

# ELECTRICAL AND COMPUTER ENGINEERING TECHNOLOGY

## Electrical and Computer Engineering Technology with Specializations in:

- Electronics
- Laser and Photonics
- Robotics and Mechatronics
- Career Path to Valencia's B.S. Degree in Electrical and Computer Engineering Technology

## Associate in Science Degree (CIP# 1615030301)

This program is designed to produce highly skilled technicians capable of assisting in the design, production, operation and servicing of electronics, optics, photonics, lasers, robotics and mechatronics systems and equipment. The specializations will provide an up-to-date curriculum in electronics engineering, lasers and photonics, and robotics and mechatronics technology. Valencia is a Center of Electronics Emphasis in Florida and is equipped with special test equipment and advanced laboratories, which provide the latest in hands-on experience.

Students are strongly encouraged to consult a career program advisor in the department office for assistance in determining the best education plan for their career goals.

Although scheduling may not always provide for the following progression of courses, students should use the foundation, intermediate and advanced course sequence as a guide in program planning.

All degree-seeking students must satisfy entry testing requirements and satisfactorily complete all mandatory courses in reading, student success, mathematics, English, and English for Academic Purposes in which the student is placed.

## Alternative Ways to Earn Credit toward this Degree

Graduates of specific programs at Orange Technical College and Osceola Technical College, as well as other institutions may be eligible to receive college credit for courses in this program. You may also be eligible to receive credit toward this degree if you have earned one of the approved Gold Standard industry certifications or Career Pathways credit. To learn more about Valencia's award of credit options, visit <https://valenciacollege.edu/academics/programs/as-degree/credit-industry-certification-agreements.php>. Eligible students should contact the Career Program Advisor in their academic department for more information about the requirements for the award of credit.

## College Credit Technical Certificates

The Electronics Engineering A.S. degree also offers the following college credit certificate programs. These certificates can put you on the fast-track to reaching your career goals. They are designed to equip you with a specialized skill set for entry-level employment or to upgrade your skills for job advancement. Most can be completed in one year or less, and all of the courses in the certificates are embedded in the A.S. degree. You can earn the certificates as you progress through your A.S. Degree or as a separate, stand-alone credential. Click on the Certificate tab at the top of the page for more information about the certificates that are offered.

- Laser and Photonics Technician (12 credits) (CIP # 0615030411)
- Robotics Applications Technician (12 credits) (CIP # 0615040514)
- Basic Electronics Technician (14 credits) (CIP # 0615030310)
- Advanced Electronics Technician (31 credits) (CIP # 0615030309)

## Start Right

Degree-seeking students enrolling at Valencia for the first time will have a limited range of courses from which to choose for their first 18 college-level credits. Within the first 18 college credit hours, you will be required to take ENC1101 (3 credits), and if applicable, SLS 1122 (3 credits) and a mathematics course appropriate to your selected meta-major (3 credits). The remaining courses will be chosen from the General Education Core Courses in humanities (3 credits), science (3 credits), or social science (3 credits), and/or the introductory courses within the A.S. degree programs. For specific courses see the *Foundation Courses* on the "Program Requirements" tab. For course sequencing recommendations, see your Career Program Advisor or create an education plan by logging into Atlas, clicking on the LifeMap tab and clicking My Education Plan.

## Potential Careers

- Electronics Technician
- Field Technician
- System Technician
- Electronics Tester
- Fiber Optics Specialist
- Instrumentation Technician
- Robotics and Simulation Technician
- Laser Specialist

## Salary & Earnings Information

For career information related to this program, please visit **O\*Net OnLine** (<https://www.onetonline.org/>).

## Contacts

### Future Students

To learn more about this program, contact Enrollment Services at [enrollment@valenciacollege.edu](mailto:enrollment@valenciacollege.edu) or 407-582-1507 or visit <https://valenciacollege.edu/electrical-engineering/>

### Current Students

Your Career Program Advisor contact information can be found in Atlas. Log into Atlas, click on the Courses tab, and check your Academic Profile information to find a link to your Advisor.

### **West Campus Faculty Program Chair**

Radu Bunea: 407-582-1360  
[rbunea@valenciacollege.edu](mailto:rbunea@valenciacollege.edu)

## Internship and Workforce Services

If you need assistance with job resources or in locating an internship, please visit: [valenciacollege.edu/internship](https://valenciacollege.edu/internship) (<https://valenciacollege.edu/internship/>).

