

# UAHM Magazine

A PUBLICATION OF THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

## INTO THE STORM

UAH STUDENTS DEPLOY INTO HURRICANE IDA TO GATHER DATA

### ACADEMICS

EARTH-BASED LAUNCHPAD FOR EVERYDAY ASTRONAUTS

### RESEARCH

URBAN HEAT ISLANDS AFFECT TREE CANOPY HEALTH

### CAMPUS

COLLEGE OF BUSINESS UNVEILS NEW CYBERSECURITY LAB



# SEE IT WITH SARAH



**Meet Sarah**, a sophomore Biological Sciences major on the Pre-Med track at The University of Alabama in Huntsville (UAH).

As a college student who loves being involved on campus and grabbing coffee with friends in her spare time, Sarah has a passion for connecting with others.

Follow along as she highlights her experiences as a UAH student. Start at [uah.edu/admissions/see-it-with-sarah](http://uah.edu/admissions/see-it-with-sarah) to read more about her journey!

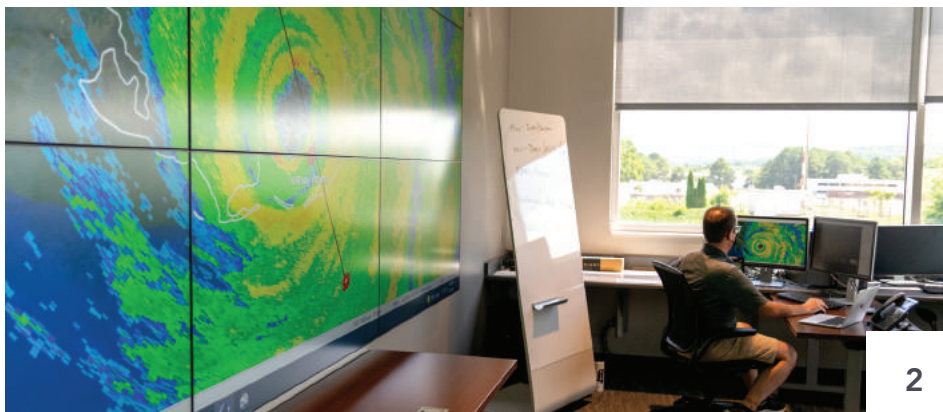
**Be sure to check out her Vlog!**



**Questions?** Contact the Office of Admissions:  
256.824.2773 / 800.824.2255 / [admissions@uah.edu](mailto:admissions@uah.edu)







2

## Into the Storm

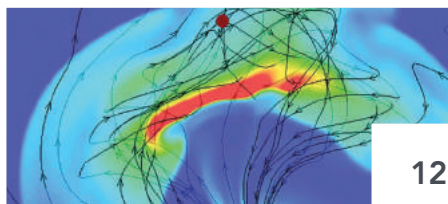
AES students deploy to Louisiana to gather data from Hurricane Ida



5

## Academics

- 05 INCLUDE program envisions earth-based launchpad for everyday astronauts
- 06 Casey Eaton earns Amelia Earhart Scholarship/Emily Wisinski awarded NOAA Hollings Scholarship
- 07 Declan Brick named Goldwater Scholar/Alay Shah selected to Matthew Isakowitz Fellowship
- 08 Seven UAH students earn DoD SMART Scholarships
- 09 Katie Baldwin uses scholarship to take her art to Taiwan
- 10 UAH partners with AEOP to bring STEM to underrepresented students



12

## Research

- 12 UAH-led space weather prediction research could be critical to U.S. Space Command
- 13 Urban heat islands affect tree canopy temperatures and health

## Campus

- 14 College of Business unveils new Cybersecurity Lab
- 16 GenCyber Camps teach blind, visually impaired, deaf and hard of hearing students about cybersecurity
- 17 Art partners with UAH Rotorcraft Center to create Commercial Arts and Technology lab



18

## Alumni

- 18 Alumna Danaë Xanthe Vlasse in consideration for music's biggest award
- 19 Dr. Kimberly Robinson named U.S. Space & Rocket Center CEO

## Athletics

- 20 UAH Athletics unveils inaugural Hall of Fame class

# UAH Magazine

UAH Magazine brings together our academic accomplishments, innovative research projects, extracurricular organizations and alumni into one engaging source for all things UAH.

If you would like to receive a hard copy of this issue of UAH Magazine or be added to our mailing list to receive future issues, please contact [omc@uah.edu](mailto:omc@uah.edu).

UAH Magazine is published by the Office of Marketing and Communications at The University of Alabama in Huntsville.

