

## Instructor Information

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Office Location: IT 101

Office Hours: by appointment

## Course Information:

### Class Time and Location:

(MW) at Industrial Technology Room 103 1:00 pm - 2:50 pm for class work.

(MW) at Industrial Technology Room 100 1:00 pm - 2:50 pm for lab work.

### Required Textbook:

Text required for this course is: Technology of Machine Tools / Steve F. Krar - 7<sup>th</sup> ed.

Publisher – McGraw-Hill Copyright 2011

ISBN 978-0-07-351083-5

### Reference Material:

Machinery's Handbook handouts.

## Course Description:

The course is an introductory course in the use of precision measuring instruments and metal working machines. This course is intended to be an introduction to the machine shop practices of industry. Shop and machine safety, hand tool and machine operation, materials characteristics, are a few of the topics covered in this course.

## Student Learning Outcomes (SLO):

This course is designed to meet one or more of the following Student Learning Outcomes:

Course Overview / Shop Safety

Outside Micrometer Caliper Overview / Lathe Nomenclature and Lathe Drives

Outside Micrometer Caliper Review / Lathe Safety and Lathe Tooling Systems.

Lathe Basics and Determining Lathe Cross Slide & Compound Slide constants.

Leadscrew Constants Using a Dial Indicator

Outside Micrometer Caliper Test / Lathe Turning with A Four Jaw Chuck

Using A Hermaphrodite Caliper and Fractional Rule / Lathe Tailstock Adjustments

Further Lathe Turning Using Leadscrew Constant Details and Tailstock Adjustments

Feeds and Speeds Calculations / Finish Turning with A 3 Jaw Scroll Chuck

Lathe Collet System Overview. Introduction to Small Lathes. Tool Bit Grinding.

Feeds and Speeds Review / Small Lathe Turning Exercise

Groove Cutting and Measurement. Vernier Calipers. Dial Calipers

Angle Conversions / Groove Cutting Practice

Surface Plate Basics. Test Indicator Basics. Gage Block Basics.

Calculating Gage Block Stack Heights / Assembling Gage Block Stacks

Feeds And Speeds Test Due / Plane Trigonometry Introduction / Angle Measurement

Sine Function and Sine Bar Theory / Sine Bar Setups

Trigonometry Test Due / Sine Bar Lab Exercises

Taper Calculations. Sine Bar Test Due / Taper Attachment. Turning A Taper

Taper Cutting Practice. Taper Inspection

Gage Block Test Due. Taper Test Due / Compound Rest Taper Cutting

Thread Nomenclature and Calculations / Cutting Threads On the Lathe

More Thread Calculations / Thread Cutting Practice

Milling Machine Introduction. Milling Machine Safety

Milling Machine Feeds and Speeds Calculations / Milling Machine Cutters

Milling Machine Operations Theory / Milling Machine Operations Demonstration Milling Operations Practice

Tap Nomenclature. Drill Nomenclature. Drilling Speed Calculations. / Drilling and Tapping in the

Milling Machine. Drilling and Tapping Practice.

Trigonometry Functions for Hole Locations / Piece Part Pick Up Methods in The Mill

Feeds and Speeds Test Due / Piece Part Pick Up Practice

Drilling A Hole Pattern Using Lead Screw Dials and Digital Readouts.

Surface Plate Layout Theory / Surface Plate Layout Practice. Pick Ups and Checking

Hole Locations Test Due / Hole Boring in The Milling Machin

Hole Boring Practice. Surface Plate Inspection Practice

Gears and Gearing Calculations / Surface Grinder Theory and Practice

Project Analysis and Planning / Cutting Tapered Treads. Tread Cutting Practice.

Our Shop Projects Analysis / Machining Our Shop Projects

Gearing Test Due / Machining Our Shop Projects

Lead Screw Test Due / Machining Our Shop Projects

Advanced Angle Inspections. Dovetail Calculations / Creating Angles in The Milling Machine

Groove Cutting Test Due. Dovetail Test Due / Lathe Attachments. Attachment Practice.

Mechanical Design Analysis / Use of Special Lathe Tools

Mechanical Design Project Due / Course Material Review

## Marketable Skills

1. Students will demonstrate knowledge of machining and inspection processes.
2. The ability to understand mathematical computations needed in inspection and machining.
3. Students will demonstrate knowledge of industry safety practices.
4. Students will understand and implement lean philosophies to improve efficiency and eliminate waste.
5. Students will demonstrate the ability to communicate information and ideas verbally and in writing so others will understand.
6. Students will understand the need for technical drawing to aid in manufacturing processes.

## SRSU Disability Services

Sul Ross State University (SRSU) is committed to equal access in compliance with Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. Students seeking accessibility/accommodations services must contact Rebecca Greathouse Wren, LPC-S, SRSU's Accessibility Services Coordinator at 432-837-8203 (please leave a message and we'll get back to you as soon as we can during working hours), or email [rebecca.wren@sulross.edu](mailto:rebecca.wren@sulross.edu). Our office is located on the first floor of Ferguson Hall (Suite 112), and our mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas 79832.

