



MFG 103 Welding Technology I
3 Credits
College Now/CTE
Student Outcomes Checklist
cocc.edu/departments/college-now/

Student's Name _____

Student's Signature _____ Completion Date _____

High School Teacher's Signature _____

Recommended Grade _____ High School _____

COCC Review Instructor's Signature _____

COURSE DESCRIPTION: Introductory course covering basic welding processes. Includes relevant safety topics and introduction to shielded metal arc welding (SMAW) and gas metal arc welding (GMAW).

REQUIRED TEXT: Welding Principles and Packages 4th Edition by Edward Bohnart

INSTRUCTIONS TO THE TEACHER: You may access video lectures, student quizzes, tests, PowerPoint slides, the final exam and answer keys through Blackboard. Call the College Now office at 541.504.2930 for access.

REQUIRED DOCUMENTATION: When the student has successfully completed all outcomes, quizzes and the final test, the high school teacher will mail or deliver the following documents to: College Now Office, Central Oregon Community College, 2600 NW College Way, Bend, OR 97703.

1. Completed and signed course outcomes and grade sheet (pages 1 & 3 of this document).
2. Signed final grade roster for the course.

GRADING:

A	4.0	Outstanding Performance
A-	3.7	Superior
B+	3.3	Excellent
B	3.0	Very good
B-	2.7	Good
C+	2.3	Better than satisfactory
C	2.0	Satisfactory
D	1.0	Passing (NOTE- DOES NOT COUNT TOWARD MATC GRADUATION)
F	0.0	Not passing

See Grading Policy at

https://www.cocc.edu/departments/college-now/forms/files/grading_policy.pdf

MATC Grading Standards

ASSESSMENT GRADE:

Portfolio	10%
Cognitive Assessment	40%
Authentic Assessment	<u>50%</u>
TOTAL	<u>100%</u>

OUTCOMES:

The student will demonstrate that they have learned to...

- Correctly identify 5 different welding processes.
- Safely work in welding environment.
- Demonstrate entry level welding abilities in SMAW.
- Demonstrate entry level welding abilities in GMAW.
- Practice in the production of weld beads that match specified criteria

INSTRUCTIONS TO THE STUDENT:

The student will begin the course by reviewing classroom and library materials related to welding safety and procedures and by viewing the Hobart companion videotapes for each welding process. The student will then take an open book safety test and must pass the test with a score of 80% or more before proceeding into the Hobart self-paced workbook materials. Begin your MFG 103 course work as follows:

1. Review any books and materials supplied by your teacher regarding welding safety.
2. Check out the video materials for GMAW and SMAW from your teacher and view the tapes for both processes.
3. Take the open book welding safety test passing with a score of 80% or better. An 80% or better welding safety score must be met before student is allowed to proceed with coursework.
4. Check out the Hobart SMAW and GMAW workbooks and begin by reading the indicated chapters on the following student check-off sheets.

MFG 103 Welding Technology I Grade Sheet

Student Name: _____

Start Date: _____

Course Tasks	Blackboard Quiz Scores	Skill Assessment
Welding Definition of Terms		
SMAW Weld Tasks		
Chapter 1		
Weld 1. 6010 Flat Position, Weld Stringer Beads, Build a Pad.		
Weld 2. 6010 Horizontal Position, Weld Stringer Beads, Build a Pad		
Weld 3. 6010 1F position, T-Joint, and Lap Joint Single Pass		
Weld 4. 6010 1F position, T-Joint Multi Pass		
Weld 5. 6010 2F position T-Joint, and Lap Joint single pass		
Weld 6. 6010 2F position T-Joint, Multi-Pass		
Weld 7. 7018 1F Position T-Joint, and Lap Joint Single Pass		
Weld 8. 7018 1F Position T-Joint Multi Pass		
Weld 9. 7018 1F Position T-Joint Weave Bead		
Weld 10. 7018 2F Position T-Joint, and Lap Joint Single Pass		
Weld 11. 7018 2F Position T-Joint Multi-Pass		
Chapter 2		
Chapter 4		
GMAW Weld Tasks		
Weld 1. Flat Position, Weld Stringer Beads, Build a Pad		
Weld 2. Horizontal Position, Weld Stringer Beads, Build a Pad		
Weld 3. 1F Position, T-Joint, and Lap Joint Single Pass		
Weld 4. 1F Position, T-Joint Multi Pass		
Weld 5. 1F Position, T-Joint Weave Bead		
Chapter 11		
Layout- Get layout project from Instructor and layout on paper to turn in for grade.		
Overall Grades		

