

# IRONWORKER APPRENTICESHIP (IRON)

## **IRON 100 Orientation and Trade Science 2.5 Units**

This course is an introduction to Ironworker's rules and regulations, record keeping, evaluations and advancement, work ethic, sexual harassment avoidance training, basic tools, safety, introduction to construction math, green construction practices, and fire watch and traffic flagger training. They will become acquainted with specifications that constitute a safe and healthful working environment. Apprentices will also be introduced to topics including lifting, measuring, basic knots, green construction, flagger, and related safety.

Lecture Hours: 2 Lab Hours: 1.5 Repeatable: No Grading: L  
 Corequisite: Student must be a registered Ironworker Apprentice with a participating employer  
 Advisory Level: Read: 2 Write: 2 Math: None  
 Transfer Status: None Degree Applicable: AS  
 CSU GE: None IGETC: None District GE: None  
 Credit by Exam: Yes

## **IRON 110 Mixed Base 1.5 Units**

Ironworker Apprentices receive an overview of the type of construction blue prints commonly used with emphasis on function and interpretation. Apprentices will review and apply basic math skills and solve typical problems relevant to the construction trades.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L  
 Corequisite: Student must be a registered Ironworker apprentice with a participating employer  
 Advisory Level: Read: 2 Write: 2 Math: None  
 Transfer Status: None Degree Applicable: AS  
 CSU GE: None IGETC: None District GE: None  
 Credit by Exam: Yes

## **IRON 120 Rigging 1.5 Units**

Ironworker Apprentices are introduced to rigging operations such as wire rope, chains, slings, cranes, helicopters, ladders, and scaffolds. Other topics include rigging safety, knot recognition and strength identification, as well as knot application to rigging.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L  
 Corequisite: Student must be a registered Ironworker Apprentice with a participating employer  
 Advisory Level: Read: 2 Write: 2 Math: None  
 Transfer Status: None Degree Applicable: AS  
 CSU GE: None IGETC: None District GE: None  
 Credit by Exam: Yes

## **IRON 130 Reinforcing 1.5 Units**

Ironworker Apprentices are introduced to standard codes, code classifications, plans, schedules, charts, and specifications commonly used by the iron worker. Topics include construction techniques used in reinforcing concrete members with steel, use of bar supports, placement of reinforcing iron, and general principles of bar splicing and welding. Post tensioning and pre-stressing techniques are also introduced.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L  
 Corequisite: Student must be a registered Ironworker Apprentice with a participating employer  
 Advisory Level: Read: 2 Write: 2 Math: None  
 Transfer Status: None Degree Applicable: AS  
 CSU GE: None IGETC: None District GE: None  
 Credit by Exam: Yes

## **IRON 131 Post-Tensioning 1.5 Units**

Ironworker Apprentices will receive knowledge and training pertaining to post-tensioning systems used in concrete construction structures. Students will receive additional knowledge of system components, safety practices, tools and equipment.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L  
 Prerequisite: IRON 130 with C or better.  
 Corequisite: Student must be a registered Ironworker Apprentice with a participating employer  
 Advisory Level: Read: 2 Write: 2 Math: None  
 Transfer Status: None Degree Applicable: AS  
 CSU GE: None IGETC: None District GE: None  
 Credit by Exam: Yes

## **IRON 138 Work Experience 1-16 Units**

Work Experience is designed for students who work or volunteer in a field related to their career major. Students are required to provide evidence that they are enrolled in a career program (e.g., education plan or coursework in a career/technical subject area). Students can earn one unit of credit for each 60 hours of unpaid volunteer time or 75 hours of paid work during the semester. Students can repeat Career/Technical Work Experience, combined with General Work Experience, or alone, up to a maximum of 16 units. Internship/job placement is not guaranteed.

