RANGER COLLEGE

STEPHENVILLE, TEXAS

COURSE SYLLABUS

Machine Shop Mathematics

MCHN 1343
2-2-3

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

Designed to prepare the student with technical, applied mathematics that will be necessary in future machine shop-related courses.

III. Required Background or Prerequisite

Basic Math

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

Identify conversion methods of numbering systems; convert fractions to decimals and back; and use formulas to solve measurement problems.

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

Test: (40%) (CT, EQS, PR) Includes all Tooling-U test grades and midterm exam (12)

Labs: (40%) (CT, EQS, PR) Includes all lab exercises (12)

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.
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Lateness/Tardiness

Any student coming to class or laboratory more than **three** minutes from the scheduled start time will be counted as absent
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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: Explain basic arithmetic operations, including addition, subtraction, multiplication, and division. Complete all test for Tooling-U lesson "Math Fundamentals 101" LAB: Interactive lab # 1 (addition, subtraction, multiply, divide)	
2	LEC: Provides the Methods used to perform basic mathematical operations using fractions, decimals, and percentages. Complete all test for Tooling-U lesson "Fractions and Decimals 111" LAB: Interactive lab # 2 (fractions, decimal, percent)	
3	LEC: An explanation of the English and Metric system and how conversion between them occurs. Complete all test for Tooling-U lesson "Units of Measurement 112"	

	LAB: Interactive lab # 3 (English-Metric conversions)
4	LEC: Provides a detailed overview of the basics of algebra. Start lessons for Tooling-U class “Algebra Fundamentals 141” LAB: Lab test I (interactive labs 1-3)
5	LEC: Demonstrate basic operations to simplify, factor, and balance basic equations, as well as calculate for missing values with only one variable. Complete all test for Tooling-U lesson “Algebra Fundamentals 141” LAB: Interactive lab # 4 (Algebra operations)
6	LEC: Describe the most common rules of geometry. Complete all test for Tooling-U lesson “Shop Geometry Overview 170” LAB: Interactive lab # 5 (geometric shapes)
7	LEC: Discuss the basic building blocks of all geometry; the line and angle. Complete all test for Tooling-U lesson “Geometry; Lines and Angles 151” LAB: Interactive lab # 6 (solving bolt circle patterns)
8	LEC: Review for midterm. (Material covered in weeks 1-7) LAB: Midterm exam
9	LEC: Discuss the geometry of triangles and the specific mathematical operations unique to them. Complete all test for Tooling-U lesson “Geometry: Triangles 161” LAB: Interactive lab # 7 (angles and sides)
10	LEC: Calculate the specifics of geometry involving circles and polygons with any number of sides. Complete all test for Tooling-U lesson “Geometry: Circles and Polygons 171” LAB: Interactive lab # 8 (radius, diameter, area, circumference, angles, and types of polygons)
11	LEC: Provides an explanation of the Pythagorean theorem and how it is used to solve right triangles. Complete all test for Tooling-U lesson “Trigonometry: The Pythagorean Theorem 201” LAB: Interactive lab # 9 (calculate missing sides of right triangles)
12	LEC: Discuss the three basic ratios that are the basis for trigonometry. Complete all test for Tooling-U lesson “Trigonometry: Sine, Cosine, Tangent 211” LAB: Interactive lab # 10 (use trig functions to solve various problems)
13	LEC: Discusses sine bars and the trigonometry required to use them. Complete all test for Tooling-U lesson “Trigonometry: Sine Bar Applications 221” LAB: Interactive lab # 11 (calculate and set-up a workpiece angle using a sine bar)
14	LEC: Calculate the relative size of the sides and angles in a triangle. Complete all test for Tooling-U lesson “Shop Trig Overview 210” LAB: Interactive lab # 12 (calculate tapers, specific dimensions and angles)
15	LEC: Review for final Exam (Material covered in 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.