



### Outcome-based 18/SU Course Syllabus

**Course Rubric Number Section:** ABDR 1307 2001  
**Lecture-Lab-Credit:** 2-4-3  
**CIP Code:** 47.0603  
**Course Title:** Collision Repair Welding  
**Course Description:** A study of industry and standard welding and cutting procedures.  
**Prerequisites:**  
**Co-requisites:**  
**Course Meets:** 200F 110 LEC M 08:00AM 10:20AM 200F 112 LAB M 10:30AM 11:40AM 200F 112 LAB M 01:00PM 04:20PM  
**Instructor:** Joseph Cantu  
**Office Phone Number:** 956-364-4825  
**Email Address:** jcantu18@tstc.edu  
**Office Fax Number:**  
**Building & Office Room Number:** F 102  
**Office Hours:** 8-5

<b>Approved by:</b> Clint Campbell	<b>Date:</b> 2018-05-07
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#### Course Outcomes

- CO1:** Identify welding equipment used in the collision repair industry
- CO2:** Set-up welding equipment used in the collision repair industry
- CO3:** Perform industry standard welds and cutting procedures

#### TSTC Grading Policy

(Grades for courses must be C or better)

Grade	Percent	Description	Grade Points
A	90-100	Excellent/Superior Performance Level	4
B	80-89	Above Required Performance Level	3
C	70-79	Minimum Required Performance Level	2
D	60-69	Below Required Performance Level	1
F	Below 60	Failure to meet Performance Requirements	0
IP	--	In Progress	
W	--	Withdrawal	0
CR	--	Credit	0
AUD	--	Audit of Course	0

See College Catalog for complete descriptions.

#### Competencies Rating Scale

Rating Scale Key			
6	90+	Proficient	Student consistently performs the task accurately to industry

			standards without supervision.
5	80-89	Proficient	Student performs the task to industry standards with no supervision.
4	70-79	Proficient	Student performs the task to industry standards with little supervision. This is the minimum performance rating for STAR skill completion.
3	60-69	Exposed/Not Proficient	Student has been introduced to the task and can perform some of the tasks to industry standards.
2	50-59	Exposed/Not Proficient	Student has been introduced to the task, but cannot perform the task to industry standards.
1	0-49		Student was absent or did not complete assignment.

## Campus Standard Policies

The [Student Handbook](#) contains valuable information on campus policies and procedures.

- Student Code of Conduct
- Student Drug and Alcohol Testing Policy
- Plagiarism
- Student Grievances and Complaints

## Disability Services

Any student who, because of a disability, may require special accommodations in order to meet the course requirements, should contact the Disability Services office, as soon as possible, to make necessary arrangements. Please note that instructors are not allowed to provide classroom accommodation to a student until appropriate verification from the Disability Services office has been provided.

### Abilene Campus

Susan Hash  
Testing and Support Services  
Abilene Main Campus Bldg. Rm. 112  
325-734-3641

### Fort Bend Campus

Schauna Boynton  
Brazos Center Rm. 113  
346-239-3394

### Sweetwater Campus

Misty Walden  
Disability Services  
Student Support Services  
Lance Sears Building Rm. 140  
325-236-8292

### Breckenridge Campus

Lisa Langford  
Testing and Advisement located in  
The Main Building Rm. 106  
254-559-7731

### Harlingen Campus

Corina De La Rosa  
Disabilities Services  
Student Support Services  
Student Services Bldg. Rm. 216  
956-364-4521

### North Texas Campus

Amanda Warren  
Student Services, Room 227  
972-617-4724

### Brownwood Campus

Nicole Whitley  
Testing and Advisement  
Building 2 Rm. 120  
325-641-5955

### Marshall Campus

Annette Ellis  
Administration and Admissions Rm. 150  
909-923-3313

### Waco Campus

Marilyn Harren  
Disabilities Services Office  
Student Services Center Rm. 198  
254-867-3600

### Williamson County

Chemese Armstrong  
Enrollment Services Rm. B113C  
512-759-5907

## Tutoring Statement

The Supplemental Instruction & Tutoring Program at TSTC offers free tutoring and academic support services to help you achieve your academic and career goals. You can access the Tutoring Schedule, as well as *MyTSTC Video Tutor Library*, by visiting: [https://portal.tstc.edu/student/Student\\_Learning/Pages/Tutoring.aspx](https://portal.tstc.edu/student/Student_Learning/Pages/Tutoring.aspx) (shortened link: [goo.gl/Z9vJvY](https://goo.gl/Z9vJvY)). For more information, please contact Norma A. Salazar@ [956-364-4557](tel:956-364-4557).