### EXECUTIVE DIRECTOR OF MARKETING AND COMMUNICATIONS

Elizabeth Gibisch

### EDITOR AND WRITERS

Russ Nelson, Jim Steele, Rylie Livingston

### DIRECTOR OF CREATIVE SERVICES

Pedro Rodriguez

### GRAPHIC DESIGN TEAM

Shalanda Edwards-White, Isabel Castañeda

### PHOTOGRAPHY

Michael Mercier

### CONTRIBUTING WRITER

Jennifer Memolo



# Hurricane

AES students ride out  
**Ida** to gather vital data



▶ Dean Meyer prepares a radiosonde, a meteorological instrument attached to a balloon, by filling the balloon with helium.

*Image courtesy of UAH AES  
Cover image courtesy of NASA*



U AH Atmospheric and Earth Science (AES) students were ready for Hurricane Ida, deploying to Louisiana the day before its Aug. 29 landfall to collect data as it came ashore.

“The reason for deploying students and staff into Hurricane Ida down in Louisiana is so we could get a better idea about the hurricane wind,” says Ryan Wade, the faculty department coordinator for AES. “The whole wind field itself, both vertically throughout the atmosphere, and horizontally, starting with the eye wall radiating outward.”

Hurricane Ida made landfall as a Category 4 hurricane in Port Fourchon, LA., with maximum sustained winds of 150 mph. UAH’s crew collected crucial data before and during the hurricane’s journey via its five vehicles equipped with mobile technology, including radar, weather stations and weather balloons.

The student team worked closely with colleagues from The University of Oklahoma, as well as scientists from the National Oceanic and Atmospheric Administration’s National Severe Storms Lab. Members of UAH’s team include both undergraduate and graduate students, as well as two staff members.

“We’re hoping to be able to provide a better scientific understanding of hurricane data, which can really improve the advanced warning forecast and help save lives in the future,” says Joshua Huggins, an undergraduate senior in AES. “We have our RaDAPS truck, which is the Rapidly

Deployable Atmosphere Profiling System, which can see a variety of current weather data as it’s happening. We can see the levels of energy in the atmosphere, vertically pointed radar, rain gauge data, the height of the clouds and so much more. We have two other vehicles that were performing atmospheric sounding data or weather balloon launches, as well as a mobile Doppler and LIDAR system.”

For the student deployment crew, Aug. 28 began around sunrise when they set out for Donaldsonville, LA., approx-

imately 100 miles north of Port Fourchon. Immediately upon arrival and instrument set up, the UAH students began collecting data, including launching weather balloons and running radar scans. One of the goals was to research severe storm squall lines that form ahead of a tropical system.

“We were actively launching weather balloon soundings about every 90 minutes or so, so that way we get a full atmosphere profile that can really help support the current conditions and validate the processes we are seeing at the surface,” Huggins

explains. “In addition to this, we were also paired up with the University of Oklahoma and the National Severe Storms Laboratory working on a dual-polarization radar project.”

The crew continued sampling the atmosphere, both vertically and horizontally, from the time the first outer spiral rain band of Ida reached their location until the hurricane’s eye passed overhead. The research done by UAH and colleagues could ultimately lead to better forecasting of hurricane threats and timing. ■

---

“The reason for deploying students and staff into Hurricane Ida down in Louisiana is so we could get a better idea about the hurricane wind...”

---

# UNIVERSITY ANNOUNCEMENTS



The UAH College of Nursing announced a partnership with Northeast Alabama Community College (NACC) to offer a Dual Nursing Degree Program slated to open during the Fall 2022 semester. Through this program, eligible students will have the opportunity to enroll at both NACC and UAH simultaneously, earning an Associate Degree in Nursing (ADN) and a Baccalaureate Degree in Nursing (BSN). The dual program of study is designed to be completed in nine total semesters—four semesters of general education courses and five semesters of nursing courses.



Dr. Carmen Scholz, a professor of chemistry at UAH, has been named one of six 2021 POLY Fellows by the American Chemical Society (ACS). POLY Fellows are recognized for their outstanding achievements and contributions to polymer science and the profession through scientific accomplishments, service to the profession or both. The awards are administered and sponsored by the POLY division of the ACS. Recently, Dr. Scholz' group showed that PAA-based polymer constructs can also be attached onto ceramic monoliths and used in affinity chromatography for protein purification.



Dr. Sharifa Love-Rutledge, an assistant professor in the chemistry department, was named to a list of "1,000 Inspiring Black Scientists." The list was compiled by Cell Mentor, an organization that strives to "help hardworking scientists answer the questions that will propel them through satisfying, challenging, diverse careers in the life sciences." Dr. Love-Rutledge is also the first Black woman to earn a Ph.D. from The University of Alabama (UA) Department of Chemistry. Her area of specialized research at UAH includes diabetes and insulin resistance, as well as cognitive decline and aging.



