

Reedley College MFGT 81-53123 Spring 2023

Intermediate Machine Shop

Instructor: Estevan Arreguin

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Office: IND 18

Classroom: IND 17

Lab: IND 16

Description: Vocational machine shop, 6 units, 12 hours Weekly. Class meets in the machine shop Tuesday and Thursday from 5:30 PM to 11:30 PM. Review of basic shop practices, hand tools, measurement systems, material selection, testing, and cutoff machines. Advanced lathe and milling operation and an introduction to CNC programming and set up will be covered, for both milling and turning centers. A digital copy of the required text will be provided.

Expected outcomes:

1. Practice safe shop techniques in operating both machinery and hand tools.
2. Fabricate parts and operate machinery using advanced shop math calculations to analyze problems.
3. Work with Computer Numerical Control equipment at an operator level capable of understanding and editing G and M codes.

Basic skill advisories: English 1A or 1AH and Math 45.

Prerequisites: MFGT 80

Provided e-text book: Machine Tool Practices 9th Edition- Kibbee.

Student provided materials:

1. Safety glasses.
2. 3 ring binder, paper, pencils, pens.
3. Scientific calculator- Preferably Ti-30Xa.
4. USB Flash drive.

How class will be conducted:

1. Lecture and demonstration.
2. Individual instruction- Shop work.
3. In class assignments and quizzes.
4. Midterm and final exam.

Course outline:

1. Manufacturing technology orientation.
2. Shop safety.
3. Math for machinists.
4. Introduction to Blueprint Reading / interpretation.
5. Measurement.
6. Precision / Semi-Precision layout.
7. Grinding.
8. Intermediate lathe work.
9. Intermediate Mill work.
10. Drilling and Reaming.
11. Taps, Countersinks, and Counter bores.
12. Cutting fluids.
13. Finishing.
14. Inspection.
15. Introduction to Computer Numerical Control (CNC).
16. Machine G and M codes
17. Principals of CNC work holding methods.
18. CNC machine operator skills.

Lab outline:

1. Measurement.
2. Lathe work.
3. Milling machine work.
4. Grinding.
5. Computer Numerical Control (CNC).

Daily point system: 30 points possible per day.

Start time tardy -10

Break tardy -10

Daily shop clean up -10

Grading:

	Number	Points each	Total points
Safety Test	1	67	50
Reading Assignments	14	10	140
Lecture Quizes	4	50	200
Midterm Exam	1	100	100
Binder Review	2	50	100
Shop Work	14	30	420
Thinking Machine	1	250	250
Daily Attendance	34	30	1020
Measurement Quizes	4	30	120
Final Exam	1	200	200
		TOTAL	2600

Grading Scale:

2600	to	2250	A
2249	to	2000	B
1999	to	1750	C
1749	to	1500	D

FINAL EXAM: TUESDAY MAY 16 - 5:30pm to 9:30pm

Essential Information:

- ✓ Any assignment turned in up to one week late will receive 50% credit.
- ✓ Homework will not be accepted more than one week late.
- ✓ Extra credit can be earned by doing research papers on a machine shop-related topic, or extra shop tasks. **50 points maximum for the semester.**
- ✓ If class needs to be canceled an email will be sent through canvas no earlier than 1 hour before the class starting time.
- ✓ Cheating and plagiarism will not be tolerated.
- ✓ Please limit your cell phone use and take necessary calls outside of the machine shop after your station has been secured and shut down.

Policies and Procedures:

Failure to attend class: Failure to attend class on a regular basis will adversely affect your performance during this course. Plagiarism or cheating of any kind will result in a grade “F” for this course. There are no makeup exams without prior permission of the instructor.

Required Reading: Required reading should be completed before the corresponding lecture/demonstration. All grades are final unless an error in math has been made by the instructor. The instructor reserves the right to adjust the course outline, scoring, grading and content as needed.

