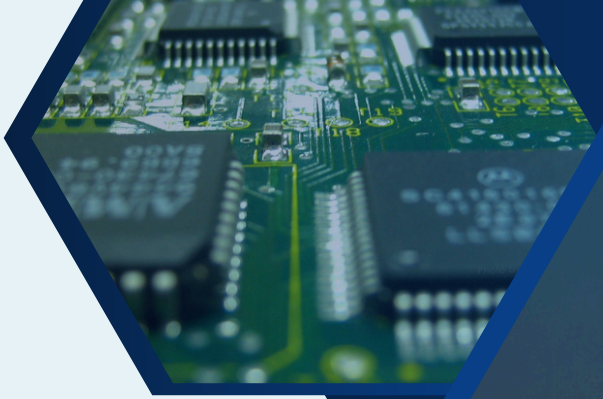
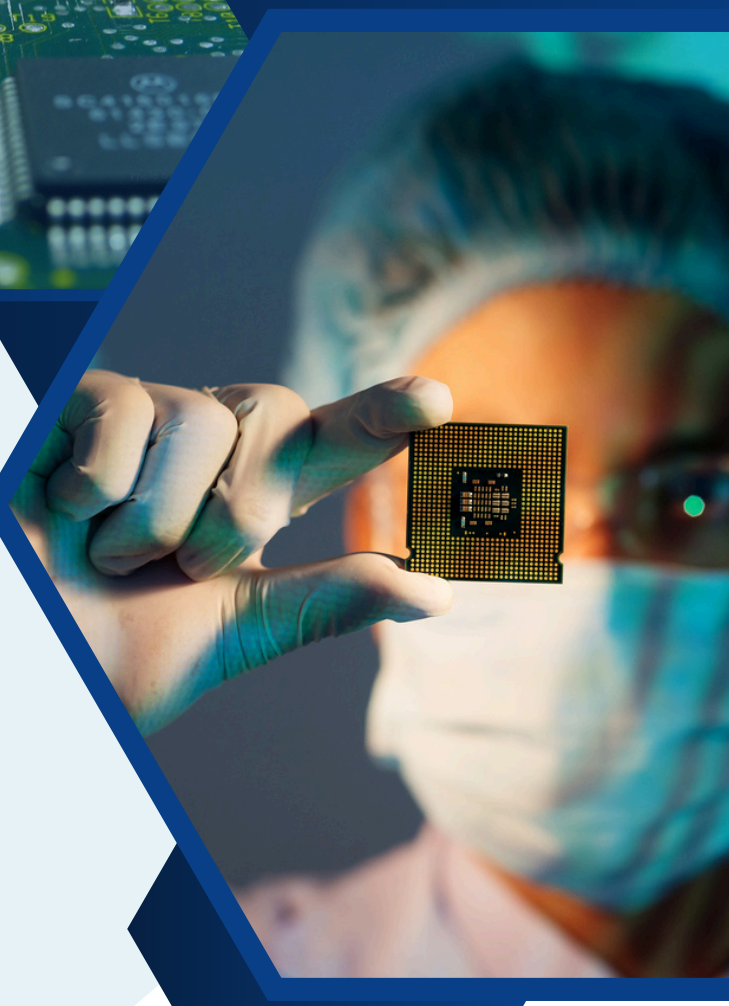
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SEMICONDUCTOR FABRICATION FOR ASSEMBLY & PRODUCT/TEST ENGINEERS



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Semiconductor Fabrication for Assembly & Product/Test Engineers

• Program Overview

This advanced training course is designed specifically for assembly and product engineers working in semiconductor assembly and test houses. The course provides an in-depth understanding of semiconductor wafer fabrication processes and their impact on final chip functionality, reliability, and parametric performance. Special emphasis is placed on wafer defects, yield loss mechanisms, failure analysis, and defect-related assembly challenges.

The course includes video tutorials demonstrating key fabrication and analysis techniques to enhance learning

• Learning Objectives

By the end of the course, participants will be able to:

1. Understand key wafer fabrication processes and their impact on chip electrical performance.
2. Identify and classify wafer fabrication defects and their effect on final product yield.
3. Correlate wafer-level defects to electrical parametric shifts and functional failures.
4. Analyze defect types that contribute to assembly and test issues.
5. Apply knowledge of semiconductor process variations in root cause analysis (RCA) of failures.
6. Develop strategies to improve yield and reliability in the assembly and test process and enhanced collaboration between wafer foundry to assembly test site.

• Duration Two(2) Full-Day Workshop;

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Semiconductor Fabrication for Assembly & Product/Test Engineers

• Training Approach

- Lecture-Based Learning: Each module is delivered through detailed explanations and case studies.
- Video Tutorials for Practical Insights: Key semiconductor processes and failure analysis techniques are demonstrated through high-quality video content.
- Case Studies from the Semiconductor Industry: Real-world yield issues are analyzed and discussed.
- Interactive Q&A & Problem-Solving Sessions: Participants will engage in discussions on defect correlation and assembly challenges.

