

AEROCOM

JOHN D. ODEGARD SCHOOL OF AEROSPACE SCIENCES

SUMMER 2020



#UNDCLEAREDFORTAKEOFF

UND
UNIVERSITY OF
NORTH DAKOTA
AERO.UND.EDU



TABLE OF CONTENTS

- 04 Letter from the Dean
- 05 President's Letter
- 07 Keeping Things Clean Since COVID-19
- 10 2020 Scholarship Recipients
- 12 Ground School Sets Pace with Move to Remote Education
- 14 How Drones Could Help Fight Against Pandemics
- 15 UND Leaders in UAS Innovation Integration
- 16 How Aviators Can Handle Career Turbulence
- 18 Aviation Speaker Series
- 19 #UNDmissingOSH
- 20 Leader In Action: Earning His Wings
- 22 Twenty-One Years Later Poellot Steps Down as Atmospheric Sciences Chair
- 24 Student Spotlight: Chasing During a Pandemic
- 25 Student Spotlight: Not Quite A Bust
- 26 Space Studies Graduates Participate in The Crew Dragon-2 Mission

AEROCOM | SUMMER 2020

PRESIDENT Andy Armacost

DEAN Dr. Paul Lindseth

ASSOCIATE DEAN Dr. Elizabeth Bjerke

ASSISTANT DEAN, EDITOR Ken Polovitz

DESIGN & LAYOUT Courtney Olson

COVER PHOTO Shawna Schill

Aerocom is published for alumni and friends of the John D. Odegard School of Aerospace Sciences. Aerocom welcomes your suggestions, story ideas, alumni profile information and photos for use in future publications. Permission to reprint any portion of text or photography may be granted upon request. Visit our website at aero.UND.edu.





What a totally different environment we are living in today compared to just a few months ago! The pandemic health crisis has certainly affected just about everything we do at the Odegard School. However, since “resilience” is one of the Odegard School’s core values, it is immensely gratifying to see how very well our faculty, staff and students have reacted to these difficult times.

In January, we were honored to host the Commander of Space Force, General Raymond who was named by President Trump in December, 2019 as the first commander of the newest branch of the armed services Space Force. A special thank you to Senator Cramer for inviting General Raymond to campus where we were able to brief him and his team on the UND’s renowned Space Studies Department and gain insight on how we can partner with Space Force on the research needs of Space Force.

We extend a very warm welcome to our incoming President, Andy Armacost who officially took over as president on June 1, 2020. We look forward to working closely with President Armacost. We also want to thank Dr. Joshua Wynne for his exceptional service as interim president of the university. In addition, we welcome Dr. Debbie Storrs as UND’s Interim Provost and Vice President of Academic Affairs effective June 1, 2020. We look forward to working closely with Dr. Storrs.

A special thank you to Dr. Jim Higgins, Professor of Aviation, for serving as Aviation Department Chair from 2016 to the Fall Semester of 2019. Under Jim’s leadership the Department was awarded the University’s Departmental Excellence in Teaching Award and faculty salaries were raised to more closely align with industry and collegiate aviation standards. After an internal search, Professor Brett Venhuizen, J.D., ATP was named the new Aviation Department Chair.

Special thanks also goes to Chester Fritz Distinguished Professor Mike Poellot for his many years of outstanding service as the Atmospheric Sciences Department Chair. Mike has stepped down from the department chair position to resume his full time faculty position within the Atmospheric Sciences Department effective July 1, 2020. We are excited to have Dr. Gretchen Mullendore, Professor Atmospheric Sciences, as the new chair of the Atmospheric Sciences Department.

We congratulate Dr. Jeff VanLooy, Associate Professor of Earth Systems Science and Policy, for his exceptional service as University Senate Chair for the 2019-20 academic year. Jeff did an outstanding job of leading the University Senate, especially during the last three months of the semester while the University transitioned to remote learning and working remotely.

As many of you have heard, I made the difficult decision to step down as Dean of the Odegard School at the end of the Fall Semester 2020. At that time, I will be returning to my position as an aviation professor within the Aviation Department and look forward to focusing on my research interests and working more closely with students. It has been a distinct honor to serve as Dean and Associate Dean of the Odegard School for the past 20 years and I sincerely want to thank the faculty, staff and students for their support. UND is in the process of launching a national search for a new Dean of the Odegard School.

Finally, a special thank you to each of you for your dedicated support of UND Aerospace and the John D. Odegard School of Aerospace Sciences! It is very much appreciated by our entire organization!

PAUL LINDSETH | DEAN, JOHN D. ODEGARD SCHOOL OF AEROSPACE SCIENCES

A handwritten signature of Paul Lindseth in black ink.



PRESIDENT'S LETTER

ANDREW ARMACOST

I am honored and privileged to serve as the 13th president of your University of North Dakota. One reason I accepted this position is because I found so much enthusiasm on campus about the opportunities and the potential of this University. That spirit filled me with great anticipation for my future at UND.

Nowhere is this more evident than at the John D. Odegard School of Aerospace Sciences. Even before I visited Grand Forks last year, I knew of the school's world-class aviation training and its reputation for groundbreaking aerospace research.

Perhaps a brief overview of my background and education will help you understand why aviation and research are in my blood. I grew up in Wisconsin as the son of a U.S. Coast Guard officer. Partly because my father and my older brother were engineers, I decided to attend Northwestern University where I was a U.S. Air Force ROTC graduate and earned a Bachelor of Science degree in industrial engineering. The Air Force would later sponsor me for both my master's and Ph.D. in operations research at the Massachusetts Institute of Technology, preparing me for a rewarding career within a career in higher education.

Twenty of my 30 years in the Air Force were served at the Air Force Academy in Colorado Springs. I started there as an instructor in 1995 and spent my final six years as the dean of faculty. The Academy's sponsored research program of more than \$50 million annually made it the nation's top-funded research program among undergraduate schools. In addition, I had the good fortune of creating opportunities that connected my research to real needs of the Air Force and the U.S.

Now that I'm at UND, there is much to make me excited about UND's John D. Odegard School of Aerospace Science. I see great opportunities for our world-class aviation program to capitalize on programs such as the Air Force's alternative

pathway to wings.

I noticed within the past year, you've hosted visits from NASA Administrator Jim Bridenstine and Gen. John Raymond, commander of the new U.S. Space Force, both of whom are bullish on pursuing research opportunities with UND Aerospace. They recognize that the people, the expertise and the facilities here can assist their agencies on topics ranging from national defense and security to deep-space exploration to developing a better understanding of the Earth's atmosphere. These are real and significant opportunities on which we can capitalize.

In addition, unmanned aircraft and autonomy were areas I researched while in the Air Force. Of course, UND is widely recognized for the work it's doing, not only to train UAS pilots, but also to integrate UAS into the national airspace, leading the way to commercialize this important technology. I'm thrilled to see the collaborations and partnerships UND Aerospace has developed with leaders in the UAS industry, as well as the wide variety programs with state and federal entities.

These are but a few of the opportunities for which UND Aerospace is ideally positioned. I am confident that by working together, we can continue the fine work John Odegard started more than 40 years ago.

