



INGENIUM

noun: from Latin meaning natural talent or disposition (think “ingenious”)

Benedictine College - School of Engineering Newsletter
Vol 2, Issue 2 — January 2019



A Look Inside

| | | | |
|------------------------------------|---|---------------------------------|----|
| Message from the Chair | 2 | ChemE Gets VR Grant | 9 |
| Faculty Contact Info | 2 | Things That Make Us Smile | 10 |
| Department Headlines | 3 | Sleep in Heavenly Peace | 11 |
| BCYC Immersion Engineering Track . | 4 | Spooky Science | 12 |
| Bits & Pieces | 6 | Calendar & Help Wanted | 14 |
| Blish-Mize Donation | 8 | T-Shirt Sales | 15 |
| DeWalt Tools Donation | 8 | Parting Shots | 16 |



A Message from the Chair



Dr. Darrin Muggli

Greetings from the *School of Engineering*. I hope you all had a very nice Christmas. As you might have noticed, we have grown up from being a measly *department* to a robust *school!* It sounds fancy, anyway. I am not sure what changes the new name will bring, but I expect to experience a few. Most importantly, I expect that I will be able to vote in the conclave that elects the next president of the college.

ABET Accreditation – As I mentioned in the previous newsletter, we had ABET visit us in September for our chemical and civil engineering degree programs. I am very happy to tell you that the ABET visitors did not find a single area in need of improvement in either program. Therefore, we are expecting that both programs will be accredited when ABET votes on such things at their meeting in July. Of course, this does not mean that we will be taking a break from all things ABET. On the contrary, we have already begun working to have our electrical engineering degree program accredited in 2021.

Electrical Engineering Degree Program – We have made a lot of progress on our electrical engineering degree program this semester. After establishing an official degree in electrical engineering last spring, we recently received approval to hire two more electrical engineering professors (one starting in fall 2019 and another in fall 2020). We are bringing in faculty candidates for onsite interviews in January.

Facilities – We have kept busy settling into our new space this semester, although we are still sharing some of it with the science *departments* (not *schools*) as their areas are undergoing renovation. The construction crews are scheduled to wrap things up in January. We are very much looking forward to finally being able to use all of our space and get equipment moved out of the storage pods.

Donations – We received a couple of generous donations of both money and equipment this semester from our current and former board members. We will tell you more about that in the next newsletter.

Please Stop By – Finally, if you are ever around Atchison, please stop by and visit us! It is always great to visit with our graduates and see how you are doing. If you can't make a trip to Benedictine, I would love to hear from you via email DMuggli@Benedictine.edu or telephone (913) 360-7961.

Calling All Alums! Stay in Touch!

Hearing from our engineering alumni simply makes our day. Please consider checking in with us and sharing your success story or important events in your life. We'd love to hear from you!

Department Chair -----

Darrin Muggli
DMuggli@Benedictine.edu

Civil Engineering -----

Mike Berry
MBerry@Benedictine.edu

Peter Merkle
PMerkle@Benedictine.edu

Scott Newbolds
SNewbolds@Benedictine.edu

Chemical Engineering -----

Juan Carlos Araque
JAraque@Benedictine.edu

Scott Blonigen
SBlonigen@Benedictine.edu

Darrin Muggli
DMuggli@Benedictine.edu

Electrical Engineering -----

Myron Fanton
MFanton@Benedictine.edu

Mechanical Engineering -----

Patrick O'Malley
POMalley@Benedictine.edu

Steve Spencer
SSpencer@Benedictine.edu

Charles Sprouse
CSprouse@Benedictine.edu

Administrative Guru -----

Jann McGregor
JMcGregor@Benedictine.edu



<department headlines>

School of Engineering

The “Department of Engineering” is no more. We have earned the distinction of being the “School of Engineering,” because our enrollment now exceeds 200 students. We humbly celebrate this distinction as our department ... err school ... continues to grow. Remember, our first graduating class was in 2012 with five engineering students! Stay tuned and watch us grow.

BENEDICTINE COLLEGE
School of Engineering

New Accreditation Nears

We are one step closer on getting our chemical and civil engineering programs accredited. All the paperwork has been submitted and approved. The review and site impaction was completed in September, 2018, by ABET. All early indicators from ABET suggest that we have no issues to address. The only remaining items are for the ABET committee to approve our program during their summer meeting. We hope to hear from them by the first of July, 2019, that these programs are accredited.



