CABINETMAKING/MILLWORK
CIP Code 48.0703

Many people think of the wood products industry as only paper and lumber. While those dominate a large portion of the wood industry, an abundance of wood products continue to be specialized products which are useful in daily living and popular by choice – everything from beautiful guitars, snowboards, paneling, kitchen cabinets, spindles on staircases, furniture, pool cues, the special cuts of wood needed to make a window frame, and the dinner table! All of these wood products are manufactured by Millworkers and Cabinetmakers. There is tremendous number of thing one can do with wood and these woodworkers are good with wood and quite literally,

Cabinetmakers must understand wood – where it comes from, how it performs and what can be done with it by cutting, shaping, and assembling wooden articles. Millworkers are skilled people who are comfortable working with technically sophisticated equipment in a manufacturing operation. Employees who are good with wood are vitally important in any millwork operation. Good maintenance, efficient installations, and timely repairs can save a company tremendous sum of money because when a machine breaks down, production stops and everybody loses money!

The wood products industry is enormous and is going through massive changes. Woodworkers often evoke images of a craftsman who builds ornate furniture using hand tools, but this industry is in the midst of a technological revolution. Hand tools have been replaced by power tools and much of the work has been automated and is now being done on an assembly line. New computerized machines are eliminating the need for unskilled, manual labor. And that means that jobs are changing focus- the wood products industry needs skilled workers – individuals who can program, operate and design high-tech machines.

Manufacturers are using computerized machines to mold and shape wood. Using robotics, they can program a machine to carve an intricate pattern into a piece of wood; therefore, allowing a variety of beautiful work to be mass produced with the entry of a computer program.

Production workers are the center of any millwork products operation. They are the ones who actually make the products and operate the machines. They move wood through the production line until it becomes a finished product and ready for distribution. Many of these jobs involve using computer controlled equipment. Companies need employees who can program and troubleshoot these machines to keep them operating. Production workers these days are constantly adapting to new ways of doing things. Machinery is changing rapidly. It's becoming more computerized and increasingly sophisticated.

Technical institutes, colleges, and universities have educational programs specifically developed for the wood industry. These programs are providing relevant and practical education that is directly related to industry needs, skills as well as knowledge. A Cabinetmaker and Millworker can combine relevant technical information about the industry with practical, hands-on learning opportunities to ensure the success of the woodworking.

Assumptions of This Program of Study

Completing a Cabinetmaking/Millwork program will prepare career and technical education students for gain entry-level employment as:

- Cabinet Builder/Maker
- Cabinet Assembler
- Cabinet Installer
- Saw Operator
- Molder Operator
- Tennoner Operator
- Bandmill Operator
- Planer Operator
- Router Operator
- Lathe Operator
- Sander
- CNC (Computer Numerical Control) Operator
- Custom Shop Worker
- Product Development Carpenter
- Production Inspector
- Model/Sample Maker
- Wood Pattern Maker
- Retail Wood Sales

Students will demonstrate the ability to:

- Actively listen and understand customer and supervisor instructions and communicate orally in the language of the Cabinetmaking/Millwork industry
- Write clear, legible, and concise material and labor estimate costs; explaining expenses and benefits of expenditure
- Read blueprints accurately and interpret plans and drawings
- Explain options of raw wood materials, production processes, costs, and quality control relative to the project expenditure
- Describe various machines and tools, including their design, uses, repair, and maintenance
- Use accurate mathematical applications involving arithmetic, algebra, and Geometry
- Document and verify measurements and dimensions to ensure adherence to specifications
- Perform basic manipulative skills of the trade using hand tools including clamps, planes, wood chisels, gouges, shapers, etc.
- Perform basic use of power tools and millwork equipment such as saws, planers, routers, trimmers, etc.
- Set up, operate, or tend saws and woodworking machines that cut, shape or trim wood
- Analyze product specifications and materials, work method and machine setup requirements, according to blueprints, oral or written instructions
- Set up, program, operate, and tend manual woodworking machines, such as drill presses, lathes, shapers, routers, sanders, planers, and nailers
- Record accurate work sheets and work related documents
- Describe tools used to examine a finished work piece to ensure conformity to specifications
- Evaluate computerized numerical control (CNC) machines to operate millwork efficiently and safely
- Stay current with advancing principles, materials and woodworking shop management software and technology

