

COURSE SYLLABUS

COURSE TITLE: MCHN 1332-271 and 272 **Bench Work and Layout (3:2:4)**

INSTRUCTOR: Rodney Busby

OFFICE LOCATION Lubbock Center, Rm. 132B / Lab 132A, Lubbock, TX 79405
Class Room 133

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OFFICE HOURS: 1:00 to 3:00 pm Monday thru Thurs.

SOUTH PLAINS COLLEGE IMPROVES EACH STUDENT'S LIFE

I. GENERAL COURSE INFORMATION

- A. **Course Description.** This course is an introduction to bench work and layout. Topics include the application of the use and theory of tools, such as hand tools, height gauges, pedestal grinders and layout tools.
- B. **Course Goals/Objectives.** The student will identify layout and hand tools; describe the proper use of layout and had tools; list the safety procedures in operating a pedestal grinder; demonstrate proper use of layout tools using precision procedures; adjust clearances on the tool rest and the spark arrestor on the pedestal grinder; perform grinding procedures on the twist drills and tool blanks; and perform grinding wheel replacement.
- C. **Course Competencies.** A = 100-90 B = 89-80 C = 79-70 D = 69-60 F = 59 or below.
- D. **Academic Integrity:** It is the aim of the faculty of South Plains College to foster a spirit of complete honesty and a high standard of integrity. The attempt of any student to present as his or her own work which he or she has not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offender liable to serious consequences, **possibly suspension.** For further information concerning cheating and plagiarism, read the section on Academic Integrity in the SPC General Catalog.
- E. **SCANS and Foundation Skills.** Specific SCANS and Foundation Skills applicable to this course are as follows: (F) 1,2,3,4,5,8,9,10,11,12. (C) 5,7,15,16,18,19,20.
- F. **Verification of Workplace Competencies-Technical Education Division.** The learning outcomes of this course will prepare the student to meet the entry-level competencies measured in a comprehensive capstone experience course, MCHN 2547 Specialized Tools and Fixtures.

II. SPECIFIC COURSE/INSTRUCTOR REQUIREMENTS

- A. **Textbook and Other Materials**
- B. Machine Tool Practices 13 978-0-13-291265-5
- C. Machinerys Handbook (30th edition)

- B. Attendance Policy:** Punctual and regular attendance is required. No excused absences. All absences may be made up. All absences in excess of three days must be made up. Three tardies are equal to one absence. When a student reaches six non-made-up absences he/she may be dropped from the course. The instructor may drop a student after three absences if the student refuses to make them up. Any student who has missed (14) consecutive calendar days in a row will be dropped. There will be a sign in sheet, It will be the students responsibility to sign in.
- C. Assignment Policy.** Projects, training exercises, and customer work are assigned to each student during the semester. Each of these learning exercises are graded or evaluated by the instructor. Students are encouraged to complete the lab assignments within reasonable length of time.
- D. Grading Policy/Procedure and/or Methods of Evaluation.** Three major exams will be given covering course content during the semester. A comprehensive final will be given at the end of the semester. Students are required to take the final exam. Exam grades count for 20% of the student's grade. Eighty percent (80%) of the students grade comes from lab work such as training exercises, projects, daily attendance, customer work completed by the student
1. Tests
 - a. Results of daily or unit tests will be given a percent grade.
 - b. The final exam will be a percent grade.
 2. Lab
 - c. Students will be graded on Lab Safety Procedures.
 - d. Students will be graded on proper use of machine and hand tools.
 2. Projects
 - a. Students will be graded on quality and precision.
 - b. At the instructor's discretion, random projects may be selected for grading without prior notice.
 4. Attitude
 - a. Students will be graded on quality and precision.
 - b. At the instructor's discretion, random projects may be selected for grading without prior notice.
 5. Final Grade
 - a. Students will be graded on quality and precision.
 - b. At the instructor's discretion, random projects may be selected for grading without prior notice.
 - c. Attendance and attitude will account for 10% of final grade.
- E. Additional Information.** A student's conduct is expected to follow the guidelines stated in the college catalogue and student handbook, any deviation will result in immediate disciplinary action. No smoking is permitted in the building and food and drinks are not allowed in any classroom, lab or shop. All these activities will be limited to break time in designated areas only. Breaks will be limited to 20 minutes. Please turn off all cell phones, pagers, etc. During class. . Please turn off all cell phones, pagers, etc. During class. The use of cell phone for conversation and texting is not permitted during class and lab. If you use your phone during these times you will be asked to leave.
- F. Dress Code. No open toed shoes, sandals or flip-flop styled shoes. No baggy, saggy or drooping clothes. This includes wearing pants pulled down in a "Low Slung Style". For safety considerations standard shop acceptable attire is required. If you have any doubts about what is acceptable see the instructor for clarification.**

- G. "Texas Senate Bill 11 (Campus Concealed Carry) does not go into effect for community colleges until August 1, **2017**."

H.

I.

SPC Standard Disability Statement

J.

Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office at Levelland (Student Health & Wellness Office) 806-716-2577, Reese Center (Building 8) 806-716-4675, or Plainview Center (Main Office) 806-716-4302 or 806-296-9611.

III. **COURSE OUTLINE**

1. Introduction

- A. Discussion of course objectives
- B. Student responsibility in
 - 1. Grading
 - 2. Class Attendance
 - 3. Class Work
 - 4. Outside Assignments
- C. Brief history of metalworking

2. Metalworking Occupations

- A. Unskilled Workers
- B. Semi-Skilled workers
- C. Skilled Worker (Machinist)
- D. Technicians

At the end of this unit the student will be able to list at least 7 out of 10 possible career opportunities for a machinist.

3. Safety

- A. Eye Protection
- B. Lifting
- C. Compressed Air
- D. Sharp Tools
- E. Hand Tools
- F. Machine Tools Operations
- G. Proper Work Habits
- H. Hazardous Chemicals
- I. Fire Hazards
- J. Electrical Shock Hazards
- K. Horse Play

L. House Keeping

At the end of this unit the student will be able to identify common shop hazards and use common shop safety equipment.

4. Job Planning

- A. Safety
- B. Reading Drawing and Making Sketches
- C. Planning a Project
- D. Layout Tools
- E. Laying Out
- F. Layout Techniques
- G. Decimal Equivalents
- H. Micrometers

At the end of this unit the student will be able to list in order the procedures for planning and laying out a project.

5. Sawing and Bench Work

- A. Hand Sawing
- B. Power Sawing
- C. Chisels and Chipping
- D. Files
- E. Filing
- F. Scrapers and Scraping
- G. Abrasives

At the end of this unit the student will be able to perform the basic operations of sawing, chipping, filing and scraping.

6. Getting Acquainted With Metals

- A. Iron
- B. Steel
- C. Steel Alloys
- D. Non-ferrous Metals

At the end of this unit the student will be able to identify different types of metal by various means of shop testing.

7. Care of Equipment

- A. Oils and Cutting Fluids
- B. Belts
- C. Electrical Equipment
- D. Care and Cleaning of Tools

At the end of this unit the student will be able to demonstrate the use of oils and cutting fluids, belts and their care and adjustment, care of electrical equipment, and the care and cleaning of tools.

8. Drill Press Work

- A. Drills, Sleeves, Sockets and Chucks
- B. Drill Sharpening
- C. Drilling Machines
- D. Holding Work for Drilling and Other Machining Operations
- E. Drilling
- F. Other Drill Press Operations

At the end of the unit the student will be able to perform basic drilling operations using a power drill press.

9. Threads, Dies and Taps

- A. Screw Threads
- B. Threading Dies and Threading
- C. Taps and Tapping

At the end of this unit the student will be able to select taps and dies for specific applications and demonstrate the proper use of these tools.

10. Fitting and Assembling

- A. Fits and Fitting
- B. Assemble Tools
- C. Rivets and Riveting
- D. Fasteners
- E. Pipe, Pie-Fitting Tools and Cutting Tools

At the end of this unit the student will be able to explain the advantages and disadvantages of various fitting and fastening methods. The student will also be able to demonstrate the various methods.

11. Tool Sharpening

- A. Grinding Wheels
- B. Sharpening Tools

At the end of this unit the student will be able to perform basic tool sharpening procedures.

12. Finishing and Inspecting

- A. Buffing
- B. Metal Finishing
- C. Stamping, Stenciling and Etching
- D. Quality Control: Inspection, Measurement, Gauging Tools

At the end of this unit the student will be able to demonstrate basic skills in the finishing and inspecting of completed project

13. Conclusion

- A. Summarize Main Teaching Points
- B. Review
- C. Final Exam

IV. ACCOMMODATIONS

ADA Statement

Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office through the Guidance and Counseling Centers at Reese Center (Building 8) [716-4606](tel:716-4606), or Levelland (Student Services Building) [716-2577](tel:716-2577).

UIDELINES

CHILDREN ON CAMPUS

Many of the students attending classes at South Plains College - Lubbock Camps are also parents who value the opportunity to participate in higher education. Sometimes students are faced with the decision of whether to remain at home with their children, bring children with them to class, or be absent from class. The following guidelines address concerns for the safety of children on campus and provide for an environment conducive to learning.

CHILDREN IN THE CLASSROOM

Students are not allowed to bring children to class and will be asked to leave in the interest of providing an environment conducive for **all** students enrolled in the class. Students are responsible for adherence to the attendance requirements set forth by the instructor in the course syllabus.

UNATTENDED CHILDREN ON CAMPUS

Children may not be left unattended. In order to provide for the safety of children on campus, parents or other guardians are responsible for supervising children while utilizing services or conducting business on campus.

DISRUPTIVE CHILDREN

Disruptive children will not be allowed to interfere with college business. Parents or other guardians are responsible for supervising and controlling the behavior of children they have brought on campus.

