

Materials Engineering and Science M.S.



Contact Information

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Steering Committee

Program Coordinator and Steering Committee
Chair; Professor Kellar with representatives from
the Departments Materials and Metallurgical
Engineering, Physics, and Chemistry.

Faculty

Professors Boyles, Foygel, Howard, Douglas
Fuerstenau Professor Kellar, and Petukhov;
Associate Professors Corey, Cross, Heglund,
Medlin, and Sobolev; Assistant Professors Fong,
Meyer, West and Zhu; Emeritus Professor Stone,
Distinguished Professor Emeritus Han.

Master of Science in Materials Engineering and Science

This interdisciplinary degree program works
in concert with other colleges and the Ph.D. in
materials engineering and science (Ph.D./MES).

The M.S./MES degree offers an education in
the broad area of materials. Students pursuing
this degree will expand their knowledge and
understanding of the science and technology of
materials synthesis, behavior, and production.
Graduates of the program formulate solutions to
materials problems through the use of multi-
disciplinary approaches made possible with a
broad background in basic materials science and
engineering coupled with an area of
specialization.

Two options are available in this degree
program: one option involves a thesis component
and the other option involves course work only.
In the thesis option, twenty-four (24) hours of
course work and a minimum six (6) credit hours
of thesis research are required. With the second
option, thirty-two (32) hours of course work must
be taken. In the latter option however, the
students are required to undertake a project under
the supervision of a faculty member. Because
students graduating with this degree are expected
to have a broad-based fundamental knowledge in
both materials engineering and materials science,
every student is required to take the following
core courses.

MES 601 Fundamentals of Materials
Engineering (4 cr.hr.)

MES 603 Condensed Matter Physics
(4 cr.hr.)

MES 604 Chemistry of Materials (4 cr.hr.)

In addition MES 790 Seminar (1 cr.hr.), is a
required course.

Areas of research currently carried out include
inorganic, organic, and biological
behavior/synthesis/treatments of materials,
polymer chemistry, solid state physics, interfacial
chemistry/physics, thermal, magnetic and
transport properties of semiconductors,
superconductors, metals and alloys, dielectric and
composite materials, recovery and processing of

minerals/materials/scrap, process simulation and optimization, thermodynamics of various materials, corrosion and corrosion inhibition, strengthening mechanisms, deformation induced transformation plasticity, artificial intelligence, kinetics of leaching and cementation processes, and behavior/properties/synthesis of composites.

engineering, mechanical engineering, civil engineering, electrical engineering, and mining engineering. Students with baccalaureate degrees in other disciplines may gain admission to the program but may require remedial undergraduate work prior to beginning their graduate course work.

Undergraduate Degrees That Prepare Students for the M.S./MES Program

The breadth of the field of materials engineering and science is such that graduates from any of the following disciplines should be prepared for graduate study in the M.S./MES program: chemistry, physics, metallurgical engineering, chemical engineering, materials



Mines Matters: School of Mines hosted the 2008 Youth Engineering Adventure (YEA) program. 265 students have participated in YEA during the program's first eight years. The program is intended for high school students interested in math and science, and encourages students to have fun while learning about technology and engineering. Students also tour engineering firms and explore engineering career opportunities. About 40% of YEA students become School of Mines' students.