MINES@150
Three Years to Go…

January 26, 2021 Presentation to the Faculty Senate
Why is MINES@150 Important?

The world is changing. As we look around, we see threats to our future:

**Competition:** increasingly competitive higher education landscape

**Relevance:** changing needs for education and research

**Complacency:** believing the status quo will be successful in the future
Why is MINES@150 Important?

- Strong production of high school graduates for two decades
- Graduation rate increases to mitigate contracting youth population
- Birth declines still predict long-term graduate declines

Why is MINES@150 Important?

Bachelor's Degree Seeking
- 2015: 8,735,162
- 2016: 8,680,309
- 2017: 8,814,333
- 2018: 8,626,366
- 2019: 8,548,717
- 2020: 8,470,450

All STEM Degrees
- 2015: 2,022,114
- 2016: 2,035,788
- 2017: 2,079,530
- 2018: 2,105,960
- 2019: 2,103,272
- 2020: 2,105,144

Colorado Higher Ed
- 2015: 303,777
- 2016: 292,738
- 2017: 291,986
- 2018: 294,234
- 2019: 292,738
- 2020: 291,986

First-Year Students at 4-Year Schools
- 2015: 1,554,191
- 2016: 1,554,206
- 2017: 1,525,834
- 2018: 1,517,142
- 2019: 1,480,532
- 2020: 1,356,484

https://nscresearchcenter.org
### Why is MINES@150 Important?

**Total Students Enrolled by School Size**

<table>
<thead>
<tr>
<th>School Size (# of students)</th>
<th>% Enrollment Change 2010-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;20,000</td>
<td>21%</td>
</tr>
<tr>
<td>10,000-20,000</td>
<td>6%</td>
</tr>
<tr>
<td>5,000 - 10,000</td>
<td>3%</td>
</tr>
<tr>
<td>1,000 - 5,000</td>
<td>-4%</td>
</tr>
<tr>
<td>&lt;1,000</td>
<td>-13%</td>
</tr>
</tbody>
</table>

**Can we compete?**

STEM student growth is central to many schools’ strategic plans.

[https://nces.ed.gov/ipeds/SummaryTables](https://nces.ed.gov/ipeds/SummaryTables)
### How Competitive Are We?

#### Q1: Which School Would You Attend?

<table>
<thead>
<tr>
<th>Metrics</th>
<th>School A</th>
<th>School B</th>
<th>School C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Enrollment</td>
<td>4500</td>
<td>4500</td>
<td>24000</td>
</tr>
<tr>
<td>US News National University Ranking</td>
<td>20</td>
<td>82</td>
<td>74</td>
</tr>
<tr>
<td>US News Undergraduate Engineering Ranking</td>
<td>8</td>
<td>44</td>
<td>16</td>
</tr>
<tr>
<td>Student:Faculty Ratio</td>
<td>8:1</td>
<td>17:1</td>
<td>18:1</td>
</tr>
<tr>
<td>Average Net Price</td>
<td>$31,356</td>
<td>$24,297</td>
<td>$16,951</td>
</tr>
<tr>
<td>Freshmen Retention</td>
<td>96%</td>
<td>94%</td>
<td>93%</td>
</tr>
<tr>
<td>4-Year Graduation</td>
<td>76%</td>
<td>49%</td>
<td>46%</td>
</tr>
<tr>
<td>6-Year Graduation</td>
<td>91%</td>
<td>77%</td>
<td>76%</td>
</tr>
</tbody>
</table>

**Audience Polling (2016):**

School A is most preferred (>90%)

School B is least preferred

**Desirable Attributes:**

Medium-size • Highly Respected • Selective • Great student outcomes • Great ROI

**Lessons-learned from recent admit & yield data?**
To thrive as a **mid-sized** and **uniquely STEM-focused** university, MINES will need to be **top-of-mind and first-choice** for students, public and private partners, and faculty and staff.

