



UNIVERSITY OF WASHINGTON

Mission of the Department of Materials Science and Engineering

The educational objectives of the department are based on the missions of the University and the College of Engineering:

- The primary mission of the University of Washington is the preservation, advancement, and dissemination of knowledge.
- The mission of the College is to provide Engineering leadership through innovative learning, world-class research and responsible public service.

The mission of the Department of Materials Science and Engineering is to be a preeminent, student-centered organization that serves the industrial and academic needs of the University, the State of Washington, the nation and the international community by:

- Serving as the focal point and catalyst for the development of high quality, coordinated and visionary research and educational programs for materials-oriented students and faculty throughout the University; and by
- Providing the highest quality educational programs in materials science and engineering for materials professionals at the undergraduate and graduate levels.

MSE Program Educational Goals and Objectives

The educational goal of the BS program in Materials Science & Engineering is to provide the undergraduates with the fundamental knowledge needed to function effectively in Materials Engineering positions in industrial, governmental and university settings. This includes:

- Providing that graduates have fundamental knowledge of mathematics and science, and are able to apply them to engineering problems and to a variety of materials systems,
- Developing graduates who are skilled in engineering fundamentals,
- Ensuring that graduates are knowledgeable about all classes of materials and their properties, structure, processing and applications
- Providing specific knowledge related to structure, properties, processing and performance specific to Materials Science & Engineering.

The specific program educational objectives for the undergraduate program in Materials Science & Engineering is based on a combination of the ABET “Objectives for degrees in Materials . . . Engineering” and additional objectives established by the department. We expect our graduates will be able to:

1. Apply advanced science (such as chemistry and physics) and engineering principles to engineering systems,
2. Describe and apply the scientific and engineering principles underlying the four major elements of the field: structure, properties, processing and performance related to material systems,
3. Solve materials selection and design problems by integrating knowledge from each of the four elements of the field,
4. Utilize experimental, statistical and computational methods for analysis and design problems
5. Use their hands-on laboratory experience to solve real engineering problem
6. Have the needed background for effective practice in industry and government
7. Have a sound, well-balanced education that will prepare them to understand their professional responsibilities and the basis for a thoughtful and responsible life
8. Have experience in integrating engineering and materials design concepts with societal issues, including economics, ethics, quality and human values
9. Are prepared to enter graduate programs, as appropriate to the student and the area of interest
10. Have the ability to communicate effectively, orally and in writing, the concepts and results of engineering investigations to both technical and non-technical audiences

These specific program educational objectives are consistent with the mission statements above, and provide specific means for disseminating knowledge through innovative learning in a high quality educational program. The objectives provide a means for student to develop their materials knowledge in the context of the fundamentals of science, mathematics and engineering.