Computerized Manufacturing & Machining

Program Title: AAS Computerized Manufacturing & Machining

Competencies

General Education Competencies:

Students should prepare for twenty-first century challenges by gaining:

A. Knowledge of human cultures and the physical and natural worlds through study in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts.

B. Intellectual and practical skills, including
- inquiry and analysis
- critical and creative thinking
- written and oral communication
- quantitative literacy
- information literacy
- teamwork and problem solving

C. Personal and social responsibility, including
- civic knowledge and engagement (local and global)
- intercultural knowledge and competence
- ethical reasoning and action
- foundations and skills for lifelong learning

D. Integrative and applied learning, including synthesis and advanced accomplishment across general and specialized skills.

Technical Competencies:

1. Practice safe working conditions of personal dress, proper use of hand tools, metrology equipment, conventional power equipment, CNC equipment, and hazardous materials and storage techniques.
2. Setup and operate conventional lathes and mills performing machining operations and holding tolerances that are required by curriculum task lists in alignment with national standards set by NIMS (National Institute of Metalworking Skills).
3. Setup and operate drill press and sawing machines to perform operations and hold tolerances that are required by the curriculum and national standards set by NIMS.
4. Read and interpret prints to the satisfaction of part production and satisfaction of national standards set by NIMS.
5. Schedule job operations in chronological sequence in which parts would be produced in an industrial setting.
6. Identify metal shapes and metallurgical properties to properly identify uses of materials and machining specifications.
7. Perform time estimates on part production including machine cost, material consumption, employee allocation, and tooling consumption.
8. Perform cutting speed calculations for various materials to achieve optimum tool life and part production.
9. Produce manual written and computer aided manufacturing programs to utilize on CNC equipment.
10. Perform setup operations on CNC lathes and mills as well as sinker EDM machines to the satisfaction of national standards set by NIMS.