ELFs Work Hard All Summer

Each summer, Benedictine’s School of Engineering hires a select group of students to help professors complete various projects, assist with Benedictine College’s Youth Conference (BCYC), and prepare lab samples for the upcoming school year. This team of hardworking students is

known by the acronym “ELF” (engineering labor force). We rely heavily on our ELF team to take a problem and solve it using the skills and knowledge they’ve gained through their engineering classes and labs. We will select our 2019 summer ELF team in April.



The 2018 ELF team (from left): Kate Caughron, Hannah Thomazin, Alex Hammeke, Joe Gawdun, Zach Michieli, Tyler Tanguay, Steven Oliver



Ready...Set...Grow!

The summer of 2018 marked the successful completion of the fifth annual Engineering Track of BCYC Immersion, a Catholic summer youth conference at Benedictine College. Formerly called “Cathedral,” the summer conference first offered an Engineering track in 2014. That year, just 8 students split between Engineering, Chemistry and Biology participated in a one week-long session. Since then, interest has grown such that two week-long sessions, one with 15 students and one with 16 students, took place in 2018. Throughout the week, high school students were immersed in Benedictine’s unique environment of Catholic community, faith, and intellectual scholarship. While the afternoons were dedicated to the engineering scholarship component, students also participated in daily Mass, Bible studies, games, and social events along with students in numerous other tracks such as nursing, biology, leadership, voice, and evangelization.

Students were given a taste of engineering through an enjoyable, interactive experience in the brand new Benedictine Engineering facilities. Assistant Professor, Dr. Charles Sprouse, introduced the students to the field of engineering by discussing fundamental concepts and providing lab demonstrations in areas such as fluid dynamics, materials science, stress analysis, energy, and combustion. Along with the instruction, students completed a fun, hands-on design project building an electric car. The process included sketching a design concept, using CAD and 3D printers to create the shell body of the car, and using shop equipment to construct the rolling chassis and DC electric circuit. The experience was capped with an exciting drag race tournament to test out the effectiveness of their first attempt completing the engineering design process. Through the experience, students gained an understanding of how the fundamentals of science are applied to real-world challenges, all while immersed in an environment of Catholic faith and fellowship.



**Record number explore
Engineering Track in 2017 BCYC
Summer Immersion Program.
Join us the summer of 2019!
Benedictine.edu/bcyc**

