



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Fitness-for-Service of Welded Structures

WELDENG 4240

Credit Hours:

2.00

Course Levels:

Undergraduate (1000-5000 level)

Course Components:

Lecture

Course Description:

The interrelationship of design, fabrication, nondestructive evaluation, fracture mechanics, and reliability concepts in establishing the overall fitness-for-purpose of welded structures.

Prerequisites and Co-requisites:

Prereq: 4201, and enrollment as a WeldEng-BS major; or permission of instructor.

Course Goals / Objectives:

- Understand basic fitness-for-service concepts
 - Ability to analyze and apply fracture mechanics design concepts to welded structures
 - Ability to analyze and apply fatigue life prediction methods to welded structures
 - Ability to apply fitness-for-service methods and standards for design of new and for life-assessment of in-service welded structures
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Course Topics:

- Introduction to fitness-for-service and root causes of weld failure.
 - Fracture mechanics for brittle fracture.
 - Fracture mechanics for ductile fracture.
 - Fracture toughness testing.
 - Fatigue crack initiation and propagation.
 - Fatigue and fracture of welded components.
 - Fracture and fatigue control.
 - Fitness-for-service assessment procedures and standards.
 - Case studies.
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Designation:

Elective