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
**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

**Designation:**

Elective