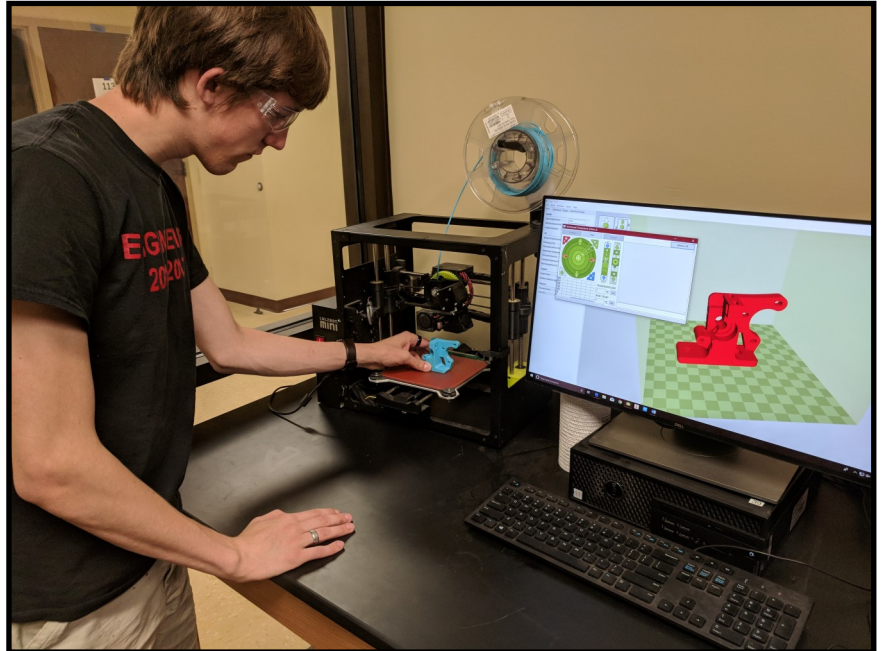


<bits & pieces>



3D Printer Lab Working Long Hours

After settling into the new engineering facilities at Benedictine this past summer, students and faculty alike have been enjoying the functionality and accessibility of the 3D printer lab. Since acquiring their first printer 3 years ago, the collection now features 3 printers: the Lulzbot TAZ 5, the Lulzbot TAZ Mini, and the Form 2. These provide a wide range of quality and efficiency options for use in a variety of applications, such as prototyping, manufacturing, class assignments, faculty projects, or simply for fun! All these printers are frequently in use, running up to 100 hours per week during busy times. A recent



modification to the lab involved installing a webcam system to monitor both the live print and the computer file. This is streamed to a television in the lab and to YouTube, increasing the visibility and user experience of this much-beloved and valuable asset.

Engineering Missions Set for Ecuador



Benedictine College's Engineering Missionaries will be traveling to Chontapunta, Ecuador, during their 2019 Spring Break Mission. Once there, they will be building a community center with the Family Missions Company. The goal of their project is to provide the local parish a place to hold church functions and to work in various trades.

The team has already been hard at work designing the structure and planning the logistics for delivering needed supplies to Ecuador. The team will travel to Chontapunta from March 2 to March 11. All alumni are welcome to join with Engineering Missionaries team to help construct the center. Other means of support are also welcome.

Contact Kienan McIntee at mcin1986@ravens.benedictine.edu.

ASCE to Build, Launch New Concrete Canoe

The Benedictine College student chapter of the American Society of Civil Engineers (ASCE) is proud to be sending a team to the ASCE Concrete Canoe Competition once again. The 2019 regional competition will be held April 12 and 13 at the University of Oklahoma.

This year's canoe will be named *Corvus*, meaning Raven in Latin, and it will be designed around that theme. Leading the project this year is senior Civil Engineering student Benjamin Suhr. He hopes to lead the team to a top three overall finish, based on Benedictine's history of high placements.

This project continues to provide a unique, multi-disciplinary opportunity for students to get involved in a hands-on project. This is a voluntary extracurricular project that yields great experience with concrete, boat building, and fellowship! Alumni are welcome to get involved via construction help, donations, or race day support.

Contact Benjamin Suhr at:
suhr1932@ravens.benedictine.edu.



New Welding Lab a Welcome Addition

With the addition of four new Miller® welders (bringing our total to six), a Miller® plasma cutter, and a welding space outfitted with four welding stations and forced ventilation, the Benedictine School of Engineering now teaches the entire MENG-3180 Manufacturing Processes Lab on campus. Students receive a proper engineering introduction to welding, including the impact of the Heat Affected Zone (HAZ), training on inspecting welds, and hands-on experience MIG and TIG welding.



<a world of thanks>

Blish-Mize Rallies Vendors

When we moved into the new woodshop, it became painfully clear something was missing — tools. We did not even have a hammer, square, or tape measure. Strangely enough, we did have nails. Jonathan Mize of the Blish-Mize Corporation in Atchison came to the rescue. Jonathan, along with many Blish-Mize vendors, provided all the hand tools and ladders that we asked for. What a grand thing for them to do! We sincerely thank Jonathan and his vendors. All tools are being used in our class projects, as well as almost everything else we do here.



Johnathan Mize of Blish-Mize.

DeWalt Supplies Power Tools & More

Benedictine's Sleep in Heavenly Peace program was severely short on power sanders and cordless drills for completing the construction of beds for area children in need. Enter Benedictine alumnus Robbi Larkin (2005) of DeWalt Tools who responded to our need by organizing a highly generous donation from DeWalt. Not only did they supply the needed tools, sandpaper, and bits, but they also provided hefty containers for safe tool storage and transport. We greatly appreciate their generous donation that keeps our building workshops running smoothly. Thank you DeWalt and Robbi!



Robbi Larkin of DeWalt Tools.

<grant brings ideas to life>

Virtual Reality in ChemE

Dr. Juan Carlos Araque in Benedictine's Chemical Engineering program is developing a virtual reality (VR) system that will allow students to put on a VR headset and visualize how molecules behave and can be manipulated in various chemical settings.

