North Central State College

MASTER SYLLABUS	2025-2026

A. Academic Division: Engineering Technology, Business & Criminal Justice Division

B. Discipline: Manufacturing

C. Course Number and Title: MFGT1300 Welding and Welding Equipment

D. Assistant Dean: Brooke Miller, M.B.A.

E. Credit Hours: 2
Lecture: 1 hour
Laboratory: 2 hours

F. Prerequisites: None

G. Last Course/Curriculum Revision Date: Fall 2025 Origin date: 11/12/2015

H. Textbook(s) Title:

Welding Principles and Applications
- Author: Jeffus
- Copyright Year: 2021
- Edition: 9th
- ISBN #: 9780357377659
- Cengage

I. Workbook(s) and/or Lab Manual: None; Class Handouts will be distributed

J. Course Description: This course covers the equipment and techniques associated with the welding and cutting processes most widely used in industry today. Topics include Oxy-fuel, SMAW, GTAW, Robotics applications, Laser welding, and others. Print reading and weld testing methods are also included. Diligent attention is given to personal and fire safety during lab activities.

K. College-Wide Learning Outcomes:

College-Wide Learning Outcome	Assessments - - How it is met & When it is met
Communication – Written	
Communication – Speech	
Intercultural Knowledge and Competence	
Critical Thinking	
Information Literacy	
Quantitative Literacy	

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

Outcomes	Assessments – How it is met & When it is met
1. Identify hazards in the welding shop.	Weekly written assignments, midterm and final exam
2. Demonstrate safe practices in the lab environment.	Weekly performance in labs.
3. Cite the advantages and disadvantages of welding over other joining processes.	Weekly written assignments, midterm and final exam
4. Explain the effects of welding on metal.	Weekly labs, Weekly written assignments, midterm and final exam
5. Identify and describe the function of the equipment and accessories used in SMAW.	Weekly labs, written assignments, midterm and final exam
6. Identify and describe the function of the equipment and accessories used in GMAW.	Weekly labs, written assignments, midterm and final exam
7. Identify and describe the function of the equipment and accessories used in GTAW.	Weekly labs, written assignments, midterm and final exam
8. Identify and describe the function of the equipment and accessories used in Plasma Arc Cutting and Welding	Weekly labs, written assignments, midterm and final exam
9. Identify and describe the function of the equipment and accessories used in Oxyfuel Gas Cutting and Welding	Weekly labs, written assignments, midterm and final exam
10. Identify and describe the function of the equipment and accessories used in Robotic, plastics, and laser beam welding	Weekly labs, written assignments, midterm and final exam

M. Recommended Grading Scale:

NUMERIC	GRADE	POINTS	DEFINITION
93–100	A	4.00	Superior
90–92	A-	3.67	Superior
87–89	B+	3.33	Above Average
83–86	B	3.00	Above Average
80–82	B-	2.67	Above Average
77–79	C+	2.33	Average
73–76	C	2.00	Average
70-72	C-	1.67	Below Average
67–69	D+	1.33	Below Average
63-66	D	1.00	Below Average
60-62	D-	0.67	Poor
00-59	F	0.00	Failure

N. College Procedures/Policies:

North Central State College believes that every student is a valued and equal member of the community.* Every student brings different experiences to the College, and all are important in enriching academic life and developing greater understanding and appreciation of one another. Therefore, NC State College creates an inclusive culture in which students feel comfortable sharing their experiences. Discrimination and prejudice have no place on the campus, and the College takes any complaint in this regard seriously. Students encountering aspects of the instruction that result in barriers to their sense of being included and respected should contact the instructor, assistant dean, or dean without fear of reprisal.

* *Inclusive of race, color, religion, gender, gender identity or expression, national origin (ancestry), military status (past, present or future), disability, age (40 years or older), status as a parent during pregnancy and immediately after the birth of a child, status as a parent of a young child, status as a foster parent, genetic information, or sexual orientation*

Important information regarding College Procedures and Policies can be found on the syllabus supplement located at https://ncstatecollege.edu/documents/President/PoliciesProcedures/PolicyManual/Final%20PDFs/14-081b.pdf

North Central State College

SYLLABUS ADDENDUM

Academic Division:	Engineering Technology, Business & Criminal Justice	**Discipline:**	Manufacturing
Course Coordinator:	Brooke Miller		
Course Number:	MFGT1300	**Course Title:**	Welding and Welding Equipment
Semester / Session:	SP 2026 / Session ___	**Start / End Date:**	01/12/2026 thru 05/08/2026

Instructor Information

Name:	Chris Harriman	**Credentials:**	State Cert and 30+ years in the field
Phone Number:	419-560-8931	**E-Mail Address:**	charriman@ncstatecollege.edu
Office Location:	023	**Office Hours:**	Varies

