



WELD-211-WELDING RELATED METALLURGY 3 CREDITS

SYLLABUS

CATALOG DESCRIPTION

Familiarizes students with methods of Metal production, Metal properties, Crystal Structure, Heat treatment of metals and Special welding applications.

Prerequisites: None

Semester Offered: Fall, Summer

Common Student Learning Outcomes

Upon successful completion of San Juan College programs and degrees, the student will demonstrate competency in...

BROAD AND SPECIALIZED LEARNING

Students will actively and independently acquire, apply, and adapt skills and knowledge with an awareness of global contexts.

CRITICAL THINKING

Students will think analytically and creatively to explore ideas, make connections, draw conclusions and solve problems.

CULTURAL AND CIVIC ENGAGEMENT

Students will act purposefully, reflectively, and ethically in diverse and complex environments.

EFFECTIVE COMMUNICATION

Students will exchange ideas and information with clarity in multiple contexts.

INFORMATION LITERACY

Students will be able to recognize when information is needed and have the ability to locate, evaluate, and use it effectively.

INTEGRATING TECHNOLOGIES

Students will demonstrate fluency in the application and use of technologies in multiple contexts.

Student work from this class may be randomly selected and used anonymously for assessment of course, program, and/or institutional learning outcomes. For more information, please refer to the Dean of the appropriate School.

Course Learning Outcomes

Upon successful completion of the course, the student will be able to...

1. Understand stress build-up problems during the welding and fabrication process.
2. Understand the basic characteristics of carbon steel and alloy steel along with how heat affects them.

Specific Learning Outcomes

Upon successful completion of the course, the student will be able to...

1. Utilize metallurgy to control distortion and warp age during welding.
2. Define hardness.
3. Use charts to break down properties of steel and alloy steels.
4. Define the difference between small and large grain crystal structure.
5. Apply heat treating and quenching techniques.
6. Utilize the annealing and normalizing processes on steel.
7. Surface hardened mild steel.
8. Select proper electrodes for special welding applications.