MESSAGE FROM THE DEAN

THANK YOU, NORTH DAKOTA!

It has been one heck of a journey, and I’d like to take this opportunity to thank our College’s incredible faculty, staff, and students and express my immense pride in the work we have all achieved together. The College has seen unprecedented growth (see my final report on pages 17-26) that truly would have been impossible without the hard work and dedication of these incredible people in this incredible place. Of course, the support of alumni and friends, the state, and the College’s Executive Board was also crucial to our collective success. I am truly thankful for all of you.

Finally, I’d also like to congratulate my colleague and dear friend Brian Tande for his appointment as interim dean of the College. Brian is a talented and visionary leader, and I am confident that he will competently lead our very capable faculty and staff to more growth (see my final report on pages 17-26) that truly would have been impossible without the hard work and dedication of these incredible people in this incredible place. Of course, the support of alumni and friends, the state, and the College’s Executive Board was also crucial to our collective success. I am truly thankful for all of you.

Each time, we’d end the comment by saying, “Only in Grand Forks!” Over time, though, we found that there really is something deeper—beyond just the weather—about the people, opportunities, and experiences here that is unique, but so ubiquitous that we often forget about it. So, even though the kids got past the transitional period long ago, we still find ourselves repeating the old maxim. It’s a frame of mind that constantly reminds us of how lucky and privileged we have been in ending up with this community that is so unbelievably kind, hardworking, and generous. Over the past eleven years, our collection of “Only in Grand Forks” moments has grown enormously, as has our love for this city, this state, and this university. I’m sincerely grateful to the many wonderful people who have warmly embraced, encouraged, and supported me and my family. For all of them, we will always be in debt.

Hesham El-Rewini, Ph.D., P.E.
Dean and Professor

LETTER FROM THE CEM’S EXECUTIVE BOARD

TERRY SEVERSON
BOARD CHAIRMAN

The CEM Executive Board is now in its seventh year of operation supporting Dean Hesham El-Rewini and the UND College of Engineering and Mines. We continue to meet semiannually—at UND during Homecoming and most recently in Bloomington, MN in April. We continue our support activities throughout the year through the Board’s four operating committees—Student Experience, College Relations, Research Promotion, and Resource Development—usually via periodic teleconferences and email among committee members and CEM faculty and staff. Our objective is to stay continuously engaged with the Dean, faculty, staff, and student leaders to provide real value to CEM.

This past year the board welcomed new members: Dean Anagnost (KLI Engineering), Jacquelyn Growhurst (Microsoft), Fred Schiller (3M), and Kristin McKenzie (DigiKey). Jacquelyn and Kristin are our first two Computer Science alumni to join the Board.

The Board has been and will continue to be fully engaged supporting the leadership transition from Dean B-Rewini to Interim Dean Brian Tande, and to Dr. Ryan Astana, director of the newly established School of Electrical Engineering and Computer Science (SSECS), as well as all the other CEM departments and initiatives. The theme of our recent spring meeting was CEM transition and future as we had sessions with all three of these leaders hearing and discussing their perspectives, thoughts, initiatives, and recommendations for CEM. It promises to be an interesting and rewarding for Board members going forward with CEM as it has been the last seven years. We’ve been privileged to see and support the very impressive growth record of CEM both in size and positive impact on UND and the state of North Dakota. There’s tremendous positive momentum in CEM that’s poised to continue. The “next big thing” for CEM is the combination of the Babcock Hall renovation, SSECS standup, and the Big Data investment. Engineering Distance Learning, now celebrating its 30th anniversary, is becoming an even more vital element of CEM. Few of us alumni realized that CEM was the vanguard in that discipline and is continuing to lead the way in the U.S. All of that, plus the other departments’ continuing strong engineering education and research programs, point to an active CEM in the future.

STEVE BURIAN
BOARD VICE CHAIRMAN
It is an honor to serve the College of Engineering and Mines as its Interim Dean. Dean El-Rewini’s time here has been nothing short of transformative (see his final report on pages 17-26), and I know that our faculty, staff and students join me in thanking Hesham for all he has done for CEM and UND these past eleven years.

Perhaps one of Hesham’s greatest legacies will be that he leaves us very well-positioned to tackle future challenges, particularly in the area of data science. The world has become inundated with data and it is increasingly important that today’s scientists and engineers know how to use and make sense of that data. In response, the College of Engineering and Mines has launched several new programs and initiatives to help our students and the industries we serve thrive in our data-driven world. For example, last year we formed the new School of Electrical Engineering and Computer Science (SEECS), which will be the center of our activities in this area. However, our efforts will significantly benefit every department and degree program in the college.

SEECS now offers new programs in data science and cybersecurity, both at the undergraduate and graduate levels. These will eventually include undergraduate minors that students from other disciplines can couple with their degree. For example, a student earning a BS in Chemical Engineering can earn a data science minor and graduate with a unique set of skills to help him or her draw additional insights from the wealth of process data collected in a refinery or chemical plant.

In addition to these programs, UND is investing significant resources to hire a cluster of data science faculty. These faculty will not only develop new courses to be taken by students across CEM, but they will also conduct research in artificial intelligence, machine learning and deep learning.

Through collaborations with others in CEM, across campus, and with industry, their work will impact many areas important to North Dakota and the region—energy, UAWs, healthcare, transportation, etc.

Finally, one of our biggest priorities in the near future is creating a modern and collaborative space to conduct these activities. We have recently kicked off a campaign to renovate the oldest academic building on campus to create the Big Data Hub at Babcock. This will provide much-needed space for the College, but will also serve as a highly-visible center of data science research and development for our region.

This is an exciting time for the College and I invite each one of you to be part of it. We are very grateful to our alumni for their generosity and continual support.

BRIAN TANDE  
INTERIM DEAN
Born: January 3, 1951, Langdon, ND
Education: University of North Dakota, BSCE, 1973
UND College of Engineering and Mines

**Mark Bittner**

**Career Experience**
- 1973-1975 Design and Construction Engineer, North Dakota Department of Transportation, Fargo, ND
- 1975-1981 Design and Construction Engineer, Fargo, ND
- 1981-2012 City Engineer, City of Fargo, ND
- 2012-2018 Director of Engineering, City of Fargo, ND

**Achievements/Accomplishments**
- Director of the basin wide multi-jurisdictional mapping initiative, LIDAR, and digital mapping
- Outstanding Support of St Paul District USACE during 1989 Flood Fight of Red River
- Outstanding Support of St Paul District USACE during 1997 Flood Fight of Red River
- Recognition of Service as Chairman of City of Fargo Employees Association
- Fargo Heritage Society Landscape Design Award for the renovation of Midtown Dam
- Outstanding City Employee by the ND League of Cities
- Designation as a North Dakota Water Wheel by ND Water Users Association & ND Water Resource Association
- Inducted into the ND Highway Hall of Honors
- Conferred Lifetime Membership into the American Society of Civil Engineers
- City of Fargo proclaimed July 11, 2018 Mark Bittner Day

During his tenure, Fargo, ND grew from 75,000 people to more than 122,000. The city’s footprint nearly doubled from 29 square miles to 50 square miles. The growth put Mark at the head of major road, water, and wastewater infrastructure expansions.