I. Topical Timeline / Course Calendar (Subject to Change):

Weeks	Topics	Assignment	Due Date
1	***SECTION 1 - INTRODUCTION*** CHAPTER 1 – Introduction to Welding CHAPTER 2 – Safety in Welding	Homework on CANVAS Classroom Lecture	
2	***SECTION 5 – RELATED TECHNOLOGIES*** CHAPTER 23 – Fabricating Techniques and Practices CHAPTER 24 – Welding Codes and Standards	Homework on CANVAS Classroom Lecture	
3	CHAPTER 27 – Weldability of Metals CHAPTER 28 – Filler Metal Selection	Homework on CANVAS Classroom Lecture	
4	***SECTION 2 – SHEILDED METAL ARC WELDING*** CHAPTER 3 – Shielded Metal Arc Equipment, Setup and Operation CHAPTER 4 – Shielded Metal Arc Welding of Plate CHAPTER 5 – Shielded Metal Arc Welding of Pipe	Homework on CANVAS	
5	***SHEILDED METAL ARC WELDING LAB***	Welding Technologies Lab	
6	***SECTION 4 – GAS SHIELDED WELDING*** CHAPTER 10 – Gas Metal Arc Welding Equipment, Setup, and Operation CHAPTER 11 – Gas Metal Arc Welding	Homework on CANVAS	
7	***GAS METAL ARC WELDING LAB***	Homework on CANVAS	
8	***MIDTERM***	Midterm on CANVAS	
9	CHAPTER 16 – Gas Tungsten Arc Welding Equipment, Setup, Operation and Filler Metals CHAPTER 17 – Gas Tungsten Arc Welding of Plate	Homework on CANVAS	
10	***GAS TUNGSTEN ARC WELDING LAB***	Homework on CANVAS	
11	***SECTION 6 – OXYFUEL PROCESSES*** CHAPTER 31 – Oxyfuel Welding CHAPTER 32 – Brazing, Braze Welding and Soldering	Homework on CANVAS	

Course Number: _____ **Course Title:** _____
Semester / Session: _____ **Start / End Date:** _____

Weeks	Topics	Assignment	Due Date
12	***SECTION 3 – CUTTING AND GOUGING*** CHAPTER 7 – Flame Cutting CHAPTER 8 – Plasma Cutting	Homework on CANVAS	
13	***CUTTING AND GOUGING Lab***	Homework on CANVAS	
14		Homework on CANVAS	
15	Any Additional Lab time needed for projects	Welding Technologies Lab	
16	Final Exam	FINAL EXAM on CANVAS	

II. Grading and Testing Guidelines:

Final Grade Calculation

Activity	Qty	Points	Percentage
Homework			50
Midterm			25
Final Exam			25

1. **Topic description #1**
   a. Basic welding processes and safety
2. **Topic description #2**
   a. SMAW
3. **Topic description #3**
   a. GMAW
4. **Topic description #5**
   a. GTAW
5. **Topic description #6**
   a. Oxyfuel brazing/welding
6. **Topic description #7**
   a. Flame and Plasma Cutting

III. Examination Policy:

1. The reasons for which a student will be excused from taking an examination _____
   a. Hospitalization (with documented verification)
   b. Death in the immediate family (with documented verification)
   c. Personal illness or illness in immediate family - (doctor's excuse required).
2. A student who misses an examination for any reason is responsible for _____
   a. Making up their work within 2 weeks of returning to class

IV. Class Attendance and Homework Make-Up Policy:

1. Class attendance is necessary to acquire the knowledge required to safe and proper welding techniques
2. Students are responsible for SAFETY.

Course Number: _____ **Course Title:** _____
Semester / Session: _____ **Start / End Date:** _____

V. Classroom Expectations:

1. Appropriate dress
   a. NO crocs, flip flops or open toed shoes of any kind. Steel or composite safety toed boots with slip resistant soles and puncture resistance required for Lab. Spatter in your shoes will burn you and possibly melt fabric into your skin wound.
   b. NO shorts. NFPA/ANSI FR rated welding jackets will be provided along with welding helmets. All skin must be shielded or covered. Burns to exposed skin WILL occur. NO Sweat pants or joggers. Slag and/or spatter can ignite and melt these clothes. Denim jeans preferred with NO holes, frays or tears. Frays WILL catch fire if a spark or similar comes in contact. NO baggy clothing. Baggy or loose clothing can catch sparks or spatter in the folds burning a hole through the fabric. Welding gloves will also be provided. Fume extractors are located and need to be used every time a weld occurs.
   c. Long hair must be restrained on the shop floor. Hats are absolutely allowed and even recommended to keep hot spatter and sparks from igniting or burning hair or help restrain long hair. Welding beanies will be provided.
   d. If grinding, Disposable N95/P2/P95 masks will be provided and must be used: Good for light, infrequent grinding, filtering at least 95% of airborne particles, but may not seal perfectly if facial hair is present.
2. NO horseplay will be tolerated!
   a. Welding technology requires your undivided attention.
   b. You could get yourself or someone else injured or killed.
3. Safety glasses will be provided
   a. When any equipment in the shop is in operation, safety glasses are required.
   b. If wearing prescription glasses, over safety glasses are required. Safety prescription glasses must have side/peripheral protection.
4. Students CANNOT be under the influence.
   a. If you are taking any medication that may cause disorientation, dizziness, or drowsiness or impairing of reaction time/attention level at any level, inform professor immediately.