



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Welding Metallurgy Laboratory I

WELDENG 7611

Credit Hours:

1.00 - 1.00

Course Levels:

Graduate (5000-8000 level)

Course Components:

Lecture

Lab

Course Description:

Fundamental understanding of microstructure evolution in alloys and steels during heat treatment, as well as welding through various characterization techniques.

Prerequisites and Co-requisites:

Prereq: Grad standing. Concur: 4101 or 7101, or permission of instructor.

Course Goals / Objectives:

- Identification of microstructures and related properties in a variety of iron based alloys subjected to similar heat treatments, as well as, welding and post-weld heat treatment
 - Design of proper control methodologies to avoid weldability issues in steels
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Course Topics:

- Identification of microstructures and related properties in a variety of iron based alloys subjected to similar heat treatments
 - Evaluation of microstructure and hardness in welds and the similarity of the same to samples subjected to thermo-mechanical processing in a Gleeble thermal-mechanical simulator
 - Understanding of complex interaction between prior heat treatment, welding process and post-weld heat treatments on the final weld microstructure and properties
 - Design and implementation of control methodologies to avoid hydrogen assisted cracking in steel welds using published standards
 - Optimization of welding process, process parameters, welding consumable selection and post-weld heat treatment for structural steel welds using computational models and experimentation
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Designation:

Elective