Program Name	Electronic Technologies
Program CIP Code	15.0300.00
Program Description and Coherent Sequence	The **Electronic Technologies** program is designed to prepare students to apply basic engineering principles and technical skills in support of electrical systems, electronics and micro-electronics which include instruction in electrical circuitry, prototype development and testing of various micro circuits. Systems analysis and testing consists of systems maintenance, instrument calibration and report preparation related to technical skills. Students completing this program will understand further advances in electronic technologies, energy bands with electronics, optical properties and evolving nanotechnology related to circuits. Students will develop advanced critical thinking, applied foundational academics, career development, life management, business, economic and leadership skills required for Electronic Technologies occupations. Students completing this program will develop advanced critical thinking, interpersonal relations, and life and leadership management skills while building business relationships that are required workplace employability skills. The program uses a delivery system made up of four integral parts: formal/technical instruction, experiential learning, supervised occupational experiences, and the Career and Technical Student Organization SkillsUSA. **Electronic Technologies Core Curriculum:** Students will learn basic safety principles and practices used in electronic manufacturing industries and/or repairing electronic equipment. Students will learn how to use basic hand tools, test equipment and troubleshooting techniques. Other units of instruction include electronics safety, application of basic math through trigonometry, reading and interpreting schematic diagrams and technical drawings, breadboarding, soldering-desoldering techniques and other basic assembly skills. **Electricity Principles and Applications:** This course includes units of instruction in basic concepts, electrical quantities and units, basic circuits, Coulomb's law, ohm's law and measurements, circuit components, multiple-load circuits, complex-circuit analysis, becoming familiar with the newly developed "transfer and join" technology in nanotechnology with CMOS electronics, thin-film transistors, magnetism to include the introduction of magnetic and electronic properties of magnetic nanocrystals, electron microscopy, electron defraction, alternating current and voltage, power in AC circuits, capacitance, inductance, transformers, RCL circuits, electric motors, and test equipment. **Electronic Principles and Applications:** This course includes

	units of instruction in semiconductors, diodes, power supplies, transistors, small-signal amplifiers, large-signal amplifiers, operational amplifiers, oscillators, communications theory, integrated circuits, silicon-controlled rectifiers, regulated power supplies and digital signal processing. **Work-based Learning:** Students have the opportunity to participate in either an Electronic Technologies Cooperative Education experience or an Internship.
Industry Validated Standards	http://www.azed.gov/career-technical-education/files/2011/11/technical-standards-electronic-technologies-15030000.pdf
Specialized Equipment	Analog and Digital Multi-meters Oscilloscopes Function Generators Impedance Meters Semi-conductor component testers Digital logic testers Circuit Boards Transistors Power Supplies Sound level meters Clamp meters Voltage testers Electronic specific hand tools Soldering tools
Industry Recognized Certifications	• Electronics Systems Associate (ESA) • IPC J-STD-001 Certification • ISCET - International Society of Certified Technicians • NICET - National Institute for Certification in Engineering Technologies • NCCER o Electronics Systems Technician - Level 1 o Electronics Systems Technician - Level 2 o Electronics Systems Technician - Level 3 • Hand Soldering 80% • Machining (application only) • FCC License – The Federal Communications Commission • Arizona Western College o Occupational Certificate: Electronic Technologies o Occupational Certificate: Solar Panel Installation I
CTE End-Of- Program (EOP) Technical Skill Assessment (TSA) Y/N	Y
Current EOP TSA Pass Score	60%

DRAFT

Participation in JTED Program Qualifies Students for These Employment Opportunities	Yes Electrical Technician Controls Technician Electronics Tester Electro-Mechanical Technician Field Service Technician Electronics Mechanic Electrical Equipment Repair Technician