ANDY ARMACOST | PRESIDENT, UNIVERSITY OF NORTH DAKOTA

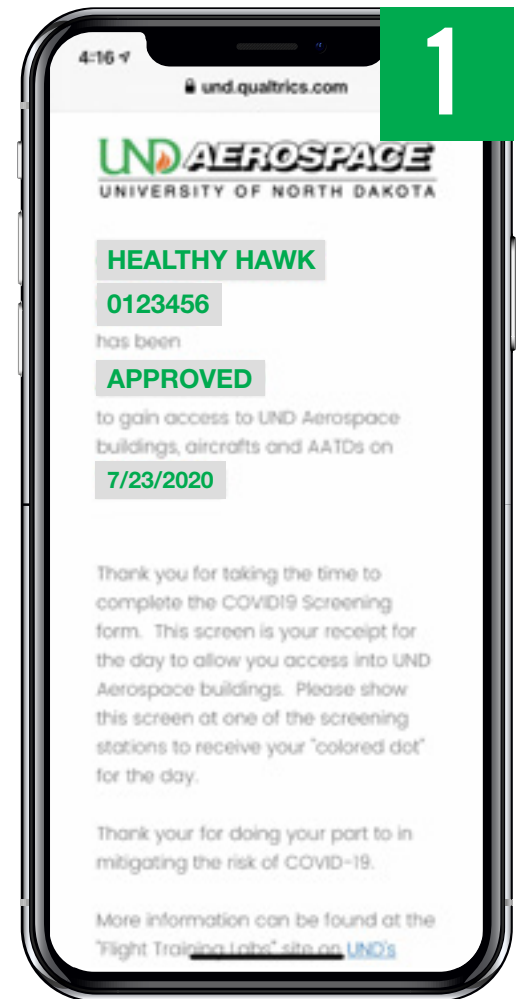
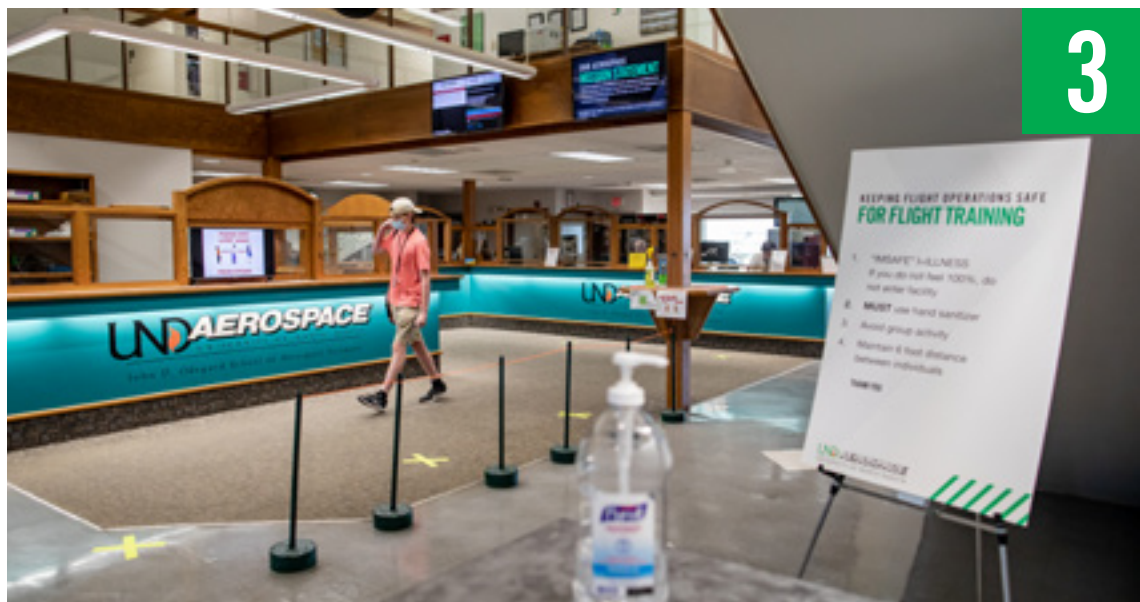
A handwritten signature in black ink, appearing to read 'Armacost'.



CONGRATS TO THE 2020 GRADUATES!

SAFETY FIRST KEEPIN' THINGS CLEAN SINCE COVID-19

Since reopening, UND Aerospace has had zero documented COVID cases due to flight training while conducting over 11,500 flight training hours in aircraft, UAS, and AATDs where 6' distance cannot be maintained. Although we have great policies, procedures and protocols, it is truly a tribute to the PEOPLE who are taking an active role in COVID mitigation at Flight Operations on a daily basis.



1. Digital screening process

Students and Instructors are required to complete an online COVID screening form prior to entering Flight Ops every day. We have screened roughly 3000 people every week.

2. Temp at the door

Upon entering the buildings, temperature checks complete the screening procedure.

3. Hand sanitizer

Hand hygiene is important and stations are set up throughout Flight Operations.



4

4. Social distancing 6ft apart

We are encouraging a 6' wingspan for social distancing throughout all facilities.

5. Wiping down tables

Everyone is responsible for increased sanitation of common areas.

6. Student briefings

We have converted the large center hangar off of dispatch into a pre/post flight briefing area. This allows for centralized sanitation and improved distancing efforts by removing a high volume of people from the previously congested dispatch area.

7. Wiping down the aircraft

Our amazing line crew conducts a thorough sanitation of the fleet every morning. Flight crews are also responsible for wiping down the aircraft before every flight (before and after).



5

8. Surgical masks in flight

Surgical masks are required for instructors and students when conducting flight training. So far we have given out over 7,500 masks.



6



Check out the music video "COVID on Decline" by Brian Willis, '03, UND Aerospace Safety Director and produced by Matt Opsahl, '00, Assistant Chief Flight Instructor.
youtu.be/O-sjKudLGhE



Larry Martin '71

Retired / Former airline executive and business entrepreneur / Board Chair of UND Aerospace Foundation Board

Don Dubuque '81

Retired / UND Aerospace Director of Extensions Programs Fleet Manager

LaMar Haugaard '85

Captain, Horizon Air

Jeff Boerboon '92

Pilot, Delta Air Lines
 Yak 110

*2020 Hall of Fame
 event details to be determined.*

2020 AEROSPACE SCHOLARSHIP



AIR TRAFFIC MANAGEMENT & SMALL UAS **EMMELINNE MILLER**

St. Louis, Missouri

Student Involvement
Student Air Traffic Control Association



HELEN & LEONARD SELKURT AVIATION SCHOLARSHIP
2020 SCHOLARSHIP RECIPIENT



AVIATION MANAGEMENT AND COMMERCIAL AVIATION **DELANTE SYKES**

Gastonia, North Carolina

Student Involvement
African Student Union, Alpha Eta Rho Delta Chapter (Aviation),
Black Student Association, Professional Pilots of Tomorrow,
Aviation Management Association



MMOPA SCHOLARSHIP/FEDEX PURPLE RUNWAY
2020 SCHOLARSHIP RECIPIENT

\$389,030

FY2020 scholarships

563

unique donors

123

students impacted

53

endowments towards
scholarships

SCHOLARSHIPS



UNDAER
UNIVERSITY OF

**COMMERCIAL AVIATION/
ATMOSPHERIC SCIENCE,
MINOR IN MATH**
EVAN RYS

Clinton, New Jersey

Student Involvement

Alpha Sigma Phi, American Meteorological Society, Student Traffic Control Assoc., Student Aviation Management Association, Gentlemen, Student Amateur Radio Assoc.

**JOHN D. ODEGARD SCHOLARSHIP
2020 SCHOLARSHIP RECIPIENT**

UNDAEROSPACE
UNIVERSITY OF NORTH DAKOTA



**SCHOLARSHIP RECIPIENT
CARLY SHUKIAR**

Check out our Aviation Scholarship video on our YouTube channel.



@UNDAerospace

SUPPORTING STUDENTS IN THEIR TIME OF NEED.

A staggering 8% of current UND students have not re-enrolled for the fall due to financial restrictions. Students' academic success is the number one priority of this University, and it has become clear that they need our help. You can support students' emergency needs through the UND Angel Fund and with the Open Door Scholarship which is awarded to students to help cover the cost of their tuition in times of hardship.

