



RANGER COLLEGE
STEPHENVILLE, TEXAS

COURSE SYLLABUS

Beginning Machine Shop

MCHN 1300

3 credit hours

Fall 2019

INSTRUCTOR:

Jeff Snow

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EMAIL: jsnow@rangercollege.edu
OFFICE: RCEC ATC
PHONE: (254) 968-1075
HOURS: [8-5 M-R]

I. Texas Core Curriculum Statement of Purpose

Through the Texas Core Curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

II. Course Description

Fundamental machine shop safety, math, and measurement.

III. Required Background or Prerequisite

None

IV. Required Textbook and Course Materials

Item	Title	Author	Publisher	Edition	ISBN
1	Tooling U	Tooling U	Tooling-U/SME	Ver. 1.0/2.0	

V. Course Purpose

The main goal of this course is to provide a deep understanding of the fundamental machining skills needed for career success in a manufacturing environment, and an in-depth knowledge as a base for strong foundational skills without becoming difficult to comprehend or retain.

VI. Learning Outcomes

Discuss the proper use of hand tools and equipment; describe safe use of various shop equipment; demonstrate the use of measuring instruments; and perform basic calculations.

VII. Core Objectives

This course meets the following of the six Core Objectives established by Texas:

[FOR CORE CLASSES: Check all of the **required** core objectives for the course, as shown on the Table of Foundational Component Areas (provided separately). If you choose to check any **optional** core objectives, be sure to justify this elsewhere in the syllabus by indicating the nature of the coursework that addresses these optional objectives.]

FOR ELECTIVE CLASSES]

- Critical Thinking Skills (CT)** – Creative thinking, innovation, inquiry, and analysis; evaluation and synthesis of information
- Communication Skills (COM)** – effective development, interpretation and expression of ideas through written, oral, and visual communication
- Empirical and Quantitative Skills (EQS)** – The manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- Teamwork (TW)** – The ability to consider different points of view and to work effectively with others to support a shared purpose or goal
- Social Responsibility (SR)** – Intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities
- Personal Responsibility (PR)** – The ability to connect choices, actions, and consequences to ethical decision-making

VIII. Methods of Instruction

Will include lectures, assigned readings, discussions, demonstrations, and hands on projects, videos, electronic documents, PowerPoints, and more.

IX. Methods of Assessment

Home Work: (10%) (CT, EQS, PR) Grades will consist of all homework assignments **(7)**.

Test: (30%) (CT, EQS, PR) Include all Tooling-U test grades, and Midterm test **(14)**

LAB: (40%) (CT, EQS, PR, TW) project parts and final assembly.

Professionalism: (10%) (CT, COM, PR, TW) Being on time, prepared to work. Great attitude. NO foul language, No use of cell phones. Student following directions, leaving the work areas clean and organized.

Final (10%) Will consist of one final comprehensive test.

Grading scale: A = 90-100% B = 80-89 C = 70-79 D = 60-69 F = Below 60

X. Course/Classroom Policies

The following rules and guidelines about classroom behavior are to be memorized, internalized, and strictly adhered to. Failure to do so will negatively impact your experience of this class, not to mention your grade.

1. Attendance

WARNING—READ CAREFULLY! If you accumulate unexcused absences exceeding 10% of the total sixty four clock-hours required for this course as set forth by the Texas Higher Education Coordinating Board, you will be dropped from class. You will receive the grade of **W**. If the final semester withdrawal date has passed, you will receive the grade of **F**. (This means you will be denying yourself credit for the course if you miss any combination of 6.4 hours of class and/or lab times.)

Excessive absences result in (1) your failure to progress towards the objectives of the course, (2) unfair demands on your instructor's time by taking him/her away from responsible students in order to catch you up on missed assignments, and most important (3) you become an increased safety risk due to your diminished familiarity with hazardous equipment and safety protocols.

Lateness/Tardiness

Any student coming to class or laboratory more than **three** minutes from the scheduled start time will be counted as absent

RC Policy on Attendance:

Regular and punctual attendance in all classes and labs is required of all students.

Unexcused absences are counted from the first day of class as listed in the college calendar, regardless of the date of the student's registration

The only excused absence is an authorized college activity. All work and/or assignments missed because of an excused absence must be completed within one week or the excused absence will be counted as unexcused. An excused absence during the one-week period does not extend the deadline for the completion of assignments

Classes and laboratories starts at the scheduled time, you have three additional minutes to be in your seat, prepared for class. If you show up to class or lab more than three minutes late you will receive an unexcused absence for the day! Any student leaving class or lab early will need to visit with the instructor before returning to class or lab. If the early departure is not justifiable, the student may be marked absent for the class or lab for that instructional time.

2. Class Participation

Each student is encouraged to participate in classroom discussions and in lab. You are here to learn and the best way to learn is by hands-on and participation. Always remember: safety comes first.

3. Missed Exams/Assignments/Make-up Policy

All assignments and missed exam (s) are to be made-up within one week of the assignment or exam. Please get with the Instructor to set-up a time to make it up.

