



Electron Microscopy - Crystalline Materials Basic Imaging Certificate of Achievement

Program Goals and Objectives

The Electron Microscopy - Crystalline Materials Basic Imaging Certificate of Achievement enables students to learn the entire line of entry-level microscopy tools sets which includes all makes and models of optical light microscopes, basic scanning and transmission electron microscopes as well as related sample preparation tool-sets to operate for best performance while imaging. The certificate prepares students to enter the workforce with basic knowledge of microscopy design, basic operation, and basic imaging strategies to become an operator or technician in the microscopy field. Students will learn proper safety protocols, how to generate proper technical writing documentation, how to complete basic design of scope layouts, and how to perform laboratory procedures as needed for microscopy. This certificate welcomes all students from all demographics and promotes an environment conducive to learning with hands-on, technical training directly related to industry standards, to help promote all students to succeed in the microscopy industry.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Demonstrate the ability to evaluate and trouble shoot microscope instrumentation and related equipment.
2. Demonstrate the ability to utilize safety protocols when working in a scientific laboratory.
3. Demonstrate the ability to handle, recognize and understand the microstructure of microscopic materials.
4. Demonstrate the ability to prepare samples for the light, atomic and electron microscopes and ion beam instrumentation.
5. Demonstrate organizational, written and oral skills for the communication of scientific principles.

Catalog Description

Upon successful completion of the Electron Microscopy - Crystalline Materials Basic Imaging Certificate of Achievement, the student demonstrates skills, knowledge and training for employment as a technician to work under the supervision and alongside research scientists in industry, research laboratories, medical schools, hospitals, colleges and universities. These are entry level positions that require additional training onsite to fulfill the needs of the employer within any microscopy-related industry. Students will demonstrate

their ability to utilize direct hands-on work, with the entire family of Optical Light Microscopes, Entry Level Scanning Electron Microscopes and Basic Transmission Electron Microscopes for experimental design, and data interpretation. This Basic Imaging certificate certifies that the student has the ability to perform basic imaging of sample materials to support data analysis. Students also demonstrate skills for technical training in organization, team work, oral and written communication, problem-solving, and critical thinking. Overall, students will possess a variety of skills for employment in fields such as aerospace, metallurgy, ceramics, computer and electronics industries, geology, environmental sectors, academia, manufacturing, and medicine.

Program Requirements

Core Requirements

Units: 23.0

Complete 23 units

E M 70	Introduction to Microscopy	2.0
E M 71	Light Microscopy and Photography	3.0
E M 73M	Introduction to Materials Electron Microscopy	4.0
E M 74	Scanning Electron Microscopy	3.0
E M 85M	Analytical Scanning Electron Microscopy	3.0
E M 86M	Focused Ion Beam Applications	4.0
E M 87A	Electron Microscopy Basic Equipment Maintenance	4.0

Complete all courses with a grade of "C" or better.

Total: 23.0

Master Planning

The electron microscopy program welcomes all students from different demographics and strives for an inclusive, student-centered learning environment. We aim to give our students the use of current technologies to optimize and support their professional growth and technical development. We provide extensive hands-on direct training on our vast line of microscopes, optical models and electron microscopes, so that our students develop the skills needed to be successful and increase their opportunities for employment within the vast electron microscopy sectors of industry.

Need for Program

Enrollment and Completer Projections

10-15 Students are projected to complete the program annually

Labor Market Information (LMI)

Employment Opportunities are vast and Salary Range are between 45K-85K.

There exists a great need for such a program to support the demands of the industry, we need to continue to produce users, operators and technicians to fulfill the needs of the industry.

Place of Program in Curriculum and Similar Programs

Place of Program in Curriculum

There are no related programs as the EM program is unique as we are the only one in the nation.

Similar Programs at Other Colleges in Service Area

- None

TOP Code

0934.70 - Electron Microscopy*

CIP Code

15.0404: Instrumentation Technology/Technician.

BOT Approval

06/03/2025