UNDalumni.org/ANGEL

UNDalumni.org/OpenDoor

BE AN ANGEL & OPEN A DOOR FOR STUDENTS TODAY!

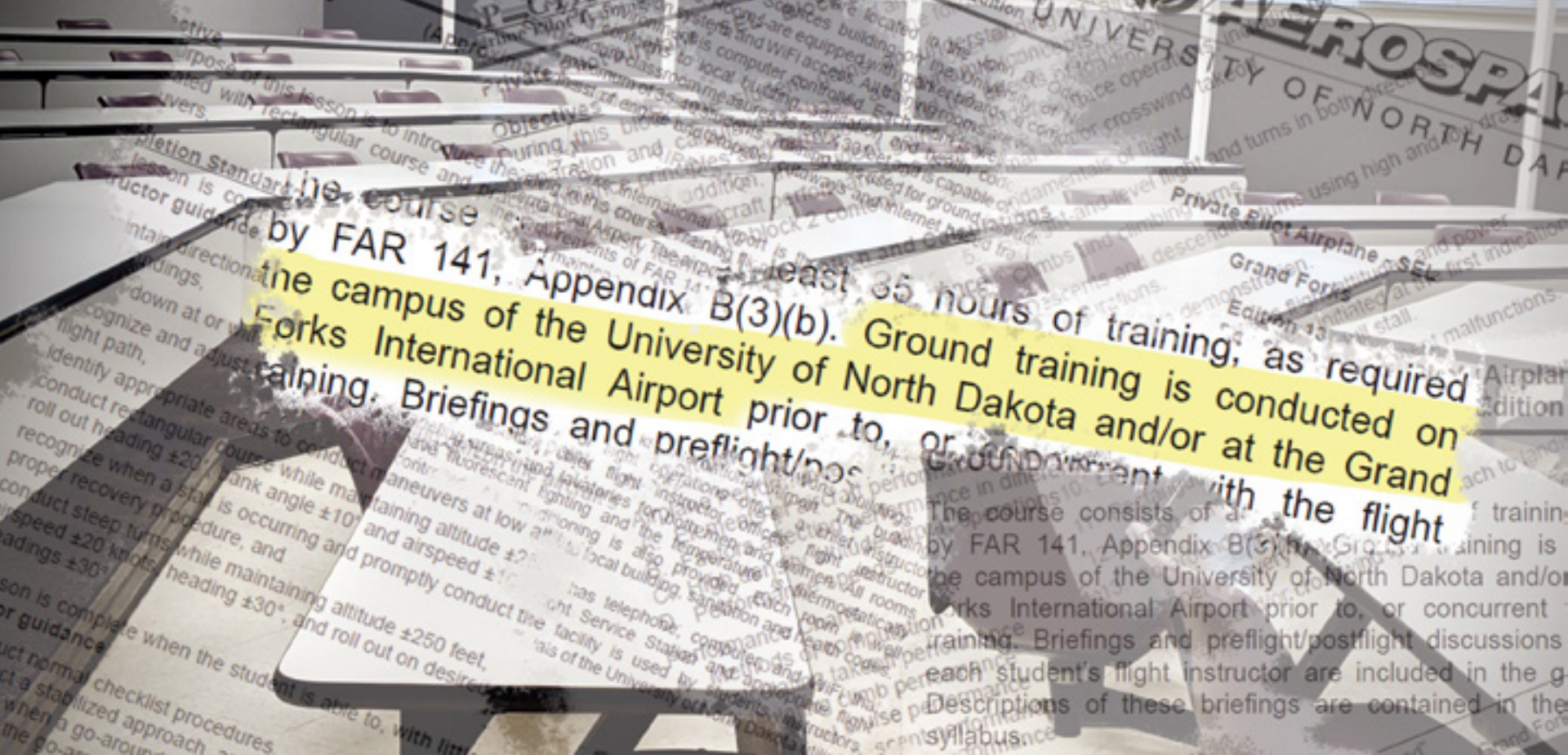
Make an impact on students' lives by funding a scholarship today! Gifts of any size are welcome. Interested in creating your own scholarship or leaving a legacy by funding a scholarship through a gift in will or estate? Call or email me to get started.



Jonathan Gehrke, '06, '11
Sr. Director of Development

P 701.777.2633

JonathanG@UNDfoundation.org



UND AEROSPACE'S GROUND SCHOOL SETS PACE WITH MOVE TO REMOTE EDUCATION

Thanks to rapid action of UND Aerospace faculty, students can complete current ground school courses online

UND Aerospace's quick request to move its ground school online won almost immediate approval from the FAA, a development that may have paved the way for other aviation schools and students around the country, leaders of the University's aviation school say.

The nation's leading flight school has had to make unprecedented changes during an unprecedented time as its programs – and programs across the planet – confront the COVID-19 outbreak.

The situation presented an especially complex set of issues for the John D. Odegard School of Aerospace Sciences.

Not only are flight operations grounded at Grand Forks International Airport until further notice, but the edict to teach remotely for the rest of the semester directly contradicts the regulations set forth by the Federal Aviation Administration (FAA) allowing UND to operate as a Part 141 ground school.

The FAA-regulated selection of courses comprising Part 141, from the 100 to 400 level, is what prepares and qualifies UND graduates to move forward in their careers as aviators. All of them involve flight in one way or another.

According to the course outlines that keep UND within Part 141 regulations, all training must be delivered on-campus at UND, or out at UND Flight Operations. This, of course, put faculty in a difficult position, and required immediate action with an impending restriction on campus activity.

The quick work of Aerospace faculty and staff impacted not only the lives of more than 1,000 UND Aerospace students eager to keep their education on track, but also, potentially, thousands more aviation students across the country.

'Not a small feat'

Here's the key dilemma that confronted Aerospace leaders as the "remote learning" news developed: How would UND be able to keep complying with FAA regulations,

while also switching ground instruction to online after spring break?

Lewis Archer, assistant professor and assistant chair of flight academics, said faculty leaders were already making “Plan B” by the time they sent a request to the FAA to deviate from their training course outlines, which would allow them to shift to online delivery.

“We had the drafted request in the hands of our principal operations inspector – who is based out of Fargo’s FAA district office – by Wednesday, March 11,” Archer said. “We were preparing for them to say no.”

On the day the request was sent, the inspector to whom it was delivered happened to be on location at UND Flight Operations, which gave Archer and Chief Flight Instructor Jeremy Roesler a chance to hand-deliver the same documents and discuss the situation.

After the chance encounter, Archer checked in with the office through the rest of the week, but didn’t hear back. Then after a tense weekend – relief. The FAA sent back a letter of approval.

“I was quite surprised not only to get that response, but also to get it that quickly,” Archer remarked.

“Those of us who have worked with the FAA over the years know that such a result is not a small feat, but rather a huge accomplishment,” Bjerke said in commending Archer’s and other’s efforts.

“As I watched all of the other collegiate aviation programs chime in that their district offices finally received guidance to assist them in similar requests, after we were already granted approval, I realized that we were once again proving to be leaders in collegiate aviation education,” she added. “Not only did Archer’s and Roesler’s efforts positively impact our aviation students, they undoubtedly helped thousands more across the country.”

Archer also liked the thought of UND showing the way for others during unusual and uncertain times. As soon as they were granted approval, UND faculty shared their regulatory approach with peer institutions. This past week, Archer confirmed that most institutions have been approved to move their ground schools online.

“I’d like to think we paved the way,” he said.

Aerospace’s online PSA

On March 16, UND Aerospace leaders described the ground-school and other coronavirus-related changes in an online presentation on the College’s YouTube channel. Throughout the presentation, the College’s message was clear: “The health and safety of our students, staff and faculty is our paramount consideration.”

