Corporate Development Council (CDC)
Spring 2020 Meeting

Hosted by:
Office of the Vice Chancellor of Student Affairs
Welcome & Overview

> Debra Robinson, Vice Chancellor, Student Affairs and CDC Executive Director

> Dave Sextro, Vice President of Engineering at Emerson and CDC Chair

CDC Mission: Engaging Alumni and Employers to prepare S&T students for success in the corporate world.
Brief Introductions

CDC Member Introductions
- Name
- Company
- Association with Missouri S&T (Alumni, Advisory Board(s), etc.)
- Interesting fact about yourself
CAMPUS UPDATE

Dr. Mo Dehghani, Chancellor
Corporate Development Council, Feb. 27, 2020
OVERVIEW

> New Initiatives
  > Missouri Consortium for Construction Innovation (MoCCI)
  > Missouri Center for Transportation Innovation
  > NextGen Precision Health Initiative and Institute
  > Center for Glass Science and Technology
  > Military Research Partnerships

> Manufacturing Initiatives

> Celebrating 150 Years
NEW INITIATIVES

Missouri Consortium for Construction Innovation (MoCCI)

From left: Rich Wlezien, Bob Brinkmann, Islam El-adaway, Brian Satterthwaite, Steve Sieckhaus, Joel Burken and John Komlos
NEW INITIATIVES

Missouri Center for Transportation Innovation

From left: John Myers, Bill Buttlar, Elizabeth Loboa, Alexander Cartwright, Mun Choi and Mark McIntosh
NEW INITIATIVES

NextGen Precision Health Initiative

VISION
Accelerate innovations in precision health that improve health outcomes for Missourians and the world.

MISSION
We will revolutionize health care for our citizens, eliminate health care disparities, and transform community health through cross-disciplinary collaborations of world-class academic researchers in partnership with government agencies and industry leaders.
NEW INITIATIVES

Center for Glass Science and Technology

NextGen PRECISION HEALTH Initiative
MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY
MILITARY RESEARCH PARTNERSHIPS

- $5.1 million federal funding from U.S. Army Research Laboratory
- Unique partnership with Fort Leonard Wood, Phelps Health, Leonard Wood Institute
- Army Research Symposium at S&T on April 1

Casey Burton discusses traumatic brain injury research during a Fort Leonard Wood conclave
MANUFACTURING INITIATIVES

> Advanced Manufacturing Week, April 27-May 1
> Grand opening of the Center for Aerospace Manufacturing Technologies facility in the Engineering Management Building

Frank Liou
Michael & Joyce Bytnar Product Innovation and Creativity Professor

Ron O’Malley
F. Kenneth Iverson Chair of Steelmaking Technologies
CELEBRATING 150 YEARS

Forged in Gold
The story of Missouri S&T's first 150 years

Dr. Larry Gragg, Curators’ Distinguished Teaching Professor Emeritus of history, will tell the story of Missouri S&T from its founding in 1870 to today in a commemorative history book. The book will be available by Homecoming 2020.
CELEBRATING 150 YEARS

SAVE THE DATE
> Oct. 16-17: Homecoming Weekend 2020
> Oct. 16: Stoffer Lecture by Nobel Laureate M. Stanley Whittingham (Chemistry)
> Nov. 5-7: 150 Years of Metallurgical Engineering at Missouri S&T
> More to come! Check 150.mst.edu for updates
THANK YOU! QUESTIONS?
S&T Degree Programs- What’s on the Horizon?