Having Trouble? If at any time you find you are having trouble succeeding in this course whether because of a change in your life circumstances or because of something you do not understand about the material – **PLEASE SEE ME** as soon as possible. There are several services available to assist you on campus. I would be happy to recommend or contact someone who will help.

Accommodations For Students with Disabilities: If you have needs as addressed by the Americans with Disabilities act (ADA), of Section 504 of the Rehabilitation Act, please notify me immediately. Reasonable efforts will be made to accommodate your needs.

Keep Track of Returned Work: You should save all your work until the end of the semester so you can double check the final grade earned as recorded by the instructor.

Important Reedley College Campus Dates for Spring 2023:

DATE	DAY	EVENT / DEADLINE
January 9	(M)	Start of Spring 2023 semester
January 9- March 10	(M-F)	Short-term classes, first nine weeks
January 16	(M)	Martin Luther King, Jr. Day observed (no classes held, campus closed)
January 20	(F)	Last day to drop a Spring 2023 full-term class for a full refund
January 27	(F)	Last day to drop a Spring 2023 full term class in person to avoid a "W"
February 17	(F)	Lincoln Day observance (no classes held, campus closed)
February 20	(M)	Washington Day observance (no classes held, campus closed)
March 10	(F)	Last day to drop a Spring 2023 full term class (letter grades assigned after this date)
March 13 - May 19	(M-F)	Short-term classes, second nine weeks
April 3-6	(M-Th)	Spring recess (no classes held, campus open)
April 7	(F)	Good Friday observance (no classes held, campus closed) (classes reconvene April 10)
May 15-19	(M-F)	Spring 2023 final exams week
May 19	(F)	End of Spring 2023 semester/ commencement

Spring 2023 MFGT 81 Reading and Assignments

WEEK	Assignment	Due Date
1 1/9/23 to 1/13/23	Safety hand out Safety test	1/13/2023
	Section A, Unit 3 pp.26-33 Self-Test Questions: 2-10	1/17/2023
2 1/16/23 to 1/20/23	Section C, Dimensional measurement outline.	1/24/2023
	Section C, Unit 1 Systems of measurements. pp.103-106 Self-Test Questions: 1,7,10	1/24/2023
	Section C, Unit 2 Using Steel Rules pp.107-115	Read/Review
	Section C, Unit 3 Instruments of Measurement. pp.116-124	Read/ Review
	Section C, Unit 4 Using Micrometer instruments pp.125-145 Self-Test Questions 1,3,5,9	1/24/2023
	Section C, Unit 5 Using Comparison Instruments. pp.146-165 Self-Test Questions: 1-4	1/24/2023
3 1/23/23 to 1/27/23	Section I, Unit 9 Other Lathe Operations. PP.451-464 Self-Test Questions: 4,11,12,16,17	1/31/2023
	Section I, Unit 10- 60 Degree Thread Information and Calculations pp.465-469 Self-Test Questions: 4,5,8,10	1/31/2023

Week	Assignment	Due Date
3 Continued 1/23/23 to 1/27/23	Section I, Unit 11 Cutting Unified External Threads pp.470-480	Read/Review
	Section I, Unit 12 Cutting unified Internal Threads pp.481-484	Read/Review
	Section I, Unit 14 Using Steady and Follow Rests pp.496-501	Read/Review
	Section I, Unit 15 Additional Thread Forms pp. 502-506	Read/Review
	Section I, Unit 16 Cutting Acme Threads PP.507-510	Read/Review
4 1/30/23 to 2/3/23	Section I, Unit 1 Engine Lathe pp391-398	Read/Review
	Section I, Unit 2 Tool Holders and Tool Holding pp.399-404	Read/Review
	Section I, Unit 3 Cutting Tools for the Lathe pp.405-412	Read/Review
	Section I, Unit 4 Lathe Spindle Tooling pp.413-419	Read/Review
	Section I, Unit 5 Operating the Machine Controls pp.420-424	Read/Review
	Section I, Unit 6 Facing and Center Drilling PP.425-434 Self-Test Questions: 2,6-10	2/7/2023

