

## Outline for Course PHOE140

### 1 Basic Math

#### **Segment 1 - Basic Math Terms and Concepts**

- Objective 1 - Describe Math as a Language
- Objective 2 - Describe How Number Lines Are Used in Math
- Objective 3 - Describe the Parts of a Math Problem
- Objective 4 - Define Integers, Fractions, Decimals, and Variables
- Objective 5 - Describe Math Terms Associated with Addition and Subtraction
- Objective 6 - Describe Math Terms Used with Multiplication and Division
- Objective 7 - Describe Commonly Used Math Terms

#### **Segment 2 - Working with Whole Numbers**

- Objective 8 - Describe the Four Basic Operations with Integers
- Objective 9 - Describe the Order of Operations
- Objective 10 - Describe the Three Properties of Operations
- Objective 11 - Define Variables and Explain How They Are Used in Equations
- Objective 12 - Describe How to Solve for Inequalities

### 2 Fractions, Decimals, and Percentages

#### **Segment 1 - Fractions and Decimals**

- Objective 1 - Define a Fraction and Describe Its Components
- Objective 2 - Describe How to Reduce a Fraction
- Objective 3 - Explain How to Add and Subtract Fractions
- Objective 4 - Explain How to Multiply and Divide Fractions
- Objective 5 - Describe the Decimal System
- Objective 6 - Explain How to Add, Subtract, Multiply and Divide Decimals
- Objective 7 - Describe How to Estimate and Round Decimals
- Objective 8 - Describe How to Convert Decimals and Fractions

#### **Segment 2 - Percentage, Average, and Ratio**

- Objective 9 - Define Percentages and Provide Examples of Where They Are Used
- Objective 10 - Describe Three Ways to Find Percentages
- Objective 11 - Define Averages and Describe Three Types
- Objective 12 - Define Ratios and Describe How They Are Expressed

### 3 Basic Geometry

- Objective 1 - Describe Geometry and Explain Dimensions
- Objective 2 - Describe the Four Building Blocks of Geometry
- Objective 3 - Describe Endpoints, Rays, Line Segments, and Angles
- Objective 4 - Describe Polygons
- Objective 5 - Describe Solid Figures
- Objective 6 - Describe How to Measure Geometric Shapes
- Objective 7 - Describe the Cartesian Coordinate System

### 4 Trigonometry

#### **Segment 1 - Cartesian Coordinate System and Angles**

- Objective 1 - Describe the Elements of a 2-D Cartesian Coordinate System
- Objective 2 - Describe Lines
- Objective 3 - Describe the Elements of an Angle
- Objective 4 - Describe How Angles Are Measured
- Objective 5 - Describe Five Types of Angles
- Objective 6 - Describe How to Convert Angles Measured in Degrees, Minutes and Seconds to Decimal Degrees

#### **Segment 2 - Triangles and the Pythagorean Theorem**

- Objective 7 - Define Trigonometry and Triangle
- Objective 8 - Describe Four Common Types of Triangles
- Objective 9 - Describe How to Use the Pythagorean Theorem
- Objective 10 - Describe How Similar Triangles Are Used in Industry

#### **Segment 3 - Basic Trigonometry**

Objective 11 - Define Trigonometric Ratios and Explain How to Calculate Sine, Cosine, and Tangent  
Objective 12 - Define Reciprocal Ratios and Explain How to Calculate Secant, Cosecant, and Cotangent  
Objective 13 - Describe Inverse Trigonometric Functions and Explain How to Calculate Them

#### **Segment 4 - Circles and Semicircles**

Objective 14 - Describe a Circle and Its Components  
Objective 15 - Describe a Semicircle and Its Components  
Objective 16 - Describe Relationships between Circles, Angles, and Lines

#### **Segment 5 - Applications of Trigonometry in Manufacturing**

Objective 17 - Describe How to Use a Sine Plate  
Objective 18 - Describe How to Create an Angular Hole Pattern  
Objective 19 - Describe How to Create a Circular Bolt Hole Pattern  
Objective 20 - Describe How to Calculate the Center Point of a Radius

