Core Competencies

The competencies proposed here are cumulative outcomes distributed across the Mines' core curriculum. In addition to necessary knowledge in math and science, the core curriculum also facilitates student success in crucial areas, including personal and professional development, understanding of global and societal contexts, ability to communicate effectively in a variety of settings, and capacity for critical and creative problem solving. These competencies represent holistic themes in student learning that extend across multiple classes, covering both curricular and co-curricular activities. They are designed to advance the integration of pathways for the signature student experience in a way that is scaffolded from the core curriculum through to graduation.
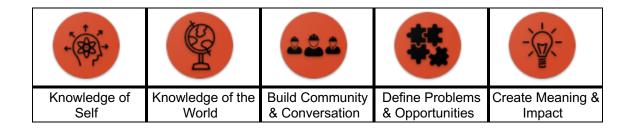
In order to facilitate an understanding of the core curriculum that transcends traditional disciplinary boundaries, we grouped the outcomes into five categories: knowledge of self; knowledge of the world; building community and conversation; defining problems and opportunities; creating meaning and impact. By using this framework to reassess the existing core curriculum, we can identify potential areas for cross-cutting initiatives that will create a more comprehensive learning process for our students and further enhance the distinctiveness of the educational experience at Mines.

Core Curriculum Committee 2020-2021

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Knowledge of Self	Knowledge of the World	Build Community & Conversation	Define Problems & Opportunities	Create Meaning & Impact

1. **<u>Knowledge of Self</u>** - *Reflect on interests, needs, background, and experiences to create a personalized Mines journey*

   The competencies covered in the core curriculum allow students to:
   A. Engage in self-directed learning in a manner that values curious and inspired learning with a growth mindset and takes responsibility for personal actions, behaviors, and opportunities.

   B. Identify strategies that engender personal well-being and seek out campus and external resources that support those strategies.

   C. Appreciate that failure and reevaluation/redesign can be a positive and productive experience that is a normal part of life.

   D. Explore and pursue interests and passions through engagement in campus activities, creative expression, academic courses, physical activity, and service.

   E. Apply and value concepts from ethics, justice, and inclusivity in their professional decisions and personal choices.

   F. Explore diverse opportunities for degrees, minors, and co-curricular opportunities such as Honors or Undergraduate Research at Mines, identify graduation requirements and advising procedures, and create a plan for their time at Mines.

2. **<u>Knowledge of the World</u>** - *Investigate a broad range of topics in order to think critically and holistically while considering a full range of perspectives, beliefs, and values*

   The competencies covered in the core curriculum allow students to:
   A. Design and conduct meaningful, appropriate, ethical, and safe experiments, in order to gather, analyze, visualize, and interpret data.

   B. Integrate perspectives and tools from the sciences, engineering, design, business, humanities, arts, and social sciences to enhance disciplinary and professional awareness.

   C. Practice critical thinking by researching existing knowledge, seeking opposing perspectives, identifying bias, and fostering a healthy skepticism of information.

   D. Recognize and critically assess political, social, economic, and cultural ideas and institutions that will shape their lives and careers in an increasingly interconnected world.

   E. Apply lessons learned beyond the traditional limits of the Mines campus through experiences with diverse points of view from across the world.

3. **Build Community & Conversation** - *Communicate effectively, collaborate successfully, and maintain positive relationships*

   The competencies covered in the core curriculum allow students to:
   A. Build personal communities by participating in campus organizations and activities.

   B. Demonstrate effective communication with diverse audiences and purposes, showing competency in written, oral, visual, and online formats.

   C. Contribute meaningfully to teams as both member and leader and demonstrate the ability to manage collaborative projects using professional tools and techniques.

   D. Constructively provide, receive, and act on feedback.

   E. Collaborate effectively with and be supportive of communities and individuals with diverse perspectives, experiences, and backgrounds.

4. **Define Challenges & Opportunities** - *Use an integrated approach to identify the leading challenges of the modern era and create opportunities to address these challenges*

   The competencies covered in the core curriculum allow students to:
   A. Apply the design process and an entrepreneurial mindset to identify opportunities for innovative, sustainable, and equitable solutions to contemporary societal and environmental challenges.

   B. Combine personal observations and reflection, stakeholder outreach and engagement, and academic research to identify and scope problems and opportunities for improvement.

   C. Identify interconnections among technical and societal dimensions of problem identification and solution.

   D. Demonstrate problem-solving approaches that connect insights, perspectives, and techniques from the sciences, engineering, design, business, humanities, arts, and social sciences.

   E. Seek and value opportunities to advance practical and theoretical professional readiness and leadership development.

5. **Create Meaning and Impact** - *Build from a breadth and depth of knowledge, techniques, and methods to advance innovative solutions, while also recognizing and understanding the broader impacts of those solutions*

The competencies covered in the core curriculum allow students to:

    A. Generate knowledge through the application of critical and creative thinking

    B. Explore challenges from a variety of perspectives and through multiple representational modalities

    C. Deploy entrepreneurial thinking, creatively move ideas to action, iterate solutions based on feedback, and critically reflect on learning processes and outcomes.

    D. Evaluate the impacts of proposed solutions from a variety of technical, societal, ethical, environmental, and economic perspectives.

    E. Meet the needs of diverse individuals, communities, and contexts by designing solutions to open-ended and complex problems that are sustainable, inclusive, and just.