High-quality programs should meet the following standards:

- Promote **positive working relationships**

- Implement a **curriculum** that fosters all areas of skill development
- Use **appropriate** and **effective teaching approaches**
- Provide **ongoing assessments** of student progress
- Employ and support qualified **teaching staff**
- Establish and maintain relationships and use resources of the **community**
- Provide a safe and healthy learning **environment**
- Implement strong program organization and supervision policies that result in **high-quality teaching and learning**
- Integrate academic skills and aptitudes necessary for postsecondary education, gainful employment and a foundation of **lifelong learning**

Academic Rigor

Research shows that career success requires the same level of college-prep courses as postsecondary success requires. The Department of Education's focus is to ensure that every student graduates is prepared for college and a career. In order to be successful in this program, students should follow the academic sequence as determined by Pennsylvania's high school reform efforts.

Resources Used for This Program of Study

- MAVCC (Multistate Academic Vocational Curriculum Consortium) http://www.mavcc.org/
- NOCTI (National Occupational Competency Testing Institute http://www.nocti.org/
- O*NET http://online.onetcenter.org/
- Pennsylvania Approved Certifications for Industry-Recognized Certifications for Career and Technical Education Programs http://www.portal.state.pa.us/portal/server.pt/community/instructional_resources/7392/industry-recognized_certifications_for_career_and_technical_education_programs/507887
- Pennsylvania Department of Labor & Industry High Priority Occupations http://www.portal.state.pa.us/portal/server.pt/community/high_priority_occupations/12910
- VTECS (A Consortium of Innovative Career and Workforce Development Resources) http://www.vtecs.org/

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An instructional program that prepares individuals to apply technical knowledge and skills in the production of products such as window frames, moldings, trim and panels and such products as furniture, store fixtures, kitchen cabinets and office equipment. Instruction includes training in cutting, shaping and assembling parts using hand tools and woodworking machines (including CNC) and refinishing furniture and installing hardware (hinges, catches and drawer pulls). Instruction also includes planning layouts, blueprint reading, drafting and knowledge of practical uses and identification of various kinds of woods.

Integrate Academic Career Education and Work Standards for Student Success
As students participate in career exploration activities and rigorous studies from elementary grades through graduation, they learn to appreciate the relationship between their classroom learning and the skills needed in the workplace. The academic skills that are embedded in the Academic Standards for Career Education and Work are expected to be addressed within classrooms and achieved by all students throughout Pennsylvania. Students should leave secondary education with a solid foundation in these Standards.
http://www.portal.state.pa.us/portal/server.pt/community/state_board_of_education/8830/state_academic_standards/529102

CEW Standards Tool Kit for teachers to implement CEW Standards.
www.pacareerstandards.com

Pennsylvania Approved Certifications

http://www.portal.state.pa.us/portal/server.pt/community/instructional_resources/7392/industry-recognized_certifications_for_career_and_technical_education_programs/507887

The Program of Study Documents

- Crosswalk Template for Task Alignment (excel) – Instructions: Indicate the number code(s) of your school's program competency or competencies aligned to each program of study competency.
- Crosswalk Template for Task Alignment (pdf) – Instructions: Indicate the number code(s) of your school's program competency or competencies aligned to each program of study competency.
- Scope and Sequence Template (word) – Enter secondary and postsecondary technical Program of Study courses.
- Scope and Sequence Template (pdf) – Enter secondary and postsecondary technical Program of Study courses.
- PA Academic Standards/Eligible Content Alignment to Task List (excel) – Crosswalk of PA Academic Standards/Eligible Content for Reading, Writing, Speaking and Listening (RWSL), Math, and Science aligned to Program of Study Secondary Competency List. (will be available soon)
- PA Academic Standards/Eligible Content Alignment to Task List (pdf) – Crosswalk of PA Academic Standards/Eligible Content for Reading, Writing, Speaking and Listening (RWSL), Math, and Science aligned to Program of Study Secondary Competency List. (will be available soon)

For more information, contact:

Dr. Jay Brown
Bureau of Career and Technical Education
PA Department of Education
333 Market Street, 11th Floor
Harrisburg, PA 17126-0333
Phone: 717-783-6991

Fax: 717-783-6672
TTY: 717-783-7445