

NANOFABRICATION MANUFACTURING TECHNOLOGY, Associate in Applied Science Degree - 4690

Science Department
CIP Code: 15.0303

The Nanofabrication Manufacturing Technology program is a collaborative program with Penn State University's Center for Nanotechnology Education and Utilization located in State College, PA. Students who are enrolled in this degree take their first few semesters at HACC, in foundational course work, to prepare them for the nanofabrication courses taken at PSU. (*Students must apply to the Center for Nanotechnology Education and Utilization for the PSU portion.*) During the semester at PSU, students work in a cleanroom setting with state-of-the-art lab testing equipment and take courses covering the latest trends in nanofabrication technologies, production and manufacturing processes. Students may complete this program at the Harrisburg and Lancaster campuses through various modalities (e.g., on-campus/in-person instruction, hybrid, synchronous remote instruction and/or asynchronous instruction). No matter which campus or modality a student chooses to take their classes, a summer semester at Penn State University Park is required to complete the coursework in this program.

Career Opportunities

Graduates of the program enter the job market as cleanroom technicians in the Nanofabrication Industry.

Competency Profile

This curriculum is designed to prepare students to:

- Assist a technical team in the cleanroom environment
- Operate and maintain cleanroom equipment
- Work in a micro- or nanofabrication environment
- Demonstrate proper safety when working in a chemical environment
- Demonstrate knowledge of cleanroom procedures
- Identify global and ethical engineering issues

PROGRAM REQUIREMENTS (TOTAL CREDITS = 60)

| General Education | | Major Requirements | | Other Required Courses | |
|---|--------|--|----|---------------------------------------|-----|
| ENGL 101 English Composition I | 3 | ELEC 100 Fundamentals of Electricity/Electronics | 1 | CHEM 100 Principles of Chemistry (or) | 3 |
| | | | | CHEM 101 General Chemistry I | |
| ENGL 104 Technical Writing | 3 | GTEC 104 Engineering Materials & Processes | 3 | | (4) |
| COMM 101 Effective Speaking | 3 | GTEC 202 Statistical Quality Control | 3 | MATH 104 Trigonometry | 3 |
| Humanities & Arts Core Elective | 3 | NFAB 211 Material, Safety & Equipment Overview | 3 | Program Electives* | 8 |
| Mathematics or Science Core Elective - <i>MATH 103</i> | 3 | NFAB 212 Basic Nanofabrication Procedures | 3 | | 14 |
| Social & Behavioral Science Core Elective | 3 | NFAB 213 Thin Films in Nanofabrication | 3 | | |
| First-Year Seminar Elective - <i>ENGR 102 or FS 100</i> | 2 or 3 | NFAB 214 Lithography for Nanofabrication | 3 | | |
| Wellness Elective | 1 | NFAB 215 Materials Modification | 3 | | |
| | 21 | NFAB 216 Characterization, Packaging & Testing | 3 | | |
| | | | 25 | | |

*Students select two courses from the following: BIOL 101; ELEC 111, 213; PHYS 201.

RECOMMENDED SEQUENCE FOR FULL-TIME STUDENTS

Part-time students can complete this program by taking one or more courses each semester.

| Spring Semester I | | Fall Semester I | | Spring Semester II | | Summer Semester II (Capstone Semester @ PSU) | |
|-------------------------------|--------|-------------------|--------|---|---|---|---|
| ELEC 100 | 1 | CHEM 100 or 101 | 3 or 4 | ENGL 104 | 3 | NFAB 211 | 3 |
| ENGL 101 | 3 | COMM 101 | 3 | Program Electives* | 8 | NFAB 212 | 3 |
| ENGR 102 or FYS 100 | 2 or 3 | GTEC 202 | 3 | Social/Behavioral Science Core Elective | 3 | NFAB 213 | 3 |
| GTEC 104 | 3 | MATH 104 | 3 | | | NFAB 214 | 3 |
| Humanities/Arts Core Elective | 3 | Wellness Elective | 1 | | | NFAB 215 | 3 |
| MATH 103 | 3 | | | | | NFAB 216 | 3 |