

**COURSE OVERVIEW PE0387**  
**Process Lean/Optimization**  
**(E-Learning Module)**

**Course Title**

Process Lean/Optimization  
 (E-Learning Module)

**Course Reference**

PE0387

**Course Format & Compatibility**

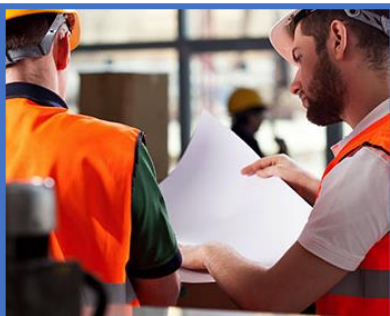
SCORM 1.2. Compatible with IE11, MS-Edge, Google Chrome, Windows, Linux, Unix, Android, IOS, iPadOS, macOS, iPhone, iPad & HarmonyOS (Huawei)

**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 process lean/optimization. It covers the lean manufacturing tools, the 8 lean tools and the 5 principles of lean manufacturing; the lean manufacturing PPT and lean techniques in manufacturing; the FMEA as lean tool; the ideas of lean and improvement of service quality; the value stream mapping and VSM commonly used symbols; the current and future state value stream map; the lean process improvement techniques, floor layout analysis and process map and processing time value analysis; and the benefits Toyota production system (TPS).

During this course, participants will learn the types of waste, lean and traditional manufacturing; the barriers to lean, implementation of lean and progress toward lean; the 5 elements of 5S, elimination of waste and waste identification; the typical steps to complete a current state drawing and typical results; the implementation of change and the wrong ways to address roadblocks; the difficulties with human error; the seven guidelines to Poka Yoke attainment and the Poka Yoke systems that govern the process; and the methods for using Poka Yoke, contact methods, counting method and motion-sequence method.

### **Course Objectives**

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

- Apply and gain an in-depth knowledge on process lean/optimization
- Identify the lean manufacturing tools, the 8 lean tools and the 5 principles of lean manufacturing
- Discuss lean manufacturing PPT and apply lean techniques in manufacturing
- Describe FMEA as lean tool and ideas of lean as well as improve service quality
- Employ value stream mapping and recognize VSM commonly used symbols
- Review current and future state value stream map
- Apply lean process improvement techniques, floor layout analysis and process map and processing time value analysis
- Describe benefits Toyota production system (TPS), types of waste, lean and traditional manufacturing
- Identify the barriers to lean and implement lean including progress toward lean
- Discuss the 5 elements of 5S and employ elimination of waste and waste identification
- Brainstorm, analyze, implement, plan, execute, check and sustain
- Carryout the typical steps to complete a current state drawing as well as review typical results
- Implement change and determine the wrong ways to address roadblocks
- Explain the difficulties with human error and why existing tools are not enough
- Discuss the seven guidelines to Poka Yoke attainment including the Poka Yoke systems that govern the process
- Apply methods for using Poka Yoke, contact methods, counting method and motion-sequence method

### **Who Should Attend**

This course covers systematic techniques on process lean/optimization for managers, leaders, section heads, superintendents, supervisors, process engineers, production engineers, plant engineers and planning engineers.

### **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 Certificate(s)**

Internationally recognized certificates will be issued to all participants of the course.

**Certificate Accreditations**

Certificates are accredited by the following international accreditation organizations: -


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USA International Association for Continuing Education and Training (IACET)

Howard Technology is an Authorized Training Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Howard Technology has demonstrated that it complies with the **ANSI/IACET 1-2013 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Howard Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 1-2013 Standard**.

Howard 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 Association 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.

Howard 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 Howard Technology programs. A permanent record of a participant’s involvement and awarding of CEU will be maintained by Howard Technology. Howard 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)

Howard 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, Howard Technology meets all of the international higher education criteria and standards set by BAC.

