

# The University of Iowa

EDITOR: Kenzie Curran

AIChE Fall 2020

## Advisor's Corner

By: Prof. David Murhammer, Professor and AIChE Student Chapter Advisor

Greetings to Hawkeye Chemical Engineers!! The COVID-19 pandemic continued to significantly influence our departmental activities during the Fall 2020 semester. Some of our courses were held in person (with masks and social distancing) and others were held online. The Professional Seminar was held via Zoom. While it is generally preferable to have in person seminar presentations, having Zoom meetings provided the opportunity to include speakers who would not be able to travel to Iowa City to present in person. During the Spring 2021 semester our department will continue to have many in-person courses and some, including Professional Seminar, online courses.

This Fall 2020 issue of our AIChE Student Chapter Newsletter begins with an article about the Engineering Grand Challenges program at the University of Iowa. This issue also includes articles about (i) the University of Iowa ChemE Jeopardy Team's journey to the North American Championship, (ii) the Omega Chi Epsilon's annual trip to Wilson's Orchard, (iii) the University of Iowa AIChE Student Chapter's activities during the pandemic, (iv) the College of Engineering Student Ambassador Program, (v) Engineering Ethics Research being conducted by Professors Fiegel and Rundlett, and (vi) the Halloween Kids' Day Camp conducted virtually.

The faculty and students adapted the best we could to the combined in-person and online courses during the Fall 2020 semester and will continue to do so during the Spring 2021 semester. We are hopeful that all courses will be in person during the Fall 2021 semester, which we believe provides an environment more conducive to learning.

Thanks for reading!  
Comments about the newsletter content can be sent to me at david-murhammer@uiowa.edu.



## University of Iowa American Institute of Chemical Engineers

### INSIDE THIS ISSUE:

Chemical Engineering and The Grand Challenges	2
2020 AIChE ChemE Jeopardy Champions!	3-4
Omega Chi Epsilon Wilson's Trip 2020	4
A Whole New World: AIChE Edition	5
New Student Ambassador Program	6
Engineering Ethics Research	6
AIChE Alumni Linked In	7
Kids' Day Camp Remodeled	7
Acknowledgments	8



## Chemical Engineering & The Grand Challenges — Collin Sindt

As the world draws further into the 21<sup>st</sup> century, increasingly complex and difficult challenges in climate, medicine, cyberspace, and national security are becoming more prevalent. For many of these areas of concern, chemical engineers have skills that are primely situated to come up with innovative solutions. The Grand Challenges program is focused on preparing students to address the large problems facing humanity upon graduation, providing support for experiential learning opportunities that contribute to the quality of a student's education. My experience in the Grand Challenges program has allowed me to pursue research, study abroad, travel to our nation's capital to share my work and expand my network to include other professionals and students in the program. This program has been a driving force in encouraging me to take bolder steps forward in my education, and my hope is that this article might make others do so as well.

The Engineering Grand Challenges program at Iowa is one of many at universities all over the country. In collaboration with other national engineering associations around the world, 14 "Grand Challenges" were identified as crucial for humanity to address in the coming years, spanning a wide range of disciplines from cyberspace to medicine, to the environment. Grand Challenges programs at universities are meant to prepare students to tackle these challenges by focusing on 5 main experiential learning areas: Research, Entrepreneurship, Multicultural Experiences, Service, and Interdisciplinary Learning. Through a combination of these experiences applied to a grand challenge, the goal is to prepare students to be leaders in coming up with innovative solutions to these challenges in their future careers.

The role of a student in the program is to satisfy, to varying degrees, each of these 5 experiential learning areas before graduation. These can be fulfilled in a variety of ways, and how each student fulfills the various requirements of the program is subject to what they wish to accomplish through it. My selected grand challenge to focus on is developing

carbon sequestration technologies, and so many of my experiences have tried to focus somehow on being applicable to that. A more detailed description of the program elements can be found online at the Iowa Grand Challenges web page. Upon application, students are asked what they have done or plan to do to address these components, and upon admission to the program, resources are provided to help them focus on those elements.