Lecture Hours: None Lab Hours: 2.07 Repeatable: Yes Grading: L  
 Corequisite: Must be a registered Ironworker apprentice with a participating employer for the minimum number of hours per unit.  
 Advisory Level: Read: 3 Write: 3 Math: None  
 Transfer Status: None Degree Applicable: NAA  
 CSU GE: None IGETC: None District GE: None

## **IRON 140 Precast Concrete and Metal Buildings 1.5 Units**

Ironworker Apprentices are introduced to the erection of precast concrete and metal buildings. Topics include rigging, handling, and installing these in a safe and economical manner. Reading and interpreting charts, tables, and blueprints will also be covered.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L  
 Corequisite: Student must be a registered Ironworker Apprentice with a participating employer  
 Advisory Level: Read: 2 Write: 2 Math: None  
 Transfer Status: None Degree Applicable: AS  
 CSU GE: None IGETC: None District GE: None  
 Credit by Exam: Yes

**IRON 150 Welding I 1.5 Units**

Ironworker Apprentices are introduced to the structure of ferrous metals and their reaction to heat. They will acquire knowledge of the equipment and materials employed in the use of shielded metal-arc, gas shielded-arc, and oxy-acetylene welding.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L  
Corequisite: Student must be a registered Ironworker Apprentice with a participating employer  
Advisory Level: Read: 2 Write: 2 Math: None  
Transfer Status: None Degree Applicable: AS  
CSU GE: None IGETC: None District GE: None  
Credit by Exam: Yes

**IRON 151 Welding II 1.5 Units**

Ironworker Apprentices continue the study of ferrous metals and their reactions to heat. They will expand their knowledge of equipment and materials employed in the use of shielded metal-arc and gas shielded-arc.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L  
Prerequisite: IRON 150 with a C or better  
Corequisite: Student must be a registered Ironworker Apprentice with a participating employer  
Advisory Level: Read: 2 Write: 2 Math: None  
Transfer Status: None Degree Applicable: AS  
CSU GE: None IGETC: None District GE: None  
Credit by Exam: Yes

**IRON 152 Welding III 1.5 Units**

Ironworker Apprentices focus on advanced skill development in shielded metal arc and gas shielded arc welding on ferrous and non-ferrous metals. Topics include vertical and overhead positions on all types of joints as they relate to structural stability.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L  
Prerequisite: IRON 151 with C or better  
Corequisite: Student must be a registered Ironworker Apprentice with a participating employer  
Advisory Level: Read: 2 Write: 2 Math: None  
Transfer Status: None Degree Applicable: AS  
CSU GE: None IGETC: None District GE: None  
Credit by Exam: Yes

**IRON 160 Lead Hazard/Scaffold/First Aid 1.5 Units**

Ironworker Apprentices are introduced to the health effects caused by Lead exposure, scaffold safety, and first aid. Topics include OSHA regulations for Lead handling, sampling methods for Lead, legal rights of workers pertaining to safety standards, and the use of proper protective equipment and work methods. First aid and CPR methods will also be covered. Apprentices will be prepared to take First Aid and CPR certification tests upon completion of this course.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L  
Corequisite: Student must be a registered Ironworker Apprentice with a participating employer  
Advisory Level: Read: 2 Write: 2 Math: None  
Transfer Status: None Degree Applicable: AS  
CSU GE: None IGETC: None District GE: None  
Credit by Exam: Yes

**IRON 161 OSHA 30/COMET Training 2.5 Units**

Ironworker apprentices receive safety training and education in order to work safely on construction sites. They will focus on specific OSHA standards and requirements related to ironworking such as fire protection and prevention, personal protective and lifesaving equipment, etc. Upon successful completion of the course, students will receive an OSHA 30 Department of Labor card. In addition, the students will receive information regarding Construction Organizing Membership Education Training (COMET). Students must be a registered Ironworker member with a participating employer.

Lecture Hours: 2.5 Lab Hours: None Repeatable: No Grading: L  
Corequisite: Student must be a registered Ironworker Apprentice with a participating employer  
Advisory Level: Read: 2 Write: 2 Math: None  
Transfer Status: None Degree Applicable: NAA  
CSU GE: None IGETC: None District GE: None  
Credit by Exam: Yes

**IRON 170 Structural I 1.5 Units**

Ironworker Apprentices study the theory and practice of blueprint reading, structural erection procedures, and proper steel structure construction.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L  
Corequisite: Student must be a registered Ironworker Apprentice with a participating employer  
Advisory Level: Read: 2 Write: 2 Math: None  
Transfer Status: None Degree Applicable: AS  
CSU GE: None IGETC: None District GE: None  
Credit by Exam: Yes

