

# **COURSE SYLLABUS**

## **REINFORCING CONCRETE**

### **Course Description:**

This course is designed to provide the Iron Worker student with training in reinforcing concrete including history, manufacturing, safety, reinforcing forms, bridge and highway construction, bending, tagging, marking, and fabricating. The course will also include unloading, handling, storing, installing and placing reinforcing. The student will also learn to read reinforcing drawings.

### **Course Objective:**

The objective of this course is to enable a student to safely reinforce concrete.

### **Learning Outcomes:**

Upon successful completion of this course, the student will be able to:

- Outline the history of reinforcing and the manufacturing of reinforcing steel.
- Identify reinforcing tools, ties and safety practices.
- Identify structural forms associated with placing reinforcing steel.
- Demonstrate how to bend, tag, mark and fabricate reinforcing steel.
- Demonstrate how to safely unload, handle and store reinforcing steel.
- Read engineering and placing drawings.
- Install bar supports.
- Place reinforcing in footings, walls, columns, beams and girders, and in joists and slabs.
- Describe how to reinforce highway and airport pavement and how to use bar splicing and mechanical couplers.

### **Target Audience:**

This course is mandatory for all Apprentices and available to Journeymen.

### **Length of Course:**

This course is designed to be offered during a total of 75 hours – 45 hours of classroom instruction and 30 hours of hands-on lab or shop training.

### **Course Materials:**

- **Reinforcing Concrete for Ironworkers** Reference Manual
- **Reinforcing Concrete for Ironworkers** Student Workbook
- **Reinforcing Concrete for Ironworkers** Instructor Guide
- **Reinforcing Concrete for Ironworkers** DVD

- **Assignment Sheets** (in the Student Workbook)
- **Job Sheets** (in the Student Workbook)
- **Tests** (in the Instructor Guide)

### **A Word about Safety**

The importance of safety will be addressed and reinforced in all hands-on activities in the classroom, in the shop, and on the job site.

### **Course Assignments:**

There are assignment sheets for each unit of instruction. Students will complete these assignment sheets prior to and/or during course sessions as determined by the instructor. Job sheets will be completed as part of each unit. Most job sheets will be completed in the lab or shop area and/or outside in a work area.

### **Course Grading Criteria:**

To successfully complete this course, the student must complete all of the assignment sheets, demonstrate the required skills in the lab or shop, and pass the knowledge tests.

### **Course Attendance:**

All course sessions are mandatory and while missed time can be made up, missing a course session will affect your ability to successfully complete this course. Speak with the instructor to arrange make-up time if necessary.

### **Course Schedule:**

NOTE: The following Course Schedule is set up for blocks or classes 3 hours in length. If your course sessions are more or less than 3 hours, you will need to adjust the number of sessions accordingly.

<b>Date</b>	<b>Topics/Activities</b>
Session 1	Introductions Review of the course syllabus including the course objectives Discussion of classroom and outside assignments History of Reinforcing
Session 2	Test – History of reinforcing Manufacturing of reinforcing steel Lecture and discussion
Session 3	Test - Manufacturing of reinforcing steel Reinforcing tools, ties and safety practices Lecture and discussion Skills demonstrations, apprentices practice and skills testing
Session 4	Reinforcing tools, ties and safety practices Skills demonstrations, apprentices practice and skills testing
Session 5	Tests - Reinforcing tools, ties and safety practices Types of reinforced concrete building construction Lecture and discussion Skills demonstrations, apprentices practice and skills testing
Session 6	Test - Types of reinforced concrete building construction Mathematics for Reinforcing Concrete Lecture and discussion

- Session 7 Test - Mathematics for Reinforcing Concrete  
Reinforcing in bridge construction  
Lecture and discussion
- Session 8 Test - Reinforcing in bridge construction  
Principles and theory of reinforcing steel  
Lecture and discussion
- Session 9 Principles and theory of reinforcing steel  
Lecture and discussion
- Session 10 Test - Principles and theory of reinforcing steel  
Fabrication of reinforcing steel  
Lecture and discussion  
Skills demonstrations, apprentices practice and skills testing
- Session 11 Fabrication of reinforcing steel  
Skills demonstrations, apprentices practice and skills testing
- Session 12 Test - Fabrication of reinforcing steel  
Unloading, handling and storing of reinforcing steel  
Skills demonstrations, apprentices practice and skills testing
- Session 13 Unloading, handling and storing of reinforcing steel  
Skills demonstrations, apprentices practice and skills testing
- Session 14 Test - Unloading, handling and storing reinforcing steel  
Engineering and placing drawings  
Lecture and discussion
- Session 15 Test – Engineering and placing drawings  
Special bar supports  
Lecture and discussion  
Skills demonstrations, apprentices practice and skills testing
- Session 16 Test – Special bar supports  
Placing reinforcing steel in footings  
Lecture and discussion  
Skills demonstrations, apprentices practice and skills testing
- Session 17 Test - Placing reinforcing steel in footings  
Placing reinforcing in walls  
Lecture and discussion  
Skills demonstrations, apprentices practice and skills testing

- Session 18 Tests - Placing reinforcing in walls  
Placing reinforcing bar in columns  
Lecture and discussion  
Skills demonstrations, apprentices practice and skills testing
- Session 19 Test – Placing reinforcing bar in columns  
Placing reinforcing steel in beams and girders  
Lecture and discussion  
Skills demonstrations, apprentices practice and skills testing
- Session 20 Test - Placing reinforcing steel in beams and girders  
Placing reinforcing in joists and slabs  
Lecture and discussion  
Skills demonstrations, apprentices practice and skills testing
- Session 21 Tests - Placing reinforcing steel in joists and slabs  
Highway structures and airport pavement  
Lecture and discussion
- Session 22 Test - Highway structures and airport pavement  
Bar splices and mechanical coupling  
Lecture and discussion
- Session 23 Test - Bar splices and mechanical coupling  
Reading reinforcing drawings  
Lecture and discussion
- Session 24 Test - Reading reinforcing drawings  
Skills demonstrations, apprentices practice and skills testing
- Session 25 Apprentices practice and skills testing  
Course summary