Those were the words of Dean Paul Lindseth, who was accompanied during the presentation by an array of faculty and staff.

UND Aerospace boasts an exemplary safety record, noted Brian Willis, director of safety. But “today, it’s not your flight safety, but your personal safety that we’re

concerned about,” he said.

Roesler said that while there are plenty of questions around requirements for flight training, those shouldn’t be a concern at the moment. The conversation about how to eventually resume flight training is ongoing, and everything is subject to change in a fluid situation.

Regarding ground school course registration, Archer said that the system tracking flight lessons – aka course prerequisites – has been frozen to Feb. 29. That means wherever students were in their flight lesson progress at that date is how the system will establish priority for registration once normal activity resumes.

Once again, though, Archer stressed the fact that any of the numbers can change as circumstances develop.

“There are a lot of factors at play, and there’s no doubt that this will delay things for a lot of students,” Archer said. “We’re going to do what we can to hopefully avoid that as much as possible.”

“Not only did Archer’s and Roesler’s efforts positively impact our aviation students, they undoubtedly helped thousands more across the country.”

BETH BJERKE, ASSOCIATE DEAN

Making it work

As many of the courses moved to online delivery for the first time, which was an undertaking on its own, the FAA conditioned its approval on having remote access to the courses.

The responsiveness and assistance from the Teaching Transformation and Development Academy (TTaDA) was a lifesaver throughout the fast-paced process, said Archer.

“The help we’ve had from TTaDA has been exceptional,” he said. “I explained what we had to do to comply with the FAA, and as soon as I had the approval, and I emailed [Academic Application Administrator/Learning Space Coordinator] Diane Lundeen, it was done instantly. We had what we needed for the FAA.

“I can’t thank them enough for how they’ve helped us through this.”

Archer is one of the many in the aviation faculty who are teaching online for the first time this week, but he’s confident that every flight student will be able to finish his or her ground school coursework for the spring semester, regardless of where each student is at in the program.

Faculty are collaborating as a group, he said – sharing knowledge and resources to ensure students get the education they expected when they chose UND Aerospace to start their aviation careers.

“It’s not going to be an easy transition, but with the amount of tools we have and people who can help, I know we can make it work,” Archer said.

—Connor Murphy / UND Today



HOW DRONES COULD HELP THE FIGHT AGAINST PANDEMICS

Research involving UND is testing three ways drones can help reduce viral spread

The University of North Dakota's Center for Innovation and Research Institute for Autonomous Systems (RIAS) are partnering in a coalition of unmanned aerial system (UAS) industry leaders to develop new mission sets against future pandemics.

Flight tests operated by Grand Forks-based drone service provider SkySkopes are underway in Grand Forks County to test the abilities of drones to spray disinfectants, deliver priority supplies, and sense body temperatures remotely.

North Dakota State University is also on-board with the project, providing an aircraft originally developed for agricultural spraying applications.

"I have not seen a partnership like this before, and we have a mission set like I've never seen before," said Matt Dunlevy, President and CEO of SkySkopes.

Coordinated response

Amy Whitney, director of the Center for Innovation at UND, said the purpose of the mission is to test each application – spray, deliver and sense – individually, as well as measure the aggregate impact of all three as a coordinated emergency response to a pandemic. The project has been made possible through the Center for Innovation's Dahl, Melroe and Nash faculty entrepreneur research fund.

"We're in a crisis where we're having to make behavioral changes," Whitney said. "Autonomous systems can help us accomplish daily life tasks in a way that helps protect public and individual health, while also bringing resources to locations where movement is restricted."

"In addition, the technology can help us identify hazards in the environment that we may not be able to see with our own eyes, much like the spread of COVID-19."

Good news

In the "Good News" portion of his daily COVID-19 response briefing on April 21, North Dakota Gov. Doug Burgum gave a high-profile shout-out to UND, SkySkopes and their collaborators for the high-tech approach.

"They have got some ideas about how UAVs might help spray water and disinfectant to stop and kill the virus and understand how drones might deliver medical supplies or they could also be used in trying to detect health issues," Burgum said. "Those are some great examples and some great innovations of how UAS can be used in a health component."

The governor lauded the private-public innovation as a big reason why North

Dakota is a leader in the UAS industry.

Benefitting communities

Executive Director of RIAS, Mark Askelson, drew attention to the fact that, while flights for upcoming tests will be taking place within line of sight in accordance with Federal Aviation Administration (FAA) regulations, the use of HUBNet's detect-and-avoid technology can enhance the safety of operating multiple aircraft in the same airspace. The continual construction of a safety case for drones' use on a broad scale is crucial for the UAS industry.

Askelson remarked that if spraying is proven to be effective against viral outbreaks, and drones can also be used to retrieve and deliver crucial medical supplies, autonomous systems could "completely change the game" for public health by lowering the risk of spreading infections.

During testing, a drone equipped with a sprayer will test dispensing non-toxic substances such as soapy water and other generic disinfectants at low altitudes.

"We're learning how we can do these things to benefit a community in a pandemic like this, but also we're learning more about how to create safer airspace for these advanced systems," Askelson said. "This would help us understand how we might use these technologies to really make a difference."

"We are very fortunate to be in a place where we have the ecosystem, leadership and partnerships that we need to work problems like this."

Coordinated Mission Set

Whitney said the endeavor allows UND and the Grand Forks region to continue its leadership in the UAS industry sector. As the business incubator that helped SkySkopes grow into a global drone service provider, the Center for Innovation is also interested in business opportunities that can positively impact public health in the long term, including establishing a statewide network for drone flight.

"This demonstration enables us to explore coordination of UAS missions in response to a crisis," said Askelson. "Such coordination could prove extremely valuable in future pandemics."

"We hope we are able to show that UAS are another tool in the toolbox for the country," Dunlevy said. "And I think that if we do find something, it's fitting that it comes out of the state of North Dakota."

—Connor Murphy / UND Today

A photograph of four men standing in a field, looking at a tablet held by one of them. They are dressed in casual attire, including t-shirts and a polo shirt. The background shows a vast, open field under a clear sky.

UND LEADS IN UAS INTEGRATION INNOVATION

FAA awards University researchers nearly \$800,000 to study safe and effective incorporation of drones into national airspace

The University of North Dakota continues to be among the world's top research drivers in the Federal Aviation Administration's (FAA) quest to effectively and safely integrate drones into the national airspace.

Case in point, UND Aerospace – with support from the University's Research Institute for Autonomous Systems (RIAS) – was recently awarded FAA funding for three unmanned aircraft systems (UAS) research projects through ASSURE, the Alliance for System Safety of UAS through Research Excellence.

UND was among only eight universities to receive nearly \$2.6 million in research grants under ASSURE. ASSURE members include 23 of the world's top research institutions and 100 leading industry and government partners. UND's combined share of the grant funding approaches nearly \$800,000, and is the lead institution two of the four projects funded by the agency.

UND will receive \$545,000 as the lead university studying UAS safety case development, process improvement and data collection. This project is developing a system to capture or categorize UAS test objectives; analyze data captured to assist in the development of UAS regulations; and to consistently query and report data across UAS test sites, including North Dakota's Northern Plains UAS Test Site.

The University also received nearly \$75,000 as the lead university for Phase II of the UAS flight data collection and analysis project. The goal is to accelerate the evaluation of proposed UAS.

Setting the standards

UND will receive \$150,000 as one of three universities examining the development of risk-based UAS training and standards for waiver review and issuance. The project will develop and evaluate the risk-based framework in the FAA's waiver review process.

"This work is on the cutting edge," said Paul Snyder, director of UND Aerospace's UAS Program. "Expertise here at UND is being leveraged to solve real-world problems that will improve safety and accessibility to the National Airspace System, as well as lay the framework for more jobs for our students."