**Course Fee**

As per proposal



## Course Contents

- Process Lean/Optimization
- What are the Lean Manufacturing Tools?
- What are the 8 Lean Tools?
- What are the 5 Principles of Lean Manufacturing?
- What is Lean Manufacturing PPT?
- What are Lean Techniques in Manufacturing?
- FMEA as Lean Tool
- Ideas of Lean
- Improving Service Quality
- Value Stream Mapping
- VSM Commonly Used Symbols
- Value Stream Mapping Method
- Current-State Value Stream Map
- Future-State Value Stream Map
- Whose Perspective do we Capture in VSM?
- Lean Process Improvement Techniques
- Workplace 5S
- 7 Process Wastes (TIMWOOD)
- Floor Layout Analysis (Spaghetti Diagram)
- Capacity and Queuing
- Process Map & Processing Time Value Analysis
- Quiz
- Process Lean/Optimization
- Lean Manufacturing Overview
- Lean Manufacturing
- Definitions
- Value
- Waste
- What is Lean?
- Thinking Lean

- Benefits
- Toyota Production System (TPS)
- Types of Waste
- Lean vs. Traditional Manufacturing
- Barriers to Lean
- Implementing Lean
- Progress Toward Lean
- Lean Is A Journey
- 5S & Visual Control
- 5 Elements of 5S
- Why 5S?
- Types of Waste
- Waste Elimination
- Waste Identification
- After 5S
- Workplace Observation
- Sort
- Straighten
- Shine
- Standardize
- Sustain
- Visual Factory Implementation
- Kaizen
- What is Kaizen?
- How to Kaizen
- Identify the Customer
- Types of Waste
- Identify the Current State
- Brainstorm and Analyze
- Implementation Plan
- Execute
- Check and Sustain
- Kaizen Blitz

- Roadblocks
- Value Streams
- What Are Value Streams?
- Types of Value Streams
- Identifying the Value Stream
- Value Stream Mapping
- The Current State - Typical Steps to Complete a Current State Drawing
- Typical Results
- The Future State
- Implementing Change
- Wrong Ways to Address Roadblocks
- Pull Manufacturing
- Why Pull Manufacturing?
- Push Vs. Pull Scheduling
- Inventory Hides Problems
- Lowering Inventory Reveals Problems
- What is Just-in-Time?
- Objective of JIT
- JIT Principles
- Quality enables JIT
- How to accomplish JIT production
- Kanban
- Kanban Squares
- Kanban Card
- Quality at the Source
- One Piece Flow
- Continuous Flow
- Pull Production
- Pull System
- Standardized Work
- Work Balancing / TAKT Time
- Production Smoothing / Leveling
- Wrap-up - Pull Manufacturing

- Mistake Proofing - (Poka Yoke and Error Proofing)
- What is Mistake Proofing?
- Everyday Examples
- Evidence of the Effectiveness
- Mistake Proofing ROI
- 1-10-100 Rule
- The difficulties with human error - Why existing tools are not enough
- Error proofing & SPC
- “Be more careful” not effective
- What Causes Defects?
- Inspection techniques
- Poka yoke
- Quiz
- Process Lean/Optimization
- Seven Guidelines to Poka Yoke Attainment
- Poka Yoke Systems Govern the Process
- Common Mistake proofing Devices
- Methods for Using Poka yoke
- Contact Methods
- Counting Method
- Motion-Sequence Method
- Types of Sensing Devices
- 3 Rules of Poka Yoke
- Quick Changeover Single Minute Exchange of Dies
- Changeover Defined
- Changeover Time Defined
- Traditional approach
- Another way
- Benefits of setup reduction
- Classification of setup activities
- What is SMED?
- Single Minute Exchange of Dies
- Why SMED?

- SMED Methodology
- The SMED Process
- Preliminary Stage
- Observed and Record
- Separate internal and external activities
- Convert internal to external
- Streamline all activities
- Document the procedures
- The SMED System – Results
- Six Sigma
- What is Six Sigma?
- Why Companies Need Six Sigma
- How good is good enough?
- Six Sigma as a Metric
- 3 Sigma Vs. 6 Sigma
- Six Sigma ROI
- Six Sigma as a Philosophy
- Six Sigma Tools
- Problem Solving Methodology
- Define Phase
- Measure – Characterize Process
- Measure Phase
- Evaluate – Understand Process
- Evaluate / Analysis Phase
- Improve – Improve and Verify Process
- Improvement Phase
- Design of Experiments (DOE)
- Control – Maintain New Process
- Control Phase
- What is Design for Six Sigma (DFSS)?
- DFSS Methodology & Tools
- Green Belts & Black Belts
- Activity Based Costing and Lean Accounting