Yamaha Corporation of America has named UAH as a 2021 honoree in its inaugural Institution of Excellence program, acknowledging the school's extraordinary commitment to innovation in the study of music. "We chose The University of Alabama in Huntsville for its outstanding work in pursuing relevant, real-world experience for the students in its school of music," says Dan Rodowicz, senior director, institutional sales, Yamaha. Only 10 outstanding schools nationwide earned the prestigious designation this year following a rigorous nationwide nomination and review process.



# SPACE PORT!

## INCLUDE program envisions Earth-based launchpad for everyday astronauts

While billionaires like Jeff Bezos and Sir Richard Branson offer to let you “touch” outer space—for a price!—UAH faculty and undergraduates are taking a radically different approach to making space accessible for the everyday explorer.

The INCLUDE Program, an Interdisciplinary Undergraduate Experience, created by Dr. Bryan Mesmer, an associate professor of industrial and systems engineering and engineering management (ISEEM), in collaboration with Dr. Kristin Weger (B.A. Psychology 2010, M.A. Psychology 2013), an assistant professor of psychology, was designed to tackle just such a ‘Grand Challenge’—in this case, exploring a two-fold problem: 1) Can a multi-country, mixed commercial, government, civilian and military Space Ecosystem be viable in 2030, 2040 and 2050? And 2) How to best creatively assess

expectations and engage society in the future Space Ecosystem?

“We looked at several ‘new space’ companies, such as Blue Origin, Virgin Galactic and Space X,” says Project Manager Anna Shipman (B.S. Industrial and Systems Engineering 2021). “We saw the gaps that existed in industry, and from there developed a proposal to address those gaps.”

Drawing on the interdisciplinary strengths of engineering, psychology, marketing, art, philosophy and other fields helped them grapple with topics as wide-ranging as the psychological rigors of space travel and making the journey affordable.

“We want our space port to be a resort-style offering,” Shipman says. “A blend of Space Camp with Disney World! It sounds very futuristic and ‘sci-fi,’ but it could very much become a reality!” ■

### FACULTY MENTORS

Dr. Bryan Mesmer and Dr. Nicholas Loyd (B.S. 2000, M.S. 2006, Ph.D. 2017, Engineering (Industrial and Systems)) **ISEEM**  
 Dr. Kristin Weger and graduate student Sheri Leder (B.A. Psychology 2019) **Psychology**  
 Amy Guerin **Theatre**  
 Vinny Argentina **Animation and Game Design**  
 Dr. Nicholas Jones **Philosophy**  
 Dr. Liwu Hsu **Marketing**

### UNDERGRADUATES

Anna Shipman, Hailey Simon and Alana Flint **ISEEM**  
 Rosie Cortelli **ISEEM/Psychology**  
 Hailey Heaton **Psychology**  
 Harleigh Bass and Elizabeth Berhow **Art/Animation**  
 Madison Travis **Digital Marketing**  
 Joseph Atchley **Philosophy**

### PRACTITIONER MENTORS

Mike Watson (M.S. 1996, Ph.D. 2005, Engineering (Electrical)) and Robert Moreland **NASA**  
 Darrin Burnett (B.S. Engineering (Mechanical) 2005), Tony Lindeman and Diane Aloisio **Dynetics**  
 Tom Acomb and Mike Ostendorf **AOA**

# Casey Eaton

earns Amelia Earhart Fellowship



Casey Eaton, a doctoral student in systems engineering, is one of 36 women from 22 countries to be awarded a \$10,000 Zonta International Amelia Earhart Fellowship for 2021-2022. The fellowship encourages women from around the world to pursue doctorates in aerospace engineering and space sciences.

Eaton graduated summa cum laude in 2019 with a B.S. in industrial and systems engineering and earned her M.S. in systems engineering in 2020. She is advised by Dr. Bryan Mesmer, an associate professor of industrial and systems engineering.

"My friend and lab mate, Garima Bhatia (Ph.D. Industrial and Systems Engineering 2021), received the fellowship in 2018. Seeing her and others pursue their degrees inspired me to continue," Eaton says. "This is a very prestigious award, which I think reflects the excellence of UAH's research in

aerospace and systems engineering. I've been very fortunate to be able to study here."

Eaton is working on two NASA-funded projects, one on the value of model-based systems engineering (MBSE) and another on project factors that lead to failure.