**IRON 171 Structural II 1.5 Units**

Ironworker Apprentices study the theory and practice of advanced blueprint reading related to complex structure construction. Structural erection procedures including the operation of mobile and tower cranes and proper construction of various steel structures are also covered.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L  
Prerequisite: IRON 170 with C or better  
Corequisite: Student must be a registered Ironworker Apprentice with a participating employer  
Advisory Level: Read: 2 Write: 2 Math: None  
Transfer Status: None Degree Applicable: AS  
CSU GE: None IGETC: None District GE: None  
Credit by Exam: Yes

**IRON 180 Architectural I 1.5 Units**

Ironworker Apprentices are introduced to architectural and ornamental iron working. Apprentices are provided detailed knowledge of the procedures and practices employed by the ironworker in architectural and ornamental iron working. Tools, anchors, fasteners, various layout instruments, and construction of curtain walls will also be covered.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L  
Corequisite: Student must be a registered Ironworker Apprentice with a participating employer  
Advisory Level: Read: 2 Write: 2 Math: None  
Transfer Status: None Degree Applicable: AS  
CSU GE: None IGETC: None District GE: None  
Credit by Exam: Yes

**IRON 181 Architectural 2 1.5 Units**

The Ironworker apprentice continue to improve their skills in architectural and ornamental construction. They will install revolving doors, rolling service doors, stairs and ladders, catwalks and grating, fencing and guard rails, detention systems, space frames, and miscellaneous and ornamental steel. They will also learn the basics of lasers, theodolites and transits and the total station. Apprentices will gain knowledge and skills using different types of anchors and fasteners. Student must be a registered Ironworker Apprentice with a participating employer.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L

Prerequisite: IRON 180 with C or better.

Corequisite: Student must be a registered Ironworker Apprentice with a participating employer

Advisory Level: Read: 2 Write: 2 Math: None

Transfer Status: None Degree Applicable: AS

CSU GE: None IGETC: None District GE: None

Credit by Exam: Yes

**IRON 195 Foreman Training and Ironworkers Union History 2.5 Units**

Ironworker apprentices will gain knowledge of the roles and responsibilities of the foreman and the history of the Ironworkers union. They will learn how to create an effective work team, communicate effectively, apply problem-solving skills, document and maintain records, plan and schedule work, implement a safety program, and ensure the quality of work. The formation of the union and historical events will be presented along with introduction of Labor Laws. Students must be a registered Ironworker member with a participating employer.

Lecture Hours: 2.5 Lab Hours: None Repeatable: No Grading: L

Corequisite: Student must be a registered Ironworker Apprentice with a participating employer

Advisory Level: Read: 2 Write: 2 Math: None

Transfer Status: None Degree Applicable: AS

CSU GE: None IGETC: None District GE: None

Credit by Exam: Yes

**IRON 500 American Welding Society (AWS) Code Welding 0 Units**

Ironworker journeymen and apprentices review welding materials, equipment, procedures, testing techniques, as well as safety requirements. Students will gain competency in techniques of joining ferrous and non-ferrous metals by the use of Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), Flux Core Arc Welding (FCAW), and Gas Tungsten Arc Welding (GTAW), and welding procedures. They will gain competency in reading welding symbols, codes, and understand site conditions that may be encountered in the industry. Student must be a registered Ironworker member with a participating employer.

Lecture Hours: 0.5 Lab Hours: 3 Repeatable: Yes Grading: O

Corequisite: Student must be a registered Ironworker Apprentice with a participating employer

Transfer Status: None Degree Applicable: NC

CSU GE: None IGETC: None District GE: None

Credit by Exam: Yes

**IRON 501 Ironworkers Preapprenticeship 0 Units**

Students interested in becoming an Ironworker Apprentice will gain knowledge and skills required for their first day at the job site. Major topics covered in this course include basic safety, measuring, and hand tools. The student will also be introduced to rigging, welding, structural steel erection, architectural and ornamental ironworking, and reinforcing ironworking.

Lecture Hours: 3.5 Lab Hours: 3 Repeatable: Yes Grading: O

Corequisite: Student must be a registered Ironworker Apprentice with a participating employer

Transfer Status: None Degree Applicable: NC

CSU GE: None IGETC: None District GE: None

Credit by Exam: Yes