## Career Path in Electronics, Laser and Photonics, or Robotics and Mechatronics Specializations

### Program Outcomes

- Apply basic mathematical and engineering concepts to technical problem solving
- Accept professional and ethical responsibilities of the engineering technology profession
- Communicate effectively in technical and non-technical environments

### Program Requirements

#### Foundation Courses

EET 1214C	INTRODUCTION TO ENGINEERING TECHNOLOGY	3
MTB 1329	MATHEMATICS FOR ENGINEERING TECHNOLOGY	3
MGF 1106 or MAC 1105	LIBERAL ARTS MATHEMATICS I *~ COLLEGE ALGEBRA	3
PHY 1020 or CHM 1020	CONCEPTUAL PHYSICS (or higher) ~ <sup>1</sup> CHEMISTRY IN EVERYDAY LIFE	3
ENC 1101	FRESHMAN COMPOSITION I +*~	3
Humanities	See Gen. Ed. Core Requirements ~	3
POS 2041	U.S. GOVERNMENT ~	3

#### Intermediate Courses

ETS 1210C	INTRODUCTION TO PHOTONICS *	3
CET 2114C or CET 2113C	DIGITAL SYSTEMS * DIGITAL SYSTEMS II	3
CET 2123C	FUNDAMENTALS OF MICROPROCESSORS *	3
EET 1015C	FUNDAMENTALS OF DC CIRCUITS *	3
EET 1025C	FUNDAMENTALS OF AC CIRCUITS *	3
EET 1141C	SEMICONDUCTOR DEVICES AND CIRCUITS	3
Specialization (See below)		29

**Total Credit Hours** **68**

+ This course must be completed with a grade of C or better.

\* This course has a prerequisite; check description in Valencia catalog.

~ This is a general education course.

(GR) Denotes a Gordon Rule course.

<sup>1</sup> PHY 2048C GENERAL PHYSICS WITH CALCULUS I, PHY 2053C COLLEGE PHYSICS I WITH ALGEBRA or higher can be used instead of PHY 1020 CONCEPTUAL PHYSICS; CHM 1045C GENERAL CHEMISTRY WITH QUALITATIVE ANALYSIS I or higher can be used instead of CHM 1020 CHEMISTRY IN EVERYDAY LIFE

### Electronics Specialization Program Outcome

- Assist in the design, operation, and troubleshooting of electronic systems

EET 2325C	RF COMMUNICATION *	3
EET 2365C	WIRELESS AND DATA COMMUNICATIONS *	3

EET 2142C	INTEGRATED CIRCUITS *	3
ETS 2511C	ELECTROMECHANICAL SYSTEMS *	3
ETS 2542C	PROGRAMMABLE LOGIC CONTROLLERS I *	3
CET 2118C	FPGA DESIGN USING VHDL *	3
Electrical and Computer Engineering Technology Electives		11
<b>Total Credit Hours</b>		<b>29</b>

\* This course has a prerequisite; check description in Valencia catalog.

### Laser and Photonics Specialization Program Outcome

- Assist in the design, operation, and troubleshooting of laser and photonics equipment and systems

ETS 2220C	INTRODUCTION TO FIBER OPTICS *	3
ETS 2221C	INTRODUCTION TO ELECTRO-OPTICAL DEVICES *	3
ETS 2230C	INTRODUCTION TO LASERS *	3
EET 2325C	RF COMMUNICATION *	3
EET 2365C	WIRELESS AND DATA COMMUNICATIONS *	3
EET 2142C	INTEGRATED CIRCUITS *	3
Electrical and Computer Engineering Technology Electives		11
<b>Total Credit Hours</b>		<b>29</b>

\* This course has a prerequisite; check description in Valencia catalog.

### Robotics and Mechatronics Specialization Program Outcome

- Assist in the Design, Operation, and Troubleshooting of Robotics and Mechatronics Systems

ETS 1603C	FUNDAMENTALS OF ROBOTICS AND SIMULATION *	3
ETS 2604C	ROBOTICS APPLICATIONS *	3
ETS 2511C	ELECTROMECHANICAL SYSTEMS *	3
ETS 2542C	PROGRAMMABLE LOGIC CONTROLLERS I *	3
EET 2325C	RF COMMUNICATION *	3
EET 2365C	WIRELESS AND DATA COMMUNICATIONS *	3
Electrical and Computer Engineering Technology Electives		11
<b>Total Credit Hours</b>		<b>29</b>

\* This course has a prerequisite; check description in Valencia catalog.

#### Electrical and Computer Engineering Technology Electives

The Electives requirement may be satisfied with any course(s) offered in the A.S. Electrical and Computer Engineering Technology degree, not already used to satisfy program requirements.

\* This course has a prerequisite; check description in Valencia catalog.

**Notes:**

Upon earning the A.S. Degree in Electrical and Computer Engineering Technology, students can continue at Valencia to complete the Bachelor's Degree in Electrical and Computer Engineering Technology. Additional education at the bachelor's level can enhance your skills and create more career opportunities. Students who wish to continue their education should consult with their Career Program Advisor to determine the best education plan for their career goals.

