



University of California, Santa Barbara
Program Learning Outcomes

MS in Materials

Upon graduation with a MS in Materials:

Core Knowledge

- Students shall be able to demonstrate knowledge of the fundamental concepts of Materials Science as relevant to Engineering practice, notably the principles governing the structure of materials and its relationship to properties and the manner in which materials are processed (MatrI 100A,B,C and MatrI 200A).
- Students shall be able to demonstrate understanding of the connections between Materials and technology in the context of their chosen major fields within the Materials graduate program at UCSB. Specifically, students shall be able to understand how materials structure and properties can be changed during processing/manufacturing, as well as the potential pitfalls when designing or processing materials in Engineering applications without sufficient understanding of their behavior.

Research Methods and Analysis

- Students shall be able to demonstrate knowledge and understanding of the methods and techniques for synthesis and processing, structural characterization, property measurement and/or computational simulation relevant to their major field of study.
- Students shall be able to review, critically assess and cogently synthesize relevant literature in their field, guided by the conceptual foundation acquired in the program as well as the understanding of engineering practice.
- Students shall be able to properly use literature citations and references to support their technical arguments and justify critical assumptions.
- Students shall be able to execute an original research project in their field, rigorously analyze relevant findings and draw sound conclusions (Plan I only).

Scholarly Communication

- Students shall be able to communicate technical information effectively through oral presentations and through the development of requisite audiovisual materials. These communications should be accessible to a variety of audiences as expected in engineering practice, from technical to business managers, as well as peers and technical staff.

Continued on Page 2

University of California, Santa Barbara
Program Learning Outcomes, continued

- Students shall demonstrate their ability to write lucid technical reports on literature studies or laboratory/computational research (typical of plan II), or an M.S. thesis of archival quality (only for Plan I).

Professionalism

- Students shall be familiar with, and understand the benefits and responsibilities of participating in the relevant professional societies in the Materials field and their chosen B.S. major (for BS/MS students).
- Students shall demonstrate an understanding of the benefits of interdisciplinary interactions, both in engineering or research teams as well as in the context of professional societies, as well as the skills to interact productively with colleagues at all levels of experience.
- Students shall understand and be able to articulate their career options after graduation, including industrial, government and academic environments.
- Students shall demonstrate a commitment to the principles of ethical professional conduct.