## Learning Resource Center

The purpose of the TSTC Learning Resource Center is to serve the TSTC Community and support academic, advanced, specialized and emerging programs, contributing to the educational and economic development of the State of Texas. You can access the Learning Resource Center page at <https://portal.tstc.edu/employee/Departments/operations/Pages/Learning%20Resource%20Center.aspx>

## Resources

**Textbooks & Publications:**

Item	Title	Author	Publisher	Edition	ISBN
1	Collision Repair and Refinishing	Alfred M. Thomas, Michael Jund	Delmar	First	9781401889944

**Tools, Materials:**

Item	Resource	Quantity
1	Safety Glasses	1-Pair
2	Welding Gloves	1-Pair
3	Welding Jacket	1
4	Welding Cap	1
5	Welding Fume Respirator	1
6	Tool Box	1
7	Welding Helmet (Self Darkening) , Optional	1

**Course Schedule**

Unit/Week	Unit Description/Objectives	Assessment Label:Description	Due Date
1	Week 1: Course Orientation and Overview		
	<ul style="list-style-type: none"> <li>Explain course polices and procedures, with emphasis on individual and overall safety considerations and precautions while using MIG Welding Equipment.</li> </ul>	<b>Lab 1:</b> Read: Gas Metal Arc Welding , assigned Text Book for next week.	
2	Week 2: Set Up and Tune MIG Welders		
	<ul style="list-style-type: none"> <li>Explain and demonstrate all required steps necessary to properly set up and tune a MIG Welder for proper operational use.</li> </ul>	<b>Test 1::</b> Test 1 Setup wire in welder: Explain and demonstrate the setup of wire and welder.  <b>Lab 2:</b> Read Gas Metal Arc Welding Techniques, in assigned Text Book for next Class Period.	In Class prior to next lab period
3	Week 3: Types of Welds		
	<ul style="list-style-type: none"> <li>Explain and Demonstrate proper Technique required to make quality welds on Automotive grade Galvanized Steel panels. Present examples of the most commonly used Auto Body Welds.</li> </ul>	<i>Work on Assigned Lab Objectives.</i> <b>Lab 3:</b> Flat Position Beads, Lap weld Butt With Backing Open Butt Weld Plug Weld Hole Fill: Lab Objective <i>Read Technique, in assigned Text Book.</i>	To be completed prior to moving to next objective.
4	Week 4: Welding Positions/Weld Defects		
	<ul style="list-style-type: none"> <li>Explain and Demonstrate the Four welding positions required in auto collision repair, and different types of welding defects,their causes, and remedies,with emphasis on I-CAR Welding Standards.</li> </ul>	<b>Test 2::</b> Lap Weld Vertical on 18 gauge.  <i>Continue Work on Assigned Lab Objectives.</i> <b>Lab 4:</b> Perform lap weld vertical <i>Read welding variables, assigned text Book. Review Lincoln Web Site for MIG Welding Basics.</i>	To be completed prior to start of next objectives.
5	Week 5: Welding Variables		
	<ul style="list-style-type: none"> <li>Explain and Demonstrate the different variables associated with MIG Welding, and how they affect the welding process.</li> </ul>	<b>Lab 5:</b> Lab Objective: Vertical Position Lap Weld Butt Weld With Backing Open Butt Weld Hole fill: Lab Objective <i>Continue Work on Assigned Lab Objectives.</i> <i>Homework: Read Welding Variables, assigned Text Book.</i>	To be completed prior to start of next objective