Richard K. Brow
Interim Deputy Provost for Academic Excellence
Corporate Development Council
27 February 2020
Brief Biographical Information

- S&T Faculty Member Since December 1997
  - Curators’ Distinguished Professor of Ceramic Engineering
  - Department Chair, Materials Science & Engineering (2001-2006)
  - Interim Dean, College of Engineering and Computing (2016-17)
  - Interim Deputy Provost for Academic Excellence (2019-2020)
    - Academic Programs
- Research and Teaching Interests Involve Glass Science & Technology
  - Relationships between composition, structure, properties
  - Designing compositions for engineering applications
    - Optical, electronic, biomedical, waste vitrification, etc.
  - Research and Creative Works Strategic Initiative to establish the NextGen Center for Glass Science
Outline

- Some information about our current programs and the higher ed landscape
- New programs in the pipeline
  - On campus, on-line
  - Undergraduate and graduate
  - Degrees and certificates
- How you might help
Our alumni value their S&T degrees

Is Your College Worth the Cost? Here’s What Students Say About Their Colleges

The schools ranked highest by their students for being worth the expense

1. BYU, US Naval Academy
2. Massachusetts Institute of Technology
3. Virginia Military Institute
4. La Tech, Princeton, Wyoming
5. Bowdoin College

Missouri University of Science and Technology
Wisconsin-River Falls, Washington and Lee, Yale

Based on 174,000 survey responses, involving over 600 universities and colleges.
Our alumni value their S&T degrees

The value of a Missouri S&T BS degree after
- 10 years: $213,000 (154th in the nation)
- 15 years: $494,000 (51st in the nation)
- 20 years: $749,000 (43rd in the nation)
- 30 years: $1,188,000 (43rd in the nation)
- 40 years: $1,548,000 (42nd in the nation)

The million dollar degree...
There are some storm clouds on the horizon

The number of high school graduates in the US is declining

**HS Grads in 2030, compared to 2015**
- Missouri: -2%
- Illinois: -18%
- Arkansas: -2%
- Oklahoma: +9%
- Kansas: +8%
- Nebraska: +5%
- Iowa: +2%

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*WICHE: Knocking at the College Door. Highlighted: Top U.S. States for Recent HSG Freshmen at NASM member institutions (IPEDS Fall Enrollments, 2016).*
The number of high school graduates in the US is declining

THE CHRONICLE OF HIGHER EDUCATION

STUDENTS

At the Precipice: 6 in 10 Colleges Say They Missed Fall Enrollment Goals

By Scott Carlson | FEBRUARY 24, 2020  ✔ PREMIUM

MINERS DIG DEEPER
The number of students who chose engineering may be cresting.
Most of 2030's Jobs Haven't Been Invented Yet

By Dora Mekouar
February 08, 2019 08:48 AM

Up to 85 percent of the jobs that today's college students will have in 11 years haven't been invented yet.
Our Challenge and Our Opportunity

Are we providing the educational opportunities that students want?

Are we providing the educational outcomes that students need?
“The Rolla Way”

1. Rigorous classroom/online curricula in foundational STEM disciplines: *Teach the basics*

2. Hands-on opportunities to apply lessons learned: *Experience the discipline*
   - Laboratory experience
   - Co-op/internships
   - Design teams

3. STEM-adjacent options: *Expand the brand*
   - STEM teaching certificates
   - STEM-centric business/IST
   - Technical writing, etc.
We are organizing our STEM-curricula into tracks that introduce students to discipline possibilities

Ex. Where can you go with a BS in Computer Science? Careers in
• Artificial Intelligence
• Virtual Reality and Computer Game Development
• Self-Navigating Vehicles
• Crypto-tech and cybersecurity
• Web and mobile applications

Ex. What do Civil Engineers do?
• Smart transportation- connecting vehicles and the roads
• Construct future cities
• Design hazard-resilient buildings
• Develop the sustainable construction materials of tomorrow
• Ensure reliable and sustainable sources of water

Tailor elements of each curriculum to respond to the interests of the students and needs of industry while retaining the core elements of each discipline.