"Our research uses a systematic review process to identify and quantify the areas of MBSE that are perceived to be valuable, as well as areas perceived as drawbacks to the approach," she says. "The second project revolves around understanding how failures are perceived and how failure data can be digitized, integrated and tracked across the agency."

"By receiving this honor, Casey has been internationally recognized as an up-and-coming force in the aerospace arena," Dr. Mesmer says. ■



# Emily Wisinski

awarded NOAA Hollings Scholarship

Junior Emily Wisinski, an honors student in earth system science, has been awarded the National Oceanic and Atmospheric Administration (NOAA) Hollings Scholarship. The Hollings Scholarship program provides academic assistance for two years of full-time undergraduate study and a 10-week, full-time paid summer internship at a NOAA facility.

"I knew UAH was a research-heavy institution, so I wanted to get involved as soon as possible," Wisinski says. "There are a multitude of opportunities for undergraduates to get involved with what they are interested in very early in their academic careers."

Wisinski has served as secretary for UPSTORM (UAH Profile Sounding Team for Operational and Research Meteorology); as a member of the UAH American Meteorological Society/National Weather Association; co-chair of the 2021 Rocket City Weather Fest; in the NASA Short-term Prediction Research and Transition (SPoRT) Center; and the NASA Sally Ride Internship.

"Emily is an amazing student who is extremely driven to succeed," says Ryan Wade, an atmospheric and earth science advisor. "This award is a testament to her planning and work ethic, and I'm excited to see what Emily will do in the future." ■



**D**eclan Brick, an aerospace engineering and physics double-major, has been named a Goldwater Scholar, the first from UAH in 13 years. Brick is an undergraduate research assistant at the UAH Plasma and Electrodynamics Research Laboratory and is mentored by Dr. Gabriel Xu, an associate professor of mechanical and aerospace engineering.

The Goldwater Scholarship is given annually to applicants in the natural sciences, engineering and mathematics. Universities are allowed to nominate only four undergraduates per year, making it a premier U.S. award.

Brick's love of aerospace and astronomy led him to UAH to pursue a demanding dual-major course of study. His capstone project involves plasma jet modeling where low temperature plasma and plasma devices have been shown to sterilize biological materials without incurring thermal damage.

"I actually did some research in solar flare prediction," Brick says. "The reason I picked up the physics major was trying to decide which side of space I want to do. Physics is helping me get a deeper theoretical base. But I ultimately want to build something! Plasma is the leading proponent for me going forward—propulsion energy, also fusion theory. I occupy a weird space. When I'm with engineers, I like a little more theory, and when I'm with physicists, a little more application. I want to be an astrophysicist, but I'm not an astrophysicist at heart, I'm an engineer!" ■

## Honors student **Declan Brick** named Goldwater Scholar



**M**echanical and aerospace engineering junior Alay Shah has been selected to the Matthew Isakowitz Fellowship Program. Shah was one of 30 fellows selected from over 280 applicants for the 2021 summer internship designed to inspire the next generation of commercial spaceflight leaders. His fellowship host company is Blue Origin.

"I'm humbled and a little in shock to be part of this incredible class of fellows," Shah says.

Shah's mentors have been Dr. Dale Thomas (B.S. 1981, Ph.D. 1988, Engineering (Industrial and Systems)), a professor of industrial and systems engineering and eminent scholar in systems engineering at the Complex Systems Integration Laboratory, and Jonathan Patrick (B.S. 2011, M.S. 2013, (Math)), a systems

## **Alay Shah** selected for Matthew Isakowitz fellowship

engineer for the Rotorcraft Systems Engineering and Simulation Center.

"They were generous with their time and advice. I wouldn't have made it this far without them," Shah says. The student has also found valuable mentors at NASA and Blue Origin and has been an intern at Glenn Research Center, Goddard Spaceflight Center and Johnson Space Center.

"To my knowledge, he's the first UAH student to get a Matthew Isakowitz Fellowship," says Dr. Thomas. "This fellowship is so competitive because of the tremendous opportunity it offers



for students to learn how to be space entrepreneurs by working alongside scientists and engineers who are revolutionizing the spaceflight enterprise."

Shah's research is in systems science, specifically the hierarchical organization of systems. "What makes one hierarchical grouping of parts in a system better than another," Dr. Thomas explains. "Such as spacecraft. Alay does not shy away from tackling hard problems—rather, he is drawn to them." ■

# SEVEN UAH STUDENTS EARN DoD SMART SCHOLARSHIPS

DoD SMART is a scholarship-for-service program in which the Department of Defense provides a full scholarship for recipients to pursue STEM degrees focused on research to further the DoD's mission, and includes an annual stipend and an assignment to an experienced mentor in their field. DoD SMART offers annual summer research internships at DoD facilities like Redstone Arsenal across the U.S.



