One-day course: Nanometer CMOS ICs

General info

*** This course starts 8.30 and ends about 17.30 (sometimes even 18.00). At the end of the course, the participants can get an official certificate.

*** This course is particularly developed as a comprehensive tutorial on the basics of integrated circuits (chips) for people who work in the non-technical disciplines of semiconductor companies: management, marketing and sales, logistics, IT, software development and other individuals with little or no technical background in integrated circuits. These people are more and more confronted with typical semiconductor terminology and abbreviations but lack the background knowledge to understand their colleagues, customers and suppliers. A basic understanding of Integrated Circuits (chips), their operation, their possibilities and limitations will enable them to better communicate with their technical contacts in the field, as well as to put their own job in a much broader perspective.

*** The **objectives** of this course are:

1) To get familiar with the most frequently used semiconductor terminology
2) To provide the basic knowledge and understanding of the complete development process of a chip
3) The course will enable the participants to better communicate with their technical colleagues in the field and with suppliers and customers
4) It will place the participants' own job in a much better perspective and it will broaden their horizons

Contents

Introduction
Basic terminology. Semiconductor market. The electronics (r)evolution: from electron tubes through transistors to chips. Moore's law: complexity growth of chips over the last 5 decades.

What is a chip
Chips are all around us. What is a wafer; what is a chip. Similarity between chip floorplan and city plan.

Basic concepts
Basic transistor. What does analog and digital mean? Basic applications of a chip: consumer, communications, identification, digital, analog, wireless, memories and interfaces.

The complete chip development cycle
Simple transistors and circuits. Layouts and fabrication layers. Substrates and wafers. Libraries and IP cores. Chip production. Chip design, testing, yield and packaging.

The future
Increasing complexity. Time to market and cost (design cost, litho cost, fabrication cost). Future trends and limitations

The course includes a copy of the book: "Bits on Chips; edition 2017"