During the Fall 2018 semester, the NVIDIA Corporation awarded Dr. Araque a graphics processing unit (GPU) grant to support his computational research. They gave him a Quadro

P6000 graphics card (value, \$5000), which will be integrated into the system under development.

We say a special thanks to NVIDIA for their generosity. More information on the new system will be available in our Summer issue of *Ingenium*.



Dr. Juan Carlos Araque



<good advice>

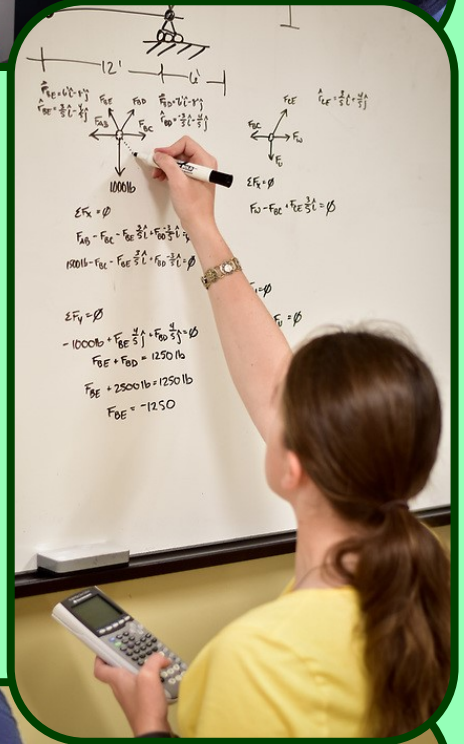
Board Members Watch Over Program

We offer another heartfelt thanks to the Board of Industrial and Academic Advisors (BIAA) that works closely with Benedictine's School of Engineering to improve the instructional program and afford its students every opportunity to succeed. BIAA's 16 members represent a cross-section of Engineering disciplines: academia, design professionals, and industry. Current BIAA Officers consist of Steve Glaser, Secretary (MGP Ingredients); Ray Gragg, Vice-Chair (Certus Structural Engineers); and Mike Odrowski, Chair (CDM Smith).

One charge of BIAA is in the area of Advancement. BIAA members, along with Benedictine's Engineering staff, current students, and recent graduates, have presented a program entitled "Preparing for Engineering as a Career" to local high school students attending Hayden, Bishop Miege, Rockhurst, St. James Academy, and St. Thomas Aquinas high schools. These presentations have proven to be a great avenue to attract new students to Benedictine.

Another area of BIAA assistance involves ABET accreditation for the specific engineering discipline degrees. Members help develop educational objectives, identify areas of continuous support, and provide institutional support. Our thanks to these dedicated volunteers for their tireless work!

<things that make us smile>



Almost everywhere you look around Westerman Hall, you see big smiles.

Top left: Classes cancelled because of a November snowstorm.

Top right: Who knew that breaking things could be educational. Two students test the amount of force needed to pull apart a piece of metal.

Center left: Going for a spin and experiencing the Coriolis effect first-hand at our Spooky Science event.

Center right: A student learns that persistence equals solutions.

Bottom right: A child test drives a toy electric car prototype customized by the Engineering Circuits class.

<sleep in heavenly peace>

Benedictine College's chapter of Sleep in Heavenly Peace (SHP) is dedicated to building twin beds and bunk beds for children in need in our community. As a newly active volunteer project in the School of Engineering, we have delivered 55 beds, and we have requests for 79 more. We plan to have another Build Day in January after students return to campus. Alumni are welcome to join in on a Build Day or to send financial support. The cost of materials and bedding is about \$350 per bed.



Help us build a bed!
Contact Dr. O'Malley
(913) 360-7960
pomalley@benedictine.edu

NO KID SLEEPS
ON THE FLOOR
IN OUR TOWN!

New Brand!