**Alencia Hall** is an Honors junior majoring in aerospace engineering and completed a summer internship position with the Missile Defense Agency (MDA) on Redstone Arsenal. Hall serves as an Honors Ambassador in the Honors College and was recently awarded an internship with Johns Hopkins University's Applied Physics Laboratory.



**Michaela Dent** is a cybersecurity junior having completed her first internship with the U.S. Army Combat Capabilities Development Center Aviation and Missile Center at Redstone Arsenal. This opportunity has helped her to expand her career path to include hardware security in addition to working as a cyber analyst or network security.



**Savannah Baron** is an Honors mechanical engineering student in her junior year who has been awarded an undergraduate scholarship with MDA. Her interest in the defense industry is the primary contributing factor to her acceptance of the SMART Scholarship, and she is looking forward to entering this job market, whether within government or private industry.



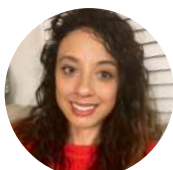
**Brooklyn Kelly** is an Honors sophomore majoring in computer science. She has been working with MDA at Redstone Arsenal over the summer breaks in either cybersecurity or test engineering. By the time she graduates, Kelly will have had the opportunity to intern at MDA for three internship cycles, leading to more hands-on experience in her field.



**Robert Schickling**, an Honors aerospace engineering alumnus (B.S. Aerospace Engineering 2021), was awarded a graduate SMART Scholarship after learning about his acceptance into Virginia Tech's aerospace engineering master's program, where he is attending the Fall semester. After obtaining his M.S. degree, he will be working at Edwards Air Force Base in Edwards, CA, to work on structural flight testing on aircraft.



**Michaela Hemming**, an aerospace engineering graduate student, was offered a graduate DoD SMART Scholarship, and had a choice among three prestigious scholarship awards. She ultimately chose the NASA Space Technology Graduate Research Opportunities fellowship.



**Gabrielle Savoie** is a DOD employee with the U.S. Army Corps of Engineers at the Huntsville Support Center. She works as an environmental engineer serving the Formerly Used Defense Sites Program and performing asset liability cost estimates for HQ, Department of Army's environmental division. She is pursuing a Ph.D. in civil engineering. ■



ASSOCIATE PROFESSOR

# KATIE BALDWIN

USES SCHOLARSHIP TO TAKE HER ART TO TAIWAN



Katie Baldwin, an associate professor of art, received a Fulbright U.S. Scholar Award to travel to Taiwan for research on woodblock printing techniques at the International Print Center in Taipei. While there, she also lectured and created a series of ten narrative works entitled, “Modified Land: A Series of Woodblock Prints,” a project that takes its inspiration from the ways mechanization shapes the land.

Baldwin is a printmaker and book artist who has traveled internationally as an artist in residence and exhibited extensively in places like Geida University in Tokyo, Japan, and the Print Center in Philadelphia, PA. Being named a Fulbright Scholar represents the culmination of a long and arduous process.

“I was really thrilled!” the artist recalls on hearing she had been selected. “After earning tenure, I saw an opportunity to apply, with the hope of receiving one for my sabbatical. I was not sure that the stars would align—but they did! I was very happy!”

Baldwin joins a select group of Fulbright alumni that includes 60 Nobel Prize laureates, 86 Pulitzer Prize recipients and 37 honorees who have served as heads of state. “Fulbrighters” engage in cutting-edge research, laying the groundwork for forging future partnerships between institutions.

What originally sparked Baldwin’s passion for woodblock printing was a stint as an art student while attending Evergreen State College in Olympia, WA, in 1993.

“I was primarily studying sculpture,” she notes. “However, I became interested in the process of mokuhanga (traditional Japanese water-based woodblock print-making) from looking at a Ukiyo-e print hanging in the print shop. Shortly after, I came across a technical book in Japanese woodblock printing. The idea that the process didn’t require a large studio space and was non-toxic stayed with me.”

The artist had a number of reasons for choosing Taiwan as her Fulbright destination.

