



# **Alabama Department of Postsecondary Education**

**Representing the Alabama Community College System**

## **STATEWIDE CAREER/TECHNICAL EDUCATION COURSE ARTICULATION REVIEW MINUTES**

Articulation Agreement Identifier: INT 153 (2005-1) Identifier is the postsecondary course prefix followed by Plan-of-Instruction version number (e.g.; INT 100 (2007-1)).

Applicable CIP code(s): 47.0303

Postsecondary course prefix, number, and title: Precision Machining Fundamentals I

Secondary Education course(s) title and number: 480701/540041 - Introduction to Precision Machining

Initial Review: October 15, 2009 DPE Annual Review: February 23, 2012

Effective date: **Fall Semester 2011.**

Course Content Analysis (all postsecondary course objectives must be sufficiently addressed in the secondary courses):

### **Notes:**

- 1 Skills and knowledge contained in the postsecondary course objectives must be present in the corresponding secondary objectives for a “match” to occur.**
- 2. Postsecondary and Secondary objectives must reflect similar content and performance levels before the course articulation agreement will be recommended to the TEDAC Oversight Committee.**
- 3. More than one Secondary course may be used in order to articulate to a Postsecondary course.**

Postsecondary Course Objectives	Secondary Courses and Objectives	TEDAC Comments
<p><b>MODULE A – MACHINE SHOP PRACTICES</b></p> <p><b>Competency:</b> A1.0 Perform tasks in a safe manner.</p> <p><b>Performance Objective:</b> A1.1 Given a variety of lab situations, perform assigned tasks in a safe manner.</p> <p><b>Learning Objectives:</b> A1.1.1 Explain the importance of safety policies. A1.1.2 Explain Lock Out/Tag Out procedures. A1.1.3 Explain good housekeeping practices. A1.1.4 Explain the importance of performing machine safety checks of equipment and accessories. A1.1.5 Explain the importance of using safe material handling techniques for lifting, transporting, and storing. A1.1.6 Explain the importance of complying with safety policies. A1.1.7 Explain the importance of practicing tool safety.</p> <p><b>Competency:</b> A2.0 Use measurement instruments.</p> <p><b>Performance Objective:</b> A2.1 Use specified measurement instruments to obtain and communicate measurements using proper symbols or words.</p> <p><b>Learning Objectives:</b> A2.1.1 Differentiate between the various types of measurement instruments used by industrial mechanics.</p>	<p><b>Introduction to Precision Machining</b></p> <p><b>Unit 1 – Introduction</b></p> <p><b>Content Standard(s)</b> 1. Summarize purposes, rules, and regulations relative to the precision machining technology program.</p> <p><b>Learning Objective(s)</b> 1. Learn relevant safety rules and regulations to be applied in the classroom/lab setting. 2. Obtain knowledge of the advancement of machine tools throughout history. 3. Gain an understanding of the multiplicity of career opportunities related to precision machining.</p> <p><b>Unit 2 – Safety</b></p> <p><b>Content Standard(s)</b> 2. Apply safety rules, regulations, and procedures for precision machining technology.</p> <p><b>Learning Objective(s)</b> 1. Explain the role that safety plays in the classroom/lab (machine shop). 2. Explain the appropriate safety precautions applicable to common manufacturing facilities. 3. Demonstrate the use and care of appropriate personal protective equipment (PPE).  4. Properly don and remove personal protective equipment (safety goggles, hearing protection, and hard hat). 5. Explain the importance of Hazard Communications (HazCom) and material safety data sheets (MSDS). 6. Describe fire prevention and firefighting techniques. 7. Demonstrate correct selection and use of hand tools.</p>	

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<p><b>MODULE B – READING AND INTERPRETING MECHANICAL DRAWINGS</b></p> <p><b>Competency:</b> B1.0 Develop mechanical drawings.</p> <p><b>Performance Objective:</b> B1.1 Develop various views of mechanical drawings of parts to be machined.</p> <p><b>Learning Objectives:</b> B1.1.1 Identify symbols and components used in mechanical drawings. B1.1.2 Explain the purpose and function of symbols and components used in mechanical drawings.</p> <p><b>Performance Objective:</b> B1.2 Transfer specifications from a mechanical drawings to an item being machined.</p> <p><b>Learning Objectives:</b> B1.2.1 Explain considerations when transferring drawings to items for machining.</p>	<p><b>Unit 3 – Print Reading</b></p> <p><b>Content Standard(s)</b> 3. Identify blueprint symbols and lines related to precision machining.</p> <p><b>Learning Objective(s)</b> 1. Identify line types (Object, Hidden, Center , Dimension, Cutting Plane, Cross section, Extension) 2. Identify blueprint views 3. Identify basic geometric dimensioning and tolerancing, notations, symbols, etc.</p>	

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<p><b>MODULE C – MACHINE SHOP TOOLS</b></p> <p><b>Competency:</b>                      C1.0 Use various tools commonly found in machine shop industrial settings.</p> <p><b>Performance Objective:</b>                      C1.1 Given a drawing, use a specified machine tool to produce the part.</p> <p><b>Learning Objectives:</b>                      C1.1.1 Identify the components of various machine tools commonly found in industrial settings.                      C1.1.2 Explain considerations for operating various types of machine tools commonly found in industrial settings.                      C1.1.3 Explain considerations for using various hand tools commonly found in industrial settings.</p>	<p><b>Unit 4-5 – Drill Press</b></p> <p><b>Content Standard(s)</b></p> <p>4. Demonstrate care and safety for a drill press.                      5. Demonstrate drill press operations to include hand sharpening a drill bit, center drilling and drilling a work piece, countersinking a hole, counter boring a hole, and calculating speed and feed per material and tooling.</p> <p><b>Learning Objective(s)</b></p> <p>1. Learn proper care and safety of a drill press (maintenance, lubrication, etc.).                      2. Know proper techniques for sharpening a drill bit.                      3. Know how to determine speeds/feeds.                      4. Perform drilling operations (countersinking, counterboring, spotfacing, centerdrilling, etc).</p> <p><b>Unit 6-7 – Power Saws</b></p> <p><b>Content Standard(s)</b></p> <p>6. Demonstrate care and safety for vertical and horizontal power saws.                      7. Demonstrate saw operations, including installing a saw blade, straight cutting a work piece, sawing an angle, and sawing a slot on a vertical saw.</p> <p><b>Learning Objective(s)</b></p> <p>1. Know safe power saw practices.                      2. Practice proper maintenance and care for the power saw.                      3. Learn multiple saw operations (content standard).</p> <p><b>Unit 8-9 – Bench-work</b></p> <p><b>Content Standard(s)</b></p> <p>8. Apply bench work skills and safety practices related to precision machining.                      • Demonstrating layout with combination square and scribe                      9. Demonstrate skills in mathematics concepts related to precision machining.</p> <p><b>Learning Objective(s)</b></p>	

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	<ol style="list-style-type: none"><li>1. Learn safe use of lay-out tools and chemicals Lay-out dye, etc.</li><li>2. Know proper hand tapping and die threading techniques.</li><li>3. Be able to safely test and install bench grinding wheels, guards, etc.</li><li>4. Apply math concepts to lay-out operations (trigonometry, geometry, etc).</li><li>5. Demonstrate surface plate lay-out techniques.</li></ol>	