Semiconductor Manufacturing & Cleanroom Technician Program

This program is designed to empower individuals with STEM backgrounds, such as students in associate's degree or technical programs, or those looking to transition into new careers, with the knowledge and skills needed to excel in the dynamic field of semiconductor manufacturing. Whether you're looking to enhance your expertise or step into an industry poised for innovation and growth, this program offers a unique opportunity to become work-ready for high-demand roles in semiconductor manufacturing.

The program features a series of hands-on, intensive courses that provide participants with practical experience in the operation and maintenance of cutting-edge tools and processes used in state-of-the-art semiconductor manufacturing. Participants will also gain insights into cleanroom operations and the advanced systems supporting semiconductor production, as well as learn about the tools used for testing and back-end processing of semiconductors.

Spanning 8 weeks, the program includes four courses (with participation in at least two required) and culminates in a two-week apprenticeship experience. Hosted at the University of Utah's Nanofab during May and June, this program offers unparalleled access to world-class facilities and expertise, equipping participants with the skills needed to launch or elevate their careers in this transformative industry.

Participation in the program is free, with selection based on applicants' interests, motivation, and relevant educational or work experience. While the program primarily targets participants residing along the Wasatch Front, exceptional applicants from other locations may be eligible for travel assistance through a limited number of travel grants.

Application link: **https://etap.nsf.gov/award/7690/opportunity/10561**

Application deadline: **March 7th, 2025**

Program Period: **May 5 to June 27, 2025**

UTAH NANOFAB

Cleanroom Fabrication Processing tools (I)

- **Lithography/Wet Etch:**
  - Spinners/coaters
  - Bake plates
  - Wafer handling robotics
  - UV aligners and laser direct-write systems
  - Wet etch chemical handling,
  - SRD maintenance
- **RIE**: DC, ICP, RF Power supplies and matching units, plasmas, gases, MFCs, pressure gauges

Weeks 1 to 3 : M, W, F — 9 to 12 and 13 to 16 (not every day, might take both timeslots)

Cleanroom Fabrication Processing tools (II)

- **Deposition:**
  - Furnaces & RTP
  - Evaporation
  - Sputter
  - Atomic layer deposition
- **Vacuum Systems:** vacuum seals, fittings, adapters, automatic pressure controllers, pressure sensors; vacuum pump monitoring, maintenance, refurbishment, and repair: dry pumps, cryo pumps, turbo pumps; RGA and leak detection

Weeks 4 to 6 : M, W, F — 9 to 12 and 13 to 16 (not every day, might take both timeslots)

Cleanroom Support systems

- **Safety Systems**
  - TGMS monitoring, alarms, and hazardous gas sensors
  - Chemical handling and classification systems
- **Gas Handling Systems**
  - Cylinder exchanges, VMBs, gas cabinets, auto crossover
  - MFCs, pneumatic valves, hazardous gas abatement systems, fittings, tubing, etc
  - Abatement system maintenance and monitoring
- **Infrastructure Systems:**
  - DI UPW, HVAC, HEPA, PCW, LN2, AWN, RH%, etc.

Weeks 1 to 4 : T, Th — 9 to 12 and 13 to 16 (not every day, might take both timeslots)

Test and backend processing

- **Packaging**
  - Lasers, Wafer bonders, dicing saws, PCB production, parylene encapsulation
- **Test and Characterization**
  - 4 point probe, Keithley 4200
  - Profilers: laser, AFM, stylus, Flexus wafer bow, Mitutoyo
  - Ellipsometry, nanospec
  - Inspection systems: SEM, optical microscopes

Weeks 5 to 8 : T, Th — 9 to 12 and 13 to 16 (not every day, might take both timeslots)

Apprenticeship (choose between two tracks)

- Tool maintenance track: work with a cleanroom staff during a two-week period performing tool service and troubleshooting.
- Process development track: work with a cleanroom researcher during a two-week period developing and troubleshooting a semiconductor process.

Tentative schedule

	Mo	Tu	We	Th	Fr	
May	5	6	7	8	9	week 1
	12	13	14	15	16	week 2
	19	20	21	22	23	week 3
	26	27	28	29	30	week 4
June	2	3	4	5	6	week 5
	9	10	11	12	13	week 6
	16	17	18	19	20	week 7
	23	24	25	26	27	week 8

Cleanroom Fabrication Processing tools (I)
Cleanroom Fabrication Processing tools (II)
Cleanroom Support systems
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Apprenticeship

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