Basic Machinist Technology

Course Objective: The student will study the fundamentals of mechanical work. The manual will provide a good reference for both the beginner and the expert.

Who this is for: Machinists, tool makers, die makers, students and engineers using machines in their work or hobbies.

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Lesson Description</th>
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<tbody>
<tr>
<td>MB.12</td>
<td>Mechanical drawing</td>
</tr>
<tr>
<td>MB.13</td>
<td>Fits and terminology</td>
</tr>
<tr>
<td>MB.14</td>
<td>Bench work</td>
</tr>
<tr>
<td>MB.15</td>
<td>How to make measurements</td>
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<tr>
<td>MB.16</td>
<td>Cutting speed and cutting fluids, drilling and related operations</td>
</tr>
<tr>
<td>MB.17</td>
<td>Lathe operations</td>
</tr>
<tr>
<td>MB.18</td>
<td>Grinding</td>
</tr>
<tr>
<td>MB.19</td>
<td>Metal sawing</td>
</tr>
<tr>
<td>MB.20</td>
<td>Toolmaking</td>
</tr>
<tr>
<td>MB.21</td>
<td>Geometry</td>
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<tr>
<td>MB.22</td>
<td>Mechanics</td>
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<tr>
<th>Item Code</th>
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<tbody>
<tr>
<td>BKMB1BK</td>
<td><em>The Starrett Book for Student Machinists</em></td>
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<td>MB12FC</td>
<td>Basic Machinist Technology</td>
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</table>

Enrolled students may take individual lessons. Please contact student services for individual lesson and textbook pricing.
Basic Machinist

Hand Tools

**Course Objective:** Study the correct way to use and care of hand tools while emphasizing safety.

**Who this is for:** (All personnel) Anyone using hand tools wanting to know the correct way to use hand tools, take care of them and use them safely.

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<tr>
<th>Item Code</th>
<th>Lesson Description</th>
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<tbody>
<tr>
<td>HT.1</td>
<td>Hand Tools (Part I)</td>
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<td>HT.2</td>
<td>Hand Tools (Part II)</td>
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<td>BKHT BK</td>
<td><em>ABC's of Hand Tools</em></td>
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<td>HT1FC</td>
<td>Hand Tools</td>
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Mechanical Refrigeration

Course Objective: Develop a basic understanding of mechanical refrigeration, various refrigeration cars, types of refrigeration equipment, effects of heat on refrigeration, the relation of pressure and temperature measurements of refrigeration.

Who this is for: Mechanics, carmen, apprentices, maintenance personnel responsible for the care and maintenance of refrigeration cars.

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Lesson Description</th>
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<tbody>
<tr>
<td>MR.1</td>
<td>Basic principles: refrigeration cars and equipment</td>
</tr>
<tr>
<td>MR.2</td>
<td>Heat effects: pressure and temperature, measurements</td>
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</table>

* A separate booklet is required for each lesson

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<tr>
<th>Item Code</th>
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<tr>
<td>MR1FC</td>
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Enrolled students may take individual lessons. Please contact student services for individual lesson and textbook pricing.
**Basic Machinist**

**How to Run a Lathe**

*Course Objective:* To aid the beginner or apprentice in the machine shop and the student in the school shop to secure a better understanding of the fundamentals and the operation of a Screw Cutting Engine Lathe. Also learn the best and most practical methods of machine shop practice in use.

*Who this is for:* Beginners or apprentices wanting to learn about the fundamentals of Screw Cutting Engine Lathes.

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<tr>
<th>Item Code</th>
<th>Lesson Description</th>
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<tbody>
<tr>
<td>LA.1</td>
<td>Lathe work, parts, care, and operation</td>
</tr>
<tr>
<td>LA.2</td>
<td>Grinding tools, lathe measurements</td>
</tr>
<tr>
<td>LA.3</td>
<td>Plain turning, chuck work</td>
</tr>
<tr>
<td>LA.4</td>
<td>Taper turning and boring</td>
</tr>
<tr>
<td>LA.5</td>
<td>Cutting screw threads</td>
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**Item Code** | **Required Textbook**
---|---
BKL | *How to Run a Lathe*

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<tr>
<td>LA1FC</td>
<td>How to Run a Lathe</td>
<td>$143.00</td>
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</table>

Enrolled students may take individual lessons.
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Basic Principles of Hydraulics

**Objective:** Explain the basic law of hydraulics (Pascal’s Law), the principle by how pumps work, the care and maintenance of hydraulic equipment.