“I wanted to expand my research in woodblock printing in East Asia,” Baldwin says. “I found the size of the country to be manageable for exploring the landscape. I am also very interested in Taiwan’s unique history. I began to look into the canal system in Taipei that once was the primary way to transport goods. As time went on, roads and highways were built over the canal systems, and water transportation within the city became obsolete. We as humans have the ability to shape the world around us, and the collective decisions, as well as individual choices we make, say a lot about who we are. The land becomes a kind of stage on which our lives play out.” ■



# UAH PARTNERS WITH AEOP TO PROVIDE UNDERREPRESENTED STUDENTS WITH HANDS-ON STEM



UAH faculty and staff partnered with the Army Educational Outreach Program (AEOP) this past summer to provide historically underrepresented students with hands-on experience in the science, technology, engineering and math (STEM) fields. AEOP's mission is to sponsor students and teachers to offer a chance to experience STEM programs to attract future STEM talent to Department of Defense careers.

The 2021 program events were organized by Dr. Bernhard Vogler and Dr. Sharifa Love-Rutledge with the Department of Chemistry; Dr. Tanya Sysoeva with the Department of Biological Sciences; Dr. Aubrey Beal with the Department of Electrical Engineering; and Christopher Smith (M.S. Human Resource Management 2020), the diversity initiatives coordinator in the UAH Office of Diversity, Equity and Inclusion.

"This was my first year participating in this outreach program!" says Dr. Sysoeva. "We successfully recruited a couple of our colleagues to collaborate and to host more students than we could otherwise. Dr. Vogler has a lot of experience with this program. I certainly learned a lot from him. I was excited to apply and receive the award to host AEOP students."

The connection with AEOP was made in conjunction with UAH's Research or Creative Experience for Undergraduates

(RCEU) Program, which works to provide research experiences for undergraduate students in all fields of study by fostering cooperation between students and researchers in a creative or scholarly project. This apprenticeship program funded by AEOP has been overseen by Dr. Vogler for seven years.

In a summer rich with student research programs, UAH was able to provide AEOP high school students with a chance to work in teams with students from UAH programs such as RCEU, the Louis Stokes Alliances for Minority Participation, the Minority Graduate Students Association and the Life Sciences Graduate Students Association in the biology department.

Events presented included: a session on library resources and training; a tour of the HudsonAlpha Institute of Biotechnology; a visit to the Alabama Supercomputer Center; a demonstration of the UAH Severe Weather Institute—Radars and Lightning Laboratories; visits to the UAH Propulsion Research Center, the driving simulator, and the fish research facility in the Culumber lab in the UAH Department of Biology; a poster session showcasing research projects completed by the AEOP apprentices; and a remote session with employees from BASF to discuss potential career choices in the chemical industry. ■



# WHAT'S IN A NAME?



## What do deciBel Research, Torch Technologies and COLSA have in common?

They all chose to name a space in The University of Alabama in Huntsville's (UAH) College of Engineering buildings, strengthening their reputations by demonstrating a commitment to UAH and investing in future engineers.

UAH is revitalizing the second floor of the Bevill Center, and gifts to name a room in Bevill Center will provide new and renovated spaces that will facilitate the growth and success of the College and University. Donors who choose to name a space at UAH leave a meaningful legacy on UAH's campus and engineering students. Other benefits of naming a space in Bevill Center include:

- ▶ **A meaningful legacy** for yourself, a loved one, a colleague, your company or your organization
- ▶ **A reputation** for your commitment to shape and elevate the learning environment for UAH students
- ▶ **A recruitment resource** for future interns or colleagues via our well-trained, in-demand engineering students
- ▶ **A plaque providing name recognition** in a high-visibility classroom space that will serve many students, faculty and staff

*"When we were provided the opportunity to contribute to the Communications and Signal Processing Laboratory, we felt this was a good fit for our company to give students an additional hands-on learning environment and enable them to apply radar systems design principles."*

**— JEFF GRONBERG**

President and CEO, deciBel Research



Email Mallie Hale, Vice President for University Advancement, at [mallie.hale@uah.edu](mailto:mallie.hale@uah.edu) today to learn more about creating your legacy.

# UAH-LED SPACE WEATHER PREDICTION RESEARCH COULD BE CRITICAL TO U.S. SPACE COMMAND



Research to improve space weather predictions by UAH's Dr. Nikolai Pogorelov will boost capabilities crucial to the success of the defense mission of the U.S. Space Command, set to be located in the Huntsville area.

"The cutting-edge research being done by Dr. Pogorelov, and indeed many of the Center for Space Plasma and Aeronomic Research (CSPAR) and Department of Space Science (SPA) researchers, is of immediate interest to the U.S. Space Command, because it provides the kind of forecasting and predictive capabilities that are essential to the protection of our military and civilian space-based assets," says Dr. Gary Zank, CSPAR director and SPA chair.

The Space Force will be concerned with the integrity and resilience of communications, global positioning and navigation, and short- and long-term response to natural threats initiated by solar disturbances, whether they are from disruptions to the Earth's magnetosphere or the rapid intensification of highly energetic particles capable of destroying satellite components.

