



**THE OHIO STATE UNIVERSITY**  
COLLEGE OF ENGINEERING

# Physical Principles in Welding Processes II

## WELDENG 4002

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**Credit Hours:**

4.00

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**Course Levels:**

Undergraduate (1000-5000 level)

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**Course Components:**

Lecture

Lab

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**Course Description:**

Study of the application of physical principles in engineering of non-arc welding processes and equipment.

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**Prerequisites and Co-requisites:**

Prereq: 2001 or 3001, and enrollment in the WeldEng-BS major or MatScEn-BS major; or permission of instructor.

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**Course Goals / Objectives:**

- Understanding of major Resistance Welding processes, weld parameters, equipment, and applications
  - Understanding of the fundamentals and theory of Resistance Welding
  - Understanding of the fundamentals and theory of Solid-State Welding
  - Ability to describe and understand the major Solid-State Welding processes, weld parameters, equipment, and industrial applications
  - Understanding of the fundamentals and theory of High Energy Density welding processes
  - Ability to describe and understand Laser and Electron Beam welding processes, weld parameters, equipment, and industrial applications
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**Course Topics:**

- Fundamentals of Resistance Welding processes
  - Equipment, parameters, and applications for Resistance Welding processes
  - Laboratory experiments - Resistance Welding
  - Fundamentals of Solid-State Welding processes
  - Equipment, parameters, and application of Solid-State Welding processes
  - Fundamentals of Laser and Electron Beam Welding processes
  - Equipment, parameters, and application of Laser and Electron Beam Welding processes.
  - Laboratory experiments - Solid-State Welding
  - Laboratory experiments - Laser Welding
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**Designation:**

Required