



# Electronics

## **Degree**

Industrial Technology, Electronics Option, Associate of Science

## **Certificates**

Electronics Technology, Certificate of Achievement

Electronics - Industrial Automation, Job Skills Certificate

Electronics - Industrial Communication , Job Skills Certificate

Electronics - Industrial Maintenance , Job Skills Certificate

Electronics - Manufacturing Automation , Job Skills Certificate

## Industrial Technology, Electronics Option, Associate of Science

Technology runs the planet, with electronics playing an essential role. It is a digital world, and those who understand this world can become valuable additions to technology-focused employers. The Industrial Technology Degree, Electronics Option, teaches essential skills that can be put to use as an industrial technician, electronics technician, field service representative, salesperson or computer technician. A degree holding student will also be looked at for quick promotions into supervision and management positions.

### To Achieve the Associate in Science

Upon completion of the following courses with at least a 'C' grade in each course, the student will be awarded an Industrial Technology, Electronics Options Associate in Science degree.

### To Transfer Coursework

A minimum of 33 semester units in the major with a grade of 'C' or better while maintaining a minimum grade point average of at least 2.0 in all California State University transferable coursework.

### Program Learning Outcomes

The successful student will be able to:

- demonstrate proficiency in technical skills and safety principles required for employment in the electronics industry.
- demonstrate problem solving skills used in electrical design and product development.
- demonstrate a deep understanding of the core material required for certification in the electronics program.

### Total Units: 33

#### Required Courses

Course #	Name	Units
ELET B1	Basic Electronics (DC and AC)	4.0
ELET B5	Programmable Logic Controllers	3.0
ELET B6	Analog and Digital Electronics	3.0
ELET B55A	Electric Motors-Controls	4.0
ELET B56	Instrumentation & Process Control	3.0
ELET B61	Telecommunications	3.0
ELET B62	Radio Communications	3.0
ELET B70	Mechanical Systems	3.0
INDT B10	Occupational Readiness -or equivalent-	3.0

#### Electives - Select at least 4 units from the following:

ELET B4	Computer Integrated Manufacturing	3.0
ELET B63	Electronic Systems Installation	3.0
MFGT B1AB	Machine Tool Processes	3.0

## Electronics Technology Certificate of Achievement

The Bakersfield College Electronics Certificate program will show the world that you have gained the necessary knowledge and skills to perform better on the job. This program of study is widely recognized and modeled after local industry competency standards. A certified electronic professional often appears more dedicated, more skilled and thus more attractive to prospective employers. Program includes study in the following areas: Electrical theory and components, soldering, wiring diagrams, safety, advanced analog semiconductor and digital devices, power supplies, test equipment, programmable logic controllers, Allen Bradley SLC 500 and CLX 5000 Instrumentation, temperature, pressure, level detectors, radio communications, antenna and transmission lines, telecommunications, video, data, network technology, motor theory and wiring, computer integrated manufacturing, installation and wiring standards, and mechanical systems. Career opportunities in Electronics Technology include entry level positions in petroleum/energy, manufacturing automation, instrumentation/process control, logistics and distribution, ancillary services, telecommunications, radio communications, food and materials processing, and industrial maintenance.

### Program Learning Outcomes

The successful student will be able to:

- demonstrate proficiency in technical skills and safety principles required for industrial employment.
- demonstrate a deep understanding of the core material required for transfer to a four year university degree program or for certification in the department programs.

### Career Opportunities:

Industrial Maintenance Mechanic, Instrumentation Technician, Process Technician, Communications Technician, Controls Technician, Automation Technician

### Total Units: 33

#### Required Courses

Course #	Name	Units
ELET B1	Basic Electronics (DC and AC)	4.0
ELET B5	Programmable Logic Controllers	3.0
ELET B6	Analog and Digital Electronics	3.0
ELET B55A	Electric Motors-Controls	4.0
ELET B56	Instrumentation & Process Control	3.0
ELET B61	Telecommunications	3.0
ELET B62	Radio Communications	3.0
ELET B70	Mechanical Systems	3.0
INDT B10	Occupational Readiness -or equivalent	3.0

#### Electives - select at least 4 units from the following

ELET B4	Computer Integrated Manufacturing	3.0
ELET B63	Electronic Systems Installation	3.0
INDR B12	Introduction to Drafting and CAD	2.0
ELET B58	Advanced Programmable Logic Controllers	3.0
WELD B1B	Introduction to the Welding Processes	2.0
MFGT B1AB	Machine Tool Processes	3.0

## Electronics, Industrial Automation

### Job Skills Certificate

The Bakersfield College Electronics Certificate program will show the world that you have gained the necessary knowledge and skills to perform better on the job. This program of study is widely recognized and modeled after local industry competency standards. A certified electronic professional often appears more dedicated, more skilled and thus more attractive to prospective employers. Program includes study in the following areas: electrical theory and components, soldering, wiring diagrams, safety programmable logic controllers, Allen Bradley SLC 500 and CLX 5000 computer integrated manufacturing. This program prepares students for careers in electronics technology. Entry level positions in petroleum/energy, manufacturing automation, process control, logistics and distribution, material processing, and industrial maintenance.

