

COURSE OVERVIEW SS0599-6M-IH
Problem Solving
(E-Learning Module)

Course Title

Problem Solving (E-Learning Module)

Course Reference

SS0599-6M-IH

Course Format & Compatibility

SCORM 1.2. Compatible with IE11, MS-Edge, Google Chrome, Windows, Linux, Unix, Android, IOS, iPadOS, macOS, iPhone, iPad & HarmonyOS (Huawei)



Course Duration

30 online contact hours
(3.0 CEUs/30 PDHs)



Course Description



This E-Learning course is designed to provide participants with a detailed and up-to-date overview of Problem Solving. It covers the general problem-solving tools and traditional problem solving; the lean problem solving model and creating a team environment to solve problems; the root cause analysis and PDCA cycle; the value stream mapping (VSM), spaghetti diagrams, pareto chart, measured variations and fishbone diagram; the problem solving skills and techniques; the individual and group techniques for generating solutions and implementing the chosen solution; and the key elements for effective root cause analysis and problem solving.



During this interactive course, participants will learn the problem categories and problem solving approaches; the process mapping process, root cause analysis, control barrier analysis and 5 why analysis; the hypothesis testing, failure modes & effects analysis (FMEA) and decision making process; gathering information, developing alternative and selecting the best alternative; the managerial decision-making process and delphi technique; the statistical aggregation, brainstorming, pareto analysis and paired comparison analysis; gathering data, generating many alternatives, thinking logically and choosing and acting decisively; the mental problem-solving process used in troubleshooting; and sorting rows and columns, creating conditional formatting and using autofilter to find records.



Course Objectives

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

- Apply and gain a good working knowledge on problem solving
- Identify general problem-solving tools, traditional problem solving and common issues in construction
- Illustrate lean problem solving model and create a team environment to solve problems
- Conduct a brainstorming exercise, define the problem and apply root cause analysis and PDCA cycle
- Describe value stream mapping (VSM), spaghetti diagrams, pareto chart, measured variations and fishbone diagram
- Create problem statements and apply problem solving skills and techniques for recognizing problems
- Carryout individual and group techniques for generating solutions and implement the chosen solution
- Identify the key elements for effective root cause analysis and problem solving including problem categories and problem solving approaches
- Illustrate process mapping process, root cause analysis, control barrier analysis and 5 why analysis
- Apply hypothesis testing, failure modes & effects analysis (FMEA) and decision making process
- Gather information, develop alternative and select the best alternative
- Develop a plan for implementation, monitor progress and apply managerial decision-making process
- Carryout delphi technique, statistical aggregation, brainstorming, pareto analysis and paired comparison analysis
- Gather data carefully, generate many alternatives, think logically and choose and act decisively
- Apply mental problem-solving process used in troubleshooting
- Sort rows and columns, create conditional formatting and use autofilter to find records

Who Should Attend

This course provides an overview of all significant aspects and considerations of problem solving for professionals in business and management, engineers, technical professionals, entrepreneurs, startup founders, consultants, advisors, researchers, academics, healthcare professionals, trainers and those who are in customer service.

Course Fee


As per proposal

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations


Certificates are accredited by the following international accreditation organizations: -

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The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units (CEUs)** in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

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British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

Training Methodology

This Trainee-centered course includes the following training methodologies:-

- Talking presentation Slides (ppt with audio)
- Simulation & Animation
- Exercises
- Videos
- Case Studies
- Gamification (learning through games)
- Quizzes, Pre-test & Post-test

Every section/module of the course ends up with a Quiz which must be passed by the trainee in order to move to the next section/module. A Post-test at the end of the course must be passed in order to get the online accredited certificate.

