MICROELECTRONICS MANUFACTURING TECHNICIAN - UNDERGRADUATE CERTIFICATE

College of Applied and Technical Studies
www.kent.edu/cats

About This Program

Unlock the gateway to cutting-edge manufacturing with our Semiconductor Manufacturing Technician certificate, immersing students in a world of semiconductor fabrication, clean room expertise and advanced vacuum technology. From mastering DC circuits to troubleshooting with precision, our program equips graduates to seamlessly bridge the gap between engineering ingenuity and practical production. Join us in revolutionizing technology as semiconductor manufacturing technicians, driving innovation in chip production and circuit board design with every step. Read more...

Contact Information

- **Flavia Princess Nesamani Inbanathan, Ph.D.** | finbanat@kent.edu | 330-675-8962
- Speak with an Advisor
- Chat with an Admissions Counselor

Program Delivery

- **Delivery:**
  - Mostly online
  - In person
- **Location:**
  - Trumbull Campus

Examples of Possible Careers*

Semiconductor processing technicians

- 10.9% much faster than the average
- 31,900 number of jobs
- $51,180 potential earnings

Additional Careers

- Field Service Technician - Semiconductor Equipment
- Industrial Maintenance Mechanic
- Packaging Technician
- Semiconductor Manufacturing Technician
- Senior Equipment Maintenance Technician - Semiconductors

* Source of occupation titles and labor data comes from the U.S. Bureau of Labor Statistics' Occupational Outlook Handbook. Data comprises projected percent change in employment over the next 10 years; nation-wide employment numbers; and the yearly median wage at which half of the workers in the occupation earned more than that amount and half earned less.

Admission Requirements

The university affirmatively strives to provide educational opportunities and access to students with varied backgrounds, those with special talents and adult students who graduated from high school three or more years ago.

Kent State campuses at Ashtabula, East Liverpool, Geauga, Salem, Stark, Trumbull and Tuscarawas, and the Twinsburg Academic Center, have open enrollment admission for students who hold a high school diploma, GED or equivalent.

Some programs may require that students meet certain requirements before progressing through the program. For programs with progression requirements, the information is shown on the Coursework tab.

International Students: All international students must provide proof of English language proficiency (unless they meet specific exceptions to waive) by earning a minimum 71 TOEFL iBT score, minimum 6.0 IELTS score, minimum 47 PTE score or minimum 100 DET score, or by completing the ELS level 112 Intensive English Program. For more information on international admission visit the admissions website for international students.

For more information on admissions, contact the Regional Campuses admissions offices.

Program Requirements

Code	Title	Credit Hours
Certificate Requirements		
ATS 11001	INTRODUCTION TO VACUUM SYSTEMS	3
ATS 11002	OVERVIEW OF MANUFACTURING MAINTENANCE	3
EERT 11000	INTRODUCTION TO SEMICONDUCTOR AND CLEANROOM	4
EERT 12000	ELECTRIC CIRCUITS I	4
EERT 22014	MICROPROCESSORS AND ROBOTICS	3
Minimum Total Credit Hours:		**17**

Graduation Requirements

Minimum Certificate GPA	Minimum Overall GPA
2.00	2.00

Program Learning Outcomes

Graduates of this program will be able to:

1. Demonstrate the capability of working safely in a cleanroom and microelectronics manufacturing environment.
2. Articulate how a semiconductor wafer is manufactured and processed to become an integrated circuit.
3. Articulate chemistry and safety awareness in semiconductor manufacturing.
4. Read and follow standard operating procedures/checklists in paper or digital format.
5. Examine maintenance procedures.

6. Articulate basic principles and purpose of quality control and quality systems.
7. Examine the basic concepts of geometric dimensioning, tolerancing, visualization and graphics in engineering technology.
8. Explain the operational mechanisms and process use of vacuum pumps used in the semiconductor industry.
9. Demonstrate the ability to test and troubleshoot a vacuum pump system with a leak.
10. Construct, analyze and troubleshoot DC electric circuits.
11. Demonstrate working with microprocessors and controllers in manufacturing process environment.
12. Demonstrate problem-solving, critical thinking and communication skills.

Full Description

The Microelectronics Manufacturing Technician undergraduate certificate provides students with a core of hi-tech manufacturing-related courses and a focus on microelectronics and semiconductor fabrication, clean room, vacuum technology, manufacturing and maintenance, DC circuits and trouble shooting and fundamental use of computers in their daily work. Semiconductor manufacturing technicians help engineers to manufacture semiconductor chips in the fabrication plant, operate and maintain the vacuum pumps and systems in manufacturing facility, design and work with circuit boards in the manufacturing environment.

The certificate allows graduates to work in product evaluation and testing, using measuring and diagnostic devices to adjust, test and repair equipment.

The certificate articulates with Kent State's undergraduate certificate in Advanced Microelectronics Manufacturing Technician and the Associate degree in Electrical/Electronics Engineering Technology program.