The main support the program provides is financial. A scholarship is given to scholars within the program, which can be applied to any academic costs like any other scholarship. In addition, \$1000 of programmatic support is available for the student to use at their discretion in pursuit of their challenge. This can be used for research funding, travel expenses, program costs for study abroad, etc. In addition, the program provides access to the broader Grand Challenges community. A national convention is held every year in Washington DC where scholars and advisors from programs all over the country come together to learn and network. I took part in this convention last November, using my programmatic support to cover all the expenses associated with the trip. The remainder of my programmatic funding then helped cover expenses for the India Winterim.

While the requirements can seem like a lot, my personal experience was that I was already completing several of the components between research and student org involvement, and the support of the program not only made these more feasible but also pushed me to do more than I ever thought I would in college. The program and the support it's provided has given me opportunities I never thought I'd see, and I'd highly recommend it to any student. Feel free to reach out to me with questions about it at my email: [collin-sindt@uiowa.edu](mailto:collin-sindt@uiowa.edu).



**NAE GRAND CHALLENGES**  
FOR ENGINEERING  
NATIONAL ACADEMY OF ENGINEERING

## 2020 AIChE ChemE Jeopardy Champions! — Professor David W. Murhammer

On November 14<sup>th</sup> the University of Iowa (UI) ChemE Jeopardy team (Dimitri Gatzios, Mason Lyons, Jonah Marks, and Collin Sindt) defeated teams from the University of Maryland, Baltimore County (UMBC) and the defending national champion University of Southern California (USC) in the championship round to win the 2020 ChemE Jeopardy National Championship. As seen in Table 1, this is the third national championship won by the UI during the 10 years of the competition – they also won in 2013 and 2014. No other university has won more than one national championship. The University of Iowa also finished in second place three times (2012, 2014, and 2019) and reached the semi-finals in 2018.

faced the UMBC and Washington State University in the preliminary round. The UI and the UMBC, finished first and second, respectively, and advanced to the semi-final round. The UI faced the University of Delaware (UD) and the University of California, Berkeley (UCB) in the semi-final round, which was also held on November 13<sup>th</sup>. The UI was leading going into Final Jeopardy. The Final Jeopardy category was Chemical Process Safety, and the clue was “This is the minimum energy of an electrostatic discharge that is considered hazardous in industrial operations where flammable vapors are present.” The correct response was “What is 0.1 mJ?”

**Table 1. Annual National ChemE Jeopardy Champions.**

\* denotes the years in which the University of Iowa finished 2<sup>nd</sup> in the national competition and \*\* denotes University of Iowa lost in the semi-final round in the national competition.

Year	National Champions
2011	University of Nebraska
*2012	University of Cincinnati
<b>2013</b>	<b>University of Iowa</b>
<b>2014</b>	<b>University of Iowa</b>
*2015	University of Maryland, College Station
2016	Princeton University
2017	University of California, Berkeley
**2018	University of Texas, Austin
*2019	University of Southern California
<b>2020</b>	<b>University of Iowa</b>

The road to the 2020 national championship began at the Mid-America Regional Conference held on September 26<sup>th</sup>. The competition was hosted by Iowa State University and held virtually using Factile ([www.playfactile.com](http://www.playfactile.com)), a platform for creating jeopardy games that can be used either virtually or in person. The University of Oklahoma and the UI finished first and second, respectively, and both qualified for the national competition. The national competition, which was also held virtually using Factile, began with the preliminary round held on November 13<sup>th</sup>. The UI

The University of Delaware provided the correct response, while the UI (“What is 0.01 mJ?”) and the UCB (no coherent response) gave incorrect responses. Fortunately, the UI had a very large lead over the UD going into the Final Jeopardy round and won the semi-final round to advance to the championship round.

