

Northeast Advanced Technological Education Center (NEATEC) – An NSF-funded Regional ATE Center (2017-2021)

Vision and Mission:

- Build a highly skilled technical workforce for the region and beyond
- Create a Career Pipeline that builds interest in the Semiconductor and Nanotechnology Manufacturing fields

Focus: Technician Education Content Module Development

NEATEC has developed a variety of hands-on technician education modules for use in community college-technician education programs including:

- **Advanced Manufacturing Practice Modules:** Module for advanced workmanship skills, mechanical assembly, pneumatic systems, and basic electrical systems.
- **Basic Vacuum Technology:** System assembly, pump-down, conductance, and leak rate evaluation using commercial vacuum fittings and gauges. Employs NEATEC's custom VAPPOR system.
- **Advanced Fitting and Vacuum Component Assembly:** System assembly, pump-down and advanced leak detection utilizing a 2nd-generation vacuum trainer incorporating commercial vacuum components and a He-Leak Detection system.
- **Basic Plasma System Assembly and Operation:** Modification of the NEATEC VAPPOR system for RF gas-plasma generation, characterization and troubleshooting.
- **RF Power Measurement Lab:** A full, lab-scale kit for introduction and measurement of RF power systems including an introduction to impedance and impedance matching
- **Basic PLC Programming and Control Circuits:** Introductory course in PLC programming electrical control systems. Includes integration of a basic micro-controller within an electro-pneumatic circuit for hands-on learning and troubleshooting
- **Mechatronics Operation and Troubleshooting:** A full, lab-scale module incorporating a 7-unit Amatrol mechatronics trainer. Includes labs for fault identification, and advanced troubleshooting.

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Focus: Experiential Learning and Outreach Programs

NEATEC has established a number of experiential learning and outreach programs for the technician career pipeline in Semiconductor and Nanotech manufacturing. Examples include:

- **NIST Cleanroom Technician Internship Program:** Established an Internship Program at NIST's Center for Nanoscale Science and Technology in Gaithersburg, MD – Placed 45 interns since 2014.
- **Transitioning Veteran Technician Training Program at Fort Drum:** Seven training workshops (56-72 hours of training each) developed and carried out. 67 transitioning soldiers at Fort Drum participated.
- **NEATEC Incumbent Technician Training Program:** NEATEC modules developed for incumbent semiconductor technicians in regional semiconductor industry were used to train more than 700 semiconductor manufacturing techs since 2015.

NEATEC: Key Impacts

- ❑ More than **25** hands-on modules developed for semi/nanotechnology technician education
- ❑ More than **1,000** community college faculty, students, high school faculty, high school students have participated in NEATEC workshops/outreach programs.
- ❑ NEATEC-developed course modules incorporated in coursework at **7** regional colleges & community colleges.
- ❑ NEATEC-developed nanotechnology kits utilized in more than **20** high schools in the Northeast

