

# INDUSTRIAL TECHNOLOGY CURRICULUM STANDARDS

- Understand project planning and design,
- Understand the use of technology equipment (i.e. computers) to aid in project planning and design,
- Understand safe use of various types of machines and equipment in manufacturing projects and industrial settings,
- Understand production techniques used in project making and industry.
- Understand how to work in a group setting with other people.

## INTRODUCTION TO COMPUTER AIDED DRAFTING (CAD):

**Grade:** 9, 10, 11, 12

**Length of Course:** One Semester

**Prerequisite:** None

### CURRICULUM BENCHMARKS:

1. Identify various line types,
2. Identify and operate various types of manual drafting equipment,
3. Hand sketch orthographic and isometric views,
4. Identify the computer equipment necessary to produce drawing using the computer aided drafting system,
5. Operate Solid Works and Chief Architect software,
6. Submit paper copies of all manual and CAD drawings for grading,
7. Publish architectural drawing on the internet for public viewing.

### COURSE DESCRIPTION:

Students will produce several hand drawn sketches to acquaint with traditional manual drafting equipment, line types and weights, and basic 3 view drawing techniques. Students will then be exposed to introductory computer aided drafting (CAD) techniques using Solid Works software. Techniques such as sketching, extruding, extended cutting, creating extra drawing planes, will be covered. Students will then need to export their sketches into a drawing template where they will display the front, top, side, and isometric in a title block. Lastly, they will need to dimension the views to show the size of the object. Students will be graded on an evaluation rubric. The second part of the course, students will spend time learning how to do architectural drawing on Chief Architect software. Their first project will be to make a Stuga (Swedish Vacation home) and then they will draw a bungalow. They will learn about wall types, creation of rooms, making roofs and foundations, creating stairs and render views. The last project will be to reproduce a set of house plans they have found on the Internet to 90% accuracy.

### STUDENTS ARE EXPECTED TO:

1. Complete assigned work in a timely manner,
2. Manage file storage on network files and flash drives,
3. Take proper care of all equipment,
4. Submit neat and clean drawings,
5. Take all tests and quizzes,
6. Be respectful of other students need for a quality work environment.

## **METAL TECHNOLOGY**

**Subject:** Metal Technology

**Grade:** 10,11,12 (Class Size around 12 Students or as space dictates)

**Length of Course:** One Semester of CAD

### **CURRICULUM BENCHMARKS:**

1. Follow all safety rules.
2. Follow proper cleanup procedures and report tool breakdown.
3. Wear proper safety gear, safety glasses, and gloves.
4. Set up and use welders and sheet metal tools.
5. Measure, cut and weld metal.
6. Assemble and construct a metals project.

### **COURSE DESCRIPTION:**

Metal technology is a class designed to familiarize the student with different phases of metalworking. The course concentrates on sheet metal. ARC welding and oxygen/acetylene welding and cutting. The students will learn the different types of welding and fastening methods, along with various joints and construction methods used in sheet metal: Projects will be planned and built with emphasis put on design and procedure.

### **WHAT STUDENTS ARE EXPECTED TO DO:**

1. Complete assigned work as assigned.
2. Take proper care of all equipment.
3. Take all tests and quizzes.

### **EVALUATION:**

The students will be evaluated on projects, exercises and quality of work completed.

## **GENERAL WOODS**

**Subject:** General Woods

**Grade:** 9, 10, 11, 12 (Class Size around 14 Students or as space dictates)

**Length of Course:** One Semester

**Prerequisite:** CAD

## **CURRICULUM BENCHMARKS:**

1. Comply with safety rules.
2. Be productive in a clean and safe working environment.
3. Follow cleanup procedures and report tool and mechanical breakdowns.
4. Maintain and utilize basic hand and power tools.
5. Recognize when tools need adjustment and repair.
6. Set up and use different woodworking machines.
7. Be able to plan, design, and construct a woods project.
8. Practice problem-solving skills.
9. Compute cost of material for a project.

## **COURSE DESCRIPTION:**

This course is designed to develop student skills in the general woodworking area. The course shall provide students with an experience where they will learn different types and properties of wood, along with use of and care of many different hand tools. The course will also introduce and provide instruction in designing and building of a small wood project, with emphasis put on good planning, safety, and putting the finishing touches on a project.

