



Course Title: STRUCTURAL WELDING I

Course #: WLD115-8

Credit Hours: 3

Semester: SPRING 2022

Cap: 10

Faculty: Lorenzo Gurule

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Office: NTU BWTC Room 115

Office Phone: 505-417-6628

Office Hours: By appointment only.

Preferred Communication: Email or text; will respond within 24 hours

Modality: Face-to-Face

Class Location & Meeting Times: BWTC 115 & Welding Lab, THUR & FRI, 10:15AM-11:45AM.

Required Materials

Textbook: 1) *Welding Principles & Applications 9th Ed. 2020.* Larry Jeffus. CENGAGE. ISBN 13: 978-0-357-37765-9 / ISBN-10:0-357-37765-6, \$162.00. 2) Study Guide, *Welding Principles & Applications 9th Ed. 2020.* Larry Jeffus. CENGAGE. ISBN-13:978-0-357-37769-7 / ISBN-10: 0-357-37769-9, \$95.40.

Tools: Must have: Safety glasses, welding hood, welding gloves, cutting goggles, protective clothes, and steel toe work boots, 4 ½” grinding wheels 2, 4 ½” cut off wheels 2, 4 ½” wire wheel, soapstone marker w/holder, adjustable vice grips, 25’ tape measure, chipping hammer, & small Swanson speed square. Tools & apparels can be purchased at BWTC & will be charged to your Student Account.

Laptop and Internet Access: Every student is required to own a laptop and have internet access.

Lab/Course Fee: \$35.00.

Mission, Vision, and Philosophy

Mission: Navajo Technical University honors Diné culture and language, while educating for the future.

Vision: Navajo Technical University provides an excellent educational experience in a supportive, culturally diverse environment, enabling all community members to grow intellectually, culturally, and economically.

Philosophy: Through the teachings of Nitsáhákees (thinking), Nahátá (planning), Íina (implementing), and Siihasin (reflection), students acquire quality education in diverse fields, while preserving cultural values and gaining economic opportunities.

Course Description

Emphasis on AWS entry and advanced level welder skills with SMAW, shielded metal arc welding process, including all position welding with mild steel electrodes. In this welding course students will learn SMAW, welding codes, rod selection, reading basic blueprints, calculating dimensions, and completing layouts. Perform plate welding in various positions using 7018 electrodes and perform plasma cutting.

Course Outcomes	Course Assessments
Students will be able to identify and demonstrate welding procedures for SMAW and GMAW in all positions.	Homework assignments, course readings, and lab observations.

Students will be able to utilize blueprints to calculate and complete proper layouts.	Practical lab work, course readings, lab observations and projects, quizzes.
Students will be able to demonstrate math skills commonly utilized within structural welding.	Quizzes, lab observations and projects.
Students will be able to identify and demonstrate proper usage of common types of welding electrodes used for structural welding.	Course readings, quizzes, and practical lab projects.
Students will identify and perform safe welding procedures and utilize correct welding terminology.	Homework assignments, course readings, lab observations and projects.
Students will be able to identify and utilize common welding techniques for correct beads with various patterns.	Lab observations, lab projects, and quizzes.

Connections to Program Assessment (Course-Embedded Measures)

Complete Reading assignments, homework assignments, exams, projects, and quizzes. At the start of class, a quiz issued for homework assignments, passing mark of 70 required to spend rest of class time in Welding lab. Less than 70 No Welding lab time

Course Activities

Week	Date	Class Topics/Reading Due	Assignments Due	Assessments
	Jan 17 Jan 18	HOLIDAY - Martin Luther King Day Instructions begin		
1	Jan 17 - 21	Sec: 1 Ch 1: Introduction, Sec: 1 Ch 2: Safety in the Welding Shop		
	Jan 19 - 20	Late registration w/fee		
	Jan 21	Last day to add/drop w/out "W"		
2	Jan 24 - 28	Sec: 2 Ch 3: SMAW setup & operation Sec: 2 Ch 4: SMAW welding of plate	Homework 1 Sec: 1 Ch 1-2	Quiz Sec: 1 Ch 1-2
3	Jan 31 Feb 4	Sec: 3 Ch 8: PAC Sec: 3 Ch 9: Related Cutting Process	Homework 2 Sec: 2 Ch 3-4	Quiz Ch 3 Performance Ch 4
4	Feb 7 - 11	Sec: 4 Ch 10: GMAW setup & operation Sec: 4 Ch 11: GMAW welding of plate	Homework 3 Sec: 3 Ch 8-9	Quiz Sec: 3 Ch 8-9
5	Feb 14 - 18	Sec: 4 Ch 12 FCAW setup & operation Sec: 4 Ch 13 FCAW welding of plate	Homework 4 Sec: 4 Ch 10-11	Quiz Sec: 4 Ch 10-11
	Feb 21	HOLIDAY – President’s Day		
6	Feb 21 - 25	Sec: 4 Ch 14 GMAW / FCAW on pipe	Homework 5 Sec: 4 Ch 12-13	Quiz Sec: 4 Ch 12-13
	Feb 25	Spring 2022 Graduation Petitions Due		
7	Feb 28 Mar 4	Sec: 4 Ch 16 GTAW set up & operation Sec: 4 Ch 17 GTAW welding of plate	Homework 6 Sec: 4 Ch 14	Quiz Sec: 4 Ch 14
8	Mar 7 - 11	Midterm		
	Mar 11	Midterm grades due		
9	Mar 14 - 18	Sec: 5 Ch 20 Shop Math & Weld Cost	Homework 7 Sec: 4 Ch 16-17	Quiz Sec: 4 Ch 16-17
10	Mar 21 - 25	Sec: 5 Ch 21 Technical Drawings Sec: 5 Ch 22 Weld joint design & symbols	Homework 9 Sec: 5 Ch 20	Quiz Sec: 5 Ch 20
	Mar 31	Last day to withdraw w/ "W"		
11	Mar 28 Apr 1	Sec: 5 Ch 23 Fabrication Techniques Sec: 5 Ch 24 Weld Codes	Homework 10 Sec: 5 Ch 21-22	Quiz Sec: 5 Ch 21-22