Course Contents

- Effective Problem-Solving
- Pre-Assessment
- Ground Rules
- What do you Already know?
- General Problem-Solving Tools
- Tool # 1: Problem Appreciation
- Tool # 2: 5 Whys
- Tool # 3: Drill Down
- Tool # 4: Cause & Effect Diagrams
- Tool # 5: Brainstorming
- Tool # 6: Mind Mapping
- Practice
- Problem-Solving Tools – Discussion
- Summary
- Course Review
- Post-Assessment
- Problem-Solving Principles and Tools
- Session 1 Learning Objectives
- Traditional Problem Solving (Ready, Fire & Aim)
- Current Situation: Trial and Error Problem Solving
- Examples of Traditional Problem Solving/Issues on Your Job
- Common Issues in Construction

- Lean Problem Solving Model
- Merits of Team Versus Individual Problem Solving
- Using Trust
- Trust
- Create a Team Environment to Solve Problems
- 8 Wastes of Lean Manufacturing
- Discussion
- Taking an Observation Walk
- Observation Walk
- Brainstorming
- Hints on Conducting a Brainstorming Exercise
- Brainstorming Causes
- How Did It Work?
- Session 1 Summary
- Session 2 Learning Objectives
- Problems
- Define the Problem
- Root Cause Analysis: 5 Whys
- One Possible Explanation
- 5 Whys Root Cause Analysis
- First Run Studies: Plan – Do – Check – Act
- Plan – Do – C – A
- Plan – Do – Check – A
- Plan – Do – Check – Act
- Debrief
- PDCA in Practice
- Session 2 Summary
- Session 3 Learning Objectives
- Value Stream Mapping (VSM)
- Spaghetti Diagrams
- Revised Placement and Flow
- Pareto Chart
- Measured Variations
- Fishbone Diagram

- Fishbone (Cause & Effect) Diagram
- A3 Overview
- What is A3?
- What Makes a Good A3 Good?
- A3 Process
- Creating Problem Statements
- A3 Thinking Steps
- No -Hub Installation & Testing Procedures 2010 (2009)
- Example A3s
- A3 Detail
- Participants Complete
- Presentation of an A3: Solving Your Problem
- Session 3 Summary
- Problem Solving Skills
- Problem-Solving Steps
- Techniques for Recognizing Problems
- Identify the Problem: Ask Who?
- Identify the Problem: Ask What?
- Identify the Problem: Ask When?
- Identify the Problem: Ask Where?
- Identify the Problem: Ask Why?
- Identify the Problem: Ask How?
- Problem Identification: Final Questions
- Techniques for Identifying the Problem
- Problem Statement
- Individual Techniques for Generating Solutions
- Advantages of Using a Group
- Limitations of Using a Group
- Group Techniques for Generating Solutions
- Choosing Among Alternative Solutions
- Implement the Chosen Solution
- Creativity Problem Solving
- Problem Solving
- What is Creative Problem Solving Approach

- What is Creative Problem Solving Process
- Key Elements for Effective Root Cause Analysis & Problem Solving
- Visual Definition of Problem
- Where do “gaps” arise?
- Communication of Problems
- CREI Problem Statement
- Concern
- Requirement
- Evidence
- Impact
- Utilizing CREI Format
- Problem Categories and Problem Solving Approaches
- Types of Problems
- “Just Do It” Issues
- Troubleshooting
- “Dig Deeper” Issues
- Steps in Disciplined Problem Solving
- Problem Type Considerations
- A Note about Fire-fighting!
- Problem Type Considerations
- Prioritize Problems
- Process View of Problems
- The Secret to Solving Problems
- Components of Process
- What are the Process Factors?
- Process View
- Main Functions of Problem Solving
- Getting to the Process of Origin
- Process Mapping Process
- Is/Is Not Analysis
- Use Data to determine
- Applying Is/Is Not Analysis
- Components of Problem’s Operational Definition
- A Root Cause