### **5 Workplace Safety**

#### **Segment 1 - The Importance of Workplace Safety**

Objective 1 - Define Workplace Safety and Explain Its Importance  
Objective 2 - Describe the Importance of Safety Policies  
Objective 3 - Results of Unsafe Behavior

#### **Segment 2 - OSHA Regulations**

Objective 4 - Describe the Occupational Safety and Health Administration and Explain Its Purpose  
Objective 5 - Describe OSHA Regulations for General Workplace Safety  
Objective 6 - Describe OSHA Regulations regarding First Aid and Fire Safety  
Objective 7 - Describe OSHA Regulations for Personal Protective Equipment  
Objective 8 - Describe OSHA Regulations regarding Material Handling  
Objective 9 - Describe OSHA Regulations for Tools and Machines  
Objective 10 - Describe the Environmental Protection Agency and Explain Its Purpose  
Objective 11 - Describe Related Safety Agencies and Explain Their Purposes

#### **Segment 3 - Practicing Safety in the Workplace**

Objective 12 - Define an Injury and Identify Common Causes  
Objective 13 - Define an Accident and Identify Common Causes  
Objective 14 - Explain How to Create a Culture of Safety in the Workplace

### **6 PPE in the Workplace**

#### **Segment 1 - Workplace PPE Requirements**

Objective 1 - Define Personal Protective Equipment  
Objective 2 - Describe an Employer's PPE Responsibilities  
Objective 3 - Identify Seven Types of Personal Protective Equipment  
Objective 4 - Describe How to Identify Hazards in the Workplace  
Objective 5 - Describe 11 Types of Hazards Found in the Workplace  
Objective 6 - Describe How to Select and Use Personal Protective Equipment

#### **Segment 2 - Head, Eye, and Ear Protection**

Objective 7 - Describe How to Use Head Protection PPE  
Objective 8 - Describe How to Use Eye Protection PPE  
Objective 9 - Describe How to Use Ear Protection PPE

#### **Segment 3 - Hand, Foot and Body Protection**

Objective 10 - Personal Protective Equipment for the Hands and Arms  
Objective 11 - Personal Protective Equipment for the Feet  
Objective 12 - Personal Protective Equipment for the Lungs  
Objective 13 - Personal Protective Equipment for the Body

### **7 Hazardous Material Communication**

#### **Segment 1 - Hazardous Materials- Definitions, Uses, and Standards**

Objective 1 - Define Hazardous Materials and Describe Two Types  
Objective 2 - Describe Chemical and Biological Hazards and Give Some Examples  
Objective 3 - Describe Chemical Health-Related and Physical Hazards  
Objective 4 - Define Hazard Communication Standards  
Objective 5 - Describe Three Levels of HAZCOM Responsibility

#### **Segment 2 - Hazardous Communication Documents**

Objective 6 - Define a Safety Data Sheet and Explain Its Use

Objective 7 - Explain the Importance of Chemical Container Labeling  
Objective 8 - Describe Two Hazardous Chemical Labeling Systems

## 8 Accident Response

### **Segment 1 - First Aid**

Objective 1 - Define First Aid and Explain Its Role  
Objective 2 - Describe Types of Bloodborne Pathogens  
Objective 3 - Describe How to Prevent Bloodborne Pathogen Exposure  
Objective 4 - Describe the Basic Guidelines of Applying First Aid  
Objective 5 - Describe How to Apply Basic First Aid Measures  
Skill 1 - Apply Basic First Aid Measures

### **Segment 2 - Accident Procedures**

Objective 6 - Describe How to Respond to a Workplace Accident  
Objective 7 - Describe How to Use an Eyewash Station  
Skill 2 - Use an Eyewash Station  
Objective 8 - Describe How to Report a Workplace Accident  
Skill 3 - Report a Workplace Accident

## 9 Lockout/Tagout

Objective 1 - Define Hazardous Energy and Describe Its Associated Dangers  
Objective 2 - Describe Lockout/Tagout and Explain Its Importance  
Objective 3 - Describe How to Use LOTO to Safeguard a Machine  
Objective 4 - Describe the Requirements of a Lockout Tagout Device  
Objective 5 - Describe the Requirements of an Energy-Control (ECP) Program