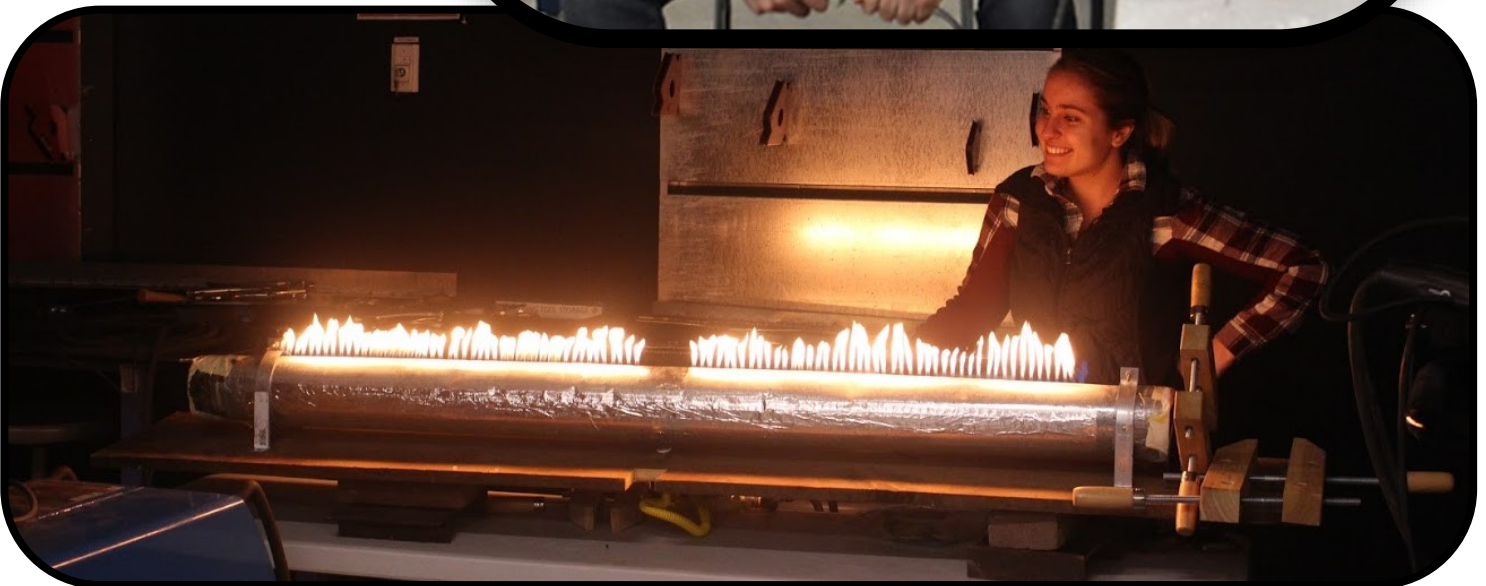
A brand was designed & fabricated at Benedictine so that each bed built carries SHP's logo. On the left, a volunteer burns on the brand! Below is the brand.



<spooky science>

... a Halloween Smash!

To celebrate the Halloween season, all science departments in Westerman Hall sponsored an evening of Spooky Science for the children and young-at-heart from the Benedictine and Atchison community. The School of Engineering offered a number of fun but surprising (if not startling) feats of science. Our students gave of their time and talents to put together great “haunting” displays of engineering wonders. Such a treat!



<hurray ravens!>

Congratulations to Benedictine's Raven Football Team that fought so hard this year. They were in the National Championship for the first time in the school's history. Way to go!

The School of Engineering has many student athletes participating in various sports. We appreciate their dedication and skill in balancing sports and academics. Our professors work hard to help these students balance classroom requirements with the teams' busy schedules.



<ask deb>

As many of you remember, Deb Scherer is keeps our facilities in ship-shape condition. She also has been "in" on many a prank and witnessed many happenings around here — academic and otherwise.

Dear Deb,

I am hoping you can help me. Now that I am out of school and making the "big bucks," I have my own place. As part of my new Christmas tradition, I bought a real Christmas tree. The tree is great, in fact it is perfect — but it is a bit too tall for my place. My significant other gets nervous whenever I pull out the saw, ever since the incident with leveling the dining room table (now our coffee table). Can you help?

Signed
Shortsighted

Dear Shortsighted,

In our new building, we had a similar problem, and I suggest you take a similar solution. Remove the ceiling tile and, like magic, your tree will fit! As far as the coffee table goes, I suggest you sell the saw to save the relationship!

Signed,
Deb Scherer



<heritage tools>

Benedictine College's School of Engineering has a woodshop and machine shop where we give students the hands-on opportunity to work with the tools that shape wood and metals. We are always in need of good tools, no matter what their age. If you know someone who is moving or down-sizing, or if you work for a company who no longer wants some of their tools, we would like to offer those tools a good home. Contact Steve Spencer at sspencer@benedictine.edu.



