

COURSE FAB3130: PRECISION TURNING 2**Level:** Advanced**Theme:** Production Systems and Processes**Prerequisite:** FAB2130 Precision Turning 1**Description:** Students develop specialized lathe skills for thread cutting and taper turning techniques.**Parameters:** Access to a fabrication facility complete with metal lathe and accessories and to instruction from an individual with specialized training in metal lathe practices.**Curriculum and Assessment Standards**

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • demonstrate print reading and job sequencing competencies • perform safe taper turning and thread cutting set-up procedures • perform taper turning and thread cutting operations • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • application of print reading and organizing skills to prepare a safe and efficient sequence of machining operations • demonstration of approved practices to set up a lathe for: <ul style="list-style-type: none"> – taper turning – thread cutting • completion of the following machining operations: <ul style="list-style-type: none"> – outside and inside tapers – outside and inside right hand threading. <p><i>Assessment Tool</i> <i>Assessment Framework: Fabrication Process, FABPRS</i></p> <p><i>Standard</i> <i>Dimensions, levels of finish and fits are to be within stated tolerances and specifications</i> <i>Performance rating of 3 for each applicable task</i></p> <ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>20</p> <p>10</p> <p>70</p> <p>Integrated throughout</p>

COURSE FAB3130: PRECISION TURNING 2 (continued)

Concept	Specific Outcomes	Notes
<p>Orientation</p> <ul style="list-style-type: none"> • Health and Safety • Lathe Accessories • Taper Turning • Threading 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe the hazards associated with metal lathes and metal cutting operations • describe a safety plan in case of accident • list and describe common lathe accessories such as drill chuck, taper attachment and thread dial • list and describe common types of tapers such as: <ul style="list-style-type: none"> – Morse taper – standard milling machine taper – taper pins • observe methods of cutting a taper by using the: <ul style="list-style-type: none"> – compound rest – tailstock offset – taper attachment methods • identify the factors that determine the most efficient method of cutting a taper such as the: <ul style="list-style-type: none"> – length and angle of taper – quality of finish – number of duplicates • identify the parts of a thread • list and describe the principal features of a: <ul style="list-style-type: none"> – Unified National Coarse (UNC) – Unified National Fine (UNF) – tapered pipe thread – ISO metric thread • describe the set-up procedures to cut internal and external left- and right-handed threads • describe the classes of fit associated with Unified Thread system 	<p>Demonstrate these processes on the lathe.</p> <p>Consider also a square, ACME, B.S.W. and buttress thread.</p>

COURSE FAB3130: PRECISION TURNING 2 (continued)

Concept	Specific Outcomes	Notes
<p>Planning and Management</p> <ul style="list-style-type: none"> • Print Reading • Boring • Work Sequencing 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • use a machine drawing to identify the: <ul style="list-style-type: none"> – overall size and shape of a machine part – thread type, size, tolerance and fit – taper type, size and fit – materials • research hole-machining operations procedures • create a systematic sequence of operations to machine a given part • calculate the appropriate cutting speeds, feed rates and depth of cuts for a given operation. 	
<p>Implementation</p> <ul style="list-style-type: none"> • Taper Turning and Thread Cutting <p>Assessment</p> <ul style="list-style-type: none"> • Career Information • Career Preparation 	<ul style="list-style-type: none"> • demonstrate skills in: <ul style="list-style-type: none"> – hole-machining operations – inside and outside taper turning – cutting inside and outside threads. • describe career and further training opportunities related to precision lathe work • prepare a record of completed activities within a portfolio. 	<p>If possible, have students visit a local machine or repair shop.</p>

