

Semiconductor demystified for non-technical professionals



Synopsis

This course aims to provide the non-technical professionals working in/with the semiconductor industry a basic understanding of the nature of business they are in. The well-structured guideline presented can be used as a highly practical reference by them in their work.

This training is targeted towards people working in the vital supporting roles in the semiconductor industry – Human Resources, Finance, Purchase & Procurement, Information Technology, Communications and the like. While these roles by themselves require a skill-set different from that of the engineers designing or manufacturing chips/wafers/semiconductor products, know-how of the basic concepts and technical jargon used in the industry facilitates people in these roles to work more productively and efficiently.

Additionally, this course also provides a very useful and comprehensive insight to students who are keen to know more about the semiconductor industry for their future jobs and career prospects.

By providing the participants with a basic foundation for understanding the language of the IC/semiconductor industry, the chip development cycle and the type of business they are in, the ultimate goal of this workshop is to equip them with a vital information stepping stone towards a more productive career.

In this course, technical concepts actually become demystified - that is to say, the "tech-talk" and jargon that otherwise may sound mysterious get revealed in their essential simplicity. The chip fabrication and design cycle are explained to enable participants to understand the development process and cycle of their company's products. The key entities involved in the semiconductor eco-system along with functions within a chip design group help the participant understand the synergy shared across various involved entities as well as an understanding of the various job profiles in a chip design group. The special nature of semiconductor industry along with the target applications, markets gives them an insight into the industry dynamics. The trends shared help them in envisioning various potential future scenarios of their industry.

The interactive nature in which this course is conducted facilitates in making this an interesting and engaging learning experience. Participants will be exposed to terms, processes and insights cited from real industry experience.

This course will be delivered by a senior VLSI consultant with extensive industry experience spanning across various functions on a global scale and across various geographies.

What You Will Learn

- The business we are in
- Generic chip cycle, Chip making/Fabrication process, Generic chip design cycle
- Demystifying some key terminology
- Key entities involved in the semiconductor eco-system
- Generic target applications and markets for semiconductor chips

- Industry dynamics and trends

These in turn will enable you in

- Effectively communicating with your customers and suppliers
- Effectively supporting your customers

Who Should Attend

Professionals working in/with semiconductor industry and with following profiles

- Human Resources
- Finance, Purchase & Procurement, Investment
- IT/MIS support
- Communications and PR
- Technical Writing
- Other supporting roles
- Students who would like to work in the semiconductor industry.

Prerequisite

General know-how. 1-2 years' experience in the semiconductor industry is preferable.

Course Methodology

This course is conducted in a seminar room. The course will include a brief interactive workshop like session to encourage participation and facilitate learning. Each participant will receive a set of course material. The training program is customizable.

Course Duration

One day

Course Structure

The course is organized into brief modules to facilitate learning and covering the important topics.

A. The business WE are in

- Brief on the business
- Key entities involved - Semiconductor eco-system
- Main product categories
- Major target markets
- Key differentiators in our business

B. Generic Chip Design Cycle

- Chip development cycle
- Transistor Introduction
- What is VLSI design Flow?
- Main levels of abstraction
- Major IC design steps

- vi. Factors affecting a chip turnaround time
- vii. Qualification & Reliability
- viii. Generic Design work groups/who does what

C. Chip making – the process

- i. Overview of wafer fab process
- ii. Making of silicon wafer
- iii. What is a Reticle, Mask
- iv. Generic wafer processing steps, Developing the wafer to fabricate a chip
- v. Assembly and Testing
- vi. Different semiconductor processes and technologies
- vii. Developing the wafer to fabricate a chip
- viii. Assembly and Testing

D. Overview of Assembly/Packaging and Testing

- i. Goals
- ii. Traditional packages and some new ones
- iii. Some factors deciding the IC packaging
- iv. Generic assembly steps
- v. Importance of testing

E. Demystifying some key terminology

Key terms like Moore's law, Yield, Wafer lots, Frontend, Backend, Mask, Channel, Netlist, Layout, Digital/Analog/RF design, Foundry, IDM, ASIC, FPGA, MPW, etc. are explained.

F. A sneak into IPs

- i. What is IP
- ii. Basic driving factors of using an IP
- iii. IP business fundamentals
- iv. Issues in the IP market
- v. Comparison with procuring of traditional physical components

G. Industry Dynamics and Trends

- i. Cyclic nature of semiconductor industry
- ii. Technology trends
- iii. What's next?

Course Instructor

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Ms. Meenu Sarin is a microelectronics professional with over 24 years' experience in the microelectronics industry across various facets of operations & across geographies like Europe, India, Singapore, Greater China and Australia and with special focus in the semi-custom ASIC environment. She has registered her company, VLSI Consultancy, in Singapore from where she consults offering techno-commercial services to the semiconductor industry. She has conducted in-house training courses and public workshops in various countries including Singapore, Malaysia, Hong Kong, India and Americas besides delivering talks in universities. She is also a founding member and an Executive Committee Member of the Singapore Semiconductor Industry Association (www.ssia.org.sg)

From 1997-2002, Meenu was a Technical Marketing Manager in STMicroelectronics (STM)/Singapore with focus on Telecom segment. In this role, she was responsible for Business Development and Program Management for STM's semicustom ASIC projects in Asia Pacific. Meenu also worked as a Program Manager in charge of managing various semi-custom projects with customers in the Asia-Pacific Region. Before her move to STM Singapore, Meenu worked at STM India from 1991 to 1997. As a Design Manager for Library Design Group, she was responsible for growing and managing a 30 member strong team involved in design and development of semi-custom digital libraries in various technologies across different platforms as per the market requirements and to support designers in STM's worldwide locations. Prior to this, Meenu had been a Design Engineer for digital library design and development at STM Italy for several years after she received her engineering degree (Computer Engineering) from Delhi Institute of Technology, India in 1988.