**Awards/Titers**
- 1989 Recognition of Service as Chairman of City of Fargo Employees Association
- 1993-1994 Cooperative Education Student, Unisys, Roseville, MN
- 1995-2001 Consultant, Microsoft, Edina, MN
- 2001-2002 Architect Evangelist, Edina, MN
- 2002-2006 Central Regional Developer & Platform Evangelism Lead, Microsoft, Edina, MN
- 2006-2011 Technical Committee member on Fargo-Moorhead Diversion FMD 1997-2007
- 2011-2012 Leadership in both state-wide multi-jurisdictional mapping initiatives, LiDAR, and digital mapping

**Professional Boards**
- UND College of Engineering and Mines Executive Board Member
- Minnesota High Tech Association (MHTA) Board Member (2011-Present)
- MHTA & 12-24-30 Committee Chair (2011-2013)
- Qajaq Camp Vice President Board Member
- UND College of Engineering and Mines Executive Board Member
- Girl Scout Co-Leader for 8 Years
- Led DPE Women in Tech Group at Microsoft
- Microsoft DigiGirlz Presenter and Volunteer
- UND College of Engineering and Mines Executive Board Member
- MHTA Board Member (2011-Present)
- Qajaq Camp Vice President Board Member
- UND College of Engineering and Mines Executive Board Member
- Girl Scout Co-Leader for 8 Years
- Led DPE Women in Tech Group at Microsoft
- Microsoft DigiGirlz Presenter and Volunteer

**Awards/Activities**
- 2002-2006 Central Regional Developer & Platform Evangelism Lead, Microsoft, Edina, MN
- 2006-2011 Technical Committee member on Fargo-Moorhead Diversion FMD 1997-2007
- 2011-2012 Leadership in both state-wide multi-jurisdictional mapping initiatives, LiDAR, and digital mapping

**During his tenure, Fargo, ND grew from 75,000 people to more than 122,000. The city’s footprint nearly doubled from 29 square miles to 50 square miles. The growth put Mark at the head of major road, water, and wastewater infrastructure expansions.**

**Jacquelyn Hiltz Crowhurst**

Born: October 22, 1971, Bemidji, Minnesota
Education: University of North Dakota, BSCSci, 1994
UND College of Engineering and Mines

**Career Experience**
- 1993-1994 Cooperative Education Student, Unisys, Roseville, MN
- 1995-2001 Consultant, Microsoft, Edina, MN
- 2001-2002 Architect Evangelist, Edina, MN
- 2002-2006 Central Regional Developer & Platform Evangelism Lead, Microsoft, Edina, MN
- 2006-2011 Customer Evangelism Director, Microsoft, Edina, MN
- 2011-2012 Developer Tools Director, Microsoft, Edina, MN
- 2012-2014 Central Regional Developer & Platform Evangelism Lead, Microsoft, Edina, MN
- 2014-2017 US Developer Tools General Manager, Microsoft, Edina, MN
- 2017-Present North Central Customer Success General Manager, Microsoft, Edina, MN

**Professional Boards**
- UND College of Engineering and Mines Executive Board Member
- Minnesota High Tech Association (MHTA) Board Member (2011-Present)
- MHTA & 12-24-30 Committee Chair (2011-2013)
- Qajaq Camp Vice President Board Member
- UND College of Engineering and Mines Executive Board Member
- Girl Scout Co-Leader for 8 Years
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**Jacquelyn Hiltz Crowhurst, husband Christopher, and parents Bob & Cheryl Hiltz**

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**Jacquelyn Hiltz Crowhurst, husband Christopher, and parents Bob & Cheryl Hiltz**
CHARLES S.

MAC FARLANE

Class of 1987

Charles S. MacFarlane

Born: July 11, 1964, Cartierville, North Dakota
Education: University of North Dakota, BSME, 1987
University of St. Thomas, MBA, 1994
University of Minnesota Carlson School of Management, Executive Program, 2000
University of Chicago Booth School of Business, Advanced Management Program, 2015

Career Experience

Director of Delivery Construction and Field Operations, Xcel Energy, Minneapolis, MN 2000-2001
Director of Electric Transmission Planning, Engineering, and Reliability, Xcel Energy, Minneapolis, MN 2001-2002
Director of Internal Analysis and Planning, One Tail Power Corporation, Fargo Falls, ND 2002-2003
Vice President of Finance & Business Planning, One Tail Power Company, Fargo Falls, ND 2003-2008
President, One Tail Power Company, Fargo Falls, ND 2008-2014
Chief Executive Officer, One Tail Power Company, Fargo Falls, ND 2014-2015
President and Chief Operating Officer, One Tail Corporation, Fargo, ND 2015-Present
President and Chief Executive Officer, One Tail Corporation, Fargo, ND 2015-Present

Professional Boards


Activities

UND Hockey Enthusiast
Young Life Board Member
Fergus Falls Community Areas Fundraising Co-Chair

Steve Martin

Born: May 1, 1966, Devils Lake, North Dakota
Education: University of North Dakota, BSME, 1989
Creighton University, Pursued MBA, 1991-92

Career Experience

1997-2003: GE Energy, Area Country Executive, Turkey, Israel, Greece, and Cyprus
2009-Present: KS Energy Africa, Co-founder/Chief Executive Officer and Board Director

Accomplishments

1994-1997: Global GE Greenhouse Gas Team Founding Member
2003-2004: GE Energy Area Country Executive, Turkey, Israel, Greece, and Cyprus
2015-2016: GE Energy Area Country Executive, Turkey, Israel, Greece, and Cyprus
2017-2018: GE Energy Area Country Executive, Turkey, Israel, Greece, and Cyprus
2018-2019: GE Energy Area Country Executive, Turkey, Israel, Greece, and Cyprus

Awards/Honors

2008: GE President's Award for Contributions to the Formation of the Business Growth Region of Central and Eastern Europe for Work at the 2004 Olympic Games in Athens
2012: Frost and Sullivan Africa Power Generation Competitive Strategy Leadership Award

Steve envisions new business models for Africa. He is targeting underserved power-generation markets, using mini/off-grid solar and gas technology he and his partners are developing.
When you think of the Silicon Valley in Northern California, what readily comes to mind?

How about “Route 128” near Boston? Or the Research Triangle outside Raleigh-Durham, N.C.?

Most think of high-powered and often high-tech corporations clustered within an arm’s length of research universities, always on the cusp of the next big thing in a given field.

UND has its own grand vision to be the best it can be in areas it’s already good at. It’s based on its Grand Challenges research initiative — in biomedical science, rural health, energy & sustainability, unmanned and autonomous systems, and Big Data — and a growth mindset to diversify the state’s economy away from oil and soil.

And it all starts with Big Data.

During his “Wake up to UND” presentation to the Grand Forks-East Grand Forks business communities, UND President Mark Kennedy announced that UND, through its College of Engineering & Mines (CEM), is making the first of what could be a number of faculty hires to support Grand Challenges research.

The first set of hires could comprise as many as six computational scientists (three junior level and three senior level professors), all well-versed, and well-funded, in the Big Data expertise, such as analytics, machine learning, artificial intelligence and robotics.

UND is using money from one of its strategic priorities pools, made possible by its new incentive-based budgeting model, to co-invest with the CEM to fund the new hires.