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## 2020 AIChE ChemE Jeopardy Champions! (continued from previous page)

As mentioned previously, the UI, the UMBC, and the USC advanced to the championship round. The UI was trailing both other teams going into the final category in Double Jeopardy (“Cartoon Characters”). The UI dominated this category by correctly responding to “This is Shaggy’s last name from the Scooby Doo cartoon” (correct response: “What is Rogers?”), “These are the names of the 3 Powerpuff Girls” (correct response: “Who are Blossom, Bubbles, and Buttercup?”), and other clues in this category to overtake the UMBC going into Final Jeopardy. The UI still trailed the USC going into the Final Jeopardy.

The Final Jeopardy category was Biochemical Engineering, and the clue was “This phenomenon occurs when the chemostat’s dilution rate is higher than the cells’ maximum growth rate.” The UI and the UMBC both gave the correct response (“What is washout?”) and the USC was not able to answer correctly. Due to strategic wagering, USC’s incorrect response, and a firm grasp of biochemical engineering fundamentals, the University of Iowa prevailed and became the 2020 national ChemE Jeopardy Champions!

## Omega Chi Epsilon Wilson’s Trip 2020 — Kenzie Curran & Mason Lyons

This semester has been like no other, being mostly online. This has prevented us students from, not only learning in the only way we have ever known, but socializing with our peers. The Chemical Engineering program at IOWA is fortunate to have often experienced a particular closeness amongst classes. Having been online and apart over summer break, we were all starting to miss each other more than anticipated! To our rescue, the Omega Chi Epsilon annual Wilson’s Apple Orchard trip provided us with a place to come together again, within 6 ft of course. It was clear we had been socially deprived when over 20 students showed up. This was the largest turnout this annual event had experienced, and the more the merrier. Luckily, Wilson’s apple orchard was unfazed by the pandemic, providing us with delicious apples and beautiful scenery, just as it had the year before. It was a perfect fall day to pick some apples, soak up some comradery, and check

in with our friends.

-Kenzie Curran

Our local Alpha Epsilon chapter of Omega Chi Epsilon made the annual expedition to Wilson’s Apple Orchard on September 25<sup>th</sup>. It was an extraordinary bonding experience for chemical engineering students of all years! We explored the groves, overcame the creek, enjoyed scrumptious apple turnovers (courtesy of Dr. Guymon), and witnessed a fantastical sunset. This tradition will continue to serve as a warm break during the thick of midterm season when comradery is invaluable.

-Mason Lyons, President of OXE



## A Whole New World: AIChE Edition — Elizabeth Occhi

### Featuring the National AIChE Conference

Due to the ongoing pandemic, the way that the world operates has drastically changed. In Spring 2020, several organizations transitioned in person activities to virtual activities. At this point, the AIChE chapter at the University of Iowa transitioned all the events to a virtual setting or cancelled events entirely. In the fall, AIChE decided to reschedule the regional conference and to schedule the national conference virtually.

The regional conference included a Chem-E jeopardy competition, a Chem-E car competition, and a poster competition. The Chem-E jeopardy competition was designed to run with factile and zoom. Factile is a virtual program that allows for participants to buzz in with their phones. The Chem-E car competition included all the normal aspects of the competition. However, instead of doing an in-person inspections and competitions, videos and zoom were also utilized. It was interesting to see how these competitions could be conducted in a virtual manner.

The national conference included the events mentioned above. This conference utilized an online program to simulate a conference setting. Not only that, but there were multiple workshops and competitions occurring throughout the schedule. The University of Iowa submitted a workshop on our chapter's kids' day camp via video. This allowed for participants to view the material at any point in the conference and for participants to comment their thoughts. I found that to be helpful, especially given the opportunity to view at any point in the conference. I didn't have to worry about picking between events that were occurring at the same time. The national conference also included a senior mixer, a variety of speakers, and a career fair. While these activities were not in person, the conferences presented several different opportunities for networking and for participants to engage with a variety of organizations in a safe manner. Not only were things done at a national and regional level, there were numerous events that were held by the AIChE chapter at the University of Iowa.