Limited number of new degrees, but more options within the degrees

How can you help? Help us understand your needs!
We will extend our inter-disciplinary certificate and minor programs to support the discipline-specific interest tracks

- Certificates require four courses, minors typically five
- Must meet discipline-specific accreditation requirements
- Gives students something to “market” to future employers
- Examples:
  - CO₂ Sequestration (Chem/ChE)
  - Engineering Ethics, Philosophy
  - Bio-Innovations (BioSci/Business)
  - Data Sciences (CompSci/Math)
  - Applied Entrepreneurship, Applied Econ Analysis (Econ/Bus)
  - Nuclear Security Policy (NucE Hist&PoliSci)

How can you help? Help us understand your needs!
We do plan to offer new degree programs

- Global Engineering (BS in World Languages)
  - Study Abroad Experience to supplement BS degree
- BS in Nuclear Medicine (ABET)
- BS in Education (STEM focus)
- MS in Construction Management
- MS/PhD in Water Science/Engrng (GE/Geo/BioSc/EnvE)
- MS in Biomedical Sciences (BioSci/Chem/ChBE/MSE)

How can you help? Help us understand your needs!
We are developing new options for Masters’ degrees

- Accelerated Masters (within disciplines)
  - (4+1) Start graduate courses in senior year
  - Adds (on average) $13K/year to salary (ChE)
- Supplemental Interdisciplinary Masters
  - Data Sciences
  - Computational Sciences
    - Numerical methods, AI, etc./Discipline specific (Chem/Phys/MSE/CivE/NucE, etc.)
    - CompSci Bootcamp (MS)
  - STEM-focused MBA
- Certificate Stacking/Interdisciplinary Masters (2+1)
  - Two EMan certs and one EE/Power: EMan MS
  - Two ExpE certs and one EMan: ExpE MS

How can you help? Help us understand your needs!
Opportunities that arise from interdisciplinary collaborations

National Workshop:
RESILIENT SUPPLY OF CRITICAL MINERALS
May 27-28, 2020
Missouri S&T Campus | Rolla, Missouri

Made possible by local expertise in mining engineering, geological engineering, mineral processing and metallurgy, policy and regulations
The Rolla Way

- Provide students the educational opportunities that they want
- Provide students the educational outcomes that they need

Teach the Basics

Expand the Brand  Experience the Discipline

Would you like to help? Contact us! brow@mst.edu
Welcome!

Gen Z Goes to College
Gen Z Goes to College

**Generation X**
1965 - 1980
- Work life Balance
- Text Message
- Loyal
- Personal Computer

**Generation Y**
1981 - 1995
- Freedom & Flexibility
- Online & Mobile
- Digital Entrepreneur
- Tablet & Smartphone

**Generation Z**
1996 - 2012
- Security & Stability
- Facetime
- Multitaskers
- Nano Computing
Who is Generation Z?

Gen Z Goes to College
Who are their parents?

Work-Life
Independence
Pragmatism

Flexibility
Skepticism
Motivation

Gen Z Goes to College
SOCIAL RESPONSIBILITY

SECURITY & STABILITY

Gen Z Goes to College
How best to work with your Gen Z student
Gen Z students want a copilot

88% of those in Generation Z feel they are extremely close to their parents, whom they see as playing roles more like friends and advisers. (2, p. 89)

Half take the opinions and perspectives of their family into consideration in their decision making. (2, p. 89)

In considering what has fostered this type of relationship, it is likely the honesty, trust, and openness that their parents have displayed early in their lives. (2, p. 157)

We have seen increased involvement of parents on PRO Days.
Gen Z students want financial security

Unlike members of Generation Y — and especially Gen Xers — Gen Z teens seem to be more financially careful and debt averse when it comes to student loans, according to the nonprofit College Savings Foundation.

They also are willing to work their way through high school and college to help cover tuition, room and board and other college costs, the survey found.

As a whole, Gen Z students “appear to be a more conservative generation that also realizes the impact debt can have on their lives," said Roger Michaud, chairman emeritus of the Washington-based savings organization.

