

July 2009

Florida Department of Education
Curriculum Framework

Program Title: Applied Technology Specialist
Specialization Tract: Advanced Technology
Career Cluster: Manufacturing

CIP Number: PSVC
0615.040302
Grade Level: College Credit Certificate
Length: 16 credit hours
SOC Code: 17-3029

- I. **MAJOR CONCEPTS AND CONTENT:** The purpose of this program is to prepare students for initial employment with an occupational title as Applied Technology Specialist or to provide supplemental training for persons previously or currently employed in this occupation.
- II. **PROGRAM STRUCTURE:** This certificate program requires a minimum of 16 credit hours of specialized courses in Applied Technology areas for assembly, verification, testing, building and updating mechanical and electrical interfaces and systems. It is part of the Advanced Technology Tract of the A.S./A.A.S. degree in Engineering Technology.
- III. **LABORATORY ACTIVITIES:** Laboratory activities are an integral part of this program and include the proper use of test equipment, such as a Digital multimeter, some hand tools, soldering equipment, and some fiber optics testing and fusion splicing equipment.
- IV. **SPECIAL NOTE:** SkillsUSA is the appropriate career student organization (CTSO) for providing leadership training and for reinforcing specific vocational skills. Career Student Organizations shall be an integral part of the career instructional program, and the activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.065, FAC.

The cooperative method of instruction may be utilized for this program. Whenever the cooperative method is offered, the following are required for each student: a training plan, signed by the student, teacher, and employer, which includes instructional objectives and a list of on-the-job and in-school learning experiences; a workstation that reflects equipment, skills and tasks that are relevant to the occupation which the student has chosen as a career goal. The student must receive compensation for work performed.

To be transferable statewide between institutions, this program/course must have been reviewed, and a "transfer value" assigned the curriculum content by the appropriate Statewide Course Numbering System discipline committee. This

does not preclude institutions from developing specific program or course articulation agreements with each other.

When a secondary student with a disability is enrolled in a vocational class for which modifications to the curriculum framework have been made, the particular outcomes and student performance standards that the student must master to earn credit must be specified in the student's Individual Educational Plan (IEP). Additional credits may be earned when outcomes and standards are mastered in accordance with the requirements indicated in subsequent IEPs. The job title for which the student is being trained must be designated in the IEP.

- V. **FEDERAL AND STATE LEGISLATION** requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Adult students with disabilities must self-identify and request such services. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.
- VI. **INTENDED OUTCOMES:** After successfully completing the program, the student will be able to:
- 03.0 Demonstrate a fundamental understanding of electronics and electricity.
 - 06.0 Demonstrate proficiency in using tools, instruments and testing devices.
 - 12.0 Demonstrate proficiency in soldering and basic laboratory practices.
 - 13.0 Demonstrate proficiency in surface mount soldering.
 - 14.0 Demonstrate proficiency in fiber optics terminations.

**Florida Department of Education
Student Performance Standards**

Program Title: Applied Technologist
Specialization Tract: Advanced Technology

03.0 DEMONSTRATE A FUNDAMENTAL UNDERSTANDING OF ELECTRONICS AND ELECTRICITY - The student will be able to:

- 03.01 Use appropriate grounding techniques.
- 03.02 Demonstrate knowledge of AC/DC theory.
- 03.03 Solve circuit problems using unit conversion and scientific notation.
- 03.04 Solve problems involving electric charge, electric current, potential difference, energy and Ohm's Law.
- 03.05 Solve problems in electric circuits involving work and power.
- 03.06 Solve problems involving series and parallel resistance circuits.
- 03.07 Solve problems involving capacitance in DC circuits.
- 03.08 Solve problems involving magnetic circuits.
- 03.09 Solve problems involving inductance in DC circuits.
- 03.10 Solve A.C. problems involving peak value, instantaneous, average value and RMS value of a sine wave.
- 03.11 Solve problems on factors governing reactance in A.C. circuits.
- 03.12 Solve impedance problems in A.C. circuits.
- 03.13 Prepare and complete concise, neat and accurate lab reports.

06.0 DEMONSTRATE PROFICIENCY IN USING TOOLS, INSTRUMENTS AND TESTING DEVICES - The student will be able to:

- 06.01 Identify and use hand tools properly.
- 06.02 Identify and use power tools properly.
- 06.03 Use inspection equipment appropriately.
- 06.05 Implement appropriate testing regimes.
- 06.06 Use appropriate measurement tools (e.g., micrometers, tapes. etc).
- 06.07 Use appropriate safety monitoring and testing equipment.
- 06.08 Communicate issues with hand sketches.
- 06.09 Use electronic measuring equipment and instruments.
- 06.10 Use multi-gauging to inspect, verify, and document whether product dimensions meet customer requirements.

12.0 DEMONSTRATE PROFICIENCY IN SOLDERING BASIC LABORATORY PRACTICES--The student will be able to:

- 12.01 Apply proper Occupational Safety Health Administration (OSHA) safety standards.
- 12.02 Make electrical connections.
- 12.03 Identify and use hand tools properly.

- 12.04 Identify and use power tools properly.
- 12.05 Demonstrate acceptable soldering techniques.
- 12.06 Demonstrate acceptable de-soldering techniques.
- 12.07 Demonstrate electrostatic discharge (ESD) safety procedures.
- 12.08 Describe the construction of printed circuit boards (PCB's).
- 12.09 Explain the theoretical concepts of soldering.
- 12.10 Demonstrate rework and repair techniques.

13.0 DEMONSTRATE PROFICIENCY IN BASIC SURFACE MOUNT SOLDERING --

The student will be able to:

- 13.01 Identify SMD components.
- 13.02 Understand concern specific to SMD components.
- 13.03 Identify proper soldering techniques to each component type
- 13.04 Solder and de-solder chip components.
- 13.05 Solder and de-solder J-Leaded components.
- 13.06 Solder and de-solder Gull Wing components.
- 13.07 Effectively identify and demonstrate the quality requirements used to inspect soldered connections.
- 13.08 Demonstrate the skills required for circuit board rework and repair.
- 13.09 Demonstrate the proper selection and use of procedural requirements, tools, materials, and methods required to comply with the applicable standards.

14.0 DEMONSTRATE PROFICIENCY IN FIBER OPTICS TERMINATION --The

student will be able to:

- 14.01 Define the basics of a Fiber Optic System.
- 14.02 Define the Advantages and types of a fiber optic system.
- 14.03 Understand how to install cables and prepare ends.
- 14.04 Understand how to install different types of connectors.
- 14.05 Understand How to make Loss measurements.
- 14.06 Understand how to install splices.
- 14.07 Understand how to certify and troubleshoot a fiber system.