THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

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 proimary fabrication, repair, or during service
- Review the failure mechanims that occur during primary fabrication, including solidification and liquation cracking, solid-state cracking, and hydrogen induced cracking
- Review failure mecahisms 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

Course Topics:

- General types of failures in welded contruction
- 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

Designation:
Elective