COURSE OVERVIEW- IMPORTANT-

- **REFERENCE THE HOBART BOOK IN EACH BOOTH IF NEEDED- IT HAS INSTRUCTIONS FOR MACHINE SETUP AND ESSENTIAL VARIABLES**
- **YOU ARE ALLOWED TO ROTATE BETWEEN SMAW AND GMAW LAB PRACTICES.**
- **IF ALL GMAW MACHINES ARE IN USE, YOU MAY CONTINUE WITH THE NEXT SMAW LAB PRACTICE.**
- **IF ALL SMAW MACHINES ARE IN USE, YOU MAY CONTINUE WITH THE NEXT GMAW LAB PRACTICE.**
- **AFTER YOU HAVE COMPLETED A WELD COME CHECK WITH AN INSTRUCTOR OR FACILITATOR FOR ASSESSMENT.**
- **IF YOUR INSTRUCTOR IS NOT AVAILABLE, YOU MAY BE INSTRUCTED TO CONTINUE TO YOUR NEXT ASSIGNMENT, BUT NEVER COMPLETE MORE THAN THREE LAB PRACTICES WITHOUT CHECKING WITH YOUR INSTRUCTOR.**
- **YOU WILL WORK THROUGH ALL THE LAB PRACTICES FOR EACH WELDING PROCESS, ONCE WE FEEL YOUR ARE ABLE TO MOVE ON TO THE NEXT WELD, WE WILL TELL YOU TO MOVE ON. AFTER YOU HAVE COMPLETED ALL THE WELDS FOR THAT WELDING PROCESS, YOU WILL HAVE ONE DAY TO PRACTICE AND THEN YOU WILL COME BACK AND TEST OUT OF ALL THE WELDS AT ONE TIME.**
- **BE SURE TO REVIEW ALL OF THE TERMS AND DEFINITIONS, WELDING POSITIONS, WELDING NOMENCLATURE, WELD JOINT CLASSIFICATIONS AND ELECTRODE SELECTION AS YOU WILL BE RESPONSIBLE FOR KNOWING THIS INFORMATION ON ALL TESTS FOR THIS COURSE.**
- **THE SKILL ASSESSMENTS FOR EACH WELDING PROCESS ARE DONE AT THE SAME TIME. YOU MAY TEST OUT OF ONE PROCESS BEFORE TESTING OUT OF THE OTHERS.**
- **YOU MAY TAKE YOUR CHAPTER EXAMS AT ANYTIME DURING THE COURSE. ASK YOUR INSTRUCTOR FOR THE PAPER TEST WHEN READY. YOU ARE ALLOWED ONLY ONE ATTEMPT AT EACH TEST. YOU WILL BE ALLOWED TO USE ONLY HAND WRITTEN NOTES (NO COMPUTER GENERATED COPIES) DURING THE EXAM.**

➤ **Chapter 1- History Of Welding**

Lap Objectives

- 1-1 Explain the history of metalworking and welding.
- 1-2 Explain the development of modern welding.
- 1-3 Give details of the mission of welding in the industrial process.
- 1-4 Describe the diverse welding process.
- 1-5 List the various welding occupations.
- 1-6 Define welder qualifications and characteristics.
- 1-7 Express the duties and responsibilities of a welder.
- 1-8 Recognize welder safety and working conditions.
- 1-9 Identify trade associations and what responsibility they have in the welding industry.
- 1-10 Establish goals to keep you up to date in the field.

