Every day, people at **Mines** prepare leaders in engineering and science, increase the world’s knowledge and serve others.

January 2017
Mines is Growing

BS Graduates -- Mines

57% increase in undergraduate degrees in 5 years

Goal: Prepare more undergraduate students for leadership in engineering and science

Enrollment

- Headcount
- Full Time Equivalents
Internships & Professional Development

• 75% of recent graduates have at least one co-op or internship
• Mines interns at 240 companies in 39 states
• 83 were SD Companies
• $17.15/hour

It’s the...
Improving Facilities

Residence Hall
Built by Mines Foundation
11 Month Construction
Opened Fall 2016

Placer Hall
Fall 2015

Goal: Redevelop and expand needed living, learning, and research spaces.

Fall 2016
Chemistry and Applied Biological Sciences

- $6.5 million renovation
- Construction started Fall 2015
- Complete January 2017
Maintenance and Repair Funds

- McLaury Renovation
  - Last major renovations -- 1970’s
  - Phase I: Replace original windows, ADA modifications with elevator and bathrooms, mitigate foundation water issues
  - Phases 2-4: HVAC upgrades and architectural improvements to gain efficiency of space
- Flooring replacement 30 – 40 year old carpet and tile
- Security access upgrades for external doors

McLaury (1922)
Math and Computer Science
### FY17 Unrestricted Budget

<table>
<thead>
<tr>
<th>Unrestricted</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Revenues</td>
<td>$30,682,482</td>
</tr>
<tr>
<td>Non-Operating Revenues</td>
<td>$17,054,788</td>
</tr>
<tr>
<td>Total Revenues</td>
<td>$47,737,270</td>
</tr>
<tr>
<td>Operating Expenses</td>
<td>$46,037,270</td>
</tr>
<tr>
<td>Increase in Net Assets</td>
<td>$1,700,000</td>
</tr>
</tbody>
</table>

- 3.6% positive margin
- FY15 and FY16 reductions in overhead staff continued while protecting teaching
- Annually review all programs
- Strengthened finance team and financial processes
- Exceeded end of FY15 and FY16 targets for restoring cash balances

**Goal:** Responsibly steward financial and physical resources.
Using State Funded Positions

Why isn’t it 100%?

- Reversion for decreases in health insurance and PEPL fund premiums
- Leave payouts when employees separate service
- Vacant while recruiting
What About Federal and Tuition/Fee Funded Positions?

- We fill them when we are sure we have the enrollment or grant awards available to pay for them

- There are gaps due to leave payouts, recruitment delays, grant award delays

- Enrollment and revenue projections are improving, resulting in fewer vacant FTE
Legislation

HB1009 – Allows SD Mines to accept the donation of a small parcel of land from Pennington County
Math @ Mines

• Started for Fall 2015 cohort using donated funds
• Year two funded by legislature for Fall 2016 cohort
• $250,000
  – Summer math by distance program
  – Intensified math for Algebra and Trig students
  – Not remedial math: intense instruction & practice for mastery

• **95%** of students who did summer math would recommend it to the next class
• **79%** would recommend intensified practice sessions to peers
Freshmen are Starting in More Difficult Classes

First Math Classes at Mines

- Differential Equations
- Calc 3
- Calc 2
- Calc 1
- Trig
- Algebra

Percent of Class Starting in Calc I or higher:
- 2014 -- 52%
- 2015 -- 58%
- 2016 -- 66%

[Bar chart showing the percentage of freshmen starting in each math class by year]
And Grades are Higher

6% Decline in D’s, F’s, and W’s
4% Decline in C’s
10% Increase in A’s and B’s

Fall math grades for the first time, full time freshman cohorts.
And Those Who Re-Take Are Doing Better 2nd Time

A/B/C Rates in for Spring Semester of Repeating Students

<table>
<thead>
<tr>
<th></th>
<th>2014 Freshmen</th>
<th>2015 Freshmen</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra</td>
<td>45%</td>
<td>67%</td>
<td>+22%</td>
</tr>
<tr>
<td>Trig</td>
<td>55%</td>
<td>74%</td>
<td>+19%</td>
</tr>
<tr>
<td>Calc I</td>
<td>59%</td>
<td>75%</td>
<td>+16%</td>
</tr>
<tr>
<td>Calc II</td>
<td>29%</td>
<td>81%</td>
<td>+52%</td>
</tr>
</tbody>
</table>

= More engineers and lower college cost for families
# How Much Will a Family Save?

<table>
<thead>
<tr>
<th>Student A</th>
<th></th>
<th>Student B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra</td>
<td>$0</td>
<td>Algebra</td>
<td>$0</td>
</tr>
<tr>
<td>Trig</td>
<td>$854</td>
<td>Trig</td>
<td>$0</td>
</tr>
<tr>
<td>Trig Retake</td>
<td>$854</td>
<td>Calc I</td>
<td>$1,139</td>
</tr>
<tr>
<td>Calc I</td>
<td>$1,139</td>
<td>Calc II</td>
<td>$1,139</td>
</tr>
<tr>
<td>Total</td>
<td>$3,986</td>
<td>Total</td>
<td>$2,278</td>
</tr>
</tbody>
</table>

Every case is different. Example:
- Start one course higher
- Pass the first time, rather than the second
- ~$1,700
Growing Research

**PhD Students**

- 2006: 39
- 2007: 46
- 2008: 53
- 2009: 76
- 2010: 93
- 2011: 90
- 2012: 89
- 2013: 94
- 2014: 115
- 2015: 113
- 2016: 115

**Invention disclosures**

- 2009: 1
- 2010: 4
- 2011: 5
- 2012: 14
- 2013: 19
- 2014: 11
- 2015: 16
- 2016: 16

**Goal:** Increase research to prepare science and engineering experts, advance knowledge, and catalyze economic development.
Research - What Are Our Strengths?

RESEARCH CENTERS:

- Advanced Manufacturing Process Technology Transition and Training Center
- Center for Friction Stir Processing
- Center for Bioenergy Research and Development
- Composite and Nanocomposite Advanced Manufacturing
- Center for Repair, Refurbish, and Return to Service
- Biochemical Spatio-temporal NeTwork Resource
- Center for Security Printing and Anti-Counterfeiting Technology
- Center for Surface Engineering Research
Research-Based Economic Development

- 9 start-ups since 2012
- One has over 40 employees
- Three others, over $3 million in venture capital
- Entrepreneur-in-Residence program – 30 executives strong
- Regional student business plan competition in year three
Space is a Barrier to Research Expansion

Overcrowding, leasing old print shop, short term leases in incubator
Alignment: Rapid is Ready
SD Institute for Advanced Materials and Manufacturing

Main Street Square
City Innovation District
Housing
Mines Campus
Summary

- Mines is growing, strengthening needed programs and improving
- Using funds efficiently
- Research space is a challenge
- Math @ Mines is working