“Big Data is vital to every field of study,” Kennedy said. “A lot of the professors that we would be bringing in would have this expertise to spark the education that will give our employers in the region the talent they need to succeed and flourish.”

FLEDGLING CLUSTER

UND Vice President for Research & Economic Development Grant McGimpsey said the new computational scientists, who will spend most of their time on Big Data research, will directly support the needs of the other Grand Challenge focus areas on campus.

“Big Data is a very different Grand Challenge than the others,” he said. “The way I look at it is that computational research, algorithm development, data analytics all underpin the other four Grand Challenges.”

McGimpsey said the most immediate off-campus impact of the beefed up computational expertise could be on the UAS side, a field where UND is pioneering in Detect-and-Avoid and Beyond the Line of Sight technologies and the integration of drones into civilian airspace.

UND, with its premier John D. Odegard School of Aerospace Sciences, is nestled in the heart of a robust UAS ecosystem, surrounded by small startups, established heavyweights, such as Northrup Grumman, General Atomics and Harris Corp., all with strong connections to the nearby FAA UAS Test Site, Grand Forks Air Force Base and Grand Sky, a new drone business park adjacent to the air base.

McGimpsey has talked to folks, such as Tom Swoyer, president of the Grand Sky Development Co., about the need for data analysts...
and computational scientists to help support the fledgling UAS cluster.

“Every company that (Swoyer) talks to, and that comes in and wants to take up space there, they have a need for information,” McGimpsey said. With more analytical firepower clustered nearby to give them what they need, private-sector innovators and firms may be more likely to stake a claim.

NURTURING CAMPUS
But it’s not just in the UAS realm.

Hesham El-Rewini, dean of the CEM, talked about a recent trip to Fargo to meet with executives of the Bobcat manufacturing company, and how the conversations were dominated by the company’s need to analyze data effectively and turn it into information.

Everybody now is trying to find ways to deal with this tremendous amount of data and how to collect it, store it and make sense out of it,” El-Rewini said.

That includes UND’s other Grand Challenges, which also would be nurtured by a computational surge on campus.

McGimpsey sees applications in everything from biomedical science and its work with complex genomes to energy studies and the exact computations it uses to coax more oil from the state’s tricky shale geology.

“What’s missing right now from all those is how to imaginatively and creatively and efficiently analyze all the data,” he said.

SYMBOLIC SETTING
Kennedy, along with McGimpsey and El-Rewini, recognized this deficiency early.

They created a more nimble and collaborative academic structure to allow the computational push to thrive. UND melded the departments of Electrical Engineering and Computer Sciences into the School of Electrical Engineering and Computer Science (SEECS), housed at the CEM. Next, came the hiring of Ryan Adams, from the University of North Carolina at Charlotte, to be the first director of the SEECS.

Along the way, a Big Data focus was established to provide the entire campus much needed data science support. Even the future headquarters for the new Big Data Hub, at Babcock Hall, was meticulously thought out.

El-Rewini envisions Babcock, with its namesake ties to the first dean of engineering and its location at the heart of campus, to be a collaborative space for researchers from all parts of campus and beyond.

The idea is that each College would invest in their own new faculty hires to meet their individual needs and use the Big Data Hub as a collaborative space to conduct much needed high-level computational research.

“Symbolically, I am saying that with the Big Data Hub at Babcock – engineering will be the core but it will collaborate with all parts of campus and beyond. The committee will collect feedback from these visits and expects to make offers by late June.”

– David Dodds
UND Today

THE BEST ENGINEERS CAN GO ANYWHERE AND EVERYWHERE, BUT THEY START HERE.

SOUTH AFRICA

Three engineering students made their way to Orapa, Botswana in Southern Africa. The UND Native American Cultural Exchange Program for Engineering Students offers internships with KS Energy in Africa. The program was established in 2017 by Steve Martin, BISME’89, KS Energy Africa, Co-Founder and CEO.

Pictured with Steve Martin are students Jaymz Wooden, Tanya McGrady, and Tyson Jeannotte.

INDIA

Martin Pozniak & Eli Vettel, EE students, stayed at one of India’s private engineering universities, BITS Pilani - Goa Campus, for one month to complete research projects, collaborate with international students, and experience a new country and culture to gain unique global experiences.

(Left to right): Mihir Kulkarni, Abhiraj Hinge, Nikhil Khedekar, Dr. Prakash Ranganathan (EE professor), Dr. Nina Goveas, Eli Vettel, Martin Pozniak, Sarthak Munjal.

SINGAPORE

Dr. Sunoj Gupta, associate professor, mechanical engineering, with Grand Challenge Scholars Program (GCSP) students Annie Miles and Margaret Ahmann, attending the 12th International Conference on Ceramic Material and Components for Energy and Environmental Applications in Singapore.

As of press date, 22 candidates have applied for the positions and six have been invited to visit campus. During their on-campus interviews, candidates are meeting with UND leadership and are asked to give a presentation about their research to the campus community. The committee will collect feedback from these visits and expects to make offers by late June.

UND COLLEGE OF ENGINEERING AND MINES

14 15 2019
Increasing college enrollment by 100 percent? Check. Increasing college research expenditures by 100 percent? Check. Increasing the college’s endowment by 300 percent? Check. Moving from college dean to a university provost? Check.

It’s a logical next step, said Hesham El-Rewini, dean of the College of Engineering & Mines, who has accepted a position as provost of Marymount University in Arlington, Va.

El-Rewini began his tenure at UND in 2008. Under his leadership, the enrollment increased by 100 percent, online enrollment rose by 140 percent, retention improved from 75 percent to 81 percent in five years, annual research expenditures increased by more than 100 percent, and the College endowment increased by more than 300 percent.

The College added a petroleum engineering program, which now enrolls more than 200 students. He guided the College through the construction of the $15.5 million Collaborative Energy Complex, which was funded through private donations and nearly $4 million from the North Dakota Higher Education Challenge Fund. UND has also announced plans to invest $10 million over five years to hire computational science research faculty to bolster the University’s standing in artificial intelligence, machine learning, and cyber security. Those faculty will be housed in a renovated Babcock Hall, which will also be the new home of the new Big Data hub.

“The College has witnessed unprecedented growth and success and gained the trust of alumni and the community,” he said. “This would not have been possible without our hardworking faculty and staff, dedicated students, and the wonderful members of the College’s Executive Board, all who I am privileged to call my friends.”

In addition to his work as dean, El-Rewini served as senior vice provost between 2017 and 2018.

“I really enjoyed working with the teams I led in the registrar’s office, Institutional Effectiveness & Research, UND IT, and Student Academic Services,” El-Rewini said. He added that he equally enjoyed working with faculty from across the colleges as he oversaw faculty affairs.

“As a provost, I will be able to expand the scope of my service and contribution to cover units beyond my own college,” he said.

“I will always be grateful for the opportunities that UND afforded me and will leave with many fond memories and a sense of optimism about the future of the University.”