## Career Path to Valencia's B.S. Degree in Electrical and Computer Engineering Technology

### Program Outcomes

- Assist in the design, operation, and troubleshooting of electronic systems
- Apply basic mathematical and engineering concepts to technical problem solving
- Accept professional and ethical responsibilities of the engineering technology profession
- Communicate effectively in technical and non-technical environments

**Foundation Courses**

EET 1214C	INTRODUCTION TO ENGINEERING TECHNOLOGY	3
ETS 1210C	INTRODUCTION TO PHOTONICS *	3
ETS 2542C	PROGRAMMABLE LOGIC CONTROLLERS I	3
SPC 1608	FUNDAMENTALS OF SPEECH ~	3
ENC 1101	FRESHMAN COMPOSITION I +*~	3
MAC 1105	COLLEGE ALGEBRA +*~	3
MAC 1114	COLLEGE TRIGONOMETRY +*~	3
Humanities	See Gen. Ed. Core Requirements ~	6
Social Science	See Gen. Ed. Core Requirements ~	3
POS 2041	U.S. GOVERNMENT	3

**Intermediate Courses**

ENC 1102	FRESHMAN COMPOSITION II +*~	3
MAC 1140	PRECALCULUS ALGEBRA +*~	3
CET 2114C	DIGITAL SYSTEMS *	3
CET 2123C	FUNDAMENTALS OF MICROPROCESSORS	3
EET 2035C	ELECTRICAL CIRCUITS *	3
MAC 2311	CALCULUS WITH ANALYTIC GEOMETRY I +*~	4

**Advanced Courses**

EET 1141C	SEMICONDUCTOR DEVICES AND CIRCUITS	3
EET 2325C	RF COMMUNICATION *	3
PHY 2048C	GENERAL PHYSICS WITH CALCULUS I +*~	4
MAC 2312	CALCULUS WITH ANALYTIC GEOMETRY II +*~	4

EET 2942	INTERNSHIP IN ELECTRONICS ENGINEERING TECHNOLOGY *	2
<b>Total Credit Hours</b>		<b>68</b>

- + This course must be completed with a grade of C or better.
- \* This course has a prerequisite; check the description in the Valencia catalog.
- ~ This is a general education course.
- (GR) Denotes a Gordon Rule course.

## Advanced Electronics Technician

**Technical Certificate**

This program is designed to prepare individuals for employment as electrical and electronics technicians, electronic testers or in related occupations in electronics. The program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the manufacturing career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of the manufacturing career cluster. The content includes but is not limited to DC circuits, AC circuits, solid-state devices, analog circuits, and digital circuits. Integrated into this content will be communications skills, leadership skills, human relations skills, employability skills, safe and efficient work practices, use of circuit diagrams and schematics, soldering, laboratory practices and technical recording and reporting. This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the Electronics Engineering industry; planning, management, finance, technical and product skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

The program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education to pursue the Electrical and Computer Engineering Technology Bachelor in Science degree at Valencia College for career advancement.

**Program Outcomes:**

- Assist in the design, operation, and troubleshooting of technical systems

Required (12):

EET 1214C	INTRODUCTION TO ENGINEERING TECHNOLOGY	3
CET 2114C	DIGITAL SYSTEMS *	3
or CET 2113C	DIGITAL SYSTEMS II	
EET 1025C	FUNDAMENTALS OF AC CIRCUITS *	3
or EET 2035C	ELECTRICAL CIRCUITS	
EET 1141C	SEMICONDUCTOR DEVICES AND CIRCUITS *	3

<b>Electives (19):**</b>		<b>19</b>
MTB 1329	MATHEMATICS FOR ENGINEERING TECHNOLOGY	3
or MGF 1106	LIBERAL ARTS MATHEMATICS I	
or MAC 1105	COLLEGE ALGEBRA	

EET 1015C	FUNDAMENTALS OF DC CIRCUITS *	3
EET 2325C	RF COMMUNICATION *	3
EET 2365C	WIRELESS AND DATA COMMUNICATIONS *	3
EET 2142C	INTEGRATED CIRCUITS *	3
ETS 1210C	INTRODUCTION TO PHOTONICS *	3
ETS 2511C	ELECTROMECHANICAL SYSTEMS *	3
ETS 2542C	PROGRAMMABLE LOGIC CONTROLLERS I *	3
CET 2123C	FUNDAMENTALS OF MICROPROCESSORS *	3
MAC 2311	CALCULUS WITH ANALYTIC GEOMETRY I *	4
MAC 2312	CALCULUS WITH ANALYTIC GEOMETRY II *	4
PHY 2048C	GENERAL PHYSICS WITH CALCULUS I *	4

\* This course has a prerequisite; check description in Valencia catalog.

