

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 or 407-582-1507 or visit valenciacollege.edu/electronics-engineering-technology/ (<https://net1.valenciacollege.edu/future-students/degree-options/associates/electronics-engineering-technology/>).

Current Students

Contact the Career Program Advisor below for more information.

Radu Bunea, Program Chair, West Campus: 407-582-1360
rbunea@valenciacollege.edu

Ed Holmes Campus Director of Advising, West Campus 407-582-1127
eholmes@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/>).

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

| | | |
|-------------------------|---|---|
| SLS 1122 | NEW STUDENT EXPERIENCE ~ | 3 |
| 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 |
| ENC 1101 | FRESHMAN COMPOSITION I **~ | 3 |
| Humanities | See Gen. Ed. Core or Institutional Requirements ~ | 3 |
| Social Science | See Gen. Ed. Core Requirements ~ | 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.

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 |

| | |
|--|-----------|
| Electronics Engineering Technology Electives | 11 |
| Total Credit Hours | 29 |

* 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 |
| Electronics Engineering Technology Electives | | 11 |
| Total Credit Hours | | 29 |

* 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 |
| Electronics Engineering Technology Electives | | 11 |
| Total Credit Hours | | 29 |

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

Electronics Engineering Technology Electives

The Electives requirement may be satisfied with any course(s) in the Course Descriptions section of the Valencia catalog with the subject prefix of CET, EGN, EGS, EET, ETD, ETS, ETP.

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

Notes:

Upon earning the A.S. Degree in Electronics Engineering, 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

| | | |
|---------------------------|---|---|
| SLS 1122 | NEW STUDENT EXPERIENCE ~ | 3 |
| EET 1214C | INTRODUCTION TO ENGINEERING TECHNOLOGY | 3 |
| ETS 1210C or ETS 2542C | INTRODUCTION TO PHOTONICS * 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 ~ | 6 |

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 |
| Restricted Electives | Select from the list below | 2 |

Total Credit Hours **68**

+ 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.

Restricted Electives

| | | |
|---------------------------|---|---|
| ETS 2542C or ETS 1210C | PROGRAMMABLE LOGIC CONTROLLERS I INTRODUCTION TO PHOTONICS | 3 |
| EET 2942 | INTERNSHIP IN ELECTRONICS ENGINEERING TECHNOLOGY | 2 |

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 or CET 2113C | DIGITAL SYSTEMS * DIGITAL SYSTEMS II | 3 |
| EET 1025C or EET 2035C | FUNDAMENTALS OF AC CIRCUITS * ELECTRICAL CIRCUITS | 3 |
| EET 1141C | SEMICONDUCTOR DEVICES AND CIRCUITS * | 3 |

Electives (19):** 19

| | | |
|--|---|---|
| MTB 1329 or MGF 1106 or MAC 1105 | MATHEMATICS FOR ENGINEERING TECHNOLOGY LIBERAL ARTS MATHEMATICS I COLLEGE ALGEBRA | 3 |
| 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 |
| Total Credit Hours | | 14 |

* 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 |
| Total Credit Hours | | 12 |

* 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.