OUR MISSION
The mission of the Precision Machining program at Trenholm State Community College is to provide academic and skill courses in order for students to gain the skills and knowledge to become proficient in the Precision Machining discipline with intensive concentration on how to safely set-up and operate metalworking equipment such as engine lathes, milling machines, CNC turning and milling centers as well as other basic shop equipment including but not limited to drilling and grinding machines.

POTENTIAL SALARY RANGE
The average full-time wage is variable dependent upon the size of the company offering employment. The current average full time wage is $43,630 for machinists/tool and die makers.

$43,630
Source: Bureau of Labor and Statistics Occupational Outlook Handbook, May 2018

INDUSTRY FACTS
With improvements in technologies, such as computer numerically controlled (CNC) machine tools, autoloaders, high-speed machining, and lights-out manufacturing, overall employment of machinists and tool and die makers is projected to show little growth from 2016 to 2026. Employment of machinists is projected to grow 2 percent from 2016 to 2026 and will vary by specialty. Even with the technologies advancements, machinists will still be required to set up, monitor and maintain these systems.

Job prospects for machinists and tool and die makers are expected to be good, primarily because of the number of job openings arising each year from the need to replace workers who retire or leave the occupation. (Source: Bureau of Labor and Statistics Occupational Outlook Handbook, 2017-2018 Edition)

Expand your career opportunities and get the skills you need for a high-paying career in Precision Machining at Trenholm State.

FOR ADDITIONAL INFORMATION:
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(334) 420-4385
dcarden@trenholmstate.edu

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Phone: (334) 420-4200
www.trenholmstate.edu

EQUAL OPPORTUNITY IN EDUCATION AND EMPLOYMENT
It is the official policy of the Alabama Department of Postsecondary Education and H. Councill Trenholm State Community College that no person shall, on the grounds of race, color, disability, sex, religion, creed, national origin, or age, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program, activity, or employment.
WHAT IS PRECISION MACHINING?

Machinists and tool and die makers set up and operate a variety of computer-controlled and mechanically controlled machine tools to produce precision metal parts, instruments, and tools.

Machinists typically do the following:
- Read blueprints, sketches, or computer-aided design (CAD) and computer-aided manufacturing (CAM) files
- Set up, operate, and disassemble manual, automatic, and computer numerically controlled (CNC) machine tools
- Align, secure, and adjust cutting tools and workpieces
- Monitor the feed and speed of machines
- Turn, mill, drill, shape, and grind machine parts to specifications
- Measure, examine, and test completed products for defects
- Smooth the surfaces of parts or products
- Present finished workpieces to customers and make modifications if needed

Tool and die makers typically do the following:
- Read blueprints, sketches, specifications, or CAD and CAM files for making tools and dies
- Compute and verify dimensions, sizes, shapes, and tolerances of workpieces
- Set up, operate, and disassemble conventional, manual, and CNC machine tools
- File, grind, and adjust parts so that they fit together properly
- Test completed tools and dies to ensure that they meet specifications
- Smooth and polish the surfaces of tools and dies

Machinists use machine tools, such as lathes, milling machines, and grinders, to produce precision metal parts. Many machinists must be able to use both manual and CNC machinery. CNC machines control the cutting tool speed and do all necessary cuts to create a part. The machinist determines the cutting path, the speed of the cut, and the feed rate by programming instructions into the CNC machine. Although workers may produce large quantities of one part, precision machinists often produce small batches or one-of-a-kind items. The parts that machinists make range from simple steel bolts to titanium bone screws for orthopedic implants. Hydraulic parts, antilock brakes, and automobile pistons are other widely known products that machinists make. Some machinists repair or make new parts for existing machinery. After an industrial machinist mechanically discovers a broken part in a machine, a machinist remanufactures the part. The machinist refers to blueprints and performs the same machining operations that were used to create the original part in order to create the replacement.

CURRICULUM REQUIREMENTS FOR ASSOCIATE DEGREE IN APPLIED SCIENCE IN AUTOMOTIVE/ADVANCED MANUFACTURING – PRECISION MACHINING

GENERAL EDUCATION CORE REQUIREMENTS: (16 Hours)

<table>
<thead>
<tr>
<th>Area</th>
<th>Course</th>
<th>Hours Required</th>
<th>Recommended Course(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Written Composition</td>
<td>3</td>
<td>ENG 101</td>
</tr>
<tr>
<td>II</td>
<td>Humanities and Fine Arts</td>
<td>3</td>
<td>MUS 101</td>
</tr>
<tr>
<td>III</td>
<td>Natural Sciences and Mathematics</td>
<td>6-7</td>
<td>MTH 116 &amp; MTH 112</td>
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<tr>
<td>IV</td>
<td>History, Social, and Behavioral Sciences</td>
<td>3</td>
<td>PSY 201</td>
</tr>
</tbody>
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AREA V: (52 Hours)

- ORI 101 Orientation to College
- INT 102 Industrial Maintenance Cutting/Welding
- ADM 291 MSSC Safety
- ADM 292 MSSC Quality Practices & Measurement
- MTT 286 Co-op
- MTT 111 Introduction to Injection Molding Lab
- MTT 112 Basic Print Reading for Machinists
- MTT 129 Lathe Operations
- OR MTT 134 Lathe Operations I AND MTT 135 Lathe Operations I Lab
- MTT 136 Milling Operations
- OR MTT 137 Milling I AND MTT 138 Milling I Lab
- MTT 140 Basic CNC Turning
- MTT 141 Basic CNC Milling
- MTT 147 Introduction to Machine Shop I
- MTT 148 Introduction to Machine Shop I Lab
- MTT 221 Advanced Blueprint Reading for Machinists
- MTT 241 CNC Milling Lab I
- MTT 243 CNC Turning Lab I

TOTAL: 52 Semester Hours

Electives:
- CIS 146 Microcomputer Applications

AWARDS AVAILABLE

ASSOCIATE DEGREE

- Associate of Applied Science - Automotive/Advanced Manufacturing – Precision Machining (52 Semester Hours)

CERTIFICATE

- Automotive/Advanced Manufacturing – Precision Machining (25 Semester Hours)
- Automotive/Advanced Manufacturing – Precision Machining – Engine Lathe Concentration (19 Semester Hours)
- Automotive/Advanced Manufacturing – Precision Machining – Milling Concentration (19 Semester Hours)

SHORT-TERM CERTIFICATE

- Automotive/Advanced Manufacturing – Precision Machining
- Automotive/Advanced Manufacturing – CNC Concentration

ACCREDITATION

H. Councill Trenholm State Community College is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) to award the Associate in Arts, Associate in Science, and Associate in Applied Science degrees as well as certificates in specific occupational areas. Contact the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) at 1866 Southern Lane, Decatur, Georgia 30033-4097 or call 404-679-4500 for questions about the accreditation of H. Councill Trenholm State Community College.