

## Bachelor of Science in Mining Engineering

### Department of Mining and Geological Engineering

#### Program Outcomes

##### **Outcome (A) A Mining Engineering graduate from the UA will:**

Demonstrate proficiency in mathematics through differential equations; physics including mechanics, thermodynamics and circuits; basic chemistry principals and laboratory techniques; basic geosciences; probability and statistics; including the ability to conduct experiments and analyze data.

##### **This outcome will be demonstrated by:**

- a) Passing engineering science and basic math and science courses, ENGR 102, and a probability and statistics course.
- b) Complete laboratory components of science courses and MNE 406a (ventilation) and 427 (rock mechanics)

##### **Outcome (B) A Mining Engineering graduate from the UA will:**

Be able to complete a design project including elements that emphasize project management, supervision, and effective communication.

##### **This outcome will be demonstrated by:**

- a) Successful completion of ENGR 102.
- b) Successful completion of the capstone design project.
- c) Having a progressive exposure to design and the design process in the curriculum.
- d) Student portfolio showing successful completion of design projects in MNE 200, 406a, 407, 415, 434, 438, 498.

##### **Outcome (C) A Mining Engineering graduate from the UA will:**

Be able to solve engineering analysis problems with increasing difficulty through the curriculum, including open-ended problems and the impact of the solution on safety and quality

##### **This outcome will be demonstrated by:**

- a) Passing foundational engineering courses CE 214, 215, 218
- b) Successful completion of MNE 406a, 407, 415, 426, 427, 434, 438
- c) Students participating in research experiences or projects at the San Xavier Mine.
- d) Professional work experience through summer jobs or internships.

##### **Outcome (D) Mining Engineering graduate from the UA will be able to:**

Prepare technical reports (including team based) in written form including graphs and tables, and oral reports in prepared presentations; identify the need for information, locate the information, assess the quality of the information, and use the information effectively.

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**This outcome will be demonstrated by:**

- a) Successfully completing assignments in MNE 200, 296a, 396a, 422, and 498

**Outcome (E) A Mining Engineering graduate from the UA will:**

Demonstrate sensitivity to issues in humanity

**This outcome will be demonstrated by:**

Completion of general education requirements that includes a course in non-western civilization studies or gender.

**Outcome (F) A Mining Engineering graduate from the UA will:**

Be involved in professional societies, outreach, or research.

**This outcome will be demonstrated by:**

- a) Involvement in professional societies.
- b) Working at the San Xavier Mine.
- c) Work on a research project with a faculty member.
- d) Work on an outreach project.

**Outcome (G) A Mining Engineering graduate from the UA will have the ability to:**

Integrate computers and software to solve engineering problems and have a working knowledge of mining equipment/tools.

**This outcome will be demonstrated by:**

- a) Completing assignments in MNE 419, MNE 407, MNE 434, MNE 438
- b) Effective participation in undergraduate research projects.
- c) Effective participation with mining equipment at the San Xavier Mining Laboratory.
- d) Performing in practice via internships or summer jobs.