

## Semiconductor Processing Fundamentals

### Who should attend?

This course is designed for those individuals in the semiconductor industry who require a fundamental knowledge of the semiconductor fabrication process.

### Course Benefits

Provide technical foundation necessary to work effectively with semiconductor equipment.

Provide understanding of function, operation, and basic process application for semiconductor equipment.

### Course Objective Summary

- Explain the difference between insulators, conductors, and semiconductors
- State the different crystal orientations for silicon, and relate them to IC manufacturing
- State the purpose for doping semiconductor materials
- Explain the difference between n-type and p-type semiconductor materials
- Describe the wafer ingot manufacturing processes
- Identify the elements and describe the operation of the bipolar transistor and describe the difference between an NPN and a PNP transistor
- Identify the elements of a MOS FET and describe the operation of an N-Channel and P-Channel MOS FET
- Describe the difference between discrete components and integrated circuits and identify common IC types

- Explain the difference between volatile and nonvolatile memory devices and their applications, identify major types of logic devices, and list the categories of analog ICs
- List the basic wafer fabrication processes, the manufacturing equipment associated with each process, and describe each of the seven processes
- Explain the difference between Front End of Line (FEOL) and Back End of Line (BEOL) manufacturing
- List the process steps and identify the purpose for each of the FEOL and BEOL manufacturing process steps
- List the considerations for selecting the package type and list the six types of packages
- Identify the three parts of an IC package and describe the packaging process
- State Moore's Law, explain how it describes the development of semiconductor manufacturing equipment, and describe the historical trends in IC applications

### Course Modules

1. *Overview*
2. *Solid State Devices*
3. *Basic Fabrication Processes*
4. *IC Manufacturing: Front End of Line*
5. *IC Manufacturing: Back End of Line*
6. *IC Manufacturing: Packaging*
7. *Trends in Semiconductor Manufacturing*

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### Registration Information

**Prerequisites:** *None*  
**Course Length:** *4 hours*  
**Course Type:** *Web-based Training*  
**Course Number:** *TRNWEB-41*

To enroll or for more information on our products and services, please call our registrar at one of the numbers below or go to [www.appliedtraining.com](http://www.appliedtraining.com).

- 1-800-468-8888, option 4 (United States)
- 1-512-272-0027 (International)

### Computer System Requirements:

Attending this course requires a computer using Internet Explorer 5.5 or higher with the plug-in for Flash Player 9. For the audio portion of the class, headsets or speakers are required. 128MB RAM or higher, high-speed Internet access and a screen resolution of 1024 x 768 are also highly recommended.