-Jan Orvik
UND Today
(Excerpt)
## SUMMARY OF COLLEGE GROWTH

Since 2008

<table>
<thead>
<tr>
<th>METRIC</th>
<th>GROWTH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PEOPLE</strong></td>
<td></td>
</tr>
<tr>
<td>Number of Faculty Positions</td>
<td>93%</td>
</tr>
<tr>
<td>Number of Staff Positions</td>
<td>136%</td>
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<tr>
<td><strong>FACILITIES</strong></td>
<td></td>
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<tr>
<td>Space (GSF)</td>
<td>48%</td>
</tr>
<tr>
<td><strong>ENROLLMENT</strong></td>
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</tr>
<tr>
<td>Undergraduate Enrollment</td>
<td>119%</td>
</tr>
<tr>
<td>Graduate Enrollment</td>
<td>158%</td>
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<tr>
<td>Online Enrollment</td>
<td>285%</td>
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<tr>
<td>Number of Ph.D. Students</td>
<td>420%</td>
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<tr>
<td><strong>RETENTION</strong></td>
<td>4%</td>
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<tr>
<td>Fall-to-Fall Undergraduate Retention</td>
<td>(78% to 81%)</td>
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<tr>
<td><strong>DEGREE COMPLETION</strong></td>
<td>67%</td>
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<tr>
<td>4-Year Graduation Rate</td>
<td>(18% to 30%)</td>
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<tr>
<td>Number of Graduates/Year</td>
<td>132%</td>
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<tr>
<td><strong>DEGREE PROGRAMS</strong></td>
<td>71%</td>
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<tr>
<td>Undergraduate Degree Programs</td>
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<tr>
<td>Graduate Degree Programs</td>
<td>178%</td>
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<tr>
<td><strong>RESEARCH</strong></td>
<td>88%</td>
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<tr>
<td>Competitive Research Expenditure/Year</td>
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<tr>
<td><strong>SALARIES</strong></td>
<td></td>
</tr>
<tr>
<td>% People making above 90% of average salary in other institutions</td>
<td>75%</td>
</tr>
<tr>
<td>— CUPA (2016)</td>
<td>(51% to 89%)</td>
</tr>
<tr>
<td>% Making above 80% of average salary in other institutions</td>
<td>30%</td>
</tr>
<tr>
<td>— CUPA (2016)</td>
<td>(77% to 100%)</td>
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<tr>
<td><strong>ENDOWMENT</strong></td>
<td>221%</td>
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<tr>
<td>Student Scholarship Endowment</td>
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<td>Faculty Endowment</td>
<td>534%</td>
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<tr>
<td>Total College Endowment</td>
<td>313%</td>
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## FUNDRAISING

Since 2008

<table>
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<tr>
<th>METRIC</th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>TOTAL MONEY RAISED</strong></td>
<td>Over $50 million</td>
</tr>
<tr>
<td><strong>NEW CONSTRUCTION</strong></td>
<td>Collaborative Energy Complex (2016)</td>
</tr>
<tr>
<td><strong>NAMED PROFESSORSHIPS</strong></td>
<td>Continental Resources (2012), Harold Hamm (2012), Ann and Norm Hoffman (June 2008)</td>
</tr>
<tr>
<td><strong>NAMED UNITS</strong></td>
<td>Harold Hamm School of GGE (2013)</td>
</tr>
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## SCHOOL NAME

Since 2008

<table>
<thead>
<tr>
<th>2008</th>
<th>TODAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>School of Engineering &amp; Mines</td>
<td>College of Engineering &amp; Mines</td>
</tr>
</tbody>
</table>
ACADEMIC / RESEARCH UNITS
Since 2008

<table>
<thead>
<tr>
<th>2008</th>
<th>TODAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Dept. of ChE</td>
<td>1. Dept. of ChE</td>
</tr>
<tr>
<td>2. Dept. of CE</td>
<td>2. Dept. of CE</td>
</tr>
<tr>
<td>3. Dept. of EE</td>
<td>3. School of EECGS</td>
</tr>
<tr>
<td>4. Dept. of GGE</td>
<td>4. Harold Hamm School of GGE</td>
</tr>
<tr>
<td>5. Dept. of ME</td>
<td>5. Dept. of ME</td>
</tr>
<tr>
<td>6. Surface Center</td>
<td>6. Dept. of PE</td>
</tr>
<tr>
<td>7. SUNRISE</td>
<td>7. Institute of Energy Studies (IES)</td>
</tr>
<tr>
<td>8. SUNRISE</td>
<td>9. SUNRISE</td>
</tr>
</tbody>
</table>

SUPPORT UNITS
Since 2008

<table>
<thead>
<tr>
<th>2008</th>
<th>TODAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alumni Relations</td>
<td>1. Alumni, Corporate, and Public Relations</td>
</tr>
<tr>
<td>2. DEDP</td>
<td>2. Development</td>
</tr>
<tr>
<td>3. Engineering IT Services</td>
<td>3. Engineering IT Services</td>
</tr>
<tr>
<td>4. Financial and Grant Services</td>
<td>4. Financial and Grant Services</td>
</tr>
<tr>
<td>5. Solberg Family Student Success Center</td>
<td>5. Solberg Family Student Success Center</td>
</tr>
</tbody>
</table>

SPACE
Since 2008

<table>
<thead>
<tr>
<th>2008</th>
<th>TODAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Harrington Hall</td>
<td>1. Babcock Hall (designated to CEM)</td>
</tr>
<tr>
<td>2. Leonard Hall (minus 3rd floor)</td>
<td>2. Collaborative Energy Complex (NEW)</td>
</tr>
<tr>
<td>3. Upson I</td>
<td>3. Harrington Hall</td>
</tr>
<tr>
<td>4. Upson II (minus basement &amp; 3rd floor)</td>
<td>4. Jodsaas Center (Dean Watson’s initiative)</td>
</tr>
<tr>
<td>5. Leonard Hall (all of I)</td>
<td>5. Leonard Hall (all of I)</td>
</tr>
<tr>
<td>6. Student Study Area (NEW)</td>
<td>6. Student Study Area (NEW)</td>
</tr>
<tr>
<td>7. Upson I</td>
<td>8. Upson II (all of II)</td>
</tr>
</tbody>
</table>
## UNDERGRADUATE PROGRAMS

Since 2008

<table>
<thead>
<tr>
<th>2008</th>
<th>Today</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Civil Eng.</td>
<td>2. Civil Eng.</td>
</tr>
<tr>
<td>5. Geology</td>
<td>5. Data Science</td>
</tr>
<tr>
<td>9. Geology</td>
<td></td>
</tr>
<tr>
<td>10. Mechanical Eng.</td>
<td></td>
</tr>
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## MS/ME PROGRAMS

Since 2008

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<tr>
<th>2008</th>
<th>Today</th>
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</thead>
<tbody>
<tr>
<td>2. Civil Eng.</td>
<td>2. Chemical Eng.</td>
</tr>
<tr>
<td>3. Electrical Eng.</td>
<td>3. Civil Eng.</td>
</tr>
<tr>
<td>5. Geology</td>
<td>5. Cyber Security</td>
</tr>
<tr>
<td>10. Geology</td>
<td></td>
</tr>
<tr>
<td>11. Mechanical Eng.</td>
<td></td>
</tr>
<tr>
<td>13. Several Minors</td>
<td></td>
</tr>
</tbody>
</table>

## PH.D. PROGRAMS

Since 2008

<table>
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<tr>
<th>2008</th>
<th>Today</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Engineering (with Tracks)</td>
<td>1. Biomedical Eng.</td>
</tr>
<tr>
<td>2. Geology</td>
<td>2. Chemical Eng.</td>
</tr>
<tr>
<td>3. Civil Eng.</td>
<td>3. Chemical Eng.</td>
</tr>
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</table>