➤ **Read Chapter 1- History of Welding**

➤ **Review the Chapter 1 Power Point Presentation**

➤ **View Chapter 1 Video Lectures**

➤ **Take Chapter 1 Paper Test**

➤ **Chapter 2- Industrial Welding**

Lap Objectives

- 2-1 Name the two major functions welding has in industry.
- 2-2 Name several industries that have found welding to be an advantage.
- 2-3 Explain why welding plays an important part in manufacturing.
- 2-4 Discuss how companies save thousands of dollars by using welding for maintenance and repair.
- 2-5 Explain why welding replaced riveting in the fabrication of pressure vessels.

➤ **Read Chapter 2- Industrial Welding**

➤ **Review the Chapter 2 Power Point Presentation**

➤ **View Chapter 2 Video Lectures**

➤ **Take Chapter 2 Paper Test**

➤ **Chapter 4- Basic Joints & Welds**

Lap Objectives

- 4-1 Describe the five basic joints and the welds applied to each.
- 4-2 Measure fillet and groove weld sizes.
- 4-3 Determine the position of welding for groove and fillet welds on plate and pipe.
- 4-4 List the factors that will affect the strength of a welded joint.
- 4-5 Describe the difference between a weld discontinuity and a weld defect.
- 4-6 Describe visual inspection and its limitations and advantages.

➤ **Read Chapter 4- Basic Joints & Welds**

➤ **Review the Chapter 4 Power Point Presentation**

➤ **View Chapter 4 Video Lectures**

➤ **Take Chapter 4 Paper Test**

➤ **Chapter 11- Shielded Metal Arc Welding Principles**

Lap Objectives

- 11-1 List the percentage of usage of Shielded Metal Arc Welding (SMAW) in the industry.
- 11-2 Name the components that make up the schematic representation of the shielded metal arc.
- 11-3 Know the maximum arc temperature of an SMAW electrode.
- 11-4 List the four constant current welding machines.
- 11-5 List the common type and uses of constant current welding machines.
- 11-6 Name the power supply ratings.
- 11-7 Name the characteristics of the four basic types of welding machines.
- 11-8 Choose the correct cable size based on the application.
- 11-9 List the welder's safety equipment

➤ **Read Chapter 11- Shielded Metal Arc Welding Principles**

➤ **Review the Chapter 11 Power Point Presentation**

➤ **View Chapter 11 Video Lectures**

➤ **Take Chapter 11 Paper Test**

After completing chapter exams turn in to an instructor for grading. Make sure they are turned in with your portfolio upon completion of the course.

**MANUFACTURING APPLIED TECHNOLOGY CENTER
COURSE SYLLABUS**

COURSE TITLE: WELDING TECHNOLOGY I

COURSE NUMBER: MFG 103

COURSE DATE: Fall, Winter, Spring and Summer Terms **CONTACT HOURS:** 90
Self Paced Program, classroom and lab
schedule per MATC open hours

CREDIT HOURS: 3

COURSE LOCATION: Building #3 Redmond Campus Rm 317

INSTRUCTOR: MATC INSTRUCTOR AS DESIGNATED

COURSE DESCRIPTION: Introductory course covering basic welding processes. Includes relevant safety topics and introduction to shielded metal arc welding and gas metal arc welding.

PREREQUISITES: MFG 100 MATC Orientation and Instructor's Approval

REQUIRED TEXT: MFG 103 Course Packet.

REQUIRED EQUIPMENT: Helmet, gauntlet gloves, cutting snips, channel lock type pliers, side cutting pliers, safety glasses with side shields, soapstone and holder.

OUTCOMES: The student will demonstrate that they have learned to...

- Correctly identify 5 different welding processes.
- Safely work in welding environment.
- Demonstrate entry level welding abilities in SMAW.
- Demonstrate entry level welding abilities in GMAW.
- Practice in the production of weld beads that match specified criteria

INSTRUCTIONAL METHODS: This course is taught using various methods including video topic presentations, open class discussions, hands on lab practice and safety, visual inspection of weldments, paper quizzes and paper final.

MATC SUPPLIED TEXTBOOK AND MATERIALS: Hobart EW-369 SMAWB, EW-369 GMAWB and companion videos, Welding- Principals and Applications by Jeffus.