- 4 Levels of Root Cause
- Problem Solving Goals
- Root Cause Analysis
- Process Cause vs. System Cause
- Process Root Cause Analysis
- System Root Cause Analysis
- Root Cause Analysis Levels
- Control Barrier Analysis (Defect/Detection Root Cause)
- Control Barrier Analysis Worksheet
- Results of Control Barrier Analysis
- Direct Process Cause
- Cause & Effect Diagram
- Fishbone Diagram
- Fishbone Process
- Direct Process Root Cause Investigation Plan & Results
- Problem Understanding Tools
- Task Analysis Worksheet
- Change Analysis Worksheet
- Actual Root Cause
- 5 Why Analysis
- Test Potential Root Causes
- Hypothesis Testing
- Root Cause Analysis Plan
- System Causes
- System Cause Analysis Worksheet
- 3 Possible Solutions
- Solution Selection
- Implementing Solutions
- Plan, Implement & Verify Solutions
- Other Opportunities
- A Key Outcome of Every Problem Solving/Root Cause Investigation.
- Failure Modes & Effects Analysis (FMEA) – A Tool for Cataloging Problems
- Management's Role
- Problem Solving Culture

- Comments on Effective Problem Solving Culture
- Problem Solving Survey-Short Version
- Decision making & problem solving
- Decision Making
- Decision Making situation
- What is the Difference between Decision Making and Decision Taking?
- Decision taking
- Problem Solving
- Relationship between Decision Making and Problem Solving
- Types of Decisions
- Levels of Decisions
- Factors Affecting Decision Making
- Decision Making Process
- Defining The Problem
- Gather Information
- Develop Alternatives
- Weigh Alternatives
- Select the Best Alternative
- Techniques In Weighing Alternatives
- Thomas Saaty's Analytical Hierarchy Matrix
- SFF Matrix: Suitability, Feasibility & Flexibility
- Implement The Solution
- Develop a Plan for Implementation
- Monitor Progress
- How to Improve Decision Making
- Traditional Problem-Solving Process
- The Managerial Decision-Making Process
- Intuitive Decision-Making Model
- MORAL & Murphy Models of Decision Making
- Ethical Decision Making Model
- Decision Making Techniques
- Group Decision Making
- Nominal Group Technique (NGT)
- Delphi Technique

- Statistical Aggregation
- Brainstorming
- Fishbone Diagram (Causes And Effect)
- Thomas Saaty's Analytical Hierarchy Matrix
- Pareto Analysis
- Paired Comparison Analysis
- PMI ('Plus/Minus/Implications') Weighing the Pros and Cons of a Decision
- Six Thinking Hats
- Decision Grid
- Problem Solving Methods
- Steps in Problem Solving
- Critical Elements in Problem Solving and Decision Making
- Define Objectives Clearly
- Gather Data Carefully
- Generate Many Alternatives
- Think Logically
- Choose and Act Decisively
- Individual Variations in Decision Making
- Values
- Life Experience
- Individual Preference
- Individual Ways of Thinking and Decision Making
- Overcoming Individual Vulnerability in Decision Making
- Values
- Life experience
- Individual Preference
- Individual ways of Thinking
- Decision Making in Organizations
- Effect Of Organizational Power on Decision Making
- Rational And Administrative Decision Making
- Comparing The Economic Man with the Administrative Man
- Summary
- The Mental Problem-Solving Process Used in Troubleshooting
- Problem Solving

- Considerations When Applying the Strategy to Solve Troubleshooting Problems
- Problem-Solving Processes Used by Skilled Troubleshooters
- Data Collection and Analysis: Approaches Used to Test Hypotheses
- Getting Organized: The Use of A Troubleshooter's Worksheet
- Initial Information
- The Stated Problem
- Troubleshooter's Worksheet
- Engage
- Define The Stated Problem
- Explore
- Plan
- Do It
- Look Back
- Feedback About Your Troubleshooting
- Example Use of The Troubleshooter's Worksheet
- Problem Solving
- Summary
- Course Recap
- Problem Solving Using Excel
- Introduction
- Lists
- Sorting Rows and Columns
- Creating Conditional Formatting
- Using Autofilter to Find Records
- Creating a Custom autofilter
- Analyzing A List with The Subtotals Command
- Pivottables
- Pivottable Terminology
- Using the Pivottable Feature
- Modifying a Pivottable View
- Pivottable Tools
- Building a Pivot Chart