Course Outline

Course objectives

1. Explore the most advanced state of electronics technology - ultralarge-scale integration (ULSI), where an integrated circuits (IC) chip contains over 10 million semiconductor devices.
2. Learn how Si semiconductors are applied in electronic industry.
3. Introduce the most sophisticated IC process equipment.
4. Introduce the IC processes ranging from sample preparation (cleanroom & wafer-cleaning), manufacturing (deposition, lithography, etching, & metallization), to device fabrication (process integration).
5. Understand the basic underlying physics of the individual IC process.
6. Enhance enthusiasm of the students on the field of IC technology.

Course outline

This class is intended to design for the senior undergraduate students to understand the application of Si semiconductor and its importance on the field of IC technology, which is the largest segment (~ 85%) in semiconductor industry. With the development of advanced ULSI technology, more sophisticated electronics are becoming cheaper and accessible. It is essentially valuable for the students to explore how those are made and understand the underlying fundamentals of the processes in ULSI technology. This class should offer a solid background for the students who are interested in taking part in the semiconductor-related technology in the future.

Textbook


Course evaluation

Final presentations (100%)