That’s a sharp contrast, he noted, to members of previous generations who often took a “sky’s the limit” approach to borrowing for college. (3)

94% of incoming students plan to work in a co-op or internship before graduating. (1)

82% of incoming students plan to work either full-time or part-time while also attending S&T. (1)
Gen Z students have only known an uncertain world

63%
TEENS WORRIED ABOUT THEIR FUTURE

Growing up in a post-9/11 world during a recession

1 in 4
American children are living in poverty

73%
of Americans were personally affected by the Great Recession

Gen Z were developing their personalities and life skills in a socio-economic environment marked by chaos, uncertainty, volatility and complexity. Blockbusters like The Hunger Games and Divergent depict teens being slaughtered. No wonder Gen Z developed coping mechanisms and a certain resourcefulness.

Source: Rutgers 2013, Annie E. Casey Foundation 2013
IF EVERYONE COULD STOP BEING OFFENDED BY EVERYTHING

THAT'D BE GREAT
Parents: Why are your grades so bad?
Me:

Student smuggles phone into exam, looks at memes instead of cheating
from left to right: me on twitter, facebook, tumblr, instagram, and linkedin
my best friend n I haven't seen each other in 3 months so we made powerpoint presentations to update each other on our lives

buzzfeed wow, tag a bestie you'd make a powerpoint for
Load more comments
sanzida_h @salamania21 😂lol haha
Ihateyouallsmuch @yettobeinspired Mine would just be 10 slides saying haven't killed myself yet lmao <3
yettobeinspired @ihateyouallsmuch or it could include all of your amazing art 😏
maya_dumanovsky @marve1le when we meet up in florida we will do this! XDDD
malka.p Yo I will legit start mine after exams @_sineli_
rebeccaaliah Omg let’s do it
marve1le @maya_dumanovsky FL?? i thought we were meeting in NC when i go to college!!

244,884 likes
DECEMBER 27, 2017

Add a comment...
Cole M. Sprouse
@colesprouse

Show those haters how it's done by hating yourself most.

8:52 pm · 09 Dec 16

Source: sprousetwinsblog

87,448 notes
"My generation is going to be known for wanting to die and memes."
riley
@lgbtop

burglar: if you wanna live give me all your money
me: bold of you to assume i want to live and that i have money

7/25/18, 10:42 AM
I propose polyhedron Earth.
Sorta round, sorta flat: truly the answer for everyone.
Milk is cereal sauce

CHANGE MY MIND

Gen Z Goes to College
Mars is the only known planet inhabited solely by robots.
Gen Z students seek fulfillment

“Although they recognize that getting any job can be challenging, they also do not want to settle for a job that is not fulfilling. Two-thirds want their careers to have a positive impact on the world, and nearly 40% plan to invent something that will ‘change the world.’” (2, p. 103)
Generation Z Student:

“If we don’t do it, nobody will, and I want to be the one to...”
Gen Z students are different than their older siblings

Gen Z Goes to College
Sources:

1. 2018 Freshman Class Profile Questions, New Student Programs


How have you noticed the Gen Z traits in your own family?

(Time to brag about your kid)
What brief stories or advice would you like to share to help some of the other parents?

What can you tell us that would help us work with your students better?
As the demand for S&T students grows, as does the service offerings.

> Two NEW Career Fairs
  - Non-Profit
  - Graduate
> Miner Mingle
> Escape Room
> International Students – Missed Opportunity
> New Data Report
New Career Fairs

> Non-Profit, Government and K-12 School District Fair
  – Emphasis on CASB Majors
  – Focus on the service oriented generation
  – April 13, 2020

> Graduate Student Career Fair
  – October 2020
  – Companies seeking Masters and PhD hires
  – Other Universities looking for adjunct faculty
Miner Mingle

> Inaugural event was a success
  - 200+ Employer representatives
  - 1,000+ Student attendance
  - Eye on expansion

> Potential new location
  - Collaboration with the Student Design and Experiential Learning Center
Escape Room

- Teaching and Practicing NACE Competencies
- Spring 2020 Sponsored by Kiewit
International Student Hiring