- What is Cost Accounting?
- Traditional Cost Systems
- Overhead Costs
- Activity-Based Costing
- Unit Costs under ABC
- Benefits of Activity-Based Costing
- Benefits of ABC
- Limitations of ABC
- When to Use ABC
- Activity-Based Management
- Lean Accounting
- Lean Accounting – The Lean Transition
- Lean Accounting – Management Accounting
- Lean Accounting – Business Management
- Lean Accounting – Operational Accounting
- Lean Accounting – Financial Accounting
- Theory of Constraints
- Constraints
- Significance of Bottlenecks
- Theory of Constraints
- Drum
- Buffer
- Ropes
- What is the Theory of Constraints?
- How does TOC help companies?
- Five Steps Of TOC
- Theory of Constraints
- Steps in the TOC Process
- Lean: How DBR Supports it
- Why Drum Buffer Rope?
- Issues with TOC
- Measurements
- Traditional vs JIT, TQM and TOC

- The “Cost World”
- The “Throughput World”
- Financial Issues
- Conclusion
- Human Factors
- Ergonomics
- What is ergonomics?
- What makes an effective program?
- Causes & contributing factors
- Hazard prevention & control
- Ergonomic modification process
- Work practice controls
- Work at working safely
- Knowledge Management
- Why Knowledge Management?
- Barriers to Knowledge Management Success
- Summary
- Rewards & Recognition
- Develop a rewards and recognition strategy
- Review your formal awards
- Align your informal awards
- Determine the reinforcing day-to-day managerial behaviors
- Align other management systems
- Establish a feedback system
- Market the program
- Safety & Health
- Cost of Accidents
- Legal Issues and Liability
- Accident Causes
- Establishing Accountability
- Defining Responsibilities
- Effective Teams
- Your Organization Can Benefit from Teams

- The Importance of Creating High Performance Teams
- The Five Stages of Team Development
- Conducting Effective Meetings
- Quiz
- An Introduction to Lean Six Sigma ( $6\sigma$ )
- History of Quality in Higher Education
- The World We Live In
- What is Six Sigma ( $6\sigma$ )?
- Six Sigma Concept
- What's Wrong With 99% Quality?
- Why Use Sigma as a Metric?
- Limitations of Average-Based Metrics
- Where Did  $6\sigma$  Come From?
- Isn't  $6\sigma$  Just for Manufacturing?
- Six Sigma ( $6\sigma$ ) in Academia
- Six Sigma ( $6\sigma$ ) Methodologies
- DMAIC Methodology
- Six Sigma Toolbox
- Project Focus
- Different Views of the Organization
- So, What is Lean?
- Where Did Lean Come From?
- Core Ideas of Lean
- Seven Speed Bumps of Lean
- The Antidote to Waste: The 5 S's
- Synergy of Lean and Six Sigma
- The Birth of "Lean Six Sigma"
- Pareto Chart in Residence Halls
- Using Pareto and Trend Analysis
- Control Chart for Hot Water in Residence Hall
- Improve
- Control
- Money

- Regression Analysis
- Reference Our Master Improvement Story
- DMAIC: Define the Project
- DMAIC: Measure the Current Situation
- DMAIC: Analyze to Identify Causes
- DMAIC: Improve
- To Recapitulate Six Sigma
- Define
- Measure
- Analyze
- Improve
- Control
- Quiz
- Lean Manufacturing
- Lean and Just-in-Time
- What is Waste?
- Seven Wastes
- Origins
- Underlying Principles to TPS
- Toyota Production System
- Timeline
- Key Lean Manufacturing Techniques
- 5S
- Benefits of 5S
- 5S Drawbacks
- Single Minute Exchange of Dies (SMED)
- SMED and Lean
- Simple CNC Example
- Changeover Time
- SMED Examples
- Benefits of SMED
- Benefits of Kanban
- Cellular Manufacturing

- Cellular Manufacturing Example
- Benefits of Cellular Manufacturing
- Lean Manufacturing Advantages and Disadvantages
- People
- How People Benefit from Lean
- How Customer's Benefit from Lean
- House of Lean
- Economics
- Changes in Lean since the beginning
- Inventory Comparison
- Quality Control
- Lean Maintenance
- A Simultaneous Approach
- 6 Tools for Lean Maintenance
- Lean Philosophies Linked to Maintenance
- Other impacts of Lean
- Problems
- Results
- Quiz