12	Apr 4 - 8	Sec: 5 Ch 25 Testing & Inspection	Homework 11 Sec: 5 Ch 23-24	Quiz Sec: 5 Ch 23-24
13	Apr 11 - 15	Sec: 5 Ch 26 Welding Metallurgy	Homework 12 Sec: 5 Ch 25	Quiz Sec: 5 Ch 25
14	Apr 18 - 22	Sec: 5 Ch 27 Weldability of Metals	Homework 13 Sec: 5 Ch 26	Quiz Sec: 5 Ch 26
15	Apr 25 - 29	Sec: 5 Ch 28 Filler Metal Selection	Homework 14 Sec: 5 Ch 27	Quiz Sec: 5 Ch 27
16	May 2 - 6	Review & Lab prep for performance		
17	May 9 – 12	Final Exams	Final Exams	
	May 12	Grades due to the Registrar		
	May 13	Spring Graduation		

Schedule Disclaimer: The course schedule outlined in the table above is subject to adjustment depending on the needs of the class to focus more on a specific chapter.

Grading Plan

Homework/Lab work: 20%	A = 100-90%
Class Participation: 10%	B = 89-80%
Quizzes: 20%	C = 79-70%
Mid-term: 25%	D = 69-60%
Final Exam: 25%	F = 59% or less

Grading Policy

Students must do their own work. Cheating and plagiarism are strictly forbidden. Cheating includes (but is not limited to) plagiarism, submission of work that is not one's own, submission or use of falsified data, unauthorized access to exams or assignments, use of unauthorized material during an exam, or supplying or communicating unauthorized information for assignments or exams.

Participation

Students are expected to attend and participate in all class activities. Points will be given to students who actively participate in class activities including guest speakers, field trips, laboratories, and all other classroom events.

Cell phone and headphone use

Please turn cell phones off **before** coming to class. Cell phone courtesy is essential to quality classroom learning. Headphones must be removed before coming to class.

Attendance Policy

Students are expected to attend all class sessions. A percentage of the student's grade will be based on class attendance and participation. Absence from class, regardless of the reason, does not relieve the student of responsibility to complete all course work by required deadlines. Furthermore, it is the student's responsibility to obtain notes, handouts, and any other information covered when absent from class and to arrange to make up any in-class assignments or tests if permitted by the instructor. Incomplete or missing assignments will necessarily affect the student's grades. Instructors will report excessive and/or unexplained absences to the Counseling Department for investigation and potential intervention. **Instructors may drop students from the class after three (3) absences unless prior arrangements are made with the instructor to make up work and the instructor deems any excuse acceptable.**

Study Time Outside of Class for Face-to-Face Courses

For every credit hour in class, a student is expected to spend two hours outside of class studying course materials.

Study Time for Hybrid or Blended Courses

For a hybrid or blended course of one credit hour, a student is expected to spend three hours per week studying course materials.

Study Time for Online Courses

For an online course of one credit hour, a student is expected to spend four hours per week studying course materials.

Academic Integrity

Integrity (honesty) is expected of every student in all academic work. The guiding principle of academic integrity is that a student's submitted work must be the student's own. Students who engage in academic dishonesty diminish their education and bring discredit to the University community. Avoid situations likely to compromise academic integrity such as: cheating, facilitating academic dishonesty, and plagiarism; modifying academic work to obtain additional credit in the same class unless approved in advance by the instructor, failure to observe rules of academic integrity established by the instructor. **The use of another person's ideas or work claimed as your own without acknowledging the original source is known as plagiarism and is prohibited.**

Diné Philosophy of Education

The Diné Philosophy of Education (DPE) is incorporated into every class for students to become aware of and to understand the significance of the four Diné philosophical elements, including its affiliation with the four directions, four sacred mountains, the four set of thought processes and so forth: Nitsáhákees, Nahát'á, Ílna and Siih Hasin which are essential and relevant to self-identity, respect and wisdom to achieve career goals successfully.

At NTU's Zuni Campus, the **A:shivi Philosophy of Education** offers essential elements for helping students develop Indigenous and Western understandings. Yam de bena: dap haydoshna: akhya hon detsemak a:wannikwa da: hon de:tsemak a:ts'umme. *Our language and ceremonies allow our people to maintain strength and knowledge.* A:shivi core values of hon i:yyułashik'yanna:wa (respect), hon delank'oha:willa:wa (kindness and empathy), hon i:yyayumola:wa (honesty and trustworthiness), and hon kohoł lewuna:wedyahnan, wan hon kela i:tsemanna (think critically) are central to attaining strength and knowledge. They help learners develop positive self-identity, respect, kindness, and critical thinking skills to achieve life goals successfully.

Students with Disabilities

Navajo Technical University is committed to serving all students in a non-discriminatory and accommodating manner. Any student who feels that she or he may need special accommodations should contact the Accommodations Office (<http://www.navajotech.edu/student-services#accomodations-services>) in accordance with the university's Disability Accommodations Policy (see http://www.navajotech.edu/images/about/policiesDocs/Disability_Exhibit-A_6-26-2018.pdf).

Email Address

Students are required to use NTU's email address for all communications with faculty and staff.

Final Exam Date: Thursday, Friday May 12 – 13, 2022.