#### Program Learning Outcomes

The successful student will be able to:

- demonstrate proficiency in automation programming/troubleshooting related to programmable logic controllers and safety principles required for industrial employment.
- demonstrate problem solving skills used in ladder logic and sequential function charts, to include design and development of programmable logic controllers circuits.
- demonstrate an understanding of the core material and theory related to programmable automation controllers that is required for transfer to a four year university degree program or for certification.

#### Career Opportunities:

Industrial Maintenance Mechanic, Instrumentation Technician, Process Technician, Controls Technician, Automation Technician

#### Total Units: 9

##### Required Courses

Course #	Name	Units
ELET B4	Computer Integrated Manufacturing	3.0
ELET B5	Programmable Logic Controllers	3.0
ELET B58	Advanced Programmable Logic Controllers	3.0

## Electronics, Industrial Communication

### Job Skills Certificate

The Bakersfield College Electronics Certificate program will show the world that you have gained the necessary knowledge and skills to perform better on the job. This program of study is widely recognized and modeled after local industry competency standards. A certified electronic professional often appears more dedicated, more skilled and thus more attractive to prospective employers. Program includes study in the following areas: electrical theory and components, soldering, wiring diagrams, safety advanced analog semiconductor and digital devices, power supplies, test equipment, radio communications, antenna and transmission lines, telecommunications, video, data, network technology, and installation and wiring standards. This program prepares students for careers in electronics technology. Entry level positions in ancillary services, telecommunications, and radio communications.

#### Program Learning Outcomes

The successful student will be able to:

- demonstrate proficiency in technical skills and safety principles required for employment in the communication field.
- demonstrate problem solving and troubleshooting skills used in multi-spectrum industrial equipment for wired and over the air systems.
- demonstrate an understanding of theory and core material related to industrial communication, radio and telecommunications, that is required for transfer to a four year university degree program or for certification

#### Career Opportunities:

Communications Technician

#### Total Units: 9

##### Required Courses

Course #	Name	Units
ELET B6	Analog and Digital Electronics	3.0
ELET B61	Telecommunications	3.0
ELET B62	Radio Communications	3.0

## Electronics, Industrial Maintenance

### Job Skills Certificate

The Bakersfield College Electronics Certificate program will show the world that you have gained the necessary knowledge and skills to perform better on the job. This program of study is widely recognized and modeled after local industry competency standards. A certified electronic professional often appears more dedicated, more skilled and thus more attractive to prospective employers. Program includes study in the following areas: electrical theory and components, soldering, wiring diagrams, safety instrumentation, temperature, pressure, level detectors, motor theory and wiring, installation and wiring standards and mechanical systems. This program prepares students for careers in electronics technology. Entry level positions in petroleum/energy, instrumentation/process control, logistics and distribution, ancillary services, materials processing, and industrial maintenance.

#### Program Learning Outcomes

The successful student will be able to:

- demonstrate proficiency and safe operation of motors and process control technology that is required for industrial employment.
- demonstrate troubleshooting and problem solving skills used by maintenance personnel for industrial technology related fields.
- demonstrate an understanding of instrumentation and mechanical systems for transfer to a four year university degree program or for certification.

#### Career Opportunities:

Industrial Maintenance Mechanic, Instrumentation Technician, Process Technician, Controls Technician, Automation Technician

#### Total Units: 10

##### Required Courses

Course #	Name	Units
ELET B55A	Electric Motors-Controls	4.0
ELET B56	Instrumentation & Process Control	3.0
ELET B70	Mechanical Systems	3.0

## Electronics, Manufacturing Automation

### Job Skills Certificate

The Bakersfield College Electronics Certificate program will show the world that you have gained the necessary knowledge and skills to perform better on the job. This program of study is widely recognized and modeled after local industry competency standards. A certified electronic professional often appears more dedicated, more skilled and thus more attractive to prospective employers. Program includes study in the following areas: electrical theory and components, soldering, wiring diagrams, safety, programmable logic controllers, instrumentation, temperature, pressure, level detectors, computer integrated manufacturing motor theory and wiring, and mechanical systems. This program prepares students for careers in electronics technology, entry level positions in petroleum/energy, manufacturing, instrumentation/process control, logistics and distribution, ancillary services, food and materials processing, and industrial maintenance.

#### Program Learning Outcomes

The successful student will be able to:

- demonstrate proficiency in manufacturing automation related skills and safety principles required for industrial employment.
- demonstrate problem solving skills used in industrial environments and manufacturing.
- demonstrate an understanding of industrial manufacturing and electronics that is required for transfer to a four year university degree program and certification.

#### Career Opportunities:

Industrial Maintenance Mechanic, Instrumentation Technician, Process Technician, Controls Technician, Automation Technician

#### Total Units: 16

##### Required Courses

Course #	Name	Units
ELET B4	Computer Integrated Manufacturing	3.0
ELET B5	Programmable Logic Controllers	3.0
ELET B55A	Electric Motors-Controls	4.0
ELET B56	Instrumentation & Process Control	3.0
ELET B70	Mechanical Systems	3.0