"For this, an understanding and predictive capability for the complex solar-geospace coupling is critical," Dr. Zank notes. "UAH, through its CSPAR/SPA researchers, are leading world-class research programs that are important to

space weather, and so would be critical to the Space Force's mission."

The work of Dr. Pogorelov and his colleagues, acknowledged by the National Science Foundation (NSF), illustrates that Huntsville possesses the scientific and technical expertise to support the new headquarters.

Dr. Pogorelov, a distinguished professor in UAH's SPA and at CSPAR, is the principal investigator for the UAH-led, three-year, \$3.2 million NSF and NASA project to develop the physical and computational aspects of solar atmosphere and inner heliosphere software models used to help predict space weather.

Solar storms can be strong enough to send highly-magnetized plasma battering through the Earth's magnetosphere, the magnetic shield that protects the planet. The disruptions could hamper a space defense system, damaging electrical grids, satellites, sensitive electronics and the equipment needed to communicate with the spacecraft on which the Space Force will rely.

Those potentially catastrophic effects make accurate space weather prediction a vital goal for national defense.

"The solar wind emerging from the sun is the main driving mechanism of solar events, which may lead to

geomagnetic storms that are the primary causes of space weather disturbances that affect the magnetic environment of Earth and may have hazardous effects on space-borne and ground-based technological systems, as well as human health," Dr. Pogorelov says. "For this reason, accurate modeling of the solar wind is a necessary part of space weather forecasting."

Using the fastest national computers, Dr. Pogorelov with his team at SPA and CSPAR performed simulations to better understand the physical processes occurring in the solar wind and compare them with observations from New Horizons, Parker Solar Probe, Ulysses and Voyager 1 and 2, the spacecraft that explored the outer reaches of the heliosphere and are now providing data from the local interstellar medium.

Correctly forecasting the arrival at Earth of coronal mass ejections and determining the direction of the magnetic field is essential to space weather prediction, and a study of non-thermal ions by Dr. Pogorelov's team helped that effort.

"Fifteen years ago, we didn't know that much about the interstellar medium or solar wind properties. We have so many observations available today, which allow us to validate our codes and make them much more reliable," Dr. Pogorelov says. ■



# URBAN HEAT ISLANDS AFFECT TREE CANOPY TEMPERATURES AND HEALTH, UAH STUDY SAYS

Healthy urban tree canopies provide shade and water transpiration that can mitigate the warming effects of urban heat islands (UHIs), and new research on tree canopy temperatures in New York City by a UAH doctoral student in the Department of Atmospheric and Earth Science offers fresh insights for urban forestry management.

Trang Thuy Vo is studying urban effects on climatology and how to mitigate the heat island effect by effectively optimizing urban forestry in megacities. Her research used data from the ECOSTRESS instrument mounted on the International Space Station. Interpreting that data can help to identify the health of trees in complex urban settings by using remotely sensed observations, which can influence the species used and planting patterns of trees in an urban landscape.

“By investigating how urban trees interact with three environmental factors—greenery amount, distance to water bodies and building height—placement of trees and supplementary requirements for their growing conditions, like irrigation, could be improved in urban design,” Vo explains.

Hard surfaces like brick, asphalt or concrete, the type of ground cover and the number and size of nearby water bodies called “blue spaces” all affect tree canopy temperatures and tree health in urban microclimates, the research found. This in turn affects the trees’ ability to

combat the UHI effect, a well-known phenomenon in which a significant temperature difference occurs between urban and surrounding rural areas.

“We found that tree temperature varies significantly across New York City’s boroughs,” Vo says. “For example, tree temperatures in Staten Island—the greenest borough—are much lower and more homogenous compared to those in Manhattan, which has the most complex building morphology. That indicates an interaction between urban morphology and urban trees.”

The study proposes practical approaches to heat mitigation in densely built-up areas, like retrofitting buildings with green facades and green roofs, and supplying necessary irrigation for the drier conditions present in heat islands.

“For inland cities with a lack of cooling benefits from blue spaces, it is better to gather trees together rather than isolating them as small patches, and to supply them with sufficient irrigation,” Vo says. “The greater the greenspace coverage, the lower the tree temperature. By understanding this dynamic behavior, I strongly think that the health of urban trees can be improved. I hope that in the future our downscaled scheme will be applied at a much larger scale, for example for the contiguous United States, so we will have a better picture of how healthy trees are across the whole U.S., given different climatic regions.” ■







As witnessed by recent cyber attacks in the national news, cybersecurity has rapidly become essential in order to protect businesses and government organizations, while working to ensure the industry keeps pace with the dizzying rate of technological change to keep data flowing and secure.

