

WELDENG 7012 (Approved): Resistance Welding Processes

Course Description

This course addresses the fundamentals, theory, and application of Resistance Welding processes, with emphasis on processes, equipment, materials, and quality control.

Prior Course Number: 602, 702

Transcript Abbreviation: Res Weld Proc

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Graduate

Student Ranks: Masters, Doctoral

Course Offerings: Autumn

Flex Scheduled Course: Never

Course Frequency: Every Year

Course Length: 14 Week

Credits: 2.0

Repeatable: No

Time Distribution: 2.0 hr Lec

Expected out-of-class hours per week: 4.0

Graded Component: Lecture

Credit by Examination: No

Admission Condition: No

Off Campus: Never

Campus Locations: Columbus

Prerequisites and Co-requisites: Graduate Standing and 4002 or 7002 or permission of instructor.

Exclusions: Not open to students with credit in 602 or 702 or 4012.

Cross-Listings:

The course is required for this unit's degrees, majors, and/or minors: No

The course is a GEC: No

The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.9999

Subsidy Level: Doctoral Course

Programs

Abbreviation	Description
WELDENG	Welding Engineering

General Information

This is a graduate level course that will be taught at the same time as 4012. Lecture content will be the same as 4012, but graduate students will be required to conduct detailed review of research papers related to resistance welding provide brief class presentations.

Course Goals

Develop an understanding of the theories and fundamentals of Resistance Welding processes.

Understanding of Resistance Welding equipment details including power supplies and tooling.

Understanding of methods for quality control and mechanical testing of Resistance Welds.
Understanding of the Resistance Welding of important structural materials including carbon and low alloy steels, stainless steels, aluminum, and titanium.
Understanding of the Resistance Welding of coated steels including galvanized, aluminized, tin coated, and terne coated steels.

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Resistance Welding fundamentals.	10.0							
Resistance Welding equipment, tooling and power supplies.	4.0							
Resistance Welding of materials.	5.0							
Resistance Welding of coated steels.	5.0							
Resistance Welding quality, quality control, and testing.	4.0							

Grades

Aspect	Percent
Exam #1	30%
Exam #2	30%
Final exam	40%

Representative Textbooks and Other Course Materials

Title	Author
<i>4502 Class Notes</i>	Dickinson, Phillips

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
***	a	An ability to apply knowledge of mathematics, science, and engineering.
*	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
**	c	An ability to design a system, component, or process to meet desired needs.
	d	An ability to function on multi-disciplinary teams.
**	e	An ability to identify, formulate, and solve engineering problems.
	f	An understanding of professional and ethical responsibility.
	g	An ability to communicate effectively.
	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
	i	A recognition of the need for, and an ability to engage in life-long learning.
	j	A knowledge of contemporary issues.
***	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

WELDENG ABET-EAC Criterion 9 Program Criteria Outcomes

Course Contribution		Program Outcome
***	l	an ability to select and design welding materials, processes and inspection techniques based on application, fabrication and service conditions
*	m	an ability to develop welding procedures that specify materials, processes and inspection requirements
	n	an ability to design welded structures and components to meet application requirements

Prepared by: David Phillips