<calendar>

| | |
|---|-------------------|
| Scholarship Ball | February 23, 2019 |
| Engineering Mission Trip to Ecuador | March 2-11, 2019 |
| Discovery Day | April 10, 2019 |
| Concrete Canoe Regional Competition | April 12-13, 2019 |
| Junior & Senior Design Project Presentation Day | April 26, 2019 |
| Graduation | May 10, 2019 |
| Raven Reunion | June 6-8, 2019 |

<help wanted>

HELP WANTED -MECHANICAL ENGINEERS

Needed: Mechanical engineering senior design reviewers (volunteer).

Duties: Review final designs for Benedictine mechanical engineering senior projects.

Commitment: Review reports and/or be part of the Web presence for their presentations on April 26, 2019. This requires a few hours per report (we will have 4 reports this year) and 2 hours for all 4 presentations. Just reviewing one report and/or one presentation would be appreciated.

Reward: This is an opportunity to make a direct hands-on difference in these senior design projects. As you know, these are all mechanical devices that will be used in the real world. Your insights are invaluable and greatly appreciated.

Interested? Contact Steve Spencer (913) 360-7121; [SSpencer@Benedictine.edu](mailto:sspencer@benedictine.edu)

HELP WANTED - ALL ENGINEERS

Needed: Sleep in Heavenly Peace ... need volunteers to help with workshops and bed deliveries.
Contact Patrick O'Malley. pomalley@Benedictine.edu

Needed: Engineering Missions Team ... we can always use another hand on our team.
Contact Scott Newbolds. Snewbolds@Benedictine.edu

Needed: Concrete Canoe Team ... please join us for the construction and/or come to the regional competition.
Contact Scott Newbolds. Snewbolds@Benedictine.edu

HELP WANTED – FINANCIAL SUPPORT

Needed: Engineering Missions Endowment
... Visit Benedictine.edu and click "Give" in the top right corner. Indicate the Designation: "Engineering Mission" and enter the remaining necessary information

Needed: Sleep in Heavenly Peace
... Contact Dr. O'Malley (913) 360-7960 or pomalley@Benedictine.edu.

Needed: Engineering Club
... make check payable to Benedictine Engineering Club and send to BC Advancement, 1020 N Second St, Atchison, KS 66002

<show your support>

2019 Engineering Club T-Shirts for Sale

Check out these smart-looking Engineering Club T-shirts that are available for your order!
This year's winning design is by mechanical engineering student Rachelle Regli (2019).
All proceeds benefit the many activities of the Engineering Club.



Prayer and Work

Adult t-shirt

sizes range from Small to X-Large

Short Sleeve: \$22

Long-Sleeve: \$30

Flat Fee Delivery Charge of \$5.00

(Fill as Many as Will Fit
in the Box!)



Future Benedictine College "Engineer"

Youth T-Shirts

Sizes Range from Small to X-Large

Adult T-Shirts

Sizes Range from Small to Large

Costs: \$18.50 (all short sleeve)

Flat Fee Delivery Charge of \$5.00

(Fill as Many as Will Fit in the Box!)

Contact: jmcgregor@benedictine.edu

or Send Request to:
Benedictine College
Attn: Jann McGregor
School of Engineering
1020 N 2nd St
Atchison, Ks 66002

Please make checks payable to *Benedictine College School of Engineering*.

Thanks for Your Support!



<parting shots>



Before you go, let us leave you with a few parting shots from Benedictine's School of Engineering.

Top left: One of the completed junior engineering projects — the cab was cast, the bed was welded, the axles were machined, and the tires were 3-D printed.

Top right: Benedictine students, faculty, and others volunteer their time and skills to build beds for children in need through the Sleep in Heavenly Peace program.

Bottom left: Two BCYC Immersion students work together to pour metal casts during their summer of 2018 engineering adventure.



INGENIUM

Benedictine College - School of Engineering Newsletter

Ingenium signifies intelligence, character, genius — all of which describe Benedictine College engineers. The use of the Latin language shows solidarity with the Church, whose official language is Latin, and with the scientific community, which for many years communicated primarily through Latin. *Ingenium* is a proud testament to our history and character as engineers and as members of the Benedictine College community.

Benedictine College School of Engineering

1020 N Second St, Atchison, KS 66002

Benedictine.edu/engineering