UND's RIAS program creates autonomous systems through multidisciplinary research and leads development of world-changing autonomous policies, with the

goal of driving a vibrant, diverse and sustainable economy consistent with ethical and legal standards.

In announcing the grant awards, U.S. Transportation Secretary Elaine Chao said, "The research funded by these grants will provide valuable data as the department leads the way to chart a course for the safe integration of drones into our national airspace."

The FAA estimates there are currently 1.7 million drones in the active UAS fleet. The agency expects this number to grow to 2.2 million by 2023. The grants are aimed at continuing and enhancing the safe and successful integration of drones into the nation's airspace.

Expanding opportunities

"In addition to providing grants, we are also supporting activities that provide operational experience like the Unmanned Aircraft Systems Integration Pilot Program, all of which move us more quickly toward full integration," Chao said.

The FAA has 12 Centers of Excellence in critical topic areas focusing on: UAS, alternative jet fuels and environment, general aviation safety, commercial space transportation, airliner cabin environment, aircraft noise and aviation emissions mitigation, advanced materials, general aviation research, airworthiness assurance, operations research, airport pavement and technology, and computational modeling of aircraft structures.

"The centers program provides a unique opportunity for focusing education, research and technology transfer resources in an unprecedented manner, and to substantially promote, upgrade and expand transportation education and research opportunities in America," Chao said.

—Patrick C Miller / UND Today

“Those of us who’ve lived through difficult events, such as 9/11 and the Great Recession, knew people who would say the industry would never be the same, or profits would never return. When you see the data, it demonstrates that time and again we always respond and recover. **Not only do we recover, we grow stronger.**”

JAMES HIGGINS, AVIATION PROFESSOR



HOW AVIATORS CAN HANDLE CAREER TURBULENCE

New virtual forum series from UND Aerospace confronts reality of aviation industry downturn

This isn't the airlines' first rodeo.

While the early impacts of a global pandemic have been grim for the airline industry, and the current students of UND Aerospace already have been affected in many ways, there's a case for long-term optimism, faculty and visiting experts at the John D. Odegard School of Aerospace Sciences agree.

That's because airlines have seen ridership, jobs and profits plummet in economic downturns before, then recover dramatically once the crisis has passed.

Furthermore, help is already on the way from the federal government. The CARES Act, the recently passed economic stimulus package, contains \$50 billion for domestic airlines and another \$8 billion for cargo carriers.

Even so, the short-term outlook remains, “Turbulence ahead.” With that in mind, Aerospace students are being told to brace for a slowdown in hiring for the immediate future.

The insights above come from the Aviation Industry Speaker Series, a forum created by Aerospace faculty as a means of communicating directly with students and answering their questions. It's also a response to the lack of in-

person gatherings on campus during the busiest time of year for hosting industry representatives.

The first two installments of the weekly series – via Zoom – confronted the reality of an industry-wide downturn and the history of the airline industry, as it relates to the global economy. Hundreds of students, along with alumni, parents, and prospective students, have tuned in to the sessions both live and on the School's YouTube channel.

The series also brought in commercial aviation alumni, all of whom currently fly for Delta Air Lines, to speak about their career experiences and give advice to students who are unsure of what's ahead.

Data-driven optimism

On March 26, Professor Jim Higgins, Chester Fritz Distinguished Professor Kent Lovelace and Associate Professor Brandon Wild called upon their decades of combined industry experience and research to present “Navigating Airline Careers During Downturns and Uncertainty.”

“With the current situation, if you want to come up with one word right now, it's ‘bad,’” said Higgins as he pulled up a plummeting chart representing global airline capacity. “Starting at the end of January, we've seen a massive drop-off in capacity. Mainline carriers in the U.S. are seeing anywhere from 15 to 30 percent passenger load factors.”

Passenger load factors – the measure of filled seats on a flight – typically average more than 80 percent, according to Higgins.

Then a more appealing chart appeared, showing industry revenues from 1950 to 2012. The slightly zigzagged but always upward-trending track showed a resilience to global disturbance and an ability to rebound in exponential fashion.

“Those of us who’ve lived through difficult events, such as 9/11 and the Great Recession, knew people who would say the industry would never be the same, or profits would never return,” Higgins said. “When you see the data, it demonstrates that time and again we always respond and recover. Not only do we recover, we grow stronger.”

Better-equipped for downturns

In short, the long-term industry outlook remains the same to UND’s experts: the world of aviation needs pilots.

Of course, there is still vast uncertainty about how quickly the current pandemic can get under control, which in turn affects the economic outlook for the months and years afterward.

But airlines hit this downturn better prepared in key ways than they were in earlier recessions. The faculty panel brought forth more industry data to explain that airlines have been able to more precisely manage operations in ways that can fend off the worst of economic downturns. Advanced analytics can help airlines better strategize flight prices, and more consideration has gone into fuel supply in recent years. One of the most important developments for carriers since the 2007-2009 recession has been ancillary revenue – charges for items such as baggage, upgrades and in-flight conveniences.

“That income really helped stabilize the industry,” Higgins said. “The good news is that it provides a buffer, and helps airline management through times of recession.”

“What we can see when we look back at the time of the Great Recession are deep losses, but the interesting thing is how quickly the industry rebounded,” Wild followed. “The biggest piece of that, in combination with what [Higgins] mentioned, is the consolidation factor – mergers.”

The associate professor quoted a former CEO of Delta Air Lines in saying a key to surviving downturn is consolidation, which spreads costs to more passengers and keep ticket prices stable. Costs go down, profit margins go up, Wild said.

Sage advice from alumni

Delta Captain and UND Hall of Fame Alum Karen Ruth was one of the three pilots who talked on April 2 about the “turbulence” of their careers in the airline industry. Throughout her 35-plus years as a pilot, instructor and interviewer for the country’s biggest airlines, she’s seen most of what the industry can throw at someone.

Ruth graduated from UND in 1982 and took advantage of the boom of job opportunities in the mid-1980s, resulting in an offer from Republic Airlines.

“In two weeks, I had five job offers” said Ruth, adding that such a “feeding frenzy” was happening across the industry. “It was very much like how it was a month ago, before the coronavirus hit.”

From there, she went through a variety of events that impacted her time as a pilot. Republic was acquired by Northwest a year after she was hired, and the forceful merging of Northwest policies and procedures (which resulted in a pay cut) “wasn’t pretty,” she said. In the 90s, Ruth was one of more than 6,000 pilots on strike amid union disputes. Along with instances directly affecting her career, Ruth

characterized the global events and disasters that affected Northwest and sped up the airline’s trajectory to bankruptcy.

“When Northwest went bankrupt in 2007, I had already taken a 15 percent pay cut,” Ruth said. “Now I had another 24 percent cut, and they froze my pension. That was a dark day, and it was a stressful time.”

Things got better for her and many pilots upon Delta’s acquisition of Northwest in 2008, but there are still plenty of things affecting pilots that are out of their control, with COVID-19 being the latest. Of more than 900 planes Delta operates, 600 of them are sitting on lots, waiting to be needed.

The other two alums featured at the forum were David Barnes and Jared Herndon, who graduated from UND in 2001 and 2008, respectively. Though they haven’t been in the industry as long as Ruth, their perspectives were equally valuable in providing students with advice.

Ruth was the first one to give recommendations to students, which were later echoed by Barnes and Herndon.

“Please be continuous learners and stay competent,” she said. “Have some financial discipline. Start saving, even if it’s \$10 a paycheck. Get a hand on your downtime – be proactive with your distance learning. This isn’t the time to just catch up on Netflix.”