> Missed opportunity to hire some of our brightest and most accomplished students

> Can sometimes cost 5-6 thousand dollars

> Third-Party consulting company available
New Data Report

Career Opportunities and Employer Relations

Annual Outcomes Report
AY 2018-2019

Will Zwikelmaier, Director
Emily Schlauch, Data Analyst

MINERS DIG DEEPER
Promoting Mental Well-Being at Missouri S&T
Reasons we Invest in Student Mental Well-Being

- Increases student performance
  - mild to severe depression leads to an average -0.2 change in GPA
  - with co-occurring anxiety, it leads to -0.4 GPA
- Improves student retention
  - among students who had dropped out with less than a 3.0 GPA, 25% screened positive for at least one mental illness
- Bolsters campus safety
- Reduces student suicide
- Helps reduce substance misuse/abuse
- Promotes resilience and reduce stress

Source: Kognito White Paper, March 2017: Increasing Student Retention through Improved Mental Health

Investing in mental well-being promotes retention
Student Stress at Missouri S&T
(from the Missouri Assessment of College Health Behaviors)

- 56% are stressed but managing; 23% report overwhelming/unbearable stress
- 30% report stress impacts academics moderately; 22% considerably/great deal
- 55% report anxiety in past year
- 30% report major depression in past year
- Main sources of stress as reported by S&T students (MACHB 2018, n=560)
  - 94% school/academics
  - 51% financial concerns
  - 51% future plans
  - 49% time management
- When problems arise students feel they can go to (MACHB 2019, n=706)
  - 83% report they go to friends and peers
  - 19% go to an academic advisor (31% state/PIP average)
  - 20% go to a faculty/professor (35% state/PIP average)
Counseling Services – early intervention/treatment

• Individual sessions
• Group sessions
• Walk-in hours
• Stress Less room
• Let’s Talk series
• Counseling library resources
• Community referrals

• After-hour resources
  • Crisis Text Line
  • National Suicide Prevention Lifeline
  • Compass Health Hotline
  • S&T Campus Police

Early Intervention  Treatment
Public Health Model for Holistic Care

- Primary Prevention
- Health Promotion
- Early Intervention
- Continuing Care
- Treatment

MINERS DIG DEEPER
Increased Demand for Mental Well-Being Services

- 5.6% average percent change in institutional enrollment
- 29.6% average percent change in counseling center utilization
- 5x rate at which counseling center utilization outpaced enrollment growth

(Source: Education Advisory Board: Understanding Today’s Demand for Mental Health Services)
Early Intervention for Students At-Risk

- University Committee for Assistance, Response, and Evaluation (UCARE)
- Care Management Services
- EdSights
- Residential Life Check-In Chats
Miner Wellness Initiatives

• Peer Education Network – Miner Wells and Tabling Events

• Miner Oasis relaxation space
  • Monday – Friday, 8am - 4:30pm
  • Coffee/tea, treats, games, art supplies
  • Comfy couches and chairs
  • Quiet and judgment-free space
Miner Wellness, Continued

• Alcohol and Drug Prevention Coalition
• STEP UP! Bystander Intervention
• Miner Wellness Consultations
• Miners Care Committee
  • Mental Well-Being Awareness Week
  • Mental Well-Being tables every two weeks
  • Mental Well-Being trainings by request
Engaging Faculty - initiatives to assist faculty with the recognition of their role in addressing student mental well-being

- Syllabus statement on mental well-being
- Faculty email to promote well-being
- Faculty awareness survey
- Tips on incorporating wellness strategies in the classroom
- Faculty mental well-being champions
Miners Care Initiatives, Continued

Miner Support Network

- Promote mental well-being and support students in their day-to-day lives through weekly peer facilitated group listening sessions
Mental Well-Being Ambassador Training Outcomes:

- Gain a greater understanding of mental health
- Be aware of and reduce barriers to seeking help
- Respond promptly, confidently, and appropriately to people in distress/crisis
- Become aware of and promote campus resources
- Identify people at risk for suicide; recognize risk factors, protective factors, and warning signs
- 87 MWB ambassadors on campus now
Miner Well-Being Certification Program

Participants will engage with campus-wide services and initiatives and develop skills that contribute to personal and community well-being and student success.

