Basic Machine Technology

SERIES SPECIFICATIONS & COURSE OUTLINE

 CONTENTS

These machine technology courses are designed to help facilitate a basic understanding of the different tools commonly used in a machine shop. The 10-part series teaches participants how to identify common tools and components and how each is used for a particular job. While the entire series is designed to train the new machinist, the individual courses also offer experienced machinists the opportunity to review basic information on various tools such as milling machines, drill presses, band saws, grinders, and precision instruments.

 AUDIENCE

The Basic Machine Technology series is designed for machinists who have no prior experience using the different tools in a workshop. It does not assume any previous knowledge of machine shop protocol. All the terms used are defined or explained in the courses.

 LEARNER EXPECTATIONS

This series is intended to be used as an essential component in your machine technology curriculum. Each lesson has specific objectives associated with the information presented. Our experience indicates that those who complete the training are likely to accomplish the stated objectives. Furthermore, if these lessons are built into a total curriculum which includes the use and operation of measuring tools, milling machines, drill presses, and precision instruments, it will help provide participants with the knowledge necessary to master the subject.

Available formats:

- Interactive Online Courseware
- DVD
- Workbook

Call 1-800-828-8190 to arrange a FREE series demo!

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Basic Machine Technology

**MCT001  Safety Procedures & Guidelines**

**Purpose:** This course is an introduction to the importance of safety in the machine shop. Skill is not only measured in the quantity and quality of production but also in the attitude of the operator towards safety. Although there are many guidelines that contribute to safety, the most important is thinking about safety.

**Objectives:** List the precautions that can protect workers from injury and describe the precautions that ensure efficient operation of the machine shop and the equipment in it.

**MCT002  Hand Tools & Their Use**

**Purpose:** The tool crib is one place that machinists become familiar with as they begin their career in the machine shop. Everyone in the shop will have access to the most commonly found tools in the crib and expect that these tools are in good working condition. Since the machinist makes continuous use of hand tools in the shop, their care and use is important. Even if they have a personal hand tool collection, they should know how to properly store these tools in their own tool box.

**Objectives:** Identify the hand tools that are commonly used in the machine shop; list the safety procedures to follow in using these tools; and describe the use of each hand tool.

**MCT003  The Use of Measuring Tools**

**Purpose:** This course shows participants the importance of measurement in machine technology. Measurements are designated by such terms as diameter, width, and depth and these readings can be taken on the inside or outside of an object. Since the naked eye is not very useful (or precise) for measurement, there are other accurate units of measure and measuring tools available to the machinist.

**Objectives:** List the safety precautions that should be taken while working in the machine shop; list the names and uses of measuring tools used in the machine shop; and identify how to read these tools accurately.

**MCT004  The Vertical Milling Machine: Parts & Operation**

**Purpose:** The vertical milling machine is one of the most versatile tools in machining operations. The type of milling machine normally found in machine shops is a vertical spindle machine with a swiveling head. This tool is good to use for machining flat surfaces. In this course, participants are shown how each part of the vertical milling machine is used in the operation of the machine as well as the different types of attachments that can be used with the milling machine.

**Objectives:** List the safety procedures to follow in using the vertical milling machine; identify the components and functions of the vertical milling machine; describe how to operate the vertical milling machine properly and safely; and identify the additional features of the milling machine and explain the function of these features.

**MCT005  Vernier Caliper & Vernier Protractor**

**Purpose:** For precise measurements a machinist must understand how to use the Vernier scale. In this course, they are shown how to read the Vernier scale and how it is used with two common machinists’ measuring tools – the Vernier caliper and the Vernier protractor.

**Objectives:** List the safety precautions to be observed in the shop; describe how to read the Vernier scale; and identify some common uses of the Vernier caliper and Vernier protractor.

**MCT006  The Pedestal Grinder**

**Purpose:** The pedestal grinder uses a rotating abrasive wheel for semi-precision sharpening of tools held by hand. This method is also referred to as off-hand grinding. In this course, participants are shown the proper procedures for dismounting and mounting a grinding wheel on the pedestal grinder. It also covers some of the safety precautions required for setting up and using the pedestal grinder.

**Objectives:** List the safety precautions to observe in using the pedestal grinder and recognize the procedures for dismounting and mounting the rotating wheel on a pedestal grinder.
Basic Machine Technology

**MCT007 Sharpening Drill Bits by Hand or the Drill Press**

**Purpose:** Two methods of grinding twist drills are shown in this course. The first method, hand grinding, is performed on a pedestal grinder with the machinist doing all the manipulations by hand. The second method, drill point grinding, is performed the same way but with a drill grinder. Since every machine shop does not have a precision drill point grinder, machinists need to know how to perform drilling techniques using both methods.

**Objectives:** Identify the safety procedures used in the machine shop and in sharpening drills; identify the parts of a drill; describe the procedures for sharpening twist drills by hand on the grinder; and explain the procedures for sharpening twist drills with a drill point grinder.

**MCT008 Drill Presses: Sensitive & Radial Arm**

**Purpose:** One of the most common tools in any machine shop is the drill press. Drilling is often performed on a sensitive drill press or a radial drill press. Each press has its own specialty and machinists must know for what situations each press is to be used. In this course, participants are shown the basic parts of the sensitive and radial arm drill presses and their functions.

**Objectives:** List the safety precautions which must be practiced when drilling with a drill press; identify the basic parts of a sensitive drill press and describe their functions; and identify the basic parts of a radial arm drill press and describe their functions.

**MCT009 Drill Press Operations**

**Purpose:** A machinist should know how to perform the many operations which are completed on a drill press. This course is designed to show them the essential operations such as center drilling, straight drilling, and straight drilling counterboring, countersinking, reaming, and tapping methods.

**Objectives:** List the safety procedures that should be followed while operating the drill press; explain how and where the various drill press operations are performed; and describe the setup procedures that go along with each of the operations.

**MCT010 Vertical Band Saws: Parts, Accessories & Operation**

**Purpose:** The vertical band machine, often called the vertical band saw, is again a versatile tool to a machinist. Using different bands, machinists can shape and finish parts by sawing, filing, or polishing. They can also cut internal or external contours on this machine. In this course, participants are shown the different parts of the band saw, the accessories a machinist may use on the machine, and the basic operational procedures.

**Objectives:** List the safety procedures for working in the shop and operating a vertical band saw; identify the parts of a vertical band machine and describe their functions; and list the accessories commonly used on a vertical band machine.