

## PLATE SHOP OPERATOR

### Plate Shop Operator Related Studies

This Apprenticeship Program is designed to teach the skills and related studies needed in the Plate Shop Operator craft leading to a Plate Shop Operator Journeyman classification.

#### MAJOR UNITS OF INSTRUCTIONS

#### SEMESTER HOURS

#### Related Studies:

Basic Math	3
Hull Shipbuilding	3
Blueprint Reading for Shipfitters	3
General Ship fitting Practices	3
Mechanical Drawing	3
Metallurgy	3
TOTAL SEMESTER HOURS	18
TOTAL CLOCK HOURS	432

\*Each course is 72 hours of instruction

- NAME:** Related Studies Curriculum – Plate Shop Operator
- TITLE:** **Basic Math**
- TEXTBOOK:** \_\_\_\_\_Furnished Material
- CREDITS:** 3 Semester Hours of Credit
- PREREQUISITES:** Students must be employed by \_\_\_\_\_and be indentured in the Apprenticeship Program.
- COURSE DESCRIPTION:** This course is designed to cover the major aspects of Practical Math to include Arithmetic, Algebra and Geometry. Seventy-two hours of instruction.
- COURSE GOAL(S):** To provide the student with information and instruction to comprehend the aspects of Practical Math.
- COURSE OBJECTIVES:** Upon satisfactory completion of this course the student will have covered the major aspects of Practical Math.  
Demonstrate proficiency in:
- A. Arithmetic
  - B. Algebra
  - C. Geometry
- CONTENT OUTLINE:**
1. ARITHMETIC
    - A. Review
    - B. Common Fractions
    - C. Decimal Fractions
    - D. Percent
    - E. Ratio
    - F. Powers and Roots
    - G. Weights and Measures
  2. ALGEBRA
    - A. Introduction to Algebra-Notations and Definitions
    - B. Addition and Subtraction
    - C. Simple Equations
    - D. Multiplication
    - E. Division
    - F. Fractions
    - G. Equations
    - H. Equations and Applications
    - I. Equations With More Than One
    - J. Exponents
    - K. Logarithms
    - L. Quadratic Equations
    - M. Variations
    - N. Graphical Methods

**CONTENT OUTLINE:**  
**(Cont.)**

3. GEOMETRY
  - A. Introduction
  - B. Areas of Polygons
  - C. Triangles
  - D. The Circles
  - E. Prisms
  - F. Cylinders
  - G. Pyramids, Cones and Fractions
  - H. The Sphere

**NAME:** Related Studies Curriculum – Plate Shop Operator

**TITLE:** **Hull Shipbuilding**

**TEXTBOOK:** \_\_\_\_\_Furnished Material

**CREDITS:** 3 Semester Hours of Credit

**PREREQUISITES:** Students must be employed by \_\_\_\_\_and be indentured in The Apprenticeship program.

**COURSE DESCRIPTION:** This course is designed to teach the principles of ship construction and terminology. Seventy- two hours of instruction.

**COURSE GOAL(S):** To provide the student with information to obtain working knowledge of specific terms and an understanding of ship construction.

**COURSE OBJECTIVES:** Upon satisfactory completion of this course the student will:

- A. Recognize specific terms
- B. Recall definitions
- C. Demonstrate an understanding of ship construction as they apply to their daily job assignments.

**CONTENT OUTLINE:**

1. Terms and Definitions
2. Strength of Materials
3. Materials used in Shipbuilding
4. Welding
5. Keels
6. Floors and Double Bottoms
7. Frames and Framing Systems
8. Shell Plating
9. Deck Beams
10. Pillars and Girders
11. Decks
12. Bulkheads and Flooding
13. Stem ,Stern, Frame and Rudder
14. Types of Ships

**NAME:** Related Studies Curriculum –Plate Shop Operator

**TITLE:** **Blueprint Reading for Shipfitters**

**TEXTBOOK:** Basic Blueprint Reading (\_\_\_\_\_furnished prints)

**CREDITS:** 3 Semester Hours of Credit

**PREREQUISITES:** Students must be employed by \_\_\_\_\_and be indentured in the Apprenticeship Program.

**COURSE DESCRIPTION:** This course is designed to introduce the blueprint reading techniques and principles. This course will cover in detail all the major areas of blueprint reading required by the ship-fitter trade. Seventy-two hours of instruction.