TOPICS:

- Basic welding safety
- The five essentials of starting the welding process
- Quality control of welding beads
- Fillet welds
- Groove welds
- Equipment setup and operation

ASSESSMENT GRADE:

See MATC Department Grading Standards

POLICIES: The following course and college policies apply to each student enrolled in this course.

Student rights and responsibilities	Please read the Students Rights and Responsibilities handbook available at: https://www.cocc.edu/policies/general-procedures-manual/student/student-rights-and-responsibilities.aspx
Americans with disabilities	Students with documented disabilities who may need accommodations, who have any emergency medical information the instructor should know of, or who need special arrangements in the event of evacuation, should make an appointment with the instructor as early as possible, no later than the first week of the term. Students may also wish to contact the COCC Disability Services Office in the Boyle Education Center at (541) 383-7583.
Non-discrimination policy	Central Oregon Community College is an affirmative action, equal opportunity institution. It is the policy of the Central Oregon Community College Board of Directors that there will be no discrimination or harassment on the basis of age, disability, gender, marital status, national origin, race, religion, sexual orientation, or veteran status in any educational programs, activities or employment. Persons having questions about equal opportunity and non-discrimination, please contact Human Resources for referral to the appropriate personnel, (541) 383-7236.
Student insurance	Students are not covered by medical insurance while on campus or involved in college classes and activities. Students are responsible for their own medical and dental insurance coverage.

Disruptive behavior	Students and faculty each have responsibility for maintaining an appropriate learning environment. Disruptive behaviors that interfere with the learning or teaching process will not be tolerated. Examples include, but are not limited to: talking in class, cell phone use or text messaging, sleeping, or in any other way not engaging in class activities, arriving late or leaving early without informing the instructor, or any other behavior that in any way negatively impacts the learning environment. Students exhibiting this behavior will be given a warning and then asked to leave the class if the behavior persists. All disruptive behavior will be reported to the Director of Student Life and could result in dismissal from the class.
Cheating and plagiarism	Students are expected to practice the highest standards of academic honesty. Acts of plagiarism or cheating are unacceptable and will result in a failing grade on the assignment and could end in dismissal from the course. Plagiarism is using, borrowing or stealing someone else's words or ideas without giving credit to the source. This includes copying definitions and sentences from textbooks, periodicals, and other student's papers, the Internet or any other resource. Cheating on any assignment or test in any form is also unacceptable. Students are expected to complete all assignments independently, unless it is designated as a group assignment. All acts of cheating or plagiarism will be reported to the Director of Student Life and disciplinary actions may result.
Final exam policy	The MATC is a self paced learning environment. The Final Exam for this course may be taken at any time once the student has completed all necessary assignments as required by the Skill Accomplishment Record and received written approval to take the exam from the Instructor of Record. Final Exams are closed book, closed note. Students must turn in their portfolio to the MATC Curriculum Room prior to taking the exam. Depending on the course, a student may be given their exam in electronic or paper form. In some courses, the Final Exam may consist of a hands-on project that will be completed in a lab. The last day to take the Final Exam for will be clearly posted on the white boards in the MATC classroom several weeks before finals week. Because of the flexible nature of the MATC program, there should be ample time to plan course completion and taking of the Final Exam. Makeup or special exams dates are not granted. However, if a student has been approved for a Final Exam and special circumstances prevent the taking of the exam by the end of the term, students should see their instructor of record in advance to arrange for an "I" grade so they can take the exam as soon as possible in the following term. If a student in this situation does not take the exam during the following term, COCC "I" grade policies will be applied and the course grade will become an "F".

PHYSICAL CONTACT STATEMENT:

Due to the nature of MATC courses, students are advised that physical contact between the instructor and student, or student to student may occur during some lab assignments. If you have concerns about these situations, you are encouraged to discuss these with the instructor prior to the next class session to determine if appropriate alternatives exist. If you do not think you will be able to participate to the extent required by the course, you are encouraged to drop the course within the appropriate deadlines in order to obtain a refund.