**Who this is for:** Students, engineers, maintenance workers or anyone interested in gaining a basic knowledge of hydraulic pumps and the principles upon how they work.

<table>
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<tr>
<th>Item Code</th>
<th>Lesson Description</th>
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<tbody>
<tr>
<td>BH.1</td>
<td>Types of pumps</td>
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<table>
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<th>Required Textbook</th>
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<tbody>
<tr>
<td>BKBH1</td>
<td><em>Basic Principles of Hydraulics—Types of Pumps</em></td>
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<tr>
<td>BH1FC</td>
<td>Basic Principles of Hydraulics</td>
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Enrolled students may take individual lessons.
Basic Machinist

Machine Shop Practice, Vol. I

Course Objective: Understand the fundamentals of the basic machine tools and the technology which supports these operations. Study the basics to make precision parts for tools, dies, machines and instruments for all classes of machine tools.

Who this is for: Machinists, toolmakers, diemakers, students and engineers can use as a source of information on machining and related technology.

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Lesson Description</th>
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<tbody>
<tr>
<td>MS.1</td>
<td>Basic metal-cutting operations</td>
</tr>
<tr>
<td>MS.2</td>
<td>Basic measuring instruments</td>
</tr>
<tr>
<td>MS.3</td>
<td>Layout work, drilling machines, twist drills</td>
</tr>
<tr>
<td>MS.4</td>
<td>Drilling machine operation</td>
</tr>
<tr>
<td>MS.5</td>
<td>Engine lathe construction, single-point cutting too and their perfomance</td>
</tr>
<tr>
<td>MS.6</td>
<td>Cylindrical drilling</td>
</tr>
<tr>
<td>MS.7</td>
<td>Chucking work, taper and angle tuning</td>
</tr>
<tr>
<td>MS.8</td>
<td>Faceplate work, screw threads, and screw thread measuring</td>
</tr>
<tr>
<td>MS.9</td>
<td>Machine shop practice: cutting screw threads on a lathe, turret lathes, production lathes, and vertical lathes</td>
</tr>
<tr>
<td>MS.10</td>
<td>Machine shop practice: precision hole location, The Jig Borer, metal cutting saws</td>
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<tr>
<th>Item Code</th>
<th>Required Textbook</th>
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<tbody>
<tr>
<td>BKMSI</td>
<td>Machine Shop Practice, Vol. 1</td>
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MS1FC  Machine Shop Practice, Vol. 1  $258.50

Enrolled students may take individual lessons. Please contact student services for individual lesson and textbook pricing.
**Machine Shop Practice, Vol. 2**

**Course Objective:** Build on the basic knowledge learned in Volume I (machining and related technology) through information on the latest techniques of machining and useful tables etc.

**Who this is for:** Machinists, toolmakers, diemakers, students and engineers can use as a source of information on machining and related technology.

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Lesson Description</th>
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<tbody>
<tr>
<td>MS.11</td>
<td>Shaper construction and shaper tools, shaper work</td>
</tr>
<tr>
<td>MS.12</td>
<td>Planers and planer work, milling, machine construction</td>
</tr>
<tr>
<td>MS.13</td>
<td>Milling cutters, milling machine operation</td>
</tr>
<tr>
<td>MS.14</td>
<td>Indexing, dividing head work</td>
</tr>
<tr>
<td>MS.15</td>
<td>Helical and cam milling</td>
</tr>
<tr>
<td>MS.16</td>
<td>Horizontal boring machine and grinding wheels</td>
</tr>
<tr>
<td>MS.17</td>
<td>Cylindrical grinding, surface grinding</td>
</tr>
<tr>
<td>MS.18</td>
<td>Cutter and tool grinding</td>
</tr>
<tr>
<td>MS.19</td>
<td>Numerical control machine tools</td>
</tr>
<tr>
<td>MS.20</td>
<td>Surface plate work</td>
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<tr>
<td>MS11FC</td>
<td>Machine Shop Practice, Vol. 2</td>
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Enrolled students may take individual lessons. Please contact student services for individual lesson and textbook pricing.
Basic Machinist

Basic Millwright Work

Course Objective: This course is intended to be a helpful guide for the practical person solving problems that present themselves from day to day to the millwright and maintenance mechanic in construction and operation of industrial plants.