**COURSE GOAL(S):** To provide the student with the information necessary to be proficient in all the major areas of blueprint reading required by the Ship-fitter Trade.

**COURSE OBJECTIVE:** Upon satisfactory completion of this course the student will demonstrate proficiency in Blueprint Reading Techniques and Principles required by the Ship-fitter trade.

**CONTENT OUTLINE:**

1. Shape Description
2. Size Description
3. Information Concerning the Reading of Ship Hull Prints
4. Ship Hull Prints
5. Introduction To \_\_\_\_\_ Prints
  - A. Title Block
  - B. Revision Columns
  - C. Bill of Materials
  - D. Plan, Sections and Elevations
  - E. Reference Drawings
6. Reference Line
7. Related Information
  - A. Ship Arithmetic
  - B. Decimal Equivalentents of Fractions
  - C. Glossary of Ship Terms
  - D. Abbreviations Used on Ship Drawings
  - E. Profile and Deck Plans
8. Working Drawings
  - A. Typical Ship Drawings
  - B. Structural
  - C. Foundation

**CONTENT OUTLINE:**  
**(Cont.)**

9. Lines Used in Ship Drawings
  - A. Lines
  - B. Drawing Scale
  - C. Dimensioning
10. SYMBOLS FOR WELDING ON STRUCTURAL DRAWINGS
11. DEVELOPING THE SHAPE OF THE SHIP
  - A. Ship Lines
  - B. Ship Parts
  - C. Drawing Projections
    - a. Three view projection
    - b. Plan
    - c. Section
    - d. Elevation
  - D. Frames
  - E. Side Stringer
  - F. Water Tight-Flat Deck
  - G. Size and Weight of Steel Plate
  - H. Size and Weight of Steel Shapes
12. Practical Exercises in Reading Blueprints

**NAME:** Related Studies Curriculum – Plate Shop Operator

**TITLE:** **General Ship-fitting Practices**

**TEXTBOOK:** \_\_\_\_\_Furnished Material

**CREDITS:** 3 Three Semester-Hours Credit

**PREREQUISITES:** Students must be employed by \_\_\_\_\_ and be indentured in the Apprenticeship Program.

**COURSE DESCRIPTION:** This course is designed to introduce the Apprentice to the fundamental Shipfitting practices and techniques. Seventy-two hours of instruction.

**COURSE GOAL(S):** To provide the student with information to introduce him/her to General Ship-fitting practices.

**COURSE OBJECTIVES:** Upon satisfactory completion of this course the Apprentice will demonstrate his/her knowledge in all covered material in General Ship-fitting Practices.

**CONTENT OUTLINE:**

1. Fairing and Tack Welding Steel Hull Members
  - A. Importance of Fairing and Tacking
  - B. Fairing Shell Butts and Seams
  - C. Fairing Bulkheads at Decks
  - D. Pulling Sheer-strake to Decks
  - E. Fairing Shell and Deck Longitudinal
  - F. Use of Hydraulic Jack
  - G. Bending of Plates and Shapes
  - H. Welding Contraction and Distortion
  - I. Fairing and Tack Welding Bottom Shell Assembly
  - J. Practical Hints on Fairing and Tacking,
  - K. Butt Clearances and Tack Weld Data
2. Lifting and Installing Liners, Angles, Brackets, Collars and Spacers
  - A. Use of Liners
  - B. Precautions for Installing Liners
  - C. Brackets and Small Flanged Plates
  - D. Flanging Flat Plates
  - E. Lifting a Flanged Plate
  - F. Fitting Welding Brackets
  - G. Fitting Collars and Spacers

**CONTENT OUTLINE(cont.):**

3. Prevention and Correction of Steel Distortion
  - A. Prevention and Correction of Steel Distortion
  - B. Correction of Distortion with Strong-back
  - C. Correcting Distortion by Shrinking
4. Lines of a Ship
  - A. Terms and Definitions Pertaining to Lines of a Ship
5. Leveling, Plumbing and Squaring
  - A. Leveling, Plumbing, and Squaring
6. Lifting and Installing Frame Stiffeners and Plates
  - A. Typical Frame and, Stiffener Construction
  - B. Methods of Lifting Framing Members
  - C. Lifting Shell Plates
  - D. Use of Roll Sets
  - E. How to Lay Out a Lifted Shell Plate
  - F. Furnace Plates
  - G. Plate Thickness and Weights
  
