



Weldability

WELDENG 4112

Credit Hours:

3.00

Course Levels:

Undergraduate (1000-5000 level)

Course Components:

Lecture

Course Description:

Teaches the basic concepts of weldability and focuses on failure mechanisms in welded construction. Failure phenomena that occur during fabrication, repair, and during service are discussed.

Prerequisites and Co-requisites:

Prereq: 4101, and WeldEng-BS major; or permission of instructor.

Course Goals / Objectives:

- Provide a basic understanding of the types of failures that occur in welded construction, including failure during primary fabrication, repair, or during service
 - Review the failure mechanisms that occur during primary fabrication, including solidification and liquation cracking, solid-state cracking, and hydrogen induced cracking
 - Review failure mechanisms that occur in service, including fracture, fatigue, creep, and corrosion
 - Review weldability tests that are used to quantify weldability
 - Provide a basic overview of techniques that are used to conduct a failure analysis of welded structures
 - Give students experience in writing a detailed technical paper on a specific topic and to review and critique papers written by other students
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Course Topics:

- General types of failures in welded construction
 - Review of welding metallurgy fundamentals
 - Solidification and liquation cracking
 - Solid-state cracking
 - Hydrogen cracking
 - Fatigue and fracture
 - Creep and stress-rupture
 - Corrosion and corrosion-related failures
 - Weldability testing
 - Failure analysis techniques and case studies
 - Student presentations
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Designation:

Elective