Our AIChE chapter's goal was to present opportunities to our members that would encourage networking in these socially distant times. One of our most popular events of the semester was Family Feud night. A survey was distributed to the different classes and the professors. The professors were also invited to attend and participate. We had a total of eight teams participate. Not only that, but our board met with our sister chapter's board for the first time as well. This allowed for us to plan future events and to discuss how our individual chapters operate. Another event included a game night with the Iowa State chapter via zoom. Not only that, but our chapter also hosted a food drive and all of the proceeds went to the University's food pantry. Our chapter also hosted a virtual kids' day camp and was very successful in doing so.

While there were numerous activities that were conducted in a virtual manner throughout this semester. These activities aided in strengthening our chapter's relationship with other AIChE student chapters. While things have definitely changed, this past semester has showed that there are multiple ways to safely connect and engage with others.



Winning ChemE Jeopardy Team Fall 2020 (L to R): Mason Lyons, Collin Sindt, Jonah Marks, Dimitri Gatzios.

## New Student Ambassador Program —Jessica Schroeder

For the past two and a half years, I have had the honor of being a student ambassador for the College of Engineering. Student Ambassadors are current students, sophomore and above, in all majors that share their experiences with prospective students and their families. My encounter with a student ambassador when I was a senior in high school is one of the main reasons that I attended the University of Iowa. During my freshman year, I joined a student org called STAR (Students to Assist Recruitment), where I helped with large-scale visit days for the University. Working with prospective students at the university level really made me realize that I wanted to share my experiences with prospective engineering students and become an ambassador.

As a student ambassador, I give tours of the Seamans Center, meet with prospective students on daily visit days, and help put on the large 'Explore Engineering Days'. We aren't just ambassadors for the college but also ambassadors for our respective disciplines as well. One of the most rewarding parts of my job is helping students real-

ize that Iowa is the school for them and helping them discover a potential discipline that best suits them. Many students and families that come to visit the college have the perception that chemical engineering is just chemistry and don't know that there is so much more ChemE has to offer. I love sharing stories about my experiences, my classmate's experiences, and talking about our professors' research to show them all the possibilities this discipline has to offer. When I started on my first team of ambassadors 3 out of 20 were ChemE majors, however this last year we have 6 ChemEs on the team. It's great to see more ChemEs get involved in this opportunity and share how amazing our department is to families. This job has really helped me grow as a person as well. I have been able to improve my communication skills and be more confident in myself. Although this was my last semester as an ambassador, I will forever cherish the experience and encourage others to apply in the spring to share their experiences as well.

## Engineering Ethics Research —Katelyn Murhammer

During the Fall of 2019, students in the Introduction to Engineering Problem Solving and Process Calculations courses were assigned a series of questions to assess their decision making about various ethical dilemmas. The assignment, the Engineering Science and Issues Test (ESIT), required an analysis of four cases involving engineering and science-related issues. The students were given two versions of the assignment, one prior to receiving hands-on ethics training and one after, to assess if each student's ethical decision making had changed over their respective course.

Due to the importance of ethical decision making within engineering, Dr. Fiegel and Dr. Rundlett, both professors in the Department of Chemical and Biochemical Engineering, decided to create a research project to analyze the results of the assignments and determine the effectiveness of the ethics training. Each student participated in a choose-your-own-adventure activity based on various engineering scenarios. This activity allowed the students to make their own decisions regarding the given scenarios and discover the

resulting impacts. The project, titled "Piloting an Ethics Choose-Your-Own-Adventure Activity in Early Engineering Education," has two primary goals: to help undergraduate students understand the potential magnitude of consequences associated with ethical-related decisions and to determine if the ethics activity in the classroom is able to increase a student's ability to make ethical decisions.

I have had the opportunity to be involved with this research project and have helped with the entering and organization of the data from the preliminary and final assignments completed by over 400 students. The next step in this process is to analyze the collected data and determine if the goals of the project were met. We are also in the process of writing a paper for the 2021 American Society for Engineering Education Annual Conference and Exposition. I am grateful that I had the opportunity to further my knowledge in ethical decision making and am excited to see the upcoming results of this project.