7. Castings, Foundations, Gratings and Floor Plates
  - A. Casting Used in Ship Construction
  - B. Foundations
  - C. Scribing Foundations for Burning
  - D. Setting Foundations by Measurement
  - E. Fitting Engine Room Grating
  - F. Fitting Engine Room Floor Plates
  
8. Miscellaneous Hull Fittings
  - A. Fitting Airports
  - B. Anchor Handling Gear
  - C. Mooring Equipment
  - D. Installing Davits
  - E. Installing Deck Ladders
  - F. Installing Steel Doors
  - G. Installing Fire Equipment
  - H. Freeing Ports and Scuppers
  - I. Fitting Hatches and Manholes
  - J. Miscellaneous Storages and Fastenings
  
9. Developments and Intersections
  - A. Layout for a Roll Cylinder
  - B. Layout for a Cylinder with Sloping Top
  - C. Layout for Right-angle Intersection of Two Cylinders
  - D. Application of Parallel Line Development

- NAME:** Related Studies Curriculum – Plate Shop Operator
- TITLE:** **Mechanical Drawing**
- TEXTBOOK:** \_\_\_\_\_furnished material
- CREDITS:** 3 Semester Hours of Credit
- PREREQUISITES:** Students must be employed by \_\_\_\_\_ and be indentured in the Apprenticeship Program.
- COURSE DESCRIPTION:** This course is designed to introduce the Apprentice to the graphic language from the basics of freehand sketching to multi-view and working drawings through the utilization of the various tools of the drafting trade. Seventy-two hours of instruction.
- COURSE GOAL(S):** To introduce the student to the graphic language from the basics of freehand sketching to multi-view and working drawings, through the utilization of the various tools of the drafting trade.
- COURSE OBJECTIVES:** Upon satisfactory completion of this course the student will be able to:  
demonstrate knowledge in graphic language from:  
    A. the basics of freehand sketching  
    B. multi-view drawings  
    C. working drawings  
all through the utilization of the various tools of the drafting trade.
- CONTENT OUTLINE:**
1. Drawing 1
    - A. The Graphic Language
    - B. Freehand Sketching,
    - C. Mechanical Drawing
    - D. Lettering,
    - E. Geometry of Technical Drawing
    - F. Techniques of Applications
  
  2. Drawing 11
    - A. Dimensioning
    - B. Shop Process
    - C. Sectional Views
    - D. Auxiliary Views
    - E. Revolutions
    - F. Threads and Fasteners
    - G. Working Drawings
    - H. Development of Intersections
    - I. Pictorial Drawings

- NAME:** Related Studies Curriculum – Plate Shop Operator
- TITLE:** **Metallurgy**
- TEXTBOOK:** \_\_\_\_\_Furnished Material
- CREDITS:** 2 Semester Hours of Credit
- PREREQUISITES:** Students must be employed by \_\_\_\_\_ and be indentured in the Apprenticeship Program
- COURSE DESCRIPTION:** This course is designed to teach the production of metals and alloys. Also heat-treatment, grain structure and the testing of metals. Thirty-six hours of instruction.
- COURSE GOAL(S):** To provide the Apprentice with the information in the production of metals and alloys, heat treatment, grain structure and the testing of metals.
- COURSE OBJECTIVES:** Upon satisfactory completion of this course the student will demonstrate his/her knowledge in:
- A. the production of metals and alloys
  - B. heat-treatment and grain structure
  - C. the testing of metals
- CONTENT OUTLINE:**
1. Production of
    - A. Iron
    - B. Steel
    - C. Cast Iron
    - D. Wrought Iron
  2. Constitution Diagrams of Alloys
  3. The Iron-Iron-Carbide System
  4. Heat-Treatment of Steel
  5. Methods Of Forming Metals
  6. Grain Structure of Metals
  7. Alloy Steels
  8. Nonferrous Alloys
  9. Testing of Metals

