

Course Information Form (CIF)

Course Code: IRW 113

Course Title: Structural Blueprint Reading

Department: Applied Sciences and Technologies

Effective Date: Summer 2026

PCS Code: 1.2 - Occupational/Technical Instruction

CIP Code: 15.1301

Repeatability: 0

Credit Hours

Catalog Notation: 3-3-4

Credit Hour Distribution:

Lecture: 3

Lab: 3

Clinical: 0

Total: 4

General Course Information

Catalog Description

Reading and interpreting drawings for structural steel construction, elements of drawings, and steel frame construction drawings, including specific drawings, plans, specific job applications.

General Course Objectives

The student will be able to read and interpret drawings for steel construction.

Minimum Placement Levels

English	Reading	Math
None	None	None

Prerequisites

Credit in IRW 112

Methods of Evaluation

At least 4 written examinations, and at least 3 lab practical exercises.

Instructional Materials and Additional Supplies

Structural Fabrication Blueprint, International Association of Iron Workers Joint Apprenticeship Training Council, latest edition

Course Content

General Learning Outcomes (GLOs)

- Technology: Students will demonstrate the ability to evaluate, select, and appropriately use current and emerging tools.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Drawings and Construction: A. Construction Principles, B. Personnel, C. Drawings and Plans, D. Structural Members, E. Job Management	1. Describe the construction principles addressed by architectural design and by engineering design. 2. Describe the function of architects, engineers, and draftsmen on a project both independently and cooperatively. 3. Describe the purpose and contents of architectural working drawings and identify the five plans included in engineering drawings. 4. Define dead load, live load, load distribution, soil bearing capacity, uniform distribution, and concentrated and eccentric loads. 5. Name and describe the four types of stress encountered in construction. 6. Define stiffness and strength of a structural member; name and describe the function of the four main structural members and give examples of each. 7. Name the necessary elements for a construction project to be completed. 8. Describe the general sequence of steps followed when constructing a building or group of buildings. 9. Name and describe the five major materials used in building construction. 10. Describe the responsibilities of job management.	8	8	0
Elements of Drawings: A. Types of Construction Drawings, B. Plans, C. Representations, D. Views, E. Scale, F. Dimensions, G. Symbols, H. Lines, I. Notes, J. Title Block, K. Specifications, L. Bill of Materials, M. Bolt Lists	1. List the types of construction drawings and plans used in ironworking. 2. List the types of drawings, representations, and views used in construction drawings. 3. Define scale and dimension and their purpose in construction drawings. 4. Identify steel member, riveting, exterior, section material, and plan symbols used in drawings. 5. Read and interpret the alphabet of lines. 6. Describe the functions of note, title blocks, specifications, bill of materials, and bolt lists on drawings.	6	6	0
Steel Frame Construction: A. Single-Rolled Shape, B. Parts of Structural Steel, C. Drawings/Symbols, D. Framing Systems, E. Plans, F. Orthographic Representations, G. Welding Symbols	1. Identify a single-rolled shape of structural steel given the steel, the symbol for the shape, or the sectional view on a drawing. 2. Name the parts of a piece of structural steel and identify a sectional symbol for structural steel and the parts represented. 3. Name and describe the steel framing systems used in construction. 4. Describe general plans for steel construction and the characteristics of stress diagrams and shop drawings included in general plans. 5. Describe the characteristics of erection plans, framing plans, and falsework plans, and when they are used. 6. Read the symbols and orthographic representations on framing plans for columns, girders, and beams, and joists and tie rods for structural steel buildings. 7. Read the symbols and orthographic representations for rivet or high strength bolt connections on design detail drawings. 8. Identify welding symbols used on design detail drawings.	7	7	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Job Applications: A. Steel Detailer, B. Steel Members, C. Shop Drawings, D. Field Drawings	- Describe the duties of the steel detailer and the references and tools they use. - Decode the symbols and erection marks in steel members and identify directional indicators and columns. - Read and interpret shop and field drawings for a job application.	6	6	0
Specific Drawings: A. Architect-Engineer Drawings, B. Substation Drawings, C. Footings, D. Steel Beam Plans	- Describe the components and functions of architect and engineer drawings. - Read and interpret architect and engineer drawings, substation drawings, footing plans and details, and steel beam plans.	6	6	0
Job Applications: A. Bridges, B. Conveyor Headers, C. Blast Furnace, D. Parking Structure, E. Sheeting, F. Precast	Read and interpret drawings for bridge, blast furnace, parking structure, sheeting, and precast construction.	6	6	0
Conveyor Headers: A. Use, B. Function, C. Fastening, D. Fabrication, E. Tools	- Describe where headers are used and their function. - Describe four ways headers may be fastened. - Identify the three pieces of information necessary for fabricating headers. - Identify the tools used in conveyor work.	6	6	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
45	45	0