

Introduction to Shielded Metal Arc Welding

WLDG 1428

INSTRUCTOR CONTACT INFORMATION

Instructor: Johnny Sitton
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Office Location: Johnny Sitton CT 3A
Office Hours: Monday - Friday 7:30 am - 4:00 pm



CREDIT

4 Semester Credit Hours (2 hours lecture, 6 hours lab)

MODE OF INSTRUCTION

In Person

PREREQUISITE/CO-REQUISITE:

None

COURSE DESCRIPTION

An introduction to shielded metal arc welding process. Emphasis placed on power sources, electrode selection, oxy-fuel cutting, and various joint designs.

COURSE OBJECTIVES

Upon completion of this course, the student will be able to:

1. Select electrodes and amperage setting for various thicknesses of metal and welding positions.
2. Define principles of arc welding
3. Explain electrode classification.
4. Perform SMAW operations in various positions using selected electrodes and different joint designs.

REQUIRED TEXTBOOK AND MATERIALS

1. 12th Edition Modern Welding by Althouse, Turnquist, Bowditch
2. Personal Tool List (approximately \$200-\$250).
 - a. Hood
 - b. Welder's cap
 - c. Shade 10 or 11 lens
 - d. Clear lens (10)
 - e. Long sleeve 100% cotton shirt or leather sleeves or leather jacket
 - f. 6. Long 100% cotton work pants (jeans)
 - g. High top leather boots (steel toe)
 - h. Leather gloves
 - i. Chipping hammer
 - j. Wire brush
 - k. Safety glasses
 - l. Channel Lock Pliers
 - m. Flashlight
 - n. 4 1/2" or 5" grinder

ATTENDANCE POLICY

I. Students are allowed to miss two days without penalty; each additional day will result in the student's grade being dropped by a letter grade.

Example:

- 2 days absent = If student has an A average no penalty
- 3 days absent = A drops to a B
- 4 days absent = B drops to a C
- 5 days absent = C drops to a D (student must retake class)
- 6 days absent = D drops to a F (student must retake class)

II. Absences are counted for unexcused, excused and coming to class late.

III. 3 tardies = 1 absences

- A. Tardy- arriving within 15 minutes after class begins or leaving before the end of class.
- B. More than 15 minutes late you will be counted absent.
- C. If you sleep in class, you will be counted absent.

IV. **Excused absences.** Only given to allow students to make up missed work.

- A. Will be given for documented Injury or Illness. The doctor's excuse required showing proof. Will count toward total days missed.
- B. Will be given for documented Death in immediate family. Will count toward total days missed.
- C. Approved LIT school functions; E.g., SkillsUSA, SGA etc. Will not count toward total days missed
- D. It is the student's responsibility to obtain from the instructor any handouts or assignments for classes missed. Lectures will not be repeated.

V. If you wish to drop, you are responsible for the drop process. I will not initiate the drop, no matter how many absences or zeroes you have; that is, if you stop coming to class and do not drop, you will earn an "F" in the course. Students are only allowed to drop 6 times in their college career.

DROP POLICY

If you wish to drop a course, you are responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

COURSE OUTLINE

Upon completion of this course, the student will be able to

- A. Career paths of a welder. Specific reasons for interest in a specific welding career.
Career paths by certifications
- B. Welding safety practices, OSHA and the Hazardous Communications Act, and SDS.
 - Welding safety procedures
 - Hazards associated with basic welding gases, fluxes, and electrodes
 - Proper personal protective equipment (PPE)
 - OSHA and the Hazardous Communications Act Safety Data Sheets (SDS)
- C. Hazards associated with welding and oxyfuel cutting equipment and processes.
 - Dangers of fumes produced while welding or cutting
 - Dangers of fire and explosions
 - Ventilation systems and fresh air supply
- D. List the dangers and safety procedures when handling an oxyfuel welding/cutting rig.
 - Dangers of high-pressure gas cylinders
 - Safety devices of high-pressure gas cylinder and the safe handling procedures of high-pressure cylinders
 - Safety devices of high-pressure cylinder regulators
 - Reverse flow check valves and flashback arrestor
 - Proper procedure the start-up, light and shut-down an oxyfuel torch system
- E. Use and maintain tools and equipment
 - Proper use of angle grinders, die grinders, saws, clamps, jack stands, etc.
 - Proper maintenance and storage of shop tools
- F. Basic shop math as it pertains to the welding industry
 - Various measuring instruments and their application in the welding industry

- Add, subtract, multiply, and divide fractions
- Markings on a tape measure
- Fabrication tools

COURSE CALENDAR

WEEK	TOPIC	REFERENCE
1 - 4	Course introduction and policies Shop orientation and safety procedures Cutting torch safety and procedures Measuring and Lay-out tools Use the Oxyfuel torch to cut metal Self-Introduction Ch 3 Assignment Ch 3 Quiz Striking an Arc Running a Bead Welding a Pad Visual test of weld beads	Syllabi Instructor Demonstration/ Supervision
5 - 9	Use the Oxyfuel torch to cut metal Welding Horizontal Fillet Welds with 6010 and 7018 Electrodes Discussion Ch 5 Assignment Ch 5 Quiz Visual test of weld beads	Instructor Demonstration/ Supervision
10 - 14	Use the Oxyfuel torch to cut metal Welding Vertical Fillet Welds with 6010 and 7018 Electrodes Ch 6 Assignment Ch 6 Quiz Visual test of weld beads	Instructor Demonstration/ Supervision
15 - 16	Use the Oxyfuel torch to cut metal Welding Overhead Fillet Welds with 6010 and 7018 Electrodes Ch 15 Assignment Ch 15 Quiz Visual test of weld beads	Instructor Demonstration/ Supervision

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

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Activity **Percentage**

Assignments: 30%

Test: 70%

Total: **100%**

No late assignments will be accepted.

GRADE SCALE

- 90-100 A
- 80-89 B
- 70-79 C
- 60-69 D
- 0-59 F

TECHNICAL REQUIREMENTS

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at <https://iit.edu/online-learning/online-learning-minimum-computer-requirements>. A functional broadband internet connection, such as DSL, cable, or Wi-Fi is necessary to maximize the use of online technology and resources.

DISABILITIES STATEMENT

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email specialpopulations@lit.edu. You may also visit the online resource at Special Populations - Lamar Institute of Technology (lit.edu).

STUDENT CODE OF CONDUCT STATEMENT

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

AI STATEMENT

Lamar Institute of Technology (LIT) recognizes the recent advances in Artificial Intelligence (AI), such as ChatGPT, have changed the landscape of many career disciplines and will impact many students in and out of the classroom. To prepare students for their selected careers, LIT desires to guide students in the ethical use of these technologies and incorporate AI into classroom instruction and assignments appropriately. Appropriate use of these technologies is at the discretion of the instructor. Students are reminded that all submitted work must be their own original work unless otherwise specified. Students should contact their instructor with any questions as to the acceptable use of AI / ChatGPT in their courses.

STARFISH

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

ADDITIONAL COURSE POLICIES/INFORMATION

1. No electronic devices of any kind (cell phones, I-pod, headphone, etc.) will be tolerated in the classrooms or labs. If you are seen using any electronic device, you will be asked to leave the class for the day.
2. No food or drink will be allowed in the classroom.
3. No derogatory or foul language will be tolerated.
4. We have a zero-tolerance policy for sexual harassment.
5. We have a zero-tolerance policy of racial or ethnic discrimination.
6. Be considerate of others in the classroom. Remember they paid for the class just like you.