## AIChE Alumni Linked in — Elanna Neppel

### ATTENTION ALUMNI

There is now an IOWA Chemical Engineering Alumni LinkedIn page for you to join!

Its called [AIChE at the University of Iowa](#).

Check it out for more frequent nerdy IOWA ChemE news, we would love to see ya there!



## Kids' Day Camp, Remodeled — Payton Biddle, Quintin Blad & Nolan Burson

This fall the AIChE Executive Board hosted a Halloween themed virtual Kids Day Camp on Halloween. Usually this event is held in person, but because of the circumstances this semester the Kids' Day Camp coordinators put together pre-packaged take-home kits full of fun experimental materials. All things considered, a dozen kids with ages between 5 and 11 were able to participate. The event lasted 3 hours with the main activities consisting of 6 STEM related experiments. The do-it-yourself experiments were supplemented with collaborative

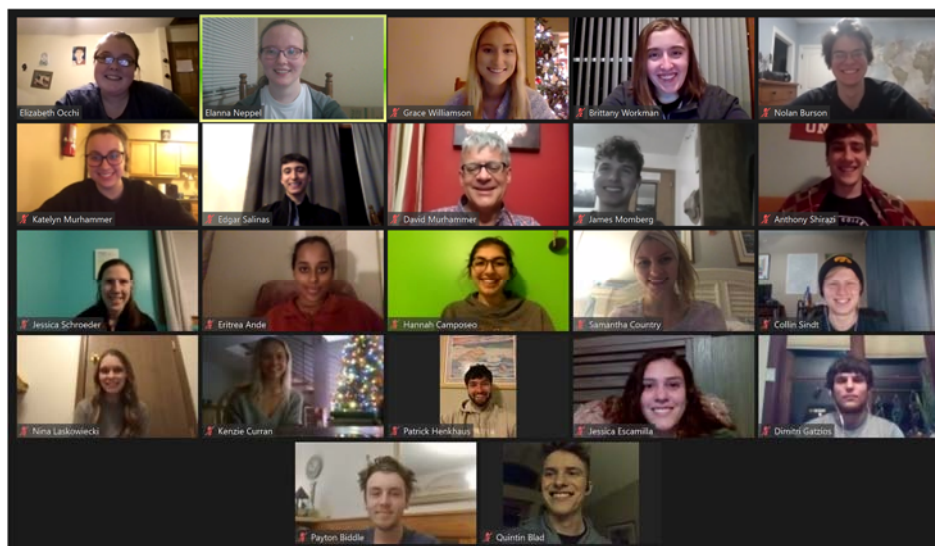
activities such as playing hangman and narrating a story chain. The experiments included making a homemade lava lamp, making slime, building a toothpick and fruit snack tower, making ooblek, making elephant toothpaste, and the coke and mentos experiment. The kids appeared to have a great time with the Day Camp and parents/guardians were also impressed based on feedback received. Chances are that the Day Camp will follow a similar format next semester since the event went so smoothly on Zoom.



## Acknowledgements

Thank you to the AIChE Officers for their hard work and contributing efforts to make our AIChE Student Chapter a successful organization.

### Fall 2020 Officers:



**President:** Elizabeth Occhi

**Vice President:** Brittany Workman

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**K-12 Outreach:** Payton Biddle, Quintin Blad, Nolan Burson

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**Faculty Advisor:** Professor David Murhammer

**Contributors:** Katelyn Murhammer, Elizabeth Occhi, Kenzie Curran, Collin Sindt, Mason Lyons, Collin Sindt, Payton Biddle, Jessica Schroeder, Elanna Neppel, Quintin Blad, Nolan Burson, David Murhammer.

***Your help is much appreciated!***

Interested in speaking at professional seminar? If so, then contact our Spring 2021 AIChE Student Chapter Vice President Janina Laskowiecki at [janina-laskowiecki@uiowa.edu](mailto:janina-laskowiecki@uiowa.edu) or Student Chapter Advisor Prof. David Murhammer at [david-murhammer@uiowa.edu](mailto:david-murhammer@uiowa.edu) for details and availability!

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