4. Lab safety/health

Safety lectures are done every day, before any equipment is used. **Safety is the #1 factor when working at home, school or industry.**

Safety Regulations

Machining can become very dangerous—even fatal—if you are careless and neglect safety precautions. Most accidents occur when people get in a hurry, so learn to pace yourself and move cautiously and deliberately. The College endeavors to provide you with proper training and a safe environment, but you must also do your part by abiding by the following rules. *If you persistently violate these rules, you will be considered a safety risk and will be withdrawn from class.*

5. Other Course Policies

1. *No eating or drinking in classrooms or labs*
2. *Turn cell phones off, no iPods or other electronic devices*
3. *Do not use internet for any activity other than online tutorials.*
4. *Do not operate any equipment in the lab without the instructor being present.*
5. *Return to class promptly after breaks.*
6. *Respect other student's tools, equipment and personal space.*
7. *Return all tools to their proper place as soon as you are finished with them.*
8. *It is your responsibility to clean up any area or machine you use.*
9. *Assignments must include students name, assignment title and date.*
10. *It is a privilege (for those who have paid) to work in the lab areas, not a Right.*

Note: Scheduled assignments are subject to change without notice at the discretion of the Instructor.

XI. Course Outline/Schedule

WEEK	LEC/LAB	TOPIC/ASSIGNMENT
1	LEC: Introduction and Syllabus review. A comprehensive overview of the safety hazards associated with metal cutting operations. Complete all test for Tooling-U lesson “ Safety for Metal Cutting 101 ” HW Assignment: Complete all test for Tooling-U lesson “ Intro to OSHA 101 ” LAB: Demonstrate basic procedures necessary before operating a machine tool.	
2	LEC: Identify the basic machine tools used in metal cutting operations. Complete all test for Tooling-U lesson “ Overview of Machine Tools 121 ”	

	<p>LAB: Identify and demonstrate components of the lathe, mill, drill press band saws, and grinders. Layout and grind a fly cutting tool.</p>
3	<p>LEC: Introduces the machine components, cutting tools and work holding devices commonly used on milling machines. Complete all test for Tooling-U lesson “Manual Mill Basics 201”</p> <p>HW Assignment: Complete all test for Tooling-U lesson “SDS and Hazard Communication 151”</p> <p>LAB: Identify all parts of the vertical mill and operate controls. Complete fly cutting tool grinding operations.</p>
4	<p>LEC: Describe the machine components and controls of a manual engine lathe and their basic function. Complete all test for Tooling-U lesson “Engine Lathe Basics 211”</p> <p>LAB: Identify all parts of the lathe and operate controls, feeds, and speeds.</p>
5	<p>LEC: Provides a detailed overview of the various bench work and layout processes that often need to be performed during manual machining. Complete all test for Tooling-U lesson “Benchwork and Layout Operations 241”</p> <p>HW Assignment: Complete all test for Tooling-U lesson “Personal Protective Equipment 111”</p> <p>LAB: Identify all hand tools, use hacksaws, files, hand drills, reamers, taps, and dies, layout equipment.</p>
6	<p>LEC: Manual milling machine set-up and operation. Complete all test for Tooling-U lesson “Manual Mill Setup 221”</p> <p>LAB: Square a block of aluminum using a vertical mill to blueprint specifications.</p>
7	<p>LEC: Manual lathe setup and operation. Complete all test for Tooling-U lesson “Engine Lathe Setup 231”</p> <p>HW Assignment: Complete all test for Tooling-U lesson “Fire Safety and Prevention 181”</p> <p>LAB: Start Lathe project part # 1 & 2. Continue with squaring aluminum block.</p>
8	<p>LEC: Review for midterm test</p> <p>LAB: Take midterm test, continue working on lab projects</p>
9	<p>LEC: Provides an introductory overview of the common metal cutting operations. Complete all test for Tooling-U lesson “Cutting Processes 111”</p> <p>HW Assignment: Complete all test for Tooling-U lesson “Bloodborne Pathogens 161”</p> <p>LAB: Continue with lathe project, complete aluminum block, start part #1 mill vise stop project.</p>
10	<p>LEC: Identify optimal band sawing variables and conditions. Complete all test for Tooling-U lesson “Band Saw Operations 211”</p> <p>Lab: Continue Lathe project parts 1&2, continue part #1 of mill project & start part # 2</p>
11	<p>LEC: Processes for various holmaking operations that the manual milling machine can perform. Complete all test for Tooling-U lessons “Holemaking on the Manual Mill 271”</p> <p>HW Assignment: Complete all test for Tooling-U lesson “Lubricant Fundamentals 211”</p>

	LAB: Continue lathe parts 1& 2 start # 3, continue parts 1 & 2 of mill project, and start 3&4.
12	LEC: Provides an overview of the use of cutting fluids. Complete all test for Tooling-U lesson “ Introduction to Metal Cutting Fluids 221 ” HW Assignment: Complete all test for Tooling-U lesson “ Metal Cutting Fluid Safety 231 ” LAB: Continue lathe parts 1, 2, 3, Continue mill parts 1-4, Submit (with blue print) any completed parts for inspection/grade.
13	LEC: This lesson provides a variety of safety topics related to NIMS credentialing. Complete all test for Tooling-U lesson “ NIMS Core Machining Skills 121 ” LAB: Complete lathe parts 1, 2, 3, Complete mill parts 1, 2, 3, 4, submit for grade.
14	LEC: Covers skills needed for the Measurement, Materials, and Safety competency within the NIMS Level I Machining Standard. Complete all test for Tooling-U lesson “ NIMS Core Measurement and Materials Skills 211 ” LAB: Assemble lathe and mill projects. Submit for assemble grade.
15	LEC: Review for Final exam (material covered weeks 1-14) LAB: Final exam.

XII. Non-Discrimination Statement

Admissions, employment, and program policies of Ranger College are nondiscriminatory in regard to race, creed, color, sex, age, disability, and national origin.

XIII. ADA Statement

Ranger College provides a variety of services for students with learning and/or physical disabilities. Students are responsible for making initial contact with the Ranger College Counselor, Gabe Lewis (glewis@rangercollege.edu). It is advisable to make this contact before or immediately after the semester begins.