This two-day training equips assembly and product engineers with a strong understanding of wafer fabrication defects, their electrical impact, and practical strategies to improve overall product yield and reliability in assembly and test processes.

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Semiconductor Fabrication for Assembly & Product/Test Engineers

• Course Schedule (Day 1)

DAY/TIME	Topic	Outcome
30 Minutes	**Introduction**	
1 Hour 30 Minutes	**Module 1: Overview of Semiconductor Manufacturing Process** • Semiconductor industry overview • Key process flow from wafer start to final chip testing • Importance of defect management in high-volume manufacturing	Gain a comprehensive understanding of the semiconductor manufacturing process, key process flows, and defect management in high-volume production.
1 Hour 30 Minutes	**Module 2: Wafer Fabrication Processes & Their Electrical Impact** • Lithography, deposition, etching, and doping processes • Impact of process variation on device performance • Electrical parameter shifts due to fabrication inconsistencies • **Video Tutorial: Overview of Semiconductor Wafer Fabrication**	Learn about lithography, deposition, etching, and doping processes, and analyze their impact on device electrical performance and process variations
1 Hour	**Lunch**	
	Continued on Next Page	

Semiconductor Fabrication for Assembly & Product/Test Engineers

• Course Schedule (Day 1 Continued)

DAY/TIME	Topic	Outcome
30 Minutes	**Introduction**	
2 Hours	**Module 3: Common Wafer Defects & Their Effects on Device Performance** • Defect classification: Particle contamination, scratches, voids, dislocations • Electrical implications of defects: leakage, threshold shifts, mobility degradation • Process-induced defects (CMP scratches, metal voids, gate oxide breakdown) • **Video Tutorial: Wafer Defect Inspection & Classification**	Identify and classify common wafer defects, understand their electrical implications, and learn strategies to mitigate process-induced defects.
2 Hours	**Module 4: Defect Inspection & Yield Analysis Techniques** • Defect detection methods: Optical, SEM, EDX, AFM, FIB analysis • Yield mapping and wafer sort correlation analysis • Statistical process control (SPC) and defect Pareto analysis • Video Tutorial: Semiconductor Yield Analysis Techniques	Master defect inspection and yield analysis techniques, including SPC, Pareto analysis, and optical/SEM-based detection methodologies.
	Recap & End Session	

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Semiconductor Fabrication for Assembly & Product/Test Engineers

• Course Schedule (Day 2)

DAY/TIME	Topic	Outcome
30 Minutes	**Introduction**	
1 Hour 30 Minutes	**Module 5: Correlation of Wafer Defects to Assembly & Test Failures** • Defects leading to delamination, bond pad contamination, and poor adhesion • Correlation between wafer-level defects and final test parametric failures • Case studies on yield degradation due to upstream fabrication defects • Video Tutorial: How Wafer Defects Impact Assembly & Test	Analyze how wafer defects impact assembly and test failures, and explore real-world case studies on yield degradation due to upstream fabrication issues.
1 Hour 30 Minutes	**Module 6: Failure Analysis (FA) Techniques for Assembly Engineers** • Failure modes due to wafer process deviations (die cracks, ESD, leakage) • Techniques in electrical failure analysis (curve tracing, TDR, lock-in thermography) • Physical failure analysis (X-ray, CSAM, TEM, decapsulation methods) • Video Tutorial: Semiconductor Failure Analysis Methods	Develop skills in electrical and physical failure analysis techniques, including curve tracing, lock-in thermography, and decapsulation
1 Hour	**Lunch**	
	Continued on Next Page	

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Semiconductor Fabrication for Assembly & Product/Test Engineers

• Course Schedule (Day 2 Continued)

DAY/TIME	Topic	Outcome
30 Minutes	**Introduction**	
2 Hours	**Module 7: Test Parametric Failures & Process Variation Impact** • Common test failures: Leakage, functional failures, speed binning issues • Impact of wafer fabrication process variations on electrical test performance • Strategies for test program optimization to account for process shifts • **Video Tutorial: Electrical Test Failures & Semiconductor Process Variability**	Learn how process variations in wafer fabrication affect electrical test performance and explore strategies to optimize test programs for defect detection.
2 Hours	**Module 8: Case Studies & Industry Best Practices** • Real-world case studies on yield loss due to wafer fabrication defects • Strategies for collaboration between foundry, assembly, and test teams • Open discussion and Q&A on defect mitigation and failure analysis.	Apply industry best practices and case study insights to improve collaboration between foundry, assembly, and test teams for defect mitigation.
	Recap & End Session	

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ABOUT ELITE INDIGO

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