6	Week 6: Welder Qualification Testing		
	<ul style="list-style-type: none"> <li>Explain and Demonstrate the I-CAR Welding Qualification Testing procedures and criteria.</li> </ul>	<b>Test 3:</b> Lap Weld / Open Butt Weld Vertical  <b>Lab 6:</b> Vertical / Overhead Beads Lap Weld Butt Weld With Backing Open Butt Weld Plug Weld Hole Fill: Lab Objective <i>Continue Work on Assigned Lab Objectives.</i> <i>Homework: Review I-CAR Welding Qualification Test.</i>	To be completed prior to next class period.  To be completed prior to start of next objective.
7	Week 7: Welder Qualification Testing		
	<ul style="list-style-type: none"> <li>Explain and Demonstrate the I-Car Welding Qualification Testing procedures and criteria.</li> </ul>	<b>Lab 7:</b> Vertical / Overhead Plug Weld Butt weld Lap weld <i>Continue Work on Assigned Lab Objectives.</i> <i>Homework: Review Miller web site, Basic MIG welding.</i>	To be completed prior to next class period.
8	Week 8: I-Car Welder Qualification Testing		
	<ul style="list-style-type: none"> <li>Have students conduct visual and destructive testing on Personal weld samples, with the emphasis on I-CAR Welder Qualification Standards.</li> </ul>	<b>Test 4::</b> Fillet Weld (Lap) / Overhead  <i>Continue Work on Assigned Lab Objectives.</i> <b>Lab 8:</b> Review Set-up and adjustment Procedures for I-CAR Qualification Test	To be completed prior to next class period.
9	Week 9: Welder Competency Practice		
	<ul style="list-style-type: none"> <li>Individual welder practice of industry standard welds conducted on 3x5, 18 Gauge Galvanized Steel Panels, with emphasis on I-CAR Welding Qualification Visual and Destructive Standards.</li> </ul>	<b>Lab 9:</b> Open Butt Weld Butt with backing Plug  <i>Continue Work on Assigned Lab Objectives.</i> <i>Read Oxygen-Acetylene/Plasma Cutter.</i>	To be completed prior to next class period.
10	Week 10: Oxygen-Acetylene Welding and Cutting Equipment/ Plasma Cutter		
	<ul style="list-style-type: none"> <li>Explain and Demonstrate the set up and use of the Oxygen-Acetylene Torch System for Welding, Brazing, and cutting operations and Plasma Arc Cutting System.</li> </ul>	<b>Lab 10:</b> Cut metal with Oxygen-Acetylene/Plasma Arc Cutting  <i>Continue Work on Assigned Lab Objectives.</i> <i>Review I-CAR Welding Qualification Test Standards.</i>	To be completed prior to next class period.
11	Week 11: I-CAR Qualification Test		
	<ul style="list-style-type: none"> <li>Administer I-CAR Welding Qualification Test Visually and Destructive Test all welding coupons submitted for analysis. Students pay for I-CAR test in accordance with I-CAR standards.</li> </ul>	<i>Continue Work on Assigned Lab Objectives.</i> <b>Lab 11:</b> Review I-CAR Welding Qualification Test Standards.	
12	Week 12: Final Exam/Lab Clean Up		
	<ul style="list-style-type: none"> <li>Conduct Practice I-Car Welding Test, to include Destructive Testing of all prescribed welds.</li> </ul>	<b>Test 5: Final:</b> Final Exam  <b>Lab 12:</b> Vertical / Overhead welds	To be administered prior to the end of semester

**Course Policies:**

**Safety Procedures:**

Students are required to participate in a safety lecture prior to performing in the laboratory portion of the course. A written test will be given to each participating student covering the presented safety materials. Students must complete the safety test with 100% accuracy prior to receiving lab assignments.

All lecture and laboratory safety rules and regulations will be followed in every detail. Failure to comply with this policy will result in dismissal from class until further notice.

#### **Required Attire for Welding Lab:**

Safety Glasses  
Welding Cap  
Welding Helmet  
Welding Jacket \*  
Welding Gloves

- A long sleeve heavy weight cotton or denim shirt without pockets, or pocket flaps that either button or snap shut, maybe substituted for a welding jacket
- Due to their potential for flammability, at no time should any clothing made of synthetic material be worn in the welding lab. Examples: Nylon, Rayon, Polyester, or fabric blends containing these products. Athletic Suits, Track Suits, Jogging Suits, and Windbreakers, are some of the most common items of clothing made of synthetic fabric. Athletic foot wear is sometimes made using plastic or other synthetic materials that may also be flammable.