Americans With Disabilities Act Statement

Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Special Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Coordinator of Special Services. For more information, call or visit the Special Services Office in rooms 113C and 112, Reese Center Building 1, 885-3048 ext. 4654.

GENERAL SAFETY ON CAMPUS

South Plains College recognizes the importance of safety on campus. The protection of persons and property is a responsibility which we all share. Personal safety begins with the individual. The following guidelines are intended to assist you in protecting yourself and to encourage practices that contribute to a safe environment for our campus community.

- Never leave your personal property unsecured or unattended.
- Look around and be aware of your surroundings when you enter and exit a building.
- Whenever possible, avoid walking alone, particularly after dark. Walk to your vehicle with other class members or request that the Security Guard walk you to your car.
- When approaching your vehicle, keep your keys in your hand; look under your car and in the back seat and floorboard. Lock the doors as soon as you are inside your car.

FOOD AND DRINK IN CLASSROOMS

It is the policy of South Plains College not to permit food or drink in the classrooms or laboratories.

<p>In case of emergency, contact the following numbers, but DO NOT leave a voice mail message. 747-0576, EXT. 4677 - ATC 885-3048, ext. 2923 - Reece Center (mobile 893-5705)</p>

SCANS COMPETENCIES

- C-1 **TIME** - Selects goal - relevant activities, ranks them, allocates time, prepares and follows schedules.
- C-2 **MONEY** - Uses or prepares budgets, makes forecasts, keeps records and makes adjustments to meet objectives.
- C-3 **MATERIALS AND FACILITIES** - Acquires, stores, allocates, and uses materials or space efficiently.
- C-4 **HUMAN RESOURCES** - Assesses skills and distributes work accordingly, evaluates performances and provides feedback.

INFORMATION - Acquires and Uses Information

- C-5 Acquires and evaluates information.
- C-6 Organizes and maintains information.
- C-7 Interprets and communicates information.
- C-8 Uses computers to process information.

INTERPERSONAL–Works With Others

- C-9 Participates as members of a team and contributes to group effort.
- C-10 Teaches others new skills.
- C-11 Serves Clients/Customers–works to satisfy customer’s expectations.
- C-12 Exercises Leadership–communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies.
- C-13 Negotiates–works toward agreements involving exchanges of resources; resolves divergent interests.
- C-14 Works With Diversity–works well with men and women from diverse backgrounds.

SYSTEMS–Understands Complex Interrelationships

- C-15 Understands Systems–knows how social, organizational, and technological systems work and operates effectively with them.
- C-16 Monitors and Corrects Performance–distinguishes trends, predicts impacts on system operations, diagnoses systems performance and corrects malfunctions.
- C-17 Improves or Designs Systems–suggests modifications to existing systems and develops new or alternative systems to improve performance.

TECHNOLOGY–Works With a Variety of Technologies

- C-18 Selects Technology–chooses procedures, tools, or equipment, including computers and related technologies.
- C-19 Applies Technology to Task–understands overall intent and proper procedures for setup and operation of equipment.
- C-20 Maintains and Troubleshoots Equipment–prevents, identifies, or solves problems with equipment, including computers and other technologies.

FOUNDATION SKILLS

BASIC SKILLS–Reads, Writes, Performs Arithmetic and Mathematical Operations, Listens and Speaks

- F-1 Reading–locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules.
- F-2 Writing–communicates thoughts, ideas, information and messages in writing and creates documents such as letters, directions, manuals, reports, graphs, and flow charts.
- F-3 Arithmetic–performs basic computations; uses basic numerical concepts such as whole numbers, etc.
- F-4 Mathematics–approaches practical problems by choosing appropriately from a variety of mathematical techniques.
- F-5 Listening–receives, attends to, interprets, and responds to verbal messages and other cues.
- F-6 Speaking–organizes ideas and communicates orally.

THINKING SKILLS–Thinks Creatively, Makes Decisions, Solves Problems, Visualizes and Knows How to Learn and Reason

- F-7 Creative Thinking–generates new ideas.
- F-8 Decision-Making–specifies goals and constraints, generates alternatives, considers risks, evaluates and chooses best alternative.
- F-9 Problem Solving–recognizes problems, devises and implements plan of action.
- F-10 Seeing Things in the Mind’s Eye–organizes and processes symbols, pictures, graphs, objects, and other information.
- F-11 Knowing How to Learn–uses efficient learning techniques to acquire and apply new knowledge and skills.
- F-12 Reasoning–discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.

PERSONAL QUALITIES–Displays Responsibility, Self-Esteem, Sociability, Self-Management, Integrity and Honesty

- F-13 Responsibility–exerts a high level of effort and perseveres towards goal attainment.
- F-14 Self-Esteem–believes in own self-worth and maintains a positive view of self.
- F-15 Sociability–demonstrates understanding, friendliness, adaptability, empathy and politeness in group settings.
- F-16 Self-Management–assesses self accurately, sets personal goals, monitors progress and exhibits self-control.
- F-17 Integrity/Honesty–chooses ethical courses of action.