

Course Syllabus

NOTE: This syllabus is subject to change during the semester. Please check this syllabus on a regular basis for any updates.

Department : Welding Technology
Course Title : Intro. to Welding Metallurgy
Section Name : WLDG_1437_ 6135
Start Date : 01/17/2012
End Date : 05/11/2012
Modality : FACE-TO-FACE
Credits : 4 (2-6)

Instructor Information

Name : James Mosman
OC Email : jmosman@odessa.edu
OC Phone # : (432) 335-6474

Course Description

A study of ferrous and nonferrous metals from the ore to the finished product. Emphasis on metal alloys, heat treating, hard surfacing, welding techniques, forging, foundry processes, and mechanical properties of metal including hardness, machinability, and ductility. Instruction is given on technical terms used in the various phases of metallurgy, and the classifications of steel.

Prerequisites/Corequisites

Prerequisite or Corequisites: None.

Scans

1, 2, 6, 8

Course Objectives

The student will describe technical terms used in the various phases of metallurgy, from early history to classification of steel. The student will discuss ferrous and nonferrous metals and how they are processed and used in industry; and describe mechanical and physical properties, surface treatment and heat treatment of metals. Student will weld

various types of structural material and diagnose welding problems and perform visual and mechanical inspections.

ACADEMIC ETHICS:

Each student is expected to do their own work on the assignments, and take tests without outside assistance. If unethical behaviour is detected, by Odessa College Policy, all parties involved may either be denied credit for the project, or at the instructor's discretion, the student(s) may be dropped from the class. A report will be made to the department chairman for further action as deemed necessary by the department chair.

Required Readings/Materials

a) You must purchase the following **required** readings/materials:

No text required. Internet access required.

1. Welding Hood with shade 10 or darker lens or auto-dark lens
2. Welding Cap
3. Welding Gloves
4. Safety Glasses or Goggles or Face Shield
5. Cutting Goggles or Face Shield
6. Spark striker
7. Chipping hammer
8. Hand Wire Brush
9. Stainless Steel Hand Wire Brush
10. MIG Pliers / Welpers
11. Combination Square

All students must have equipment prior to 3rd class period or arrangements made with instructor.

Course Requirements (Lectures, Assignments and Assessments)

1. Take all tests
 2. Complete all homework assignments
 3. Complete all welds in assigned order
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Summary of Assignments & Activities

* NOTE: The due dates are subject to change. Please check this syllabus on a regular basis for any updates.

Item(Name)	Type	Description
1. Class Introduction, Safety Orientation	Lecture/Video/Exam	Students will be introduced to welding program, lab safety, class requirements. Safety Exam.
2. Introduction to Metallurgy	Lecture/Lab/	Ferrous and Nonferrous metals.
3. Basic Chemistry of Metals	Lecture/Lab/	Introduction to Chemistry.
4. Manufacturing Processes	Lecture/Lab/	Study the various processes used to produce steel.
5. Standards & Specifications	Lecture/Lab/	Look at various codes and standards as they relate to welded steel.
6. Properties of Metal	Lecture/Lab	Study of properties of metals.
7. Properties of Metal	Lecture/Lab	Study of properties of metals.
8. Cutting Methods and Processes	Lecture/Lab	OFC, PAC and CAC-A
9. Welding Methods and Processes	Lecture/Lab	SMAW and GTAW
10. Welding Methods and Processes	Lecture/Lab	GMAW, FCAW and SAW
11. Welding Methods and Processes	Lecture/Lab/ Exam	Other Welding processes. Exam on all Introductory Material.
12. The Effects of Temperature on Welded Structures	Lecture/Lab	Temperature phase chart.
13. The Effects of Temp. on Welded Structures	Lecture/Lab	Heat vs. Hardness, Tempering
14. The Effects of Temp. on Welded Structures	Lab	Heat Treatments
15. Fluxes and Gases for Shielding	Lecture/Lab	SMAW and SAW Fluxes
16. Fluxes and Gases for Shielding	Lecture/Lab	GMAW, FCAW and GTAW Gases
17. Welding Stainless Steels and other alloys.	Lecture/Lab/Exam	Stainless Steels and properties. Exam on Temperature Effects and Shielding Methods.
18. Welding Stainless Steels and other alloys.	Lab	Stainless Steels and properties.

19. Welding Stainless Steels and other alloys.	Lecture/Lab	Stainless Steels and properties.
20. Nonferrous Metals	Lecture/Lab	Description and Properties of Nonferrous metals.
21. Nonferrous Metals	Lecture/Lab	Aluminum Weldability and Metallurgy
22. Nonferrous Metals	Lecture/Lab	Aluminum Weldability and Metallurgy
23. Nonferrous Metals	Lecture/Lab	Aluminum Weldability and Metallurgy
24. Inspection of Welded Structures	Lecture/Lab/Exam	A Study of Welding Codes. Exam on Stainless Steel and Nonferrous Metals.
25. Inspection of Welded Structures	Lecture/Lab	AWS Codes
26. Inspection of Welded Structures	Lecture/Lab	ASME Codes
27. Inspection of Welded Structures	Lecture/Lab	API Codes
28. Castings and Forgings	Lecture/Lab	Other Metal Working Processes
29. Castings and Forgings	Lecture/Lab	Other Metal Working Processes
30. Final Review & Clean-up	Lecture /Lab	Final Review. Clean-up Lab.
31. Final Exam	Exam	Take final comprehensive written exam.

Grading Policy

METHOD OF EVALUATION:

Homework	20%
Section Quiz	20%
Lab Work	30%
Professionalism	10%
Final Exam	<u>20%</u>
Total Grade	100%

90 – 100 = A	80 – 89 = B	70 – 79 = C
61 – 69 = D	Below 61 = F	

Special Needs

Odessa College complies with Section 504 of the Vocational Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. If you have any special needs or issues pertaining to your access to and participation in this or any other class at Odessa College, please feel free to contact me to discuss your concerns. You may also call the Office of Disability services at 432-335-6861 to request assistance and accommodations.

Learning Resource Center (Library)

The Library, known as the [Learning Resources Center](#), provides research assistance via the [LRC's catalog \(print books, videos, e-books\)](#) and [databases \(journal and magazine articles\)](#). [Research guides](#) covering specific subject areas, [tutorials](#), and the "[Ask a Librarian](#)" service provide additional help.

Student E-mail

Please access your [Odessa College Student E-mail](#), by following the link to either set up or update your account: <http://www.odessa.edu/gmail/>. **All assignments or correspondence will be submitted using your Odessa College email.**

Student Portal

Please access your [Odessa College Student E-mail](#), by following the link to either set up or update your account: <http://www.odessa.edu/gmail/>. **All assignments or correspondence will be submitted using your Odessa College email.**

Technical Support

For Blackboard username and password help and for help accessing your online course availability and student email account contact the Student Success Center at 432-335-6878 or online at https://www.odessa.edu/dept/ssc/helpdesk_form.htm.

Important School Policies

For information regarding student support services, academic dishonesty, disciplinary actions, special accommodations, or student's and instructors' right to academic freedom can be found in the [Odessa College Student Handbook](#).