## EXTERNAL & INTERNAL ENGAGEMENT

Since 2008

### College Advisory Entities

<table>
<thead>
<tr>
<th>2008</th>
<th>Today</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alumni Academy</td>
<td>1. Alumni Academy</td>
</tr>
<tr>
<td>2. Student Advisory Board</td>
<td>2. Student Advisory Board</td>
</tr>
<tr>
<td>3. Staff Advisory Board</td>
<td>3. Staff Advisory Board</td>
</tr>
<tr>
<td>4. Alumni Academy</td>
<td>4. Alumni Academy</td>
</tr>
</tbody>
</table>

### Publicity

<table>
<thead>
<tr>
<th>2008</th>
<th>Today</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Social Media</td>
<td>2. Social Media</td>
</tr>
<tr>
<td>3. Print &amp; Digital Media</td>
<td>3. Print &amp; Digital Media</td>
</tr>
</tbody>
</table>
## NEW INITIATIVES

### Students
- Alumni Perspective Series
- Big Ideas Gym (B.I.G.)
- BIG Challenge
- Conversation with the Dean (Campus & Online)
- Engineering Living Learning Community
- Escape
- Peer Mentoring
- Industry Mentoring
- Grand Challenges Scholars Program (GCSP)
- Skype/Tea/Walk with the Dean
- 40+ renovation projects (Labs, Classrooms, Study areas)

### Faculty and Staff
- Diverse Leadership Development and Community Engagement Program
- Monthly Town Hall Meetings
- Monthly Lunch with Colleagues
- Dean’s Afternoon Snacks (multiple times/semester)
- Weekly Tea with El-Rewini
- Weekly Walk with the Dean
- Wellness Programs
- Numerous Professional Development Opportunities

### Recognition & Funding Opportunities
- Outstanding Faculty Award
- Outstanding Staff Award
- Dean’s Teaching Professorship
- Dean’s Research Professorship
- CEM Recognition Parking
- Faculty Research Enhancement Funding
- Faculty Teaching Enhancement Funding
- Staff Service Enhancement Funding

## MOST RECENT INITIATIVES

### Research
- An investment of $10 million to hire a cluster of research faculty in computational sciences
- Agreement between CEM and UND was signed in December 2018. A search firm has been hired. Faculty interviews are being conducted April/May 2019.

### Space
- Renovation of Babcock
- An architecture firm specialized in historic buildings was retained by UND facilities. An exterior design has been finalized.

### Fundraising
- Naming the Department of Chemical Engineering
- Several meetings have been held with a donor. A proposal to name the Department of Chemical Engineering has been submitted and is under consideration by the donor.

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COUPLE POSTHUMOUSLY GIFTS $1M FOR HAROLD HAMM SCHOOL

The UND Harold Hamm School of Geology & Geological Engineering, within the College of Engineering & Mines (CEM), received a $1 million gift from the late John Carter, a 1959 UND grad, and his late wife, Ruth.

Their gift will establish the “Drs. John and Ruth Carter Endowment,” the revenue from which will be used to create the Geology & Geological Engineering Students and Faculty Excellence Fund. The endowment will promote excellence among faculty and students who major in geology or geological engineering through activities such as field trips, experiential learning and professional development.

CEM Dean Hesham El-Rewini says he is humbled by the Carters’ generosity.

“We are so thankful to Dr. John and Dr. Ruth Carter for their legacy gift that will help the Harold Hamm School of Geology & Geological Engineering continue to promote excellence,” El-Rewini said. “I am very proud of Dr. John Carter’s accomplishments during his rich life journey.”

GIVING PEOPLE

John Carter, a Sisseton, S.D., native, received his bachelor’s degree in geology from UND in 1959 and his Ph.D. from the University of Cincinnati in 1966. During his 27 years as a curator of invertebrate paleontology at the Carnegie Museum of Natural History in Washington, D.C., he named more than 130 new species and 40 new genera. He enjoyed many explorations and archaeological digs throughout his career as a paleontologist and is world-renowned for his research on the 350 million-year-old fossil brachiopods. He also wrote several books.

Ruth Carter earned a Ph.D. in history from the University of Pittsburgh. She spent most of her career working for the University Library System and concluded her professional endeavors as head of the Archives Service Center and curator of historical collection at University of Pittsburgh. She also authored and co-authored many books and articles on cataloging and classification.

John Carter was recognized by the UND College of Engineering & Mines in 2006 when he was the honored recipient of the Arthur Gray Leonard Award. The award recognizes outstanding achievement in geosciences in research, technical studies and projects applied to societal needs, teaching, educational development or leadership in conservation of earth’s resources and environment.

Christin Wengert, the Carters’ niece and spokesperson for the couple, said her aunt and uncle were extremely kind and giving people who loved supporting the causes important to them.

“They believed in higher education and learning and were very philanthropic,” Wengert said. “They felt honored to give back to higher education.”
Lock on Leaks

UND petroleum engineer develops novel methods to detect pipeline leaks before they wreak economic, environmental havoc.

Leakage is a major challenge in any technology that moves fluids from one place to another.

Think garden hose: how much water leaks along the path from faucet to nozzle? Unless it’s all brand new and fits perfectly, you’re just about guaranteed to lose water along the way.

Now think big hose — as in a coated carbon steel pipe upward of one inch thick and five feet in diameter and maybe hundreds of miles from well to refinery. Any leak in this vital system is economically and environmentally consequential.

So noted Kegang Ling, petroleum engineering professor and an expert in pipeline leak detection in the UND Department of Petroleum Engineering, part of the College of Engineering & Mines. Ling has been researching more cost-effective and more efficient algorithms that detect and precisely quantify leaks earlier than existing technologies.

“First, let’s point out that pipelines are the safest, best, safest, and cleanest way to move oil and natural gas,” said Ling, who’s been studying leakage challenges for more than a decade. He knows the problems firsthand — after graduating with his petroleum geology degree in the People’s Republic of China, he worked on Chinese offshore drilling rigs. He obtained his Ph.D. in petroleum engineering at Texas A&M.

Simpler, More Practical

But let’s not play down the risks: pipelines, key to the national economy, are a lot more than the big “garden hoses” in the petroleum industry. The Argonne National Laboratory, a federal Department of Energy facility in Lemont, Illinois, notes that the U.S. pipeline industry is large and diverse, comprising more than 2 million miles of pipes in all 50 states, daily ferrying millions of barrels of liquid petroleum and refined products, natural gas, and other fluids.

Thus, Ling is part of an elite global group of engineers and scientists looking at ways to mitigate leaks in this vast system.

“My research looks at how to detect a leakage after it occurs, and I use data to detect a leakage by drops in pressure and other parameters such as temperature,” said Ling, who’s served as associate editor for the Journal of Unconventional Oil and Gas Resources and has published, often as part of a multi-institution research team, several key and often-quoted papers about pipeline leaks. “I provide methods of detecting leaks to energy and pipeline companies.”

In his Petroleum Engineering lab at UND, Ling and his team built a model pipeline system with sensors placed all along to detect the minute changes in pressure, temperature, and volume that signal a leak. His algorithms showcase a novel way to specifically pinpoint and quantify a leak so that a pipeline operator can immediately tell exactly how big the leak is — this facilitates timely and accurate response to the leakage situation.