Week	Assignment	Due Date
5 2/6/23 to 2/10/23	Section I, Unit 7 Turning Between Centers pp.435-447	Read/Review
	Section I, Unit 8 Alignment of Lathe Centers pp.448-450	Read/Review
	Section E, Layout pp.235-243 Outline	2/14/2023
	Section E, Unit 1 Basic Semi- Precision Layout Practice pp.244-249	Read/Review
	Section E, Unit 2 Basic Precision Layout Practice pp.250-262	Read/Review
6 2/13/23 to 2/17/23	Section J Vertical Milling Machines pp. 511-513	Read/Review
	Section J, Unit 1 Vertical Spindle Milling Machines pp.514-516	Read/Review
	Section J, Unit 2 Cutting Tools and Cutter Holders pp.517-522	Read/Review
	Section J, Unit 3 Setups on the Vertical Milling Machine pp.523-529	Read/Review
	Section J, Unit 4 Vertical Milling Machine Operations pp.530-539 Outline	2/21/2023
	Section J, Unit 5 Using the Offset Boring Head pp.540-544	Read/Review

Week	Assignment	Due Date
7 2/20/23 to 2/24/23	Section F, Unit 2 Speeds and Feeds For Machine Tools pp.275-278	Read/Review
	Section F, Unit 4 Using Carbides and Other Tool Materials pp.284-300	Read/Review
	Section H, Unit 5 Countersinking and Counter Boring pp.374-376	Read/Review
	Section H, Unit 6 Reaming on the Drill Press pp.377-382	
	Section C, Unit 6 Using Gauge Blocks pp.166-173	Read/Review
8 2/27/23 to 3/3/23	Section C, Unit 7 Using Angular Measuring Instruments pp.174-182	Read/Review
	Section C, Unit 8 Tolerances, Fits and Geometric Dimensions pp.183-192 Self-Test Question: 1,2,4,5,7,8	3/7/2023
9 3/6/23 to 3/10/23	Section B, Unit 1 Arbor and Shop press pp.37-44	Read/Review
	Section B, Unit 4 Files pp.57-62	Read/Review
	Section B, Unit 6 ID and Uses of Taps pp.67-71	Read/Review
	Section B, Unit 7 Tapping Procedures pp.72-76	Read/Review

Week	Assignment	Due Date
10 3/13/23 to 3/17/23	Section D, Unit 3 Hardening, Case Hardening, and Tempering pp. 209-220 Handout	3/21/2023
	Section D, Unit 5 Rockwell and Brinell Hardness Testers pp.225-234 Handout	3/21/2023
	Section D, Unit 4 Annealing, Normalizing, and Stress Relieving pp.221-224	Read/Review
	Section D, Unit 5 Rockwell and Brinell Hardness Testers pp.224-234 Handout	3/21/2023
	MIDTERM Covering First 9 Weeks of assignments.	
11 3/20/23 to 3/24/23	Section G, Unit 3 Preparing to Use the Vertical Band Machine pp.326-334	Read/Review
	Section G, Unit 4 Using the vertical Band Machine pp.335-340	Read/Review
	Section L, Unit 5 Work Holding on the Surface Grinder pp.621-624	Read/Review
	Section L, Unit 6 Using the Surface Grinder pp.625-631	Read/Review

Week	Assignment	Due Date
12 3/27/23 to 3/31/23	CNC Introduction/ Milling	
13 4/3/23 to 4/7/23	CNC Introduction/ Milling	
14 4/10/23 to 4/14/23	CNC Introduction/ Milling	
15 4/15/23 to 4/21/23	CNC Introduction/ Lathe	
16 4/24/23 to 4/28/23	CNC Introduction/ Lathe	
17 5/1/23 to 5/5/23	CNC Introduction/ Lathe	