- Career Well-Being
- Social Well-Being
- Financial Well-Being
- Physical/Mental Well-Being
- Community Well-Being
Online Resources

Sanvello

• On demand app for managing stress, anxiety, depression, and building resiliency
• Premium version available to students, faculty, and staff at no cost
Online Resources

e-CheckUptoGo
online personal alcohol use assessment

Ask.Listen.Refer.
online suicide prevention training

Check-Up From the Neck Up
online mental health screenings

Body U
anxiety/stress management, healthier body and eating habits, improve self-

MINERS DIG DEEPER
JED Campus

• Nationwide initiative of The Jed Foundation (JED) designed to help schools evaluate and strengthen their mental health, substance misuse, and suicide prevention programs and systems.
Luncheon

> St. Pat’s A&B
> 12:30 p.m. – 1:30 p.m.
> Topic: Five Essential Elements of Well-Being

> Following the luncheon is the Student Leaders Roundtable Discussions (1:45 p.m. – 2:30 p.m.)
  – Your room assignment is on your Info Sheet
## Well-being: The Five Essential Elements

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Career Wellbeing</strong></td>
<td>Do you like what you do every day? With thriving Career Wellbeing, you will have something to look forward to every day and twice the odds of thriving in your life overall.</td>
</tr>
<tr>
<td><strong>Physical Wellbeing</strong></td>
<td>Do you have good health and enough energy to do what you want to do every day? With thriving Physical Wellbeing, you will look better, feel better and live longer.</td>
</tr>
<tr>
<td><strong>Social Wellbeing</strong></td>
<td>Do you have strong relationships and love in your life? Your Social Wellbeing is strongly influenced by your closest relationships and social connections.</td>
</tr>
<tr>
<td><strong>Community Wellbeing</strong></td>
<td>Do you take pride in your community? The positive outcomes of thriving Community Wellbeing might be the difference between having a good life and a great one.</td>
</tr>
<tr>
<td><strong>Financial Wellbeing</strong></td>
<td>Do you have enough money to do the things you want to do in life? Financial security has much more influence on your overall wellbeing than your income alone.</td>
</tr>
</tbody>
</table>
Mental Well-being & Greek Housing
Introduction

Alyssa Goldkamp

Jonathon Thomas
Missouri Assessment of College Health Behaviors 2019 (n=706)

- 56% are stressed but managing; 23% report overwhelming/unbearable stress
- 30% report stress impacts academics moderately; 22% considerably/great deal
- 55% report anxiety in past year
- 30% report major depression in past year
- 23% report suicidal thoughts in past year; 33% of those with suicidal thoughts sought assistance
- 47% concerned about a friend having suicidal thoughts or actions
- 68% of those who sought assistance report services very and extremely effective

Main sources of stress as reported by S&T students (MACHB 2018, n=560)

- 94% school/academics
- 51% financial concerns
- 51% future plans
- 49% time management
2019 Initiatives

> Community Values in Action Training
> Meeting with Student Affairs
> Greek Student Advisory Board
> Magnets
> Mental Well-Being Ambassador Training
Current Initiatives

- Well-Being Ambassador Training at Greek Academy
- Mental Well Being Awareness Week
- Suicide Prevention Walk (Out of the Darkness)
- Greeks Against Sexual Assault
- Mental Well Being Committee
- Resource Trainings
Future Initiatives

- Counselors at Houses
- Resource Drive
- Mental Well-Being Ambassadors
- Resource Training
- Resource Cards
Lightning Rod Wrap-Up
Next CDC Meeting is: September 2020
Date TBD

Thank you for attending!

Hosted by:
Office of the Vice Chancellor of Student Affairs