\*\* Students are strongly advised to see the program advisor before enrolling for any of the elective courses to satisfy the chosen program pathway.

## Basic Electronics Technician

### Technical Certificate

This program is designed to prepare individuals for employment as electrical and electronics technicians, electronic testers or in related occupations in electronics. This program includes the basic electronics competencies as identified by the electronics industry as prerequisite for all technical programs. This program prepares individuals to assemble, install, operate, maintain, troubleshoot and repair basic electronic equipment used in industry. It also prepares students to enter advanced training and education in specialized electronics-related fields. The content includes, but is not limited to, DC and AC circuits and digital systems. Integrated into this content will be communication, leadership, human relations, and employability skills; safe and efficient work practices; use of circuit diagrams and schematics; soldering; laboratory practices; and technical recording and reporting.

### Program Outcomes

- Assist in the design, operation, and troubleshooting of technical systems

EET 1214C	INTRODUCTION TO ENGINEERING TECHNOLOGY	3
MTB 1329	MATHEMATICS FOR ENGINEERING TECHNOLOGY *	3
or MGF 1106	LIBERAL ARTS MATHEMATICS I	
or MAC 1105	COLLEGE ALGEBRA	
CET 2114C	DIGITAL SYSTEMS *	3
or CET 2112C	DIGITAL SYSTEMS I	
EET 1015C	FUNDAMENTALS OF DC CIRCUITS *	3
or EET 2035C	ELECTRICAL CIRCUITS	
Any EET, ETS, or CET elective		2
<b>Total Credit Hours</b>		<b>14</b>

\* This course has a prerequisite; check description in Valencia catalog.

### Notes:

All certificate courses are offered on the West campus.

Specialized courses may not be offered every session or on every campus

## Laser and Photonics Technician

### Technical Certificate

This program is designed to prepare individuals for employment as laser and optics technicians or in related occupations in laser and optics.

This program includes the basic competencies as identified by the laser and optics industry. This program prepares individuals to assemble, install, operate, maintain, troubleshoot and repair basic laser and optical devices and equipment used in industry and prepares individuals to enter advanced training and education in specialized laser and optics-related fields. The content includes, but is not limited to, laser circuits, electro-optical devices and circuits. Integrated into this content will be communication, leadership, human relations, employability skills, safe and efficient work practices, use of circuit diagrams and schematics, laboratory practices, and technical recording and reporting.

### Program Outcomes

- Assist in the design, operation, and troubleshooting of technical systems

MTB 1329	MATHEMATICS FOR ENGINEERING TECHNOLOGY *	3
or MGF 1106	LIBERAL ARTS MATHEMATICS I	
or MAC 1105	COLLEGE ALGEBRA	
ETS 1210C	INTRODUCTION TO PHOTONICS *	3
ETS 2221C	INTRODUCTION TO ELECTRO-OPTICAL DEVICES *	3
ETS 2230C	INTRODUCTION TO LASERS *	3
or ETS 2220C	INTRODUCTION TO FIBER OPTICS	

**Total Credit Hours** **12**

\* This course has a prerequisite; check description in Valencia catalog.

### Note:

All certificate courses are offered on the West Campus.

Specialized courses may not be offered every session or on every campus.

## Robotics Applications Technician

### Technical Certificate

This program prepares individuals to install, maintain and troubleshoot general robot systems and simulators. Graduates of this technical program will be prepared to enter advanced training and education in specialized Robotics and Simulation related fields. The content includes, but is not limited to: Robotic Applications, Modeling and Simulation, and Virtual Reality Environment. Integrated into this program will be communications skills, leadership skills, human relations skills, employability skills, safe and efficient work practices, use of circuit diagrams and schematics, laboratory practices, and technical recording and reporting.

### Program Outcomes

- Assist in the design, operation, and troubleshooting of technical systems

MTB 1329	MATHEMATICS FOR ENGINEERING TECHNOLOGY *	3
or MGF 1106	LIBERAL ARTS MATHEMATICS I	
or MAC 1105	COLLEGE ALGEBRA	
EET 1214C	INTRODUCTION TO ENGINEERING TECHNOLOGY	3
ETS 1603C	FUNDAMENTALS OF ROBOTICS AND SIMULATION *	3
ETS 2604C	ROBOTICS APPLICATIONS *	3
<b>Total Credit Hours</b>		<b>12</b>

\* This course has a prerequisite; check description in Valencia catalog.

**Notes:**

All certificate courses are offered on the West Campus.

Specialized courses may not be offered every session or on every campus.