The trio also implored students to find ways to build their resumes if their career paths are altered by the circumstances of a pandemic and resulting downturn. Ruth said in her 25 years of being an interviewer, the first thing she looked at was how applicants were using their time outside of work and class.

Another common refrain was to manage expectations. Airlines will most likely bounce back, but hiring could slow for the foreseeable future; and students, for instance, might find themselves instructing for longer than they originally planned.

“In aviation, airplanes can experience unexpected turbulence, despite careful observance of the weather,” said Ruth in closing. “So it is in life. No matter how well you plan and organize, you’ll need to adjust to situations beyond your control, just like this one. We’re all in this together.”

—Connor Murphy / UND Today

THANK YOU FOR PARTICIPATING ALUMNI!

AVIATION INDUSTRY SPEAKER SERIES

When UND went remote, Aerospace was fortunate enough to begin a virtual series through zoom webinars which featured a great amount of our alumni. The series has over 5,000 views on our YouTube Channel!



JARED HERNDON '08

Delta Air Lines



DAVID BARNES '01

Delta Air Lines



LT ERIN E COULTER '11

United States Navy



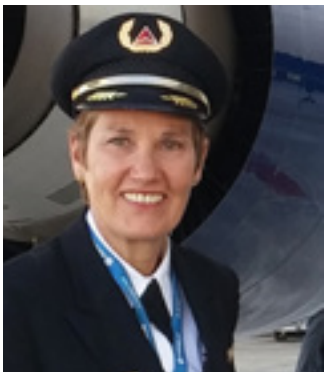
JIM HIGGINS '99 '05

UND Aerospace



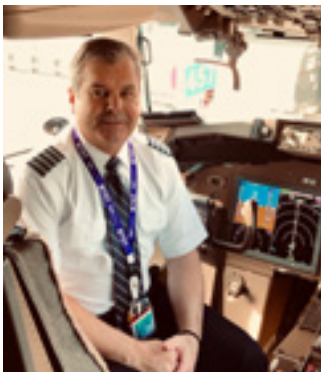
KENT LOVELACE '80 '84

UND Aerospace



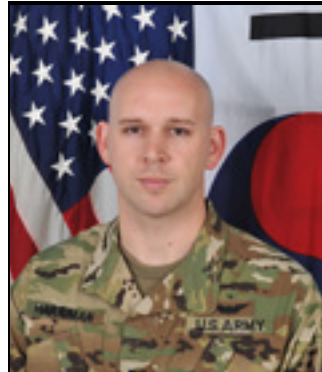
KAREN RUTH '82

Delta Air Lines



**CPT JEFFREY J
FRANE '84**

FedEx



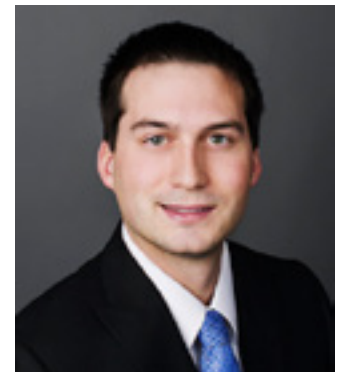
**CPT JOSHUA E
HARRIMAN '11**

United States Army



BRANDON WILD '19

UND Aerospace



KYLE C WANNER '09

North Dakota Aeronautics
Commission



**1LT NICHOLAS D
LIBERT '17**

United States Marine Corps



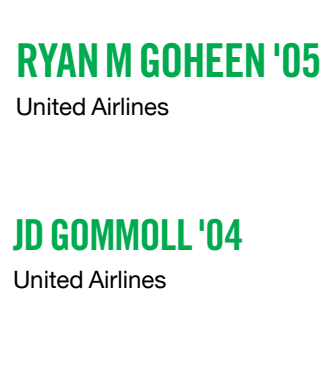
JIM SWEENEY '86

Fargo Jet Center, Fargo, ND



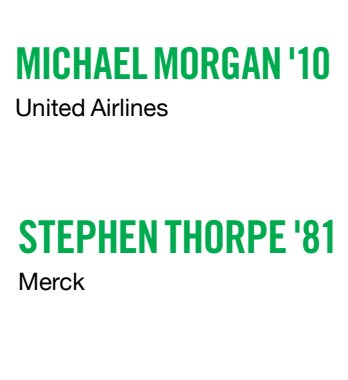
**CPT MICHAEL C
ELSEN RATH '00**

FedEx



RYAN M GOHEEN '05

United Airlines



MICHAEL MORGAN '10

United Airlines



JD GOMMOLL '04

United Airlines



STEPHEN THORPE '81

Merck



MARK LARSEN '04

NBAA




SARAH WOLF '92

NBAA

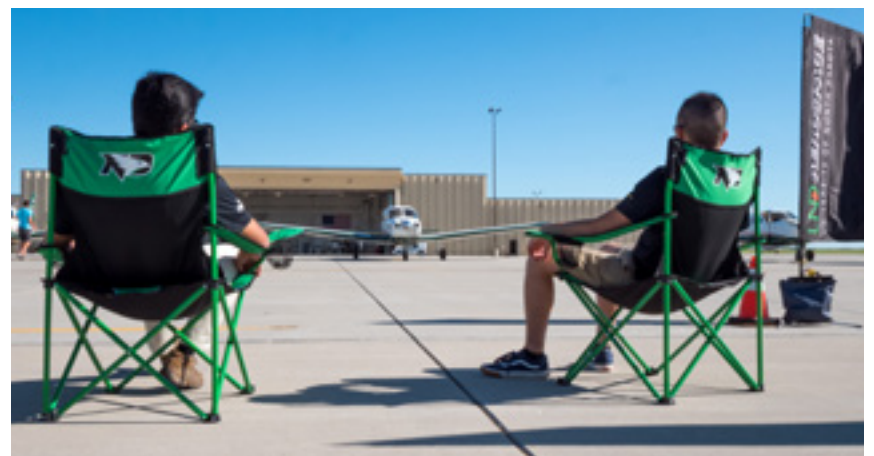
#UNDmissingOSH



Check out our recap video!
youtu.be/-pilzGPsrA0



@UNDaerospace





LEADER IN ACTION: EARNING HIS WINGS

Travis Gylling is a flight instructor at UND, while completing his second degree here

Travis Gylling's first time behind the controls of an airplane was hardly thrilling.

He was 16, a high school student in Ellensburg, Wash. It was a hot summer day. The Cessna 150 plane was heating up inside, and the flight was bumpy. Gylling threw up.

Yet, he did not abandon flying. Gylling, who's now a flight instructor and a double-major at the University of North Dakota, is pursuing a career as a pilot. After all, aviation is a family thing. Both of Gylling's grandfathers served in the U.S. Air Force, and a great uncle was a medevac pilot during the Vietnam War, later becoming an airport manager. And as a child, Gylling would spend hours at the Seattle Flight Museum with his older brother.

"Describing flight is very challenging, but the feeling you get from flying an airplane is extraordinary," Gylling said. "To leave earth and get airborne is amazing."

After obtaining his private pilot license in 2016, Gylling arrived on the UND campus, where he graduated with a bachelor's degree in aviation management in December and will earn a degree in commercial aviation in May.

Since that first flight, Gylling has built not only the stamina of a pilot but also the expertise. He doesn't shy away from aerobatics, or executing intricate maneuvers in the air. He can flip and spin and loop and roll.

"If you've been on a roller coaster, it's like that, but you're on the flight controls," Gylling said. "We're unique here at UND because we have aerobatic training."

He also credits being involved as a key to his success at UND. Arriving on campus not knowing anyone, Gylling was involved with numerous student groups on campus and volunteered in the Grand Forks community.