DRAFT

SB1525 JTED Course and Program Requirements

Requires students obtain passing score of 60% on assessment 15-391(3)(b) Page 1/20-24 & 15-391(5)(b) Page 2/1-6	Yes Technical Skill Assessment requires a 60% pass score. • Industry Certification exams o ISCET (International Society of Certified Electronics Technicians) Exam requires 75% o IPC J-STD-001 Certification exam requires 70% o Hand Soldering exam requires 80%
Not a Course Required under Minimum Course of Study including Honors 15-391(3)(d) Page 1/27-29	Courses in this program are not required for graduation.
Majority of Instructional Time in Lab / Field / Work Based Learning Environment 15-391 (3)(e) Page 1/30-32 and **Requires CTSO Participation** 15-391(5)(d) Page 2/10-13	Yes, the majority of the Electronics Technologies instruction is lab and work-based learning. SkillsUSA
Demonstrated Need for Extra Funding for a course 15-391 (3)(f) Page 1/33-34	Yes, this program demonstrates the need for extra funding due to the cost of specialized equipment, instructional materials, lab set up and work-based learning.
Specialized Equipment Exceeds Cost of Standard Course 15-391(3)(g) Page 1/35-36 and 15-391(5)(c) Page 2/7-9	Yes, specialized equipment includes, but is not limited to: • Analog and Digital Multi-meters • Oscilloscopes • Function Generators • Impedance Meters • Semi-conductor component testers • Digital logic testers • Circuit Boards • Transistors • Power Supplies • Sound level meters • Clamp meters • Voltage testers • Electronic specific hand tools • Soldering tools
Alignment through Curriculum, Instructional Model and Courses Sequence 15-391(5)(e) Page 2/15-18	Yes State-established course sequence for Electronics Technologies program consists of a minimum of 3 Carnegie Units of Instruction.

DRAFT

Defined Pathway to Career and Postsecondary Ed in Specific Vocation or Industry 15-391(5)(f) Page 2/19-21	Yes Community College certificates and associate degree Industry opportunities: • Electrical Technician • Controls Technician • Electronics Tester • Electro-Mechanical Technician • Field Service Technician • Electronics Mechanic • Electrical Equipment Repair Technician
Fills High Need Vocation or Industry as Determined by CTE/ADE 15-391(5)(j) Page 2/30-31	Yes Electronics Technologies is ranked 39th on the 2016 CTE Program List based on Labor Market Data from the Office of Employment and Population Statistics ranking high-skill, high-demand and high-wage occupations.

Requires a Single or Stackable Credential or a Skill that allows a student to obtain work 15-391(5)(k) Page 2/32-35	Yes
	• Electronics Systems Associate (ESA)
	• IPC J-STD-001 Certification
	• ISCET - International Society of Certified Technicians
	• NICET - National Institute for Certification in Engineering Technologies
	• NCCER
	  o Electronics Systems Technician - Level 1
	  o Electronics Systems Technician - Level 2
	  o Electronics Systems Technician - Level 3
	• Hand Soldering 80%
	• Machining (application only)
	• FCC License – The Federal Communications Commission
	• Arizona Western College
	  o Occupational Certificate: Electronic Technologies
	  o Occupational Certificate: Solar Panel Installation I

Leads to certification or licensure verified by that vocation or industry that qualifies student for employment which the student would not otherwise qualify. 15-391(5)(l) Page 2/36-39	Yes
	Program must offer one or more of the following industry certifications:
	• Electronics Systems Associate (ESA)
	• IPC J-STD-001 Certification
	• ISCET - International Society of Certified Technicians
	• NICET - National Institute for Certification in Engineering Technologies
	• NCCER
	  o Electronics Systems Technician - Level 1
	  o Electronics Systems Technician - Level 2
	  o Electronics Systems Technician - Level 3
	• Hand Soldering 80%
	• Machining (application only)

DRAFT

	• FCC License – The Federal Communications Commission
	• Arizona Western College
	  o Occupational Certificate: Electronic Technologies
	  o Occupational Certificate: Solar Panel Installation I

If no certification or licensure is accepted by vocation or industry, completion of program must qualify student for employment for which student would not otherwise qualify without completing JTED program. 15-391(5)(l) Page 2/39-43	N/A
Requires instruction and instructional materials substantially different from and exceed scope of standard instruction and include skills, competencies and knowledge to be successful in JTED program vocation or industry. 15-391(5)(m) Page 2/44-45 and 3/1-3	Instruction and instructional materials are specific to the industry certification sought. Both instruction and instructional materials are substantially different from and exceed the scope and cost of standard instruction.
Industry provided financial or technical support. 15-391(5)(n) Page 3/4-8	Yes Industry supports Electronics Technologies programs in the following ways: • Serves on industry standards development and validation committees • Serves on state and local advisory boards • Provides work-based learning experiences • Donates equipment and supplies • Serves as classroom speakers and provides resources • Provides technical support
Demonstrated need for extra funding in order to provide JTED program 15-391(5)(o) Page 3/9-11	Yes, these programs would not be available for students due to the cost of equipment, instructional materials, industry certifications and lab and work-based instruction without additional funding.

Eligibility		**Yes**	**No**
JTED	The **Electronic Technologies** program meets the requirements for **JTED** compliance and eligibility	x	
CTE Federal Perkins and State Priority	The **Electronic Technologies** program meets the requirements for **Perkins** and is eligible to generate **CTE State Priority funding**.	x	

DRAFT