MFGT-82-58330 Fall 2023

Advanced Machine Shop

Instructor: Estevan Arreguin **E-Mail:** estevan.arreguin@reedleycollege.edu

Office: IND 18 **Classroom:** IND 17 **Lab:** IND 16

Contact: (559) 240-3905

Meeting Times: Monday and Wednesday 5:30pm to 11:10pm

Course Description:

Vocational machine shop, 6 units, 12 hours weekly. Class will meet in the IND 17 Monday and Wednesday of each week. From 5:30pm to 11:10pm. Here we will review Machine shop practices, Measurement systems, Blueprint reading, Material selection, Advanced CNC lathe and Milling machine operation, as well as CNC machine set up procedures.

Course Objectives:

In the process of completing this course, students will.

- Select and properly use tools of the machine trade.
- Perform precision measurement and layout needed in the machine trade.
- Propose proper material for a prescribed project and calculate necessary cuts for the job.
- Set up and perform advanced machining operations on conventional and Computer Numeric Control machine shop equipment.
- Identify potential hazards in machine operation and revise techniques to optimize safety.
- Prepare accurate and correct calculations to precisely set machines for close tolerance work.
- Set up and operate Computer Numeric Control Turning and Machining Centers.
- Program both Computer Numeric Control Turning and Machining Centers.

Student Learning Outcomes:

Upon successful completion of the course, students will be able to.

- Practice safe shop techniques in operating both hand tools and machinery.
- Calculate advanced mathematical problems associated with part fabrication and machinery operation.
- Consistently execute daily assigned work in a timely and professional manner.

Basic skills Advisory: English 1A or 1AH, and Math 45

Prerequisites: MFGT 81

Minimum Student Materials:

- E-Text Book provided
- Safety Glasses (Required)
- 1” - 3 Ring Binder
- 3 Ring Binder Dividers
- Scientific Calculator
- USB Flash Drive

How Class Will be Conducted:

- Lecture and Demonstrations
- Machine Shop Tasks
- Weekley Assignments and Quizzes
- Midterm and Final exam

Course/Lab outline:

- Machine shop safety test
- Math for Machinists
- Measurement
- Part inspection
- Introduction to CNC Programming
- Cartesian Coordinate system
- Machine G and M Codes
- Principals of CNC Work Holding
- CNC Machine Operator Technician Skills
- CNC Machine Setup Technician Skills
- CNC Mill Programming
- CNC Lathe Programming
- Introduction to CAD/CAM

Final: Monday December 4th 5:30pm to 11:10pm

Essential Information:

- Any Assignment turned in up to one week late will receive 50% Credit
- Homework assignments will not be accepted more than one-week past due date
- Extra credit may be given by doing up to 2 research papers of no less than 5 paragraphs in length that cover a relevant manufacturing topic.
- Attendance and participation are of the highest importance. You must be in class to participate and complete all in class work assigned.
- In the event of class being cancelled you will be notified via Canvas and with a sign being posted outside of IND 16.
- Cheating and plagiarism will not be tolerated. A student will receive no credit for an assignment if, in the opinion of the instructor, the individual has cheated.
- If you carry a cellular phone please set it to vibrate or turn it off.

Important Dates for Fall 2023

DATE	DAY	EVENT / DEADLINE
August 4	(F)	Last day to add a full-term or short-term first nine weeks Fall 2023 class in person 5:00 p.m.
August 6	(Su)	Last day to add a full-term or short-term first nine weeks Fall 2023 class using Self-Service 11:59 p.m.
August 7	**(M)**	**Start of Fall 2023 semester**
August 7 - October 6	(M-F)	Short-term Fall 2023 classes, first nine weeks
August 18	(F)	Last day to drop a Fall 2023 full-term class for full refund
August 25	(F)	Last day to register for a Fall 2023 full-term class in person with add authorization
August 25	(F)	Last day to drop a Fall 2023 full-term class to avoid a “W” in person
August 27	(Su)	Last day to drop a Fall 2023 full-term class to avoid a “W” on Self-Service
August 27	(Su)	Last day to add a Fall 2023 full-term class with add authorization on Self-Service
September 4	**(M)**	**Labor Day holiday (no classes held; campus closed)**

October 1	(Su)	Deadline to apply for graduation for Fall 2023 completion
October 6	(F)	Last Day to drop a full-term Fall 2023 class (letter grades assigned after this date)
October 9 - December 8	(M-F)	Short-term Fall 2023 classes, second nine weeks
November 10	(F)	Veterans Day observed (no classes held, campus closed)
November 23-24	(Th-F)	Thanksgiving holiday (no classes held, campus closed)
December 4	**(M)**	**Final for MFGT-82-58330/ 5:30pm-11:10pm**
December 8	(F)	Last day to change a Fall 2023 class to/from Pass/No-Pass grading basis
December 8	(F)	End of Fall 2023 semester
December 11-29	(M-F)	Winter Recess (campus is open December 11-22; campus closed December 25-January 1)

Policies and Procedures:

- **Failure to Attend Class-** Failure to attend class on a regular basis will adversely affect your performance and progress in this course. Plagiarism or cheating of any kind will result in a grade of "F" for this course. There are no makeup exams without prior permission from the instructor.
- **Reading Requirements**- 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. Reedley College has several resources for student success. I would be happy to research and recommend one if needed.
- **Accommodations for Students with Disabilities-** If you have needs as addressed by the Americans with Disabilities Act (ADA), or Section 504 of the Rehabilitation Act, please notify me immediately and efforts to accommodate your needs will be made.
- **Keep Track of your Returned Work**- This will insure you have the correct grade at the end of the semester, or if you have any disagreements with the instructors grade score.