To help meet these challenges, the College of Business (COB) has constructed a new state-of-the-art Cybersecurity Lab, completed just in time for the Fall 2021 semester. The new space was unveiled during a ribbon-cutting ceremony to provide vital resources that position the UAH COB at the forefront of this important field.

“The Cybersecurity Lab will leverage the specialized cybersecurity programs in the College of Business to educate students and train-up well-rounded professionals with the knowledge

and expertise needed to secure and defend businesses and organizations against cybersecurity threats,” explains Dr. Jason Greene, dean of the COB. “The lab will offer our students access to the latest cloud-based cyber technologies, as well as a state-of-the-art learning environment that fosters collaboration and a team approach to problem solving.”

The new capabilities within the COB are comprised of three functions that will complement one another to provide the advanced resources required to secure and defend against cybersecurity threats.

**Virtual Cyber Teaching and Research** will provide students access to state-of-the-art cloud-hosted tools and environments featuring countless virtual machines and virtual network configurations as a hedge against technology obsolescence.

**Collaborative Teaching** is designed to facilitate teaching via a student-focused, collaborative, hands-on learning laboratory that promotes team-based problem solving and analysis in identifying cyber threats, securing networks, complying with cyber standards and responding to cyber-related events in an organization.

**Digital Forensics** includes forensic workstations, forensic imagers and other physical and virtual forensic tools to give students a unique hands-on experience in detecting, investigating and analyzing cyber breaches.

The growth of this industry is predicted to increase by as much as 28% through 2026 (U.S. Bureau of Labor Statistics), highlighting a need to meet the increasing demand for cybersecurity experts. This new space demonstrates UAH’s commitment to student engagement and innovation, while also meeting the requirements of the National Center





# MEETING THE CHALLENGE OF CYBER THREATS

## College of Business unveils new Cybersecurity Lab

of Academic Excellence and marking UAH as a leader in cybersecurity.

In addition, the new lab provides a venue for hosting team-based cyber events, such as “hackathons” and Capture the Flag competitions, facilitating community engagement through outreach events, workshops or seminars. These events will promote home and business security, identity theft prevention, device security, IoT (Internet of Things) security, as well as payment and transaction security.

The new space provides a collaborative environment rather than static ‘front-of-room’ lecturing to promote learning through active interaction among students. The student tools are hosted in the cloud as well, ensuring access to future capabilities. In addition, the processes learned will be team-oriented with respect to problem solving through success-driven,

cohort-based relationships, improving retention and student confidence.

Lastly, the Huntsville community’s investment in cybersecurity education to help build a capable cyber workforce will be served by a curriculum that covers a wide range of technical expertise, including cyber threat intelligence; incident response; evidence collection; risk mitigation and response; organizational recovery and response; fraud and fraud mitigation; governance; and protection of intellectual property. The UAH COB plans for instruction to be business-focused, while supporting a student population from diverse backgrounds and disciplines to meet real-world needs.

Dr. Greene points out how these methods will provide working professionals in particular with a leg up in the industry.

“Our graduate programs—our master’s in information systems and our master’s in cybersecurity—will utilize the Cybersecurity Labs to give our students, who are primarily working professionals, an advantage in both the knowledge and skills that help them lead their organizations with the secure information and operations.

“Our industry and community partners have emphasized the need for cybersecurity professionals at all levels of the organization,” Dr. Greene notes. “With the Cybersecurity Lab, our undergraduates will be better prepared than ever. Not only will they continue to gain cyber knowledge through their courses, but this lab opens up opportunities for hands-on experience with cyber tools that are so critical in protecting and detecting threats to business transactions, communications and projects.” ■



## GenCyber Camps teach cybersecurity to blind, visually impaired, deaf and hard of hearing high schoolers

U AH's Center for Cybersecurity Research and Education (CCRE) recently held two GenCyber Camps for high school students from Alabama, California, Florida, Georgia, Kentucky, New York, North Carolina, South Carolina and Tennessee. Ten high school students with blindness and visual impairments and 15 campers who are deaf or hard of hearing were exposed to a wide range of cybersecurity and computer topics.

In the camp for visually impaired campers, "Students built a computer, learned to program, and encrypted and decrypted secret messages," explains Jesse Hairston (B.S. Computer Engineering 2015, M.S. Cybersecurity CPE 2016), CCRE assistant director. "Campers also practiced digital forensics and built circuits."

The camp represents a partnership between UAH and the Center for Assistive Technology Training