



Course Code 8-110	CEUs 0.3 CEUs
Course Length 3 hours	

Course Introduction

This course will provide the learner with a comparison of the commonly cast ferrous and nonferrous alloys. There will be discussions of applications, properties, and criteria for selection of the following alloys: iron, steel, copper aluminum, magnesium, zinc, and super alloys.

Learning Outcomes

1. Explain why we use alloys
2. Explain the difference between ferrous and non-ferrous alloys
3. List at least three criteria that must be considered when selecting an alloy
4. For each alloy explain the:
 - Classification system and list common alloys
 - Mechanical and physical properties of the alloy
 - Applications and industries that use the alloy

Lesson Outline

- Module 1: Alloy Basics and Selection
 - Lesson 1 : Common elements
 - Lesson 2 : Ferrous vs. Nonferrous
 - Lesson 3 : Mechanical & physical properties
 - Lesson 4 : Alloy characteristics
- Module 2: Iron
 - Lesson 1 : Classification system and list common alloys
 - Lesson 2 : Mechanical and physical properties
 - Lesson 3 : Applications and industries
- Module 3: Steel
 - Lesson 1 : Classification system and list common alloys
 - Lesson 2 : Mechanical and physical properties
 - Lesson 3 : Applications and industries
- Module 4: Aluminum
 - Lesson 1 : Classification system and list common alloys
 - Lesson 2 : Mechanical and physical properties
 - Lesson 3 : Applications and industries
- Module 5: Cooper
 - Lesson 1 : Classification system and list common alloys
 - Lesson 2 : Mechanical and physical properties
 - Lesson 3 : Applications and industries
- Module 6: Magnesium
 - Lesson 1 : Classification system and list common alloys
 - Lesson 2 : Mechanical and physical properties
 - Lesson 3 : Applications and industries

<ul style="list-style-type: none"> • Module 7: Zinc <ul style="list-style-type: none"> ○ Lesson 1 : Classification system and list common alloys ○ Lesson 2 : Mechanical and physical properties ○ Lesson 3 : Applications and industries • Module 8: Superalloys <ul style="list-style-type: none"> ○ Lesson 1 : Classification system and list common alloys ○ Lesson 2 : Mechanical and physical properties ○ Lesson 3 : Applications and industries • Conclusion
<p>Instructional Methods:</p> <ul style="list-style-type: none"> • Facilitator led discussion • Group discussion • Q&A
<p>Assessment Methods:</p> <ul style="list-style-type: none"> • Instructor-led knowledge checks • Group activities, report back and debrief • Discussion
<p>Course Prerequisites, if any:</p> <ul style="list-style-type: none"> • None
<p>Attendee Requirements to Earn CEUs:</p> <ol style="list-style-type: none"> 1. Present at least 2.7 hours of the total 3 hours of instructional time (90%), which does not include meals or breaks. 2. Active participation (can include asking questions, communicating with other attendees during and taking part in group activities, providing responses during whole class or group discussions). 3. Successful achievement of learning outcomes.
<p>Who Should Attend?</p> <p>The target audience for this course consists of individuals responsible for:</p> <ul style="list-style-type: none"> • designing/engineering cast components • buying from casting suppliers