

# NANOFABRICATION MANUFACTURING TECHNOLOGY, Associate in Applied Science Degree - 4690

Engineering & Technology Department

The Nanofabrication Manufacturing Technology AAS programs provides students with knowledge and skills used in chip manufacturing, pharmaceuticals, micro-electromechanical systems, sensors, biomedicine, opto-electronics, and cutting-edge computer displays. The Nanofabrication Manufacturing Technology program uses a resource-sharing approach to “high-tech” workforce development that permits students to gain hands-on skills in a laboratory environment at both HACC and at Pennsylvania State University. Once students successfully complete three semesters of background work with a minimum 3.0 GPA and obtain a letter of recommendation from a HACC electronics faculty member, they are able to go to the PSU Electronic Materials and Processing Research Laboratory (EMPRL), located in State College, Pa to complete their coursework. The program is only available at the Harrisburg Campus.

## Career Opportunities

Graduates of the program enter the job market as clean-room technicians in the semiconductor manufacturing industry.

## Competency Profile

This curriculum is designed to prepare students to:

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

## PROGRAM REQUIREMENTS (TOTAL CREDITS = 71)

General Education		Major Requirements		Other Required Courses	
ENGL 101 English Composition I	3	CAD 154 Computer Aided Drafting and Design	3	CHEM 100 Principles of Chemistry (or)	3
ENGL 104 Technical Writing	3	ELEC 101 Equipment Utilization	1	CHEM 101 General Chemistry I	(4)
COMM 101 Effective Speaking	3	ELEC 106 Fundamental of Electronics	4	MATH 104 Trigonometry	3
Humanities & Arts Elective	3	ELEC 111 AC/DC Circuits I	4	MATH 202 Introduction to Statistics	4
Mathematics or Science Elective - MATH 103	3	ELEC 125 Introduction to PC Technology	3	PHSC 113 Introduction to Physical Science	<u>3</u>
Social & Behavioral Science Elective	3	ELEC 213 Digital Electronics	4		13
First-Year Seminar Elective - ENGR 102	2	NFAB 211 Material, Safety & Equipment Overview	3		
Wellness	<u>1</u>	NFAB 212 Basic Nanofabrication Procedures	3		
	21	NFAB 213 Thin Films in Nanofabrication	3		
		NFAB 214 Lithography for Nanofabrication	3		
		NFAB 215 Materials Modification	3		
		NFAB 216 Characterization, Packaging & Testing	<u>3</u>		
			37		

## RECOMMENDED SEQUENCE FOR FULL-TIME STUDENTS

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

Fall Semester I	Spring Semester I	Summer	Fall Semester II	Spring Semester II (Capstone Semester @ EMPRL)					
CAD 154	3	COMM 101	3	Humanities/Arts Elective	3	CHEM 100 or 101	3 or 4	NFAB 211	3
ELEC 101	1	ELEC 111	4	Social/Behavioral Science Elective	3	ELEC 106	4	NFAB 212	3
ELEC 125	3	ELEC 213	4	Wellness	1	MATH 202	4	NFAB 213	3
ENGL 101	3	ENGL 104	3			PHSC 113	3	NFAB 214	3
ENGR 102	2	MATH 104	3					NFAB 215	3
MATH 103	3							NFAB 216	3