July 2010

Florida Department of Education
Curriculum Framework

Program Title: **Automation**
Specialization Tract: **Advanced Manufacturing**
Career Cluster: **Manufacturing Career Cluster**

CCC	
CIP Number	0615061301
Program Type	College Credit Certificate (CCC)
Program Length	12 credit hours
CTSO	SkillsUSA
SOC Codes (all applicable)	17-3027
Targeted Occupation List	http://www.labormarketinfo.com/wec/TargetOccupationList.htm

Purpose

This certificate program is part of the Engineering Technology AS/AAS degree program (0615000001).

A College Credit Certificate consists of a program of instruction of less than sixty (60) credits of college-level courses, which is part of an AS or AAS degree program and prepares students for entry into employment (Rule 6A-14.030, F.A.C.).

This 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 instruction in maintenance techniques, computer aided drafting/design skills, technical communications, maintenance and operation of various industrial components, quality control and testing, material handling protocols, and proper usage of tools and instrumentation.

Laboratory Activities

Laboratory activities are an integral part of this program. These activities include instruction in the use of safety procedures, tools, equipment, materials, and processes related to these occupations. Equipment and supplies should be provided to enhance hands-on experiences for students.

Special Notes

Career and Technical Student Organization (CTSO)

SkillsUSA is the appropriate career and technical student organization for providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered. The activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.065, F.A.C.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's IEP or 504 plan or postsecondary student's accommodations plan to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their postsecondary service provider. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. 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.

Standards

After successfully completing this course the student will be able to perform the following:

01.0 Operate industrial automation systems.
02.0 Troubleshoot industrial automation systems.
03.0 Apply the principals of robotics to industrial automation systems.
04.0 Use proficiently human machine interfaces to control automated systems

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Student Performance Standards

Program Title: **Automation**
CIP Number: **0615061301**
Program Length: **12 credit hours**
SOC Code(s): **17-3027**

This certificate program is part of the Engineering Technology AS/AAS degree program (0615000001). At the completion of this program, the student will be able to:

01.0 Operate industrial automation systems - The student will be able to:

- 01.01 Chart and analyze ladder logic diagrams for industrial automation systems.
- 01.02 Identify PLC input and output module locations.
- 01.03 Match wiring harness identification to program addresses for input and output modules.
- 01.04 Identify active and passive states of each module.
- 01.05 Interpret flow charts to match field device components with the real devices.
- 01.06 Identify when a programmable controller is in run or program mode.
- 01.07 Integrate control systems and equipment with production and production support mechanisms.
- 01.08 Establish routine operations involving maintenance schedules.
- 01.09 Perform minor repair to industrial automation systems.
- 01.10 Integrate control systems and equipment with production and production support mechanisms.
- 01.11 Demonstrate automatic inventory accounting related monitoring and control systems.
- 01.12 Implement automatic tracking of materials and products using bar codes, machine vision and sensing, and/or infrared technologies.

02.0 Troubleshoot industrial automation systems - The student will be able to:

- 02.01 Apply troubleshooting techniques to identify root cause, errors and faults of a problem.
- 02.02 Isolate systems for troubleshooting.
- 02.03 Develop a strategy for making system improvements based on troubleshooting activities.
- 02.04 Identify needed expertise to address the issue.
- 02.05 Participate in troubleshooting and resolution team effectively.

03.0 Apply the principals of robotics to automated systems - The student will be able to: .

- 03.01 Define the essential components of a robotic system.
- 03.02 Choose appropriate robot equipments for specific tasks.
- 03.03 Describe methods of moving robotic parts.
- 03.04 Choose and implement appropriate sensors for robotic applications.
- 03.05 Choose and install appropriate actuators for robotic applications.
- 03.06 Program robotic devices for restricted movements.

04.0 Use proficiently human machine interfaces to operate automated systems - The student will be able to:

04.01 Match computer graphic icons to real field equipment.
04.02 Route data flow between computer and controlled machines.
04.03 Identify the computer input and output signals and equipment destinations.
04.04 Implement manual override appropriately.
04.05 Perform computer based system and/or machine troubleshooting.
04.06 Define the essential components of an integrated HMI system.