## Library Information

The Bryan Wildenthal Memorial Library in Alpine offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library's website, [library.sulross.edu](http://library.sulross.edu). Off-campus access requires logging in with your LoboID and password. Librarians are a tremendous resource for your coursework and can be reached in person, by email ([srsulibrary@sulross.edu](mailto:srsulibrary@sulross.edu)), or phone (432-837-8123).

The Southwest Texas Junior College (SWTJC) Libraries at Uvalde, Del Rio, and Eagle Pass. Offer additional access to library spaces and resources. Del Rio, Eagle Pass, and Uvalde students may also use online resources available through SWTJC website, [library.swtjc.edu](http://library.swtjc.edu). The SWTJC Libraries serve as pick-up locations for Inter-Library Loan (ILL) and Document Delivery from the Alpine campus.

## Attendance and Participation

If you do not attend classes, you could lose your financial aid. You must attend and participate in your on-campus or online course(s) before the course certification date and continue beyond the course withdrawal date.

Your instructor is also required by law to validate/certify your attendance in your on-campus or online course(s) in order for you to receive financial aid. To meet this attendance requirement in an online course, you must demonstrate academic activity to establish eligibility for federal student aid with activities such as, but not limited to, the following examples: initiating contact with your instructor to ask a question about the academic subject studied in the course, submitting an academic assignment, taking an exam, completing an interactive tutorial, participating in computer-assisted instruction, attending a study group that is assigned by the instructor, or participating in an online discussion about academic matters relating to the course.

In an online class, simply logging in is not enough to demonstrate academic purpose. You are required to participate in your online class by taking part in an academically related activity as described above.

## Classroom Climate of Respect

Importantly, this class will foster free expression, critical investigation, and the open discussion of ideas. This means that all of us must help create and sustain an atmosphere of tolerance, civility, and respect for the viewpoints of others. Similarly, we must all learn how to probe, oppose and disagree without resorting to tactics of intimidation, harassment, or personal attack. No one is entitled to harass, belittle, or discriminate against another on the basis of race, religion, ethnicity, age, gender, national origin, or sexual preference. Still we will not be silenced by the difficulty of fruitfully discussing politically sensitive issues.

## Diversity Statement

"I aim to create a learning environment for my students that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, socioeconomic class, age, nationality, etc.). I also understand that the crisis of COVID, economic disparity, and health concerns, or even unexpected life events could impact the conditions necessary for you to succeed. My commitment is to be there for you and help you meet the learning objectives of this course. I do this to demonstrate my commitment to you and to the mission of Sul Ross State University to create an inclusive environment and care for the whole student as part of the Sul Ross Familia. If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. I want to be a resource for you."

## Academic Integrity

Students in this class are expected to demonstrate scholarly behavior and academic honesty in the use of intellectual property. A scholar is expected to be punctual, prepared, and focused; meaningful and pertinent participation is appreciated. Examples of academic dishonesty include but are not limited to: Turning in work as original that was used in whole or part for another course and/or professor; turning in another person's work as one's own; copying from professional works or internet sites without citation; collaborating on a course assignment, examination, or quiz when collaboration is forbidden.

All students are expected to complete their own work at all times. Any dishonest conduct will be promptly rewarded with an immediate “F”.

### Plagiarism

A student guilty of plagiarism and/or cheating will receive a grade of “F” in the course involved and the grade will be so recorded on the transcript. Students giving and receiving assistance in any unauthorized manner during an examination will subject themselves to this cheating policy. A pattern of cheating will result in suspension.

### Grading Policy

All work will be graded on specific criteria using the following guidelines. Any worksheets will be graded on a points-per-answer basis. Criteria for grading will include accuracy of content, appropriateness of content for assignment, presentation, and clarity. Projects in the lab will be graded on accuracy, neatness, content, adherence to standards, adherence to assignment, and workmanship. Graded items will be broken into specific categories and presented on grade sheets given at the time the assignments are given.

Final grades will be determined by totals in these areas:

25% Take home tests and exercises.

5% Final exam (comprehensive)

35% daily work: To be determined.

And Lab proficiency tests and setup.

30% Attendance

5% instructors discretion grade to include attitude, lab care, and work ethi

In the event one of the above categories is not completed during the course that percentage will automatically be divided between the other categories at the same level. All assignment points will be converted to percentages for individual assignment letter grades.

A=100-90;

B=89-80;

C=79-70;

D=69-60;

F=59-0

**Tests:**

All tests will be of the take home variety.

**Midterm Exam:**

No midterm exam

**Final Exam:**

The take home final exam will be made available. The exam will include written, practical, and analytical portions, and will be comprehensive of the entire semester.

