



University at Buffalo

The Center for Industrial Effectiveness



# Step into the Cleanroom

## Cleanroom Fundamentals and Semiconductor Technologies

This self-paced 9-hour online course from the University at Buffalo introduces modern semiconductor manufacturing and cleanroom operations. Designed for students and professionals entering or supporting the semiconductor industry, the course covers the fundamentals of silicon-based device fabrication, cleanroom design, semiconductor materials, and key wafer-processing techniques – including deposition, doping, oxidation, etching, and photolithography – while featuring a virtual, **hands-on lab experience** that provides practical exposure to real-world fabrication workflows and industry-standard technologies.

This course provides foundational knowledge for learners at any stage. High school and college students can use it to prepare for undergraduate or graduate programs in engineering and microelectronics. College students and adult learners can gain skills for entry-level roles, internships, or apprenticeships in semiconductor manufacturing and lab work. Upon completion, learners earn a certificate.

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### TOPICS INCLUDE:

- Transistors
- Cleanrooms
- Semiconductor Materials
- Vacuum Science Overview
- Physical Vapor Deposition (PVD)
- Chemical Vapor Deposition (CVD)
- Doping
- Oxidation
- Wet Processing
- Dry Etching
- Photolithography



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