## **WHAT THE STUDENT IS EXPECTED TO DO:**

1. Do assigned work in textbook.
2. Select, design, plan and build a woods project.
3. Follow all safety rules and regulations.
4. Clean lab and put tools in proper place at end of class period.
5. Work well individually and as a member of a group.

## **EVALUATION:**

Students will be evaluated on project design and workmanship.

# **MACHINE WOODS**

**Subject:** Machine Woods

**Grade:** 10, 11, 12 (Class Size Limited to 12 or as space dictates)

**Length of Course:** First and Second Semester

**Prerequisite:** General Woods

## **CURRICULUM BENCHMARKS:**

1. Comply with safety rules.
2. Be productive in a clean and safe working environment.
3. Follow cleanup procedures and report tool and mechanical breakdowns.
4. Maintain and utilize basic hand and power tools.
5. Recognize when tools need adjustment and repair.

6. Set up and use different woodworking machines.
7. Be able to plan, design, and construct a woods project.
8. Practice problem-solving skills.
9. Compute cost of material for a project.

### **COURSE DESCRIPTION:**

The course introduces operation of power machines to the student. A student will learn safety rules, proper operation, and minor repairs on these machines. The students, throughout the year, will have time to design and build a woodworking project that should include a door or drawer to provide some complex construction methods. A student must have taken general woods and enter this class at the beginning of the school year.

### **WHAT THE STUDENTS ARE EXPECTED TO DO:**

1. Complete assigned work in textbook.
2. Plan, design, and build a cabinet wood project.
3. Successfully pass a safety test on operation of all power machines.
4. Wear safety glasses and follow safety rules.
5. Maintain a clean and orderly work area.

### **EVALUATION:**

Students will be evaluated on project selection, design and workmanship.

## **CABINETRY**

**Subject:** Cabinetry

**Grade:** 11, 12 (Class Size around 14 Students or as space dictates)

**Length of Course:** First and Second Semester

**Prerequisite:** Machine Woods

### **CURRICULUM BENCHMARKS:**

1. Comply with safety rules.
2. Be productive in a clean and safe working environment.
3. Follow cleanup procedures and report tool and mechanical breakdowns.
4. Maintain and utilize basic hand and power tools.
5. Recognize when tools need adjustment and repair.
6. Set up and use different woodworking machines.
7. Be able to plan, design, and construct a woods project.
8. Practice problem-solving skills.
9. Compute cost of material for a project.

### **COURSE DESCRIPTION:**

Cabinetry is an advanced course in woods and is available to the student wanting to learn more advanced woodworking techniques. The student will design and built an advanced woods project that will involve more detail and construction methods. This class should expand the student's appreciation of use and availability of power machines, jigs, and special operations. This course is the completion of a three-year program in woods and is a challenging experience.

**WHAT STUDENTS ARE EXPECTED TO DO:**

1. Complete assigned work in textbook.
2. Will successfully pass safety test on operation of power machines.
3. Follow all safety rules.
4. Leave lab in clean and orderly fashion.
5. Plan, design, and construct an advanced woods project during the school year.

**EVALUATION:**

Students will be evaluated on project selection, design and workmanship.

## **CONSTRUCTION**

**Subject:** Construction

**Grade:** 10, 11, 12 (Class Size around 14 Students or as space dictates)

**Length of Course:** One Semester

**Prerequisite:** Basic Woods

**CURRICULUM BENCHMARKS:**

1. Understand the basic safety and safety operating procedures necessary for a construction project.
2. Understand the basic background knowledge required for entry into the construction industry.
3. Understand the basic sequence of procedures necessary for a construction project.
4. Differentiate among and apply the appropriate methods and processes to various construction materials and their installation.
5. Use the appropriate equipment for the particular situation.

**COURSE DESCRIPTION:**

The fundamentals of building construction will be taught through lecture, demonstration, and activity. Students will use construction models and will build a small structure to develop skill in the fundamentals of building construction.

**WHAT THE STUDENT IS EXPECTED TO DO:**

1. Do assigned work in textbook.
2. Select, design, plan and build a small storage building.

3. Follow all safety rules and regulations.
4. Clean lab and put tools in proper place at end of class period.
5. Work well individually and as a member of a group.

**EVALUATION:**

Students will be evaluated on daily work and written and hands-on tests