**Why is MINES@150 Important?**

**Path A: Specific Near-Term Actions**

- **Undergraduate Programs:**
  - Create unique-to-Mines signature experience
  - Increase graduation rates and decrease time-to-graduation
  - Expand program offerings and pathways to completion
  - Strengthen emphasis on professional preparation
  - Services/experiences have to be like Cohort A schools

- **Non-thesis Masters & Non-Degree Programs:**
  - Need to grow these (national increase +30% overall while Mines has been stagnant/declining in masters enrollment)
  - Need non-traditional delivery (times & method) for convenience

- **Research-based Masters & Doctoral Programs:**
  - Create signature graduate experience and professional preparation
  - Grow/expand research enterprise
  - Offer unique program options
To thrive as a **mid-sized** and **uniquely STEM-focused** university, MINES will need to be **top-of-mind and first-choice** for students, public and private partners, and faculty and staff.

**A Top-of-Mind First-Choice University**

- A leader in educating STEM students and professionals
- A preferred partner for talent, solutions and life-long learning

**An inspiring and caring community in which to learn, explore, live and work**

- A producer of differentiated and highly desired STEM-educated leaders
- The exemplar for alumni affinity, visibility and involvement

**Accessible and attractive to qualified students from all backgrounds**

- A go-to place for use-inspired research and innovation needed to solve challenges facing industry, society, and the environment

**MINES@150 Aspirations**
The **MINES@150** plan includes **macro-level design parameters** that define our size in the future. These reflect program input, review of our financial model, benchmarking and our goals.

<table>
<thead>
<tr>
<th></th>
<th>Fall 2018 Values</th>
<th>Mines@150 Aggregate Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Students</td>
<td>4908</td>
<td>5000</td>
</tr>
<tr>
<td>Masters/Non-Degree Students</td>
<td>670</td>
<td>1600</td>
</tr>
<tr>
<td>Doctoral Students</td>
<td>550</td>
<td>900</td>
</tr>
<tr>
<td>T/TT Faculty</td>
<td>223</td>
<td>250</td>
</tr>
<tr>
<td>Teaching Faculty &amp; Professors of Practice</td>
<td>88</td>
<td>90</td>
</tr>
<tr>
<td>Research Grants &amp; Contract Awards</td>
<td>$66M</td>
<td>$85M</td>
</tr>
</tbody>
</table>
Top-of-Mind & First-Choice” Imperatives

To achieve our MINES@150 aspirations, we must:

• become more accessible and attractive to the students we want at Mines (affordability, success metrics, living/learning, culture, demographics)

• produce distinctive graduates: highly-valued, future-prepared and adaptable.

• re-align our programs portfolio with the future; expand offerings and diversify delivery, grow the professionally-oriented pre- and post-graduate education.

• grow the scale and impact of our R&D and other innovation activities: build thematic strengths, expand partnerships, diversify funding sources, increase tech transfer.

• build/acquire the infrastructure needed for MINES@150.

• grow/acquire the leadership needed for MINES@150.

• strengthen affinity for MINES among our students, alumni, and external partners.

• attract investment to support our strategic initiatives.
MINES@150 Priorities/Initiatives

Signature Student Experience
(distinctive coupled curricular + co-curricular preparation for future success)

Student Success
(>94% retention, 75%/85% 4/6 year graduation, >95% post-graduation placement)

Financial Accessibility & ROI
(manageable maximum student debt at graduation ($40K?))

