

## **INDUSTRIAL ARTS**

### **Introductory Industrial Arts for Tomorrow**

Grade 9

1 year

1 credit

This course is designed to give a student an introductory knowledge of three areas of our Industrial Arts programs. This class is designed for the freshman level to be a full year, to give each student a preliminary informational study of each area.

CAD (Computer Aided Drawing), the student learns the drafting program of AutoCAD 2002, or its upgrade version. Several areas of drawings including many toolbar functions will be covered to increase ones knowledge for the other areas of the drafting courses offered.

Technology of woodworking is covered over an 18-week period so that all areas of machine operation are covered. This gives the student a well-rounded knowledge of safety and machine operation. In the process of learning, the each student will complete three to four individual projects that enhance the learning process.

Electricity is the third area of study that will cover safety, the use of test equipment, basic theory of electricity, math that deals with electricity, and standard house/ schematic drawings. The student to make him/her comfortable when working around electricity performs several lab exercises.

### **Principles of Technology**

**(80001)**

Grade 9, 10

½ year

½ credit

Principles of Technology consists of 6 (semester) or 12 (year) two week courses including 4 stroke engines, computer animation, 3D modeling, landscape design, CAD, computer repair, graphic design, CNC milling, video editing, electronics, digital manufacturing, digital photography, and vinyl sign making. Each course will cover the resources, technological processes, industrial applications, technological impact and occupations encompassed by that system in our changing complex society. This six (twelve) course set provides the orientation needed to industrial occupation programs. In addition to the modules students will do research projects to explore the goals of past, future and evolution of technology.

General Goal: To initiate awareness in the student to explore technology and its role in modern society.

Specific Goals Explored:

- 1) Technology – What is this all about?
- 2) The Evolution of technology – How did we get here and why?
- 3) Technology Today – What is it doing for me now?
- 4) Technology Tomorrow – What do I have to look forward to?
- 5) Technology Careers – What career can technology offer me?

**Computer Aided Drafting (CAD) 1****(81501)**

Grade 10-11-12      1 semester      ½ credit

This course will introduce the student to the basic fundamentals of drafting, while concentrating on mechanical drafting and its techniques. The content of the course covers the method of transferring ones ideas to paper. Drawing and the language of industry are covered in detail. Typical duty areas covered may include: planning and organizing activities, preparing sketches, performing basic layouts and detailing drawings.

**Computer Aided Drafting (CAD) 2****(81502)**

Grade 10-11-12      1 semester      ½ credit

Prerequisite: CAD 1

This course is a continuation of Introduction to Drafting I which will reinforce those concepts and skills already covered. Some of the additional areas introduced are sections, auxiliaries, assembly drawings, pictorials and developments. Typical duty areas covered may include: planning and organizing activities, performing general office procedures, preparing sketches, performing basic layouts, detailing drawings and producing mechanical working drawings.

**Introduction to Construction 1****(70502)**

Grade 11-12      1 semester      ½ credit

Prerequisite: CAD 1

This course will introduce students to the basic skills necessary for success in the construction occupations. Planned learning activities will focus on measuring skills, safety, using hand and power tools and building construction and theory. Various joining techniques including nailing, welding, brazing and soldering are also covered. Typical duty areas include: applying safety practices, performing housekeeping and recordkeeping activities, conducting shop operations, identifying employment opportunities, interpreting employment capabilities, demonstrating appropriate work behavior, maintaining a safe and healthy environment, maintaining a business-like image, maintaining working relationships with others, communicating on the job, adapting to change and performing mathematical skills.

**Introduction to Construction 2****(70503)**

Grade 11-12      1 semester      ½ credit

Prerequisite: Introduction to Construction 1

This course will build upon Construction I and include wall and floor layout, basic roofing and small building construction. Duty areas include: applying safety practices, estimating materials, installing rough framing, installing roof components and installing exterior finishes. In addition, the employability skills in the following duty areas are covered: identifying employment opportunities, interpreting employment capabilities, demonstrating appropriate work behavior, maintaining a safe and healthy environment, maintaining a business-like image, maintaining working relationships with others, communicating on the job, adapting to change and performing mathematical skills.

**Production Technology (Cabinet Making)****(70501)**

Grade 10-11-12          1 semester          ½ credit

Prerequisite: CAD 1

This course provides learning experiences common to most occupations in the woodworking industry. Instruction includes use of balance and proportion in design, layout and construction of wood products necessary for day-to-day living. Planned learning activities will allow students to become knowledgeable of the fundamentals of shop safety, tool and machine usage, material selection and routine housekeeping procedures. Typical duty areas covered include: applying safety practices, performing housekeeping and recordkeeping activities, identifying employment opportunities, interpreting employment capabilities, demonstrating appropriate work behavior, maintaining a safe and healthy environment, maintaining a business-like image, maintaining working relationships with others, communicating on the job, adapting to change and performing mathematical skills.

This course is designed to develop, construct and finish quality cabinets for kitchens, bathrooms or computer centers. The student will work in conjunction with the construction class to make all necessary cabinets and counter tops for the project under construction. Emphasis is placed on quality workmanship and safety on all power tools using the best construction techniques.

**Construction 3****(70507)**

Grade 12                      1 semester          ½ credit

Prerequisite: Construction 2 and consent of instructor

In Construction III students apply skills related to the following duty areas: estimating materials, installing rough framing, installing roof components, installing interior finishes, installing exterior finishes, maintaining existing wiring and finishing surfaces.

**Construction 4****(70508)**

Grade 12                      1 semester          ½ credit

Prerequisite: Construction 3

Construction 4 provides reinforcement for all skills which the student has mastered in the previous construction courses. In addition, skills from the following duty areas are incorporated: roughing in feeders, branch circuit cables and circuits, trimming out electrical devices and appliances, joining pipe, building drains and installing fixtures.

**Welding 1****(76012)**

Grade 10-11-12          1 semester          ½ credit

Prerequisite: Illinois Plan for Industrial Education

This course provides experience in oxyacetylene and shielded metal arc welding. Ferrous material will be joined by these two processes. Students will be introduced to basic skills relating to shop safety, and set-up and operation of equipment. They will also begin to develop specific skills needed to weld in the flat and horizontal welding positions.

**Welding 2****(76013)**

Grade 10-11-12          1 semester          ½ credit  
Prerequisite: Welding 1

In this course, student learning experiences will build on earlier skill development in oxyacetylene and shielded metal arc welding in the flat and horizontal positions. In addition, students begin to develop basic skills in the vertical and overhead welding positions and in thermal cutting methods.

**Welding 3****(76014)**

Grade 11-12          1 semester          ½ credit  
Prerequisite: Welding 2

Student learning experiences will build on earlier skill development in oxyacetylene and shielded metal arc welding. The student will develop in-depth knowledge and demonstrate advanced skills in these processes welding in the flat, horizontal, vertical and overhead welding positions and in thermal cutting methods. In addition, the student will begin to develop skills in gas metals arc welding (MIG). Basic shop math and measurement will be emphasized.

**Welding 4****(76015)**

Grade 11-12          1 semester          ½ credit  
Prerequisite: Welding 3

In this course, the student learning experiences will build on earlier skill development in oxyacetylene and shielded metal arc welding. Students will develop additional skills in these processes in the flat, horizontal, vertical and overhead welding positions, along with thermal cutting methods. The student will increase knowledge of and achieve skills with gas metal arc welding (MIG) and gain knowledge in the areas of blueprint reading, fabrication, layout and setup of assigned welding jobs. Students will also begin to develop job skills in gas tungsten arc welding (MIG). Basic shop math and measurement will be emphasized.