#### **Acceptable Attire**

- NIOSH approved safety glasses with clear lenses will be worn at all times.
- Full-toed shoes (no slippers, sandals, flip-flops, or bare feet).
- Full length pants (must extend past ankles).
- Pants must fit around waist within 3 inches of belly button.
- Shirts (no sleeveless or tank tops).
- Shirts with and without buttons on neck opening can be worn with instructor approval.
- Clothing must be reasonably snug fitting (not excessively loose, baggy, torn).
- Inappropriate slogans on clothing are not acceptable.
- Jogging clothes, sweats, or warm-ups are not acceptable.
- Acceptable headgear: ball caps or bump caps (**No** do-rags, bandanas or shower caps)
- The **Instructor has the final authority** concerning matters of dress.

#### **Classroom and Lab Behaviors**

- Smoking in classrooms, laboratories and shops are prohibited
- Smoking is permitted only in designated areas
- Smoking is prohibited within 20 feet of a building, when permitted
- Smoking is prohibited within the fenced area surrounding the ACM and CAT Labs.
- The consumption of drinks, candy and other food items is restricted to lounge areas
- Eating or drinking in laboratories are hazardous because of the toxic nature of lab materials being handled
- No horseplay at any time
- Be responsible – Be a professional

#### **Late Work/Test Policies**

All students are required to be present for class. However, unexpected circumstances will occur. If a student has an excused absence, death or illness in the immediate family, the student must notify the instructor of record immediately. If a test is missed, the instructor has to give permission for make-up. The missed test must be made up before the next scheduled period of instruction.

An excused absence only allows for make-up of missed assignments or test. The absence is recorded.

Assignments are due at the beginning of class of the set due date. Late assignments will not be accepted and a grade of "zero" will be earned for said assignment. Students who prior contacted the instructor may be considered excused.

#### **Pop Tests**

**Can be given at any time by the instructor and are not make up items.**

#### **Exemptions**

Students can be exempted from a final exam if:

- A. Lecture average is 90 or above
- B. Attendance is perfect
- C. Assignments are completed and turned in
- D. Projects are complete

#### **Cell Phone Policy**

Cell phones may not be brought into the classroom or lab as they are unsafe and disruptive to the environment.

Anyone failing to adhere to this policy will be dismissed from class and issued a non-participation grade (absence) for that period of instruction.

#### **Departmental Awards Ceremony/Cleanup Policy**

Each student is expected to participate in the awards ceremony and cleanup activities once the date has been identified.

Student's final exam grade is dependent upon their participation at these functions. One half ( $\frac{1}{2}$ ) of the final exam grade for the course is participation. One half ( $\frac{1}{2}$ ) of the final exam grade is completing the final exam for the course.

participation. One must pass the final exam grade to complete the final exam for the course. Students with unexpected circumstances can be excused by the department chair only. TSTC school calendar identifies the end of the semester. Student break begins the day after.

**Instructor's Participation Policy:**

A student is expected to attend and participate during the scheduled period of instruction (lecture and lab). This begins with the first scheduled class day of the term. A student deemed a non-participant for more than 10% (\_\_\_\_\_ hours) of the lecture or 10% (\_\_\_\_\_ hours) of the lab periods, regardless of grades earned on assignments, will have to repeat the course.

A student is considered tardy up to 15 minutes into the scheduled lecture or lab, and thereafter will be considered a non-participant for that period of instruction.