Living & Learning Community Expansion
(housing for 1st and 2nd year students and thesis-based graduate students)

Scholars Communities
(all students are members of vertically-connected & supportive communities)

Pathways to Mines – Expand Opportunity
(Increase the ways that students get attracted to and prepared for Mines)

DI&A Plan & Initiatives (woven into many initiatives)

Become more attractive and accessible to the students we want at MINES

A great community to learn, explore, live and work in

Attractive and accessible to qualified students from all backgrounds
A leader in educating STEM students and professionals

A producer of differentiated and highly desired STEM-educated leaders

**Attributes of Mines Graduates**

- Hard-working, creative, persistent, resilient & collaborative problem solvers
- Technical competency
- Hands-On Experience
- Best Professional Preparation
  - Business competency
  - Communicating & selling ideas, solutions, etc.
  - Leadership
  - Organizational understanding
- Strong Affinity to Mines
- Pay it forward attitude

**MINES@150 Priorities/Initiatives**

Produce distinctive graduates: highly-valued, future-prepared and adaptable

**Pathways of Distinction**
(distinctive & differentiated programs)

**Econ Alternative**
(finance, accounting, etc.)

**Vallejo-Irvine (VIP) Program**
(deliberate professional preparation)

**E&I Ecosystem**
(Labiola Innovation Complex, Beck Venture Center, McNeil E&I programs)

**Thorson/Honors & 1st Year Programs**
(context: excite, inspire, engage)

**Harvey, Grewcock, Vanguard Scholars**
(thermatic scholars communities)

**Preparing Future Alumni**
(owned/delivered by alumni)
MINES@150 Priorities/Initiatives

Re-align our programs portfolio with the future; expand offerings and diversity delivery

Launch Thematic/Interdisciplinary/Leading Edge Programs
- Advanced Energy Systems (NREL+MINES)
- Space Resources (aerospace industry + Mines unique expertise)
- Advanced Manufacturing (additive manufacturing; materials+AI, etc.)
- Quantum Engineering
- Others (30+ new post-bac options; data sciences, etc.)

Offer Stackable Credentials (certificates, micro-masters, etc.)
Offer Remote 4+1 Completion (complete while working 1st job)
Business Engineering & Mgmt Sciences; Construction Mgmt
MINES Online + MINES Marketing (expand interest and access and delivery beyond the Denver area)

A leader in educating STEM students and professionals
A producer of differentiated and highly desired STEM-educated leaders
MINES@150 Priorities/Initiatives

Grow the scale and impact of our R&D and other innovation activities

- build thematic strengths,
- expand partnerships,
- diversify funding sources,
- increase tech transfer.

MINES@150
The Frontiers Initiatives

Positioning MINES for leadership at future S&T frontiers

- Materials and Advanced Manufacturing
- Earth and Space Exploration, Technology, and Engineering
- Others (TBD)

Research & Education Frontiers at MINES
MINES@150 Priorities/Initiatives

Build/ acquire the infrastructure needed for MINES@150

Spruce Hall
1750 Jackson

Beck Venture Center
Labriola Innovation Complex
McNeil Hall

Mines Park?
MINES@150 Priorities/Initiatives

Grow/ acquire the leadership needed for MINES@150

Fryrear Endowed Chairs for Innovation & Excellence
Each distinguished endowed chair and award offers the most highly-accomplished faculty recognition for demonstrating exceptional teaching and/or research AND for the important leadership roles they take to drive a strategic initiative and/or program that furthers the vision and mission of Mines

New MINES@150-specific Leadership Positions
Vice Provosts for X
Presidential Faculty Fellow for X
Vice President for Global Initiatives

Formal Leadership Development Programs
Administrative Leaders
Campus Leaders
Strengthen affinity for MINES among our students, alumni, and external partners

 MINES@150 Priorities/Initiatives

**Oredigger Camp**
(new students welcomed by upper class students)

**MINES Traditions**
(M-Climb, E-Days, Homecoming, etc.)

**Developing Future Alumni**
(alumni owned/delivered)

**MINES Climbs Together**
(Orediggers supporting Orediggers)

**Signature Student Experience**
(if done right, it will accomplish this imperative…)

**Department/Program-Level Initiatives**
(TBD)
Attract investment to support our strategic initiatives

MINES@150 Priorities/Initiatives

- Investment in Students
- The Mines Signature Student Experience
- Entrepreneurship, Innovation, and Business Programs
- The Pursuit of Excellence and Distinction
MINES@150
Three Years to Go…

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