Grading:

	Number	Point Value	Total Points
Safety Testy	1	50	50
Measurement Quizzes	6	30	180
CNC Program Quizzes	5	30	150
Outlines	5	20	100
Exercises	17	10	170
Lecture Quizzes	5	30	150
Mid-Term Exam	1	100	100
Final Binder	1	100	100
Final Exam	1	200	200
Class Project	1	250	250
	Total Possible Points:		**1450**

Grade Scale:

1450	TO	1305	A
1304	TO	1159	B
1158	TO	1013	C
1012	TO	867	D

	Class Date	Reading Assignment	Workbook	Workbook Assignment	Due Date
WEEK 1	8/7/2023	Safety Test Read pp.1-7	Mill / In-class	Positioning Exercise pp.8	8/9/2023
	8/9/2023	Read pp.9-28	Mill		
WEEK 2	8/14/2023	Outline pp.30-41	Mill	Interpolation Exercise pp.41	8/21/2023
	8/16/2023	Outline pp.42- 50	Mill		8/21/2023
WEEK 3	8/21/2023	Read pp.51-54 Read pp.56-59	Mill	Circular Pocket Milling Exercise pp.55 **CNC Quiz 1**	8/28/2023
	8/23/2023	Outline pp.60-67	Mill	**Lecture Quiz 1**	8/28/2023
			Mill	Cutter Compensation Exercise #1 pp.66 Cutter Compensation Exercise #2 pp.68	8/28/2023
WEEK 4	8/28/2023	Read pp.72-79	Mill	Canned Cycle Exercise #1 pp.81 **Measurement Quiz 1**	9/4/2023
	8/30/2023	Read pp.82-88	Mill	Canned Cycle Exercise #2 pp.90	9/4/2023
		Read pp.92-95	Mill		
WEEK 5	9/4/2023	**NO CLASS - LABOR DAY**			
	9/6/2023	Read pp.98-101	Mill	Canned Cycle Exercise #3 pp.102-103 **CNC Quiz 2**	9/11/2023

WEEK 6	9/11/2023	Outline pp.105-108	Mill	**Lecture Quiz 2**	9/18/2023
	9/13/2023	Read pp.109-115	Mill	**Measurement Quiz 2**	
WEEK 7	9/18/2023	Read pp.1-7	Lathe	Lathe Part Points pp.8 Lathe Part Points pp.9	9/25/2023
	9/20/2023	Read pp.10-26	Lathe		

Week 8	9/25/2023	Outline pp.27-31	Lathe		
	9/27/2023	Read pp.32-40	Lathe	Linear Interpolation Exercise pp.34 Chamfer/Corner Rounding Exercise pp.39 **CNC Quiz 3**	10/2/2023
WEEK 9	10/2/2023	Read pp.41-47	Lathe	Circular Interpolation Exercises pp.44/pp.45/pp.46/pp.47 **Lecture Quiz 3**	
	10/4/2023	Outline pp.48-50 Read pp.51-56	Lathe	**Measurement Quiz 3**	10/9/2023
WEEK 10	10/9/2023	Read pp.77-93	Lathe	**Mid-Term Exam**	
	10/11/2023			Exercise pp.86	10/16/2023
WEEK 11	10/16/2023	Read pp.94-108	Lathe		
	10/18/2023	Read pp.109-114	Lathe	G76 O.D Threading Exercise pp.114 **CNC Quiz 4**	10/23/2023
WEEK 12	10/23/2023	Read pp.115-122 Read pp.129-130	Lathe	**Lecture Quiz 4**	
	10/25/2023			**Measurement Quiz 4**	
WEEK 13	10/30/2023	**Class Project**	**Lathe Skills**		
	11/1/2023	**Class Project**	**Mill Skills**		
WEEK 14	11/6/2023	**Class Project**	**Lathe Skills**		
	11/8/2023	**Class Project**	**Mill Skills**	CNC Quiz 5	
WEEK 15	11/13/2023	**Class Project**	**Lathe Skills**	Lecture Quiz 5	
	11/15/2023	**Class Project**	**Mill Skills**	Measurement Quiz 5	
WEEK 16	11/20/2023	**Class Project**	**Lathe Skills**		
	11/22/2023	**Class Project**	**Mill Skills**		
WEEK 17	11/27/2023	**Class Project**	**Lathe Skills**		11/27/2023
	11/29/2023	**Final Binder**	**Mill Skills**	Measurement Quiz 6	11/29/2023
WEEK 18	12/4/2023 **Final Monday, December 4th - 5:30pm to 11:10pm**				