In 2018, Gylling became a flight instructor. In any given day, he might have up to five flights with students, which each usually takes about 40 minutes in the air. His students come from all 50 states and abroad.

"I absolutely love my job right now," he said. "It's a great way to learn more and hand those skills down to the next generation of pilots."

Come this May, however, Gylling will graduate and plans to fly for a regional airline in the Pacific Northwest. He hopes to one day fly for a large, national airline. But Gylling says he will miss UND.

"My favorite flight at UND is still yet to come," he said. "My last day at UND will be the Friday of finals week this year. I'm not really looking forward to it because I don't want it to end."

—Dima Williams / UND Today

Check out Travis Gylling's Leader In Action story on our YouTube channel.



@UNDaerospace



BE A PART OF THE NEXT GENERATION OF LEADERS NAVIGATE THROUGH CHANGE & SOLVE SUSTAINABILITY PROBLEMS

The department of Earth System Science & Policy (ESSP) is now offering its Master of Environmental Management (M.E.M.) online and on-campus.

The MEM is a 2-years non-thesis Professional Master's Degree designed for students seeking a workforce-ready degree combining science-based knowledge and high-demand professional skills. It is particularly suited for working professionals interested in expanding their knowledge based, critical thinking ability, and technical skill. Geared towards those with a background and interest in environmental and sustainability science, and environmental policy the program provides advanced quantitative and analytical knowledge, integrated geospatial technology skills, and professional component such as business, economics, and communication.

The overarching goal of the M.E.M. is to offer an interdisciplinary and applications-oriented education required by professionals who are working towards a sustainable management of Earth's systems and resources. The M.E.M. curriculum has two main components designed to fulfill this goal:

- An Advanced Disciplinary component composed of a set of disciplinary coursework, as well as an Internship or an Applied Project
- A Workplace Skills component composed of Quantitative/Analytic and Professional Knowledge and skills coursework.

An Earth System Science & Policy degree gives you the strategic skills you need, including:

- Geographic Information Systems
- Environmental Science
- ArcGIS (GIS Software)
- Remote Sensing
- Spatial Analysis
- Environmental Policy
- Quantitative Analysis
- Data analytic
- Professional skills

For more information visit the program finder:

und.edu/programs/earth-system-science-and-policy-mem/index.html



“I don’t know how it ended up being 21 years, you get up, go to work and you have another day behind you...”

“ One of them I received was awarded to ‘the faculty member most likely to walk, not run, out of a burning building.’”



TWENTY-ONE YEARS LATER POELLOT STEPS DOWN AS ATMOSPHERIC SCIENCES CHAIR

Chester Fritz Distinguished Professor’s tenure as department leader unique, but no accident, says successor

After 21 years at the helm of UND’s Department of Atmospheric Sciences – a time in which he has played a role in not only the evolution of a College, but also that of an entire scientific pursuit – Chester Fritz Distinguished Professor Mike Poellot is returning to his faculty position at the John D. Odegard School of Aerospace Sciences.

A few days ago, Professor Gretchen Mullendore assumed the role of chair, the fourth to do so in the department’s history.

Through two decades leading the department, Poellot’s achievements are many.

Since the late 1990s, the department has advanced its degree offerings to the graduate and doctoral levels. In that time frame, the relatively small department has brought in \$31 million of external research funding.

Poellot and his fellow faculty, as well as graduate students, have conducted dozens of projects with the Federal Aviation Administration, NASA and the National Oceanic and Atmospheric Administration, among other agencies and organizations. For a time, Poellot, a licensed pilot, flew second-in-command on the University’s state-of-the-art Citation research jet on a number of airborne research experiments, and he has led many others from beyond the cockpit.

Graduates of the department’s programs have gone on to careers that didn’t exist when Poellot took over as the third chair of UND Atmospheric Sciences. To provide them, as well as faculty, with the environment necessary to succeed was a terrific and rewarding challenge, the professor said.

Considerate, calm and collected

Poellot, hesitant to boast about innumerable research achievements and academic

contributions to the Odegard School, called attention to a particular award in a recent interview with UND Today.

“Our students, in the past, have given out fun awards to the faculty,” Poellot recalled, smiling. “One of them I received was awarded to ‘the faculty member most likely to walk, not run, out of a burning building.’” Paul Lindseth, dean of the Odegard School, concurred as he recognized Poellot as a calm and collected leader.

“He’s not someone to get too excited about change, and he has always been thoughtful and considerate of the opinions of his colleagues while making decisions,” Lindseth said. “He has done a fantastic job in growing the department, both in teaching and research.”

He commended Poellot for his extensive service as chair and said the professor has been able to advance faculty and graduate research with an entrepreneurial spirit while also incorporating research into teaching. As an example, Lindseth called attention to Poellot’s role in UND receiving its first FAA Center of Excellence award in 2001.

“I’m forever indebted to Mike for answering the phone one night, years ago,” Lindseth said. “I asked him to put together a proposal for the general aviation research award that we were working on, on behalf of Atmospheric Sciences. If he hadn’t stayed up that night to meet the next day’s deadline, I don’t know if we would have received the award from the FAA.”

The University is now home to three such FAA research partnerships, in total.

“That’s what we do, though,” Poellot replied, to laughs. “There are those days, when it comes to proposal deadlines. Isn’t that right, Gretchen?”

Mullendore, grinning, nodded in agreement.

‘Big shoes to fill’

“Our department has been so thankful to have had Mike as such a great chair for so long,” said Mullendore, who has been a faculty member since 2007.

Mullendore said she has big shoes to fill, and that it’s an honor to continue facilitating learning and research for UND Atmospheric Sciences. Lindseth and Poellot both know the department is in good hands.

“I’m very confident that Gretchen has the abilities to continue the traditions of excellence established by Mike and past chairs,” Lindseth said. “With respect to their field, I am also confident that they will continue answering questions about our atmosphere that are critical to saving lives not only in the aviation environment, but throughout our society.

“That pursuit of understanding has been paramount in the success of the department, throughout its history.”

Given the unique challenges presented to academia through the coronavirus pandemic, Mullendore’s focus for the short term is getting back to teaching and learning in a way that’s safe for everyone. Beyond that, the professor said, she has learned a great deal from observing Poellot’s leadership style over the years.

“Part of being great in that role is continuing to learn,” Mullendore said.

“Atmospheric sciences, both in research and teaching, is always changing. The

job of figuring out what needs to be the next priority of what we’re teaching and learning is one that’s never finished.”

Just as Lindseth inferred, Mullendore intends to continue Poellot’s approach of thoughtful, informed leadership. However, she did note a couple of potential changes.

“I would probably at least jog out of the burning building,” laughed Mullendore, referring to Poellot’s student-designated award. “And maybe I’ll institute some sort of term limit on chairs.”

Unique, but no accident

Associate Dean Elizabeth Bjerke remarked that Poellot’s 21 years as department chair might be a record for the College. Fellow Chester Fritz Distinguished Professor Kent Lovelace, now director of aviation industry relations, held chairmanship for the Department of Aviation for 20 years, until 2014. It’s more common among academic departments to rotate faculty leadership positions every three or four years.

“The dean would select a faculty member when the time came, and I guess as long as I didn’t screw up too badly, I could continue being chair,” Poellot chuckled. “I’ve always enjoyed being part of planning for the future, for activities and helping our faculty. The position comes with an innate desire to see things grow, be successful and continue.”

“I don’t know how it ended up being 21 years,” he said. “You get up, go to work and you have another day behind you. But I figured it’s about time to get new blood in the system, as well as step back and spend more time with the research I’m doing.”

Mullendore commented that while it’s unique in atmospheric sciences departments to have a chair serve as long as Poellot, it’s no accident.

“A big part of that is that no one within the department could imagine anyone doing a better job than Mike,” the new chair said.

