, demonstrating various levels of employment.

Exhibit 3 – Earnings for Electronics and Electric Technology in the South Central Coast region

SOC	Occupation	Entry-Level Hourly Earnings	Median Hourly Earnings	Experienced Hourly Earnings
17-3023	**Electrical and Electronic Engineering Technician**	$26.42	$35.38	$44.81
17-3024	**Electro-Mechanical Technicians**	$21.33	$35.88	$47.30
19-4051 (19-4051.01)	**Nuclear Technicians (Nuclear Equipment Operations Technicians)**	$35.63	$44.60	$55.01
51-8013	**Power Plant Operators**	$20.45	$27.20	$42.15

Source: Economic Modeling Specialists International (EMSI)

Employer Job Postings

In this research brief, real-time labor market information is used to provide a more nuanced view of the current job market, as it captures job advertisements for occupations relevant to the field of study. Employer job postings are consulted to understand who is employing electronics technicians, and what they are looking for in potential candidates. To identify job postings related to Electronics and Electric Technology, the following standard occupational classifications were used:

17-3023	**Electrical and Electronic Engineering Technicians**
17-3024	**Electro-Mechanical Technicians**
19-4051.01	**Nuclear Equipment Operations Technicians**
51-8013	**Power Plant Operators**

Top Occupations

In 2018, there were 412 employer postings for occupations related to Electronics and Electric Technology.

Exhibit 4 – Top occupations in job postings and risk of automation tables

SOC Code	Occupation	Job Postings, Full Year 2018
17-3023	Electrical and Electronic Engineering Technicians	226
17-3024	Electro-Mechanical Technicians	156
51-8013	Power Plant Operators	29
19-4051.01	Nuclear Equipment Operations Technicians	1

Source: Labor Insight/Jobs (Burning Glass)

SOC Code	Occupation	Risk of Automation
17-3023	Electrical and Electronic Engineering Technicians	Medium
17-3024	Electro-Mechanical Technicians	High
51-8013	Power Plant Operators	High
19-4051.01	Nuclear Equipment Operations Technicians	Low

Source: Labor Insight/Jobs (Burning Glass)

Top Titles

The top job titles for employers posting ads for jobs related to Electronics and Electric Technology are listed in Exhibit 5. Test Technician is mentioned as the job title in 18% of all relevant job postings (75 postings).

Exhibit 5 –Job titles

Title	Job Postings, Full Year 2018
Test Technician	75
Electronics Technician (Engineering)	67
Instrumentation Technician	44
Electronics Technician (Electro-Mechanical)	39
Calibration Technician	26
Electrical Technician	25
Plant Operator	17

Source: Labor Insight/Jobs (Burning Glass)

Top Employers

Exhibit 6 lists the major employers hiring professionals in the Electronics and Electric Technology field. The top employer posting job ads was General Atomics. The top worksite cities in the region for these occupations were Camarillo, Palmdale, Santa Clarita, Thousand Oaks, and Oxnard.

Exhibit 6 – Top employers (n=301)

Employer	Job Postings, Full Year 2018
General Atomics	23
Northrop Grumman	21
Benchmark Electronics	9
Jt3 LLC	9
Lockheed Martin Corporation	9

Source: Labor Insight/Jobs (Burning Glass)

Skills

Repair is the most sought after skill for employers hiring for jobs related to Electronics and Electric Technology.

Exhibit 7 –Job skills (n=370)

Skills	Job Postings, Full Year 2018
Repair	195
Test Equipment	127
Calibration	84
Oscilloscopes	78
Soldering	78

Source: Labor Insight/Jobs (Burning Glass)

Industry Concentration

Exhibit 9 shows the industries where most electronics technicians are employed in the South Central Coast region. Note: 31% of records have been excluded because they do not include an industry. As a result, the chart below may not be representative of the full sample.

Exhibit 9 – Industries employing the most electronics technicians, 2018

Industry	Occupation Group Jobs in Industry	% of Occupation Group in Industry
Manufacturing	121	43%
Professional, Scientific, and Technical Services	80	28%
Public Administration	24	8%
Utilities	13	5%
Educational Services	10	4%

Source: Labor Insight/Jobs (Burning Glass)

Education and Training

Exhibit 10 shows the typical entry-level education requirement for the occupations of interest, along with the typical on-the-job training needed to attain competency in the occupation.

Exhibit 10 – Education and training requirements

SOC	Occupation	Typical entry-level education	Typical on-the-job training
17-3023	**Electrical and Electronic Engineering Technicians**	Associate's Degree	None
17-3024	**Electro-Mechanical Technicians**	Associate's Degree	None
19-4051.01	**Nuclear Equipment Operations Technicians**	Associate's Degree	Moderate-term on-the-job training
51-8013	**Power Plant Operators**	High school diploma or equivalent	Long-term on-the-job training

Source: Bureau of Labor Statistics Employment Projections (Educational Attainment)

Regional Completions and Openings

There were 14 regional completions (2017) and 172 regional openings (2017) in the South Central Coast region in programs related to the occupations identified as related to Electronics and Electric Technology.

Exhibit 11 – Completions and Openings

4 Regional Institutions had Related Programs (2017)	**14** Regional Completions (2017)	**172** Annual Openings (2017)

Source: Economic Modeling Specialists International (EMSI)

Related Programs

CIP Code	Program	Completions (2017)
15.0000	Engineering Technology, General	10
15.9999	Engineering Technologies and Engineering-Related Fields, Other	4
15.0303	Electrical, Electronic and Communications Engineering Technology/Technician	0
15.0399	Electrical and Electronic Engineering Technologies/Technicians, Other	0

Source: Economic Modeling Specialists International (EMSI)

Student Outcomes

The CTE LaunchBoard provides student outcome data on the effectiveness of CTE programs. The following student outcome information was collected from exiters of the Electronics and Electric Technology program (TOP Code: 0934.00) in the South Central Coast region for the 2015-16 academic year.

- The median annual wage for students after exiting is $31,776
- Starting salary in the region for Electrical and Electronics Engineering Technicians is $65,749
- 69% of students are earning a living wage
- 75% of students are employed within a year after completing a program

Source: CTE LaunchBoard

Sources

O*Net Online, Labor Insight/Jobs (Burning Glass), Economic Modeling Specialists International (EMSI), MIT Living Wage Calculator, Bureau of Labor Statistics (BLS) Education Attainment, California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart, CTE LaunchBoard, Statewide CTE Outcomes Survey, Employment Development Department Unemployment Insurance Dataset

Notes

Data included in this analysis represents the labor market demand for positions most closely related to electronics technicians. Traditional labor market information was used to show current and projected employment based on data trends, as well as annual average awards granted by regional community colleges. Real-time labor market information captures job post advertisements for occupations relevant to the field of study and should not be used to establish current job openings, because the numbers may include duplicate job postings or postings intended to gather a pool of applicants. Real-time labor market information can signal demand and show what employers are looking for in potential employees, but is not a perfect measure of the quantity of open positions.