Grade Scheme		
Category Description		Category Value
Lab		80%
Assessment Label:	Assessment Description	Assessment Value
Lab 1:	Read: Gas Metal Arc Welding , assigned Text Book for next week.	6.67%
Lab 2:	Read Gas Metal Arc Welding Techniques, in assigned Text Book for next Class Period.	6.67%
Lab 3:	Flat Position Beads, Lap weld Butt With Backing Open Butt Weld Plug Weld Hole Fill: Lab Objective	6.67%
Lab 4:	Perform lap weld vertical	6.67%
Lab 5:	Lab Objective: Vertical Position Lap Weld Butt Weld With Backing Open Butt Weld Hole fill: Lab Objective	6.67%
Lab 6:	Verticle / Overhead Beads Lap Weld Butt Weld With Backing Open Butt Weld Plug Weld Hole Fill: Lab Objective	6.67%
Lab 7:	Vertical / Overhead Plug Weld Butt weld Lap weld	6.67%
Lab 8:	Review Set-up and adjustment Procedures for I-CAR Qualification Test	6.67%
Lab 9:	Open Butt Weld Butt with backing Plug	6.67%
Lab 10:	Cut metal with Oxygen-Acetylene/Plasma Arc Cutting	6.67%
Lab 11:	Review I-CAR Welding Qualification Test Standards.	6.67%
Lab 12:	Vertical / Overhead welds	6.67%
Category Description		Category Value
Test		20%
Assessment Label:	Assessment Description	Assessment Value
Test 1::	Test 1 Setup wire in welder: Explain and demonstrate the setup of wire and welder.	4.00%
Test 2::	Lap Weld Vertical on 18 gauge.	4.00%
Test 3:	Lap Weld / Open Butt Weld Vertical	4.00%
Test 4::	Fillet Weld (Lap) / Overhead	4.00%
Test 5: Final:	Final Exam	4.00%
Total Assessment Percent		<b>100.00%</b>
Total Category Percent		<b>100.00%</b>
<b>A = 100-90                      B = 89-80                      C = 79-70                      D = 69-60                      F = 59-0</b>		

Description of Graded Elements of the Course			
Assessment Label	Assessment Description/Course outcomes met	Assessment Value in Percent	% of Final Grade
Lab 1	Read: Gas Metal Arc Welding , assigned Text Book for next week. <b>Course outcomes met:</b> CO1, CO2	6.67	6.67%
Test 1:	Test 1 Setup wire in welder: Explain and demonstrate the setup of wire and welder. <b>Course outcomes met:</b> CO1, CO2	4.00	4.00%
Lab 2	Read Gas Metal Arc Welding Techniques, in assigned Text Book for next Class Period. <b>Course outcomes met:</b> CO3	6.67	6.67%

Lab 3	Flat Position Beads, Lap weld Butt With Backing Open Butt Weld Plug Weld Hole Fill: Lab Objective <b>Course outcomes met:</b> CO2, CO3	6.67	6.67%
Test 2:	Lap Weld Vertical on 18 gauge. <b>Course outcomes met:</b> CO2, CO3	4.00	4.00%
Lab 4	Perform lap weld vertical <b>Course outcomes met:</b> CO2, CO3	6.67	6.67%
Lab 5	Lab Objective: Vertical Position Lap Weld Butt Weld With Backing Open Butt Weld Hole fill: Lab Objective <b>Course outcomes met:</b> CO2, CO3	6.67	6.67%
Test 3	Lap Weld / Open Butt Weld Vertical <b>Course outcomes met:</b> CO3, CO2	4.00	4.00%
Lab 6	Verticle / Overhead Beads Lap Weld Butt Weld With Backing Open Butt Weld Plug Weld Hole Fill: Lab Objective <b>Course outcomes met:</b> CO2, CO3	6.67	6.67%
Lab 7	Vertical / Overhead Plug Weld Butt weld Lap weld <b>Course outcomes met:</b> CO3, CO2	6.67	6.67%
Test 4:	Fillet Weld (Lap) / Overhead <b>Course outcomes met:</b> CO2, CO3	4.00	4.00%
Lab 8	Review Set-up and adjustment Procedures for I-CAR Qualification Test <b>Course outcomes met:</b> CO1, CO2	6.67	6.67%
Lab 9	Open Butt Weld Butt with backing Plug <b>Course outcomes met:</b> CO3, CO2	6.67	6.67%
Lab 10	Cut metal with Oxygen-Acetylene/Plasma Arc Cutting <b>Course outcomes met:</b> CO1, CO2	6.67	6.67%
Lab 11	Review I-CAR Welding Qualification Test Standards. <b>Course outcomes met:</b> CO3	6.67	6.67%
Test 5: Final	Final Exam <b>Course outcomes met:</b> CO3, CO2	4.00	4.00%
Lab 12	Vertical / Overhead welds <b>Course outcomes met:</b> CO2, CO3	6.67	6.67%
		<b>100.00</b>	<b>100.00%</b>