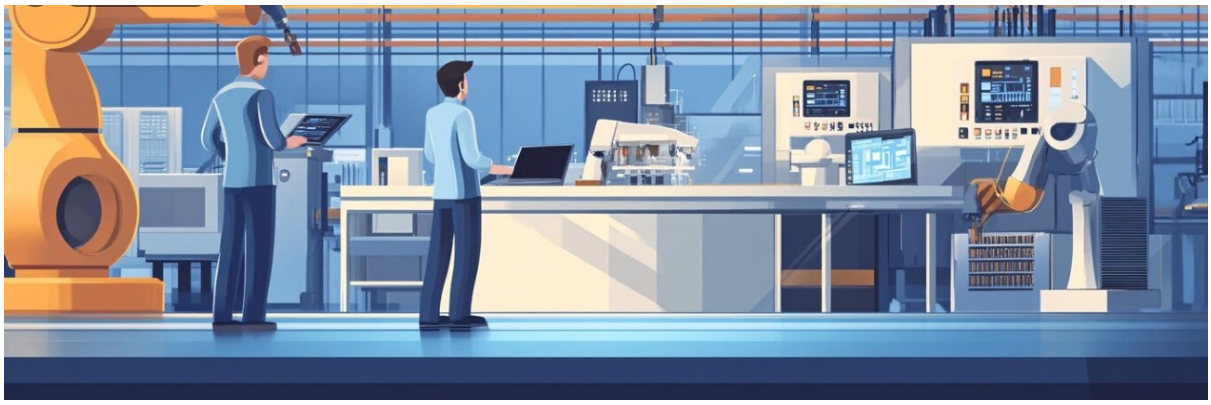

PFMEA TRAINING FOR SEMICONDUCTOR TESTING MACHINE PROCESS

Professional Certificate in PFMEA for Semiconductor Testing Machine Processes

Course Code: M049/25

Duration: 3 Days

Delivery Format: Hybrid

Target Audience:

Anyone trying to identify and reduce risk: Process managers and engineers, or personnel in the fields of manufacturing, quality assurance, reliability research, development, and safety engineering.

Program Outcomes:

Upon completion of this program, participants will be able to:

- Understand the fundamental concepts and importance of PFMEA in process development.
- Apply the PFMEA process, including planning, analysis, and action phases.
- Identify potential failure modes in a process using various techniques.
- Analyze the effects of failure on product functionality and reliability.
- Assess failure severity, occurrence, and detection, and calculate the Risk Priority Number (RPN).
- Develop and prioritize risk mitigation strategies for high-risk failure modes.

Detailed Syllabus

Module 1: Introduction to PFMEA

Outcome: Participants will understand the fundamental concepts of PFMEA, its importance in preventing process failures and ensuring customer satisfaction, and its evolution.

Topics:

- Definition and Importance of PFMEA in Process Development
- Overview of key concepts: Failure Modes, Effects, and Analysis
- Historical Context and Evolution of PFMEA Methodology

Activities:

- Lectures and discussions on the definition and benefits of PFMEA.
- Case studies illustrating the impact of PFMEA on product/process development.

Assessments:

- Quiz on basic PFMEA concepts and terminology.

Module 2: PFMEA Process Overview

Outcome: Participants will understand the different phases of the PFMEA process, and the roles and responsibilities of team members involved. They will also be able to define the objectives and scope of a PFMEA project.

Topics:

- Phases of the PFMEA Process: Planning, Analysis, and Action
- Roles and Responsibilities of PFMEA Team Members
- Establishing Objectives and Scope for PFMEA Projects

Activities:

- Detailed explanation of the PFMEA process phases.
- Interactive sessions defining team roles and responsibilities.

Assessments:

- Matching exercise on PFMEA phases and their key activities.
- Developing a basic scope and objective statement for a PFMEA project.

Module 3: Identifying Failure Modes

Outcome: Participants will be equipped with techniques to systematically identify potential failure modes in a process and learn how to document and classify them effectively.

Topics:

- Techniques for Identifying Potential Failure Modes in Process
- Understanding the root causes and mechanisms of failure
- Documentation and Classification of Failure Modes

Activities:

- Brainstorming sessions to identify potential failure modes for a given process.
- Guidance on using checklists and historical data in failure mode identification.

Assessments:

- Identifying potential failure modes for a provided process scenario.
- Classifying identified failure modes using a defined system.

Module 4: Assessing Failure Effects

Outcome: Participants will learn how to analyze the effects of potential failures, assess their severity, determine occurrence and detection ratings, and calculate the Risk Priority Number (RPN).

Topics:

- Analyzing the Effects of Failure on Process Performance and Functionality
- Evaluating Severity, Occurrence and Detection Ratings
- Prioritizing Failure Modes Based on Risk Priority Numbers (RPNs)

Activities:

- Exercises in analyzing failure effects on product functionality and reliability.
- Applying severity assessment criteria to different failure modes.

Assessments:

- Assigning severity, occurrence, and detection ratings and calculating RPNs for given failure modes.

Module 5: Risk Mitigation Strategies

Outcome: Participants will be able to develop, prioritize, implement, and evaluate the effectiveness of risk mitigation strategies for high-risk failure modes.

Topics:

- Developing Action Plans to Address High-Risk Failure Modes
- Process establishment and Implementing Risk Mitigation Strategies
- Evaluating the Effectiveness of Risk Controls

Activities:

- Brainstorming mitigation actions for identified high-risk failure modes.
- Applying prioritization techniques to select the most effective strategies.

Assessments:

- Proposing mitigation actions for high-RPN failure modes.
- Prioritizing mitigation strategies based on given criteria.

Module 6: Integrating PFMEA with Processes

Outcome: Participants will understand how to integrate PFMEA into the process development lifecycle, ensure effective communication within PFMEA teams, and adhere to documentation and reporting requirements.

Topics:

- Embedding PFMEA into the Process Development Lifecycle
- Collaboration and Communication with Cross-Functional Teams
- Documentation and Reporting Requirements for PFMEA Activities

Activities:

- Discussions on integrating PFMEA at different stages of process development.
- Developing communication plans for PFMEA teams.

Assessments:

- Identifying key integration points for PFMEA in a process development lifecycle.
- Outlining a communication plan for a PFMEA team.

Module 7: Case Studies and Practical Exercises

Outcome: Participants will be able to apply PFMEA principles and techniques through the analysis of real-world examples and practical exercises. They will also benefit from knowledge sharing and group discussions.

Topics:

- Analysis of Real-World PFMEA Examples and Success Stories
- Hands-on Exercises: Conducting PFMEA for Process Layout and Manufacturing Process
- Group Discussions and Knowledge Sharing on Best Practices

Activities:

- Group exercises applying PFMEA to specific process scenarios (e.g., layout, manufacturing).
- Facilitated discussions and knowledge sharing among participants.

Assessments:

- Applying PFMEA steps to a provided case study.
- Participation in group discussions and problem-solving exercises.

Module 8: Review and Next Steps

Outcome: Participants will consolidate their learning, develop a personal action plan for applying PFMEA, and provide feedback on the course.

Topics:

- Recap of Key Learnings and Takeaways from the Course
- Action Planning: Applying PFMEA Principles in Participants' Work Environments
- Feedback Collection and Course Evaluation

Activities:

- Summarizing key concepts and action items.
- Individual work on developing a personal action plan.