During their joint interview, both Poellot and Mullendore spoke highly of their colleagues, as well as the students, some of whom they interact with daily regarding graduate work and various research projects.

“They’re all terrific,” Mullendore said. “We just have such great people, and I’m excited to facilitate the learning and research that this department already does so well. It’s going to be a pleasure to continue working with everyone.”

Poellot took time to thank Lindseth and past occupants of the Dean’s Office for their consistent support over the years, as well as colleagues such as the late Leon Osborne, also a Chester Fritz Distinguished Professor, who passed away in 2017. Poellot remarked that Osborne was always a source of counsel and encouragement, as well as a great friend.

“I almost feel like the department has been my baby, over the years, just because I was here before it started in 1986,” Poellot said. “I’ve watched it form and grow, but to turn it over to Gretchen is a great outcome. I have every confidence that she’ll do great things, better things and new things as we strive to continually improve the department.”

—Connor Murphy / UND Today

CHASING DURING A PANDEMIC



For most students in UND's Atmospheric Sciences program, storm chasing is quite a popular activity. It's like a validation on the skills we learn in the classroom being applied in the real world while experiencing Mother Nature's power. COVID-19 has impacted chasing this year in many ways. At the start of the season, we saw UND's Storm Experience course being cancelled due to the rising cases all over the country at the time. With states temporarily closing businesses, we saw a large influx of people becoming new storm spotters which has its advantages as well as disadvantages. As far as preventative measures, after refueling, we immediately use hand sanitizer, we social distance when talking with locals and other chasers, and we limit who we chase with in the vehicle i.e. the same one/two people we also work with and see on a daily basis. Storm chasing is a socially distanced activity since we all drive our own vehicles but can still chase with others we normally wouldn't see on a daily basis. At the beginning of the 2020 tornado season, I modified my Jeep Wrangler into a mobile mesonet. The goal for this project is to drive directly under the mesocyclone and collect as many lines of data as possible while being stationary. The mobile mesonet is equipped with an experimental controlled flow and aspirated temperature and humidity probe I designed as well as weather instruments that are capable of measuring wind speed and direction, barometric pressure, temperature, relative humidity, and GPS coordinates. Another scenario how COVID-19 has impacted us is that it prevented us from chasing in Canada due to the border being closed. So far this year, chasing has been very difficult due to the lower than average number of tornadoes. So far, Maddi Cruff (a Junior in the program) and I have had one solid chase where we were able to get directly under two areas of rotation near Maddock, North Dakota at the end of June. As the tornado season continues in the Northern Plains, we will continue to take precautions to protect ourselves as well as the local community and other chasers in the areas we chase from COVID-19.

— David Singewald (Atmospheric Sciences Junior)



STORM CHASING

(From left to right): Gabe Benson, Nathan Schlegel, Mark Frahm (current commercial Aviation student), and Evan Rys, posing for a photo after a long day storm chasing

Submitted by Evan Rys



NOT QUITE A BUST

Being an Atmospheric Science/Commercial Aviation student, nothing quite gets me excited like tornados do. I had been forecasting all summer and June 7th, 2020 was the first day to have a significant chance of severe weather. Since I had not been storm chasing yet this year, I was itching to get out and see something. The day came and early that morning, my good friend and I started forecasting and predicting where the first cells would pop. We decided that Thief River Falls looked the most promising. We packed up my car with iPads, computers, cameras, and smartphones (all storm chasing musts), some aviation friends, grabbed some sandwiches to go, and headed out there. We arrived about an hour before things started to pop off in order to re-evaluate the models and current weather. At that point all we had to do was wait.

Once the storms start to pop, your head must be on a swivel. Making sure you are never putting yourself or others in unnecessary risk is of utmost importance. We ended up being quite accurate on where the storms would begin, but they got messy quite quickly. We tried to get some good photos of the storms anyway and ended up having a great time, even though we didn't see anything super crazy.

Getting outside and doing what you love with your friends can really help the quarantine blues, and for that, I am grateful.

— Evan Rys (Atmospheric Sciences/Commercial Aviation Senior)

SPACE STUDIES GRADUATES PARTICIPATE IN THE CREW DRAGON DEMO-2 MISSION

After the final Space Shuttle program mission in 2011, the United States lost its capacity to put their own astronauts in space and had to rely on Russia to lift their NASA crew members to the International Space Station (ISS). After almost one decade of development, the Crew Dragon Demo 2 mission lifted off Kennedy Space Center in Florida, successfully carrying two American astronauts into the ISS and ending that dependence on May 30th.

Commander Douglas Hurley and joint-operations Commander Robert Behnken were the first astronauts flying on a commercially built and operated space vehicle, beginning a new era in human spaceflight.

The launch vehicle and spacecraft were developed by SpaceX, a private company headquartered in California and owned by entrepreneur Elon Musk, who also owns the Tesla electric cars company and other technology ventures.

After a flawless 19-hour flight, the Dragon spacecraft and its two NASA astronauts docked with the ISS and transferred them into the station to start several weeks of testing and experiments.

SpaceX is the first private company to develop a human-rated rocket and spacecraft and is the only one in the world to have launched humans to space.

NASA invested \$3.1 billion to develop this capability.

Both Hurley and Behnken are veterans of the space shuttle program and both had two previous flights before this mission.

Hurley visited UND in 2014 with his wife Karen Nyberg, UND graduate and an experienced astronaut herself, spending more than six months on the International Space Station. Nyberg is also a current member of the UND Aerospace Foundation Board.

During their visit to UND, both NASA astronauts were able to visit the Lunar-Mars Habitat during an analog mission and meet with the UND Aerospace crew. In the last decade, the Department of Space Studies has been a developer of highly trained space professionals for both NASA and the space industry. Space Studies graduates are now in the forefront of human space exploration, including SpaceX.

Three recent Space Studies graduates are working for this innovative company, and contributing to the development of launchers, spacecraft systems, and operations.

These UND alumni are Brian Badders (Space Studies 2013), Jonathan Schiralli (Space Studies 2014), and Chris Follette (Space Studies 2017).

Badders serves as Manager of Fairings, Payload / Starlink Integration, Schiralli is a Senior Ground Segment Technician, and Follette is a Falcon 9 Final Integration Launch Engineer.

At UND, these students were involved in many programs, such as high-altitude balloon missions, rocketry team launches, the Dakota Space Society, and other engineering design challenges. Badders, Schiralli, and Follette also conducted research and internships through the North Dakota Space Grant Consortium, a statewide NASA-funded program that is housed in the Space Studies Department. Schiralli was also a crew member of the Analog mission III at the UND Lunar-Mars Habitat when Doug Hurley visited UND.

The Space Studies Department is proud of these alumni and looks forward to helping more North Dakota students achieve their career goals.

— Pablo de León, Chair of Space Studies





1. SpaceX is the first private company to launch American astronauts to the ISS
2. Astronauts Bob Behnken (left) and Doug Hurley (right). Hurley visited UND in 2014.
3. UND Space Studies alumnus Brian Badders, '13
4. UND Space Studies alumnus Chris Follette '17
5. UND Space Studies alumnus Jonathan Schiralli, '14
6. Brian Badders, a lead member of the 2013 UND rocketry team, visited Robonaut during the Student Launch Initiative (SLI) rocketry competition

UND AEROSPACE

UNIVERSITY OF NORTH DAKOTA

John D. Odegard School of Aerospace Sciences
3980 Campus Road, Stop 9007
Grand Forks, ND 58202-9007

Non-Profit
U.S. POSTAGE
PAID
Grand Forks, ND
Permit #10



FLYOVER TO HONOR THE FRONTLINE WORKERS

May 18, 2020



@UNDaerospace