Who this is for: Millwrights and maintenance mechanics.

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Lesson Description</th>
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<tbody>
<tr>
<td>MG.1</td>
<td>Drawing and sketching</td>
</tr>
<tr>
<td>MG.2</td>
<td>Machinery and equipment installation</td>
</tr>
<tr>
<td>MG.3</td>
<td>Principles of mechanical power transmission and V-bolt drives</td>
</tr>
<tr>
<td>MG.4</td>
<td>Flat belts, gears</td>
</tr>
<tr>
<td>MG.5</td>
<td>Chain drives, couplings</td>
</tr>
<tr>
<td>MG.6</td>
<td>Packings and seals</td>
</tr>
<tr>
<td>MG.7</td>
<td>Bearings, structural steel</td>
</tr>
<tr>
<td>MG.8</td>
<td>Structural steel, screw threads</td>
</tr>
<tr>
<td>MG.9</td>
<td>Fasteners</td>
</tr>
<tr>
<td>MG.10</td>
<td>Pipe fittings</td>
</tr>
<tr>
<td>MG.11</td>
<td>Pipe valves</td>
</tr>
<tr>
<td>MG.12</td>
<td>Carpentry(Part 1)</td>
</tr>
<tr>
<td>MG.13</td>
<td>Carpentry(Part 2)</td>
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</table>

Course continued on facing page
Guide to Basic Millwright Work continued

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Lesson Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MG.14</td>
<td>Sharpening saws, wood fastening</td>
</tr>
<tr>
<td>MG.15</td>
<td>Sheet metal work and blacksmithing</td>
</tr>
<tr>
<td>MG.16</td>
<td>Rigging (Part 1)</td>
</tr>
<tr>
<td>MG.17</td>
<td>Rigging (Part 2)</td>
</tr>
<tr>
<td>MG.18</td>
<td>Electricity</td>
</tr>
<tr>
<td>MG.19</td>
<td>Welding (Part 1)</td>
</tr>
<tr>
<td>MG.20</td>
<td>Welding (Part 2)</td>
</tr>
<tr>
<td>MG.21</td>
<td>Pumps</td>
</tr>
<tr>
<td>MG.22</td>
<td>Air compressors</td>
</tr>
<tr>
<td>MG.23</td>
<td>Air compressors</td>
</tr>
<tr>
<td>MG.24</td>
<td>Portable power tools, mensuration, and mechanical calculations</td>
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<tr>
<th>Item Code</th>
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<tr>
<td>BKMILL</td>
<td><em>Millwright’s Mechanic’s Guide</em></td>
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<td>MG1FC</td>
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Enrolled students may take individual lessons.
Please contact student services for individual lesson and textbook pricing.
**Basic Machinist**

**Basic Hydraulic Technology**

**Course Objective:** The beginning student will learn about hydraulics from basic physical concepts of component operation and its application.

**Who this is for:** Anyone wishing to learn basic hydraulics, how it

<table>
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<tr>
<th>Item Code</th>
<th>Lesson Description</th>
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<tbody>
<tr>
<td>HD.1A</td>
<td>The physical world of a machine and hydraulic transmission of force and energy</td>
</tr>
<tr>
<td>HD.2A</td>
<td>Petroleum-based hydraulic fluid and fire-resistant hydraulic fluid</td>
</tr>
<tr>
<td>HD.3A</td>
<td>Operation at the suction side of pump and hydraulic actuators</td>
</tr>
<tr>
<td>HD.4A</td>
<td>Control of hydraulic energy and check valves, accumulators and cylinders</td>
</tr>
<tr>
<td>HD.5A</td>
<td>Flow control valves and directional control valves</td>
</tr>
<tr>
<td>HD.6A</td>
<td>Pressure control valves and pilot-operated pressure control valves</td>
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<tr>
<td>HD.7A</td>
<td>Hydraulic pumps and hydraulic motors</td>
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**Item Code** | **Required Textbook** |
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<tbody>
<tr>
<td>BKHD SUP</td>
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