“What this is all about is trying to find the most effective method of leak detection, and continually refine this detection process,” said Ling.

In addition to his leak detection R&D work, Ling’s research interests include reservoir engineering, natural gas engineering, reservoir evaluation, production optimization, and flow assurance.

“What we’re looking for is simpler and more practical leak detection,” he said. “Detecting, locating, and precisely quantifying leaks is one of the energy industry’s critical needs.”

- Juan Miguel Pedraza

UND College of Engineering & Mines and Education team up to assist rural, African trade school with novel invention.

Retired Lockheed Martin executive and CEM alum Ben Dove confirmed a long-held conviction over the past year.

“If you really want something done, ask North Dakotans, they’ll come through for you,” he said. Dove, a 1983 mechanical engineering graduate, recently had his relationship with UND “reinvigorated” after an experience brought multiple colleges, professors and students together to address needs a world away.

Going Back in Time

The former Vice President of Performance Excellence at Lockheed Martin’s Information Systems and Global Solutions division became familiar with UND’s senior projects in mechanical engineering after sponsoring a drone research project in 2015. In 2016, he was asked to sit on the executive advisory board for the College of Engineering & Mines.

Friend Jeffery Lohr told Dove about the Moringa Community School of Trades. For the past decade, Lohr has worked with a rural Ghanan village to establish a technical school: a means of extending education for middle to high school-aged students, equipping them with marketable skills. As Dove became more interested in this grassroots effort, he learned of issues persisting after the school was established and operating.

“With their local education system, it’s like going back in time in the United States,” Dove said. “Sometimes the smartest kid in the schoolhouse will become the teacher as soon as they graduate.”

Given the poor economic conditions of rural life in Ghana, teachers are few and available education for teaching are few. Dove says the students learn by copying whatever the teacher writes on the board — aligning with the national curriculum is nearly impossible.

Food storage was another issue Dove noticed. While the area grows quality produce, villages lack the access to electricity required by refrigeration. People store food through canning, but the cost of fuel to keep water boiling and sterilize jars is too high, says Dove. Deforestation is rampant in Ghana, making wood a rare commodity.

Designing Efficiency

Dove became inspired to reach out to UND. For their senior design project, a team of six students developed a stove consisting of a metal ducting elbow – bent at 90 degrees – surrounded by a shell of bricks. The shell supports the elbow and keeps the stove insulated. Its crude design was purposeful, as it needed to be cheaply replicable for viability in rural Ghana.

“The students working on it did an excellent job, and the school is so happy with it,” Dove reported. “Any time somebody sees it, they think ‘we need one of those.’ There are all sorts of elegant solutions, but here was a fairly inexpensive method to use an abundant resource like bamboo.

Bamboo, a grass, is not typically used as a fuel due to its water content. If not split and treated before burning, bamboo’s water pockets expand and cause explosions.

The Moringa Community School of Trades is now looking to sell a starter kit for a stove to anyone in the area who needs it, says Dove. The more people who have it, the greater the economic and environmental benefits.

- Connor Murphy

UND Today (Excerpt)
AFTER 30 YEARS, STILL PIONEERS

In the late 1980s, Arnie Johnson had a new nickname:

Fuzzy Arnie.

The electrical engineering professor, who arrived at the University of North Dakota in 1988, earned the moniker because of a task that is now enshrined in the annals of the University and of the discipline.

Johnson, who would also chair the department of electrical engineering, taught the first ever distance-education class in engineering at UND, and ostensibly across the country.

Lectures, led in empty auditoriums that resembled TV studios more than college classrooms, rolled on videotape to be snail-mailed to students. Technology, at classrooms, rolled on videotape to be

In the late 1980s, Arnie Johnson had a new nickname:

Fuzzy Arnie.

On June 6th, over 60 current online students met Johnson for the first time too, when they flocked to the College of Engineering and Mines’ Collaborative Energy Center to mark the 30th anniversary of the distance education program at UND.

A novel, outlandish and brazen idea in the 1980s, the program remains somewhat of a maverick, a unique opportunity in the academic and professional realms of engineering.

“We are the only university in the U.S. and as far as I know in the world that offers a full suite of programs, accredited programs, that are delivered via distance to undergraduate students,” said CEM Dean Hesham El-Rewini.

THE BEGINNING

In the fall of 1988, at the Conference for Industry and Education Collaboration, Jim Carter, then a manager at Minn.-based manufacturing corporation 3M, approached then CEM Dean Alan Fletcher with a proposition – a UND course for 3M’s full-time employees.

Thus, after some deliberation, arose UND’s distance engineering program. The first class, Johnson’s, had 11 students, nine of whom completed it.

For each lesson, they waited some three weeks to receive the cassettes after Johnson had recorded them. Assignments and exams would arrive at Johnson’s desk with a lag of almost a month, too.

Cameras would sometimes fail, and Johnson had to start over. Chalk on old-fashioned blackboards did not appear clear on camera, so Johnson scribbled with black markers on large sheets of white paper.

“There was a challenge in the early days when every year we had to go through improvements of technologies, hardware, software,” said Johnson, who also directed the program.

And every year, the number of companies partnering with UND for its distance engineering offering grew. Hutchinson Technology, Cargill, Hewlett Packard and Sony, among others, joined.

Faculty secured national grants to develop the curriculum, parts of which – especially the Engineering 100 class – are still utilized today. The capstone course shifted from requiring on-campus work to on-the-job-site projects. The program expanded into various fields – petroleum engineering, geological, mechanical, civil, chemical. The list of attainments and enhancements swelled.

“The fact that we were the very first to offer such an innovative program was extremely exciting,” said Lynette Krenelka, executive director of TTaDA who used to provide technological and logistical support to the program through what was the office of continuing education. “We were serving a student population that was older than average.”

ACCREDITATION IN TIME OF FLOOD

The year of 1997 is etched into the psyche of UND. Spring delivered a record flood that shuttered campus only months before CEM succumbed to a rigorous accreditation audit by the Accreditation Board for Engineering and Technology, Inc (ABET).

The last 30 years of pioneering “leaps and bounds” that have resulted in this array of options have a single impetus.

Further compounding the process was ABET’s new approach that dictated the assessment of students’ outcomes rather than professors’ inputs. At the time, the distance program had no graduates yet, Owens said.

Still, it earned full accreditation, attesting that CEM, in the quality of its classes, did not distinguish between on-campus and distance students.

“That was a big deal,” Owens said. “It is still is a big deal.”

STUDENT FOCUS

Today, some 15 years after snubbing videotapes for online platforms, the distance engineering program boasts over 500 alumni – and hundreds more engineers in the making.

Through over 100 courses a semester, CEM offers fully online education – certificates or diplomas – in 28 engineering fields.

“This is about students,” said Owens. “It always has been.”

- Dima Williams
UND Today
FIVE FACULTY RECEIVE $600K INTERDISCIPLINARY NSF GRANT

Feng Xiao (PI) and Naima Kaabouch (co-PI) from the College of Engineering & Mines, Xiaodong Zhang from John D. Odagard School of Aerospace Sciences, and Julia Xiaojun Zhao and Deborah Worley from the College of Education & Human Development (all co-PIs) were recently awarded a 5-year grant of $649,791 from the National Science Foundation (NSF) to support high-achieving and financial needy STEM undergraduate students at UND.

