

ENERGY AND MINERAL ENGINEERING

Learning Outcomes

Master of Science (M.S.)

1. **KNOW:** Graduates will be able to demonstrate deep understanding and proficiency in project evaluation methods, optimization and application of mechanistic, thermodynamic, fluid flow, and kinetic analysis methods for integrative design of energy and mineral engineering systems.
2. **CREATE:** Graduates will demonstrate proficiency in designing and executing a research plan to address real-world problems in the field of energy and mineral engineering and economics.
3. **CRITICAL THINKING:** Graduates will be able to review and critically analyze work by others in the broad area of energy and mineral engineering and economics.
4. **COMMUNICATE:** Graduates will be able to effectively communicate their research findings to scholars in the field and broad audiences through formal presentations and written works.
5. **PROFESSIONAL PRACTICE:** Graduates will demonstrate a commitment to conduct themselves in accordance with the highest ethical standards and active engagement in service to the profession and society.

Doctor of Philosophy (Ph.D.)

1. **KNOW:** Graduates will demonstrate in-depth knowledge of the core theories and methods in the field of energy and mineral engineering as well as within one of the program options. This will include the application of physics, chemistry, advanced mathematics, economics and/or engineering principles to problems in energy and mineral engineering.
2. **CREATE:** Graduates will be able to creatively synthesize new ideas or hypotheses in energy and mineral engineering and economics, devise critical tests of hypotheses, and/or develop unique solutions to problems in energy and mineral engineering and economics.
3. **APPLY:** Graduates will be able to carry out independent and original research studies that address current problems in energy and mineral engineering synthesizing theory and/or experiments.
4. **CRITICAL THINKING:** Graduates will be able to review and critically analyze work by others in their field of specialty.
5. **COMMUNICATE:** Graduates will be able to convey ideas or arguments in clear, concise, well-organized proposals, papers and reports as well as in formal, oral presentations.
6. **PROFESSIONAL PRACTICE:** Graduates will demonstrate the ability to collaborate in a collegial and ethical manner with other professionals within their field and within diverse scientific backgrounds.