In North Dakota, limited financial support is cited as the top reason that students leave the University of North Dakota (UND), the state’s flagship institution, prior to degree completion. In a project funded by the National Science Foundation (NSF) to support high-achieving and financial needy STEM undergraduate students at UND, PI Xiao (Assistant Professor at Civil Engineering) said the overall goal of this project is to support highly-skilled STEM students to degree completion and to prepare them to meet state and national needs for more American scientists and engineers. By reducing or eliminating the burden of tuition, UND S-STEM recipients will be better positioned to spend more time in the class concentrating on their studies, engaging in research projects, and seeking out internships that are relevant to their long-term interests. Therefore, academic performance and UND retention rates are expected to improve as a result of the scholarship program.

Feng Xiao (PI) and Naima Kaabouch (co-PI) from the College of Engineering & Mines, Xiaodong Zhang from John D. Odagard School of Aerospace Sciences, and Julia Xiaojun Zhao and Deborah Worley from the College of Education & Human Development (all co-PIs) were recently awarded a 5-year grant of $649,791 from the National Science Foundation (NSF) to support high-achieving and financial needy STEM undergraduate students at UND.

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A CEM team of researchers led by Dr. Jun Liu, Associate Professor Computer Science was recently awarded $399,778 from DOE to develop a cybersecurity system to safeguard fossil fuel power generation systems. Dr. Liu, along with Hossein Salehtar, Professor Electrical Engineering and Michael Mann, Director of the Institute for Energy Studies together with Minnkota Power Cooperative will develop innovative ways of integrating blockchain technology into the power plant control system security. The UND team will work with the control center team at Minnkota’s Milton R. Young Station near Center, N.D., to create a mock-up of how power data flows from point to point on the grid. The researchers will apply blockchain technology to those simulated testbeds, using the data system of a real-world generation facility while maintaining the security integrity of Minnkota’s actual data. The goal is to prevent a malicious data manipulator, also known as hacker, from getting into the system, creating false readings, and disrupting the operation of the power generation system. Ultimately, the project can have much broader reaches as blockchain technology can be applied to so many areas of utilities. Industry trends are moving toward more direct customer interaction, which involves a broad and sophisticated data system. It’s going to take some years of research to come to that. This is a first step that will help utilities, internally, make their operations secure.

THE GOAL IS TO PREVENT A MALICIOUS DATA MANIPULATOR, ALSO KNOWN AS HACKER, FROM GETTING INTO THE SYSTEM, CREATING FALSE READINGS, AND DISRUPTING THE OPERATION OF THE POWER GENERATION SYSTEM.

DR. FENG XIAO
CIVIL ENGINEERING

DR. NAIMA KAABOUCH
ELECTRICAL ENGINEERING

DR. JUN LIU
ASSOCIATE PROFESSOR
COMPUTER SCIENCE

DR. MICHAEL MAN
EXECUTIVE DIRECTOR
INSTITUTE OF ENERGY STUDIES

HYDROGEN GENERATION PROPOSED FOR $210K FUNDING

A team of researchers at UND, led by Dr. James Mecklenburg, Professor of Chemical Engineering, was recently awarded $209,775 from the National Science Foundation (NSF) to develop a technology that produces hydrogen directly from water. The research will be led by Dr. Mecklenburg and Dr. Scott Steen, also from the College of Engineering and Mines. The team will work with local industry partners to commercialize the technology, which has the potential to significantly reduce the cost of hydrogen production and make it more competitive with fossil fuels.

The project will focus on developing a new class of catalysts that can efficiently catalyze the water-gas shift reaction, which converts CO2 and water into hydrogen and carbon monoxide at high temperatures. The team will also develop a novel reactor design that can achieve high hydrogen yields and efficiencies. The research has the potential to make hydrogen a viable alternative to fossil fuels, which are currently the most common source of hydrogen.

The project is expected to result in the commercialization of a new technology that can produce hydrogen directly from water, potentially reducing the cost of hydrogen production and making it more competitive with fossil fuels.
AROUND CEM

BIG IDEAS CHALLENGE
Students present projects at the Big Ideas Challenge, a national GCSP program that encourages students to come up with the next big idea. The program is sponsored by the Margaret & Edson Larson Foundation.

2019 SPRING BAKE-OFF
1st Place winner Jordan Eberhardt with Darin Buri

A NEW MONUMENT
Tau Beta Pi members unveil their new monument located in front of the main entrance to Upson II.

CEM HOCKEY NIGHT
Left: Brian Tande, Wally, EE’87 & Sharon Lang, Desiree Tande, Jay Evans, Che’98
Right: Nettie & Jack, CE’71, Lindvig

CEM HOCKEY NIGHT
Brad Aafedt, Dean El-Rewini, Sherine Talaat, Gayle Aafedt, Che’88

CEM HOSTS OPEN HOUSE FOR PROSPECTIVE STUDENTS

ELEMENTARY STUDENTS FROM MAPLETON, ND TAKE FIELD TRIP TO CEM

BIOMEDICAL SYMPOSIUM

UND COLLEGE OF ENGINEERING AND MINES
TEAMWORK MAKES THE DREAM WORK
Graduate student Sam Cowart and Professor Gautham Krishnamoorthy of Chemical Engineering working together.

2018 ANNUAL SWE CONFERENCE
UND Society of Women Engineers’ Chapter wins the SWE Mission Award and Bridget Hieland receives the NABPA IV-West Ring Star Award in Minneapolis.

DECEMBER 2018 ORDER OF THE ENGINEER RING CEREMONY & PLEDGE OF THE COMPUTING PROFESSIONAL

2019 FREEMAN AWARDS
Brianna Bednarek, Abby Aymond and John DeBelitz’s project was chosen as the 1st place winner of the 2019 Minnokta Power Andrew L. Freeman Innovation Award. Pictured with Brendan Kennelly, BSSE ‘02.

STOVE-TOP DIPLOMACY (P. 29)

E-WEEK W/ DR. JOEL NESS

ENGINEERS WITHOUT BORDERS IN GUATEMALA

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STOVE-TOP DIPLOMACY (P. 29)

E-WEEK W/ DR. JOEL NESS

ENGINEERS WITHOUT BORDERS IN GUATEMALA
2019 FACULTY & STAFF AWARDS

DEAN’S OUTSTANDING FACULTY AND STAFF AWARDS

Recipients: Dr. Yun Ji (Associate Professor & Graduate Program Director, Chemical Engineering), Mary Winters (Administrative Secretary, Civil Engineering), and Junior Nasah (Manager Major Projects, Institute for Energy Studies)

Dr. Sukhvarsh Jerath, civil engineering, retires. He was presented a recognition award in appreciation for his years of service to CEM.

Dr. Daba Gedafa
Department chair, associate professor, and civil engineer Dr. Daba Gedafa was named UND’s Outstanding Advisor for his leadership to the American Society of Civil Engineers (ASCE).

Dr. Sukhvarsh Jerath
After over thirty years of teaching aspiring engineers at the College of Engineering & Mines, Dr. Sukhvarsh Jerath, civil engineering, retires. He was presented a recognition award in appreciation for his years of service to CEM.

2019 FOUNDERS DAY AWARDS

DEPARTMENTAL EXCELLENCE IN TEACHING AWARD

Received by the Department of Mechanical Engineering. The department has seen a 60-percent increase in enrollment over the past 10 years, which now makes the department the second-largest on campus.

INTERDISCIPLINARY RESEARCH COLLABORATION AWARD

Received by the Research Institute for Autonomous Systems (RIAS). Shown above are Jason Jensen, Prakash Ranganathan (EE), Jeremiah Neubert (ME) and Mark Askelton.

EXCELLENCE IN ACADEMIC ADVISING

Mojdeh Mardani, lecturer, EE, received the UND Foundation/Karleen Home Rosaaen Award for Excellence in Academic Advising.
STUDENT SUCCESS STORIES

I’M EXCITED FOR WHAT THE FUTURE HOLDS FOR ME.
MATHEW COX, MSCE 2019

ABBY AYMOND
B.S. in Electrical Engineering with Biomedical Focus (2019)
Hometown: Grand Forks, ND
“My college experience has been full of exciting opportunities for development and research, both on and off campus. After graduation I will start the Biomedical Engineering Masters program at UND, with an anticipated thesis defense in early Summer 2020, then will start medical school the following August.”

MATHEW COX
Hometown: Olympia, WA
“I look back on my time here with pride and excitement for what the future holds. I came to UND in the Fall of 2013 to pursue my degree in Civil Engineering, as well as be a part of the football team. Over my time here, I have become a well-rounded student confident in my knowledge and skills in the engineering world. This can be demonstrated in my path towards a career. During the interview process, I felt confident in my skills and knowledge. I received offers from all of the companies that I interviewed with in Minneapolis, accepted a position with Kimley-Horn as a Water Resources Engineer. This position drew my interest for the potential of growth that I saw within the Water Resources team at Kimley-Horn and this fits exactly with my career goals. I am excited for what the future holds for me.”

JON DeBELTZ
B.S. in Chemical Engineering with Biomedical Focus (2019)
Hometown: Grand Forks, ND
“Beginning college, I was not sure what degree program I wanted to do. I liked both Math and Science, but I also had an interest in Biology and Physiology. I decided to pursue a degree in Electrical Engineering with a Biomedical Focus to use Mathematics and Science to understand problems in Biology and Physiology. Throughout my time at UND, I learned the value of hard work, dedication, and perseverance. I enjoyed working on my senior design and getting to work in some of the labs.”

JACOB GERITZ
B.S. in Chemical Engineering (2019)
Hometown: Casselton, ND
“At UND I have been involved with Pi Kappa Alpha, Dakota Venture Group, Student Relations Committee, AIChE, Student Government and Special Olympics. I worked a co-op at Cargill in Eddyville, Iowa and an internship at 3M at Brookings, SD. I have accepted a full time position at 3M as a Resident Project Engineer Medical Device Division at Brookings, SD.”

KAIT DRAWZ
B.S. in Mechanical Engineering (2019)
Hometown: Minot, ND
“I started my mechanical engineering degree at UND in 2015. Soon after starting school I was able to become involved through many different organizations such as American Society of Mechanical Engineers, Formula SAE, and the Society of Women Engineers. After attending the career fair at the SWE national convention I got a position as a manufacturing engineer with Saint-Gobain in McPherson Kansas.”

ALICIA KEELING
B.S. in Chemical Engineering (2019)
Hometown: Fergus Falls, MN
“My experience at UND has been a valuable chapter to my story. In and out of the classroom, the professors and faculty of the Chemical Engineering department have encouraged my success by teaching me leadership and communication. From meeting my husband in the engineering living-learning community to the opportunity of an on-campus interview with Hess Corporation which turned into a summer internship, I feel well-prepared for the next chapter. We will be moving to Minot, ND as I take on the position of Foundation Engineer with Hess Corporation.”

THROUGHOUT MY TIME AT UND, I LEARNED THE VALUE OF HARD WORK, DEDICATION, AND PERSEVERANCE.
JON DeBELTZ, BSChE 2019
**GET CONNECTED.**

On behalf of the College of Engineering & Mines, it is our pleasure to welcome you back to CEM whether you physically come to campus or visit virtually via our webpage, departmental newsletters, social media or through this ninth edition of ENGINEERING. We are excited to share the events, accomplishments, and future plans for the College with you at every opportunity. Much of our success depends on a thriving, energetic, and engaged alumni base in order to advance the best interests of the College and our students. Alumni are crucial to the present and, most importantly, the future of CEM. We would like to hear from you! There are a number of ways to get connected.

**ATTENDING OR HOSTING AN EVENT**

Events are scheduled on campus and throughout the country. We will notify you when we are coming to your area. Let us know if you would like to help host or coordinate activities in your area.

**COME BACK TO CAMPUS**

With a walk around CEM, you’ll see your investments in our campus. We encourage you to let us know what’s on your “must see” list.

**HIRING CEM STUDENTS**

We encourage you to highlight your company throughout the year by joining us on campus and holding an info session. It is the perfect opportunity to get to know the students and partner with us to make employment opportunities available to CEM graduates.

**VOLUNTEERING**

Your expertise and experience is of great value to the students. Please consider sharing that knowledge with our students by becoming a student mentor; joining students in the classroom or during informal lunches; or participating in our Alumni Perspective Series. We would appreciate your involvement.

**SUPPORT**

If you are considering lending your financial support to the college, there are numerous ongoing opportunities. It is our intention to work with you to ensure the stewardship of your gifts of time, talents, or treasures.

Scholarships create opportunities for talented students to earn a degree, regardless of their ability to pay. Endowments provide the foundation for continued innovation, strengthening the educational experience over the long term. Support for faculty chairs and professorships enables us to attract and retain top scholars who bring distinction to the College. Unrestricted gifts support the college’s immediate needs provide resources to academic programs, faculty support, scholarships, facilities, technology, and laboratory equipment. Legacy gifts to the College live on at UND forever. Perhaps you wish to assist with the restoration of Babcock Hall and help transform this historic building into the Big Data Hub vital to every field of study. Wherever you are, we hope you see yourself connecting to the College of Engineering and Mines very soon.

**An Alum makes a special trip back to CEM**

Joe Skojde, BS’49 General Industrial Engineering, his son Kurt and daughter-in-law Kathe visit CEM. He is proud to say he is a 98 year old World War II pilot who has traveled the world and still holding on to a wish to skydive. He was a photographer (1948-49) for the North Dakota Engineer, a quarterly journal published by students from the College of Engineering. He enjoyed a 60 year career with Honeywell. During their visit, they met Brian Tande, Dean El-Rewini and current students working in their research labs.

**RETURNING TO ALMA MATER**

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TOGETHER, WE BUILD THE FUTURE

UND’s oldest standing academic building is getting a new lease on life! Babcock Hall, the historic 110 year old building will undergo a renovation. Once the original home of the College, it bears the name of UND’s first engineering dean Earl J. Babcock. The restoration will include collaborative research and laboratory spaces and innovation/tech transfer spaces as well as social and study spaces.

Two figures stand in the window of Babcock Hall. The figure on the left is noted to be Earle J. Babcock. Circa 1909-1910. Photo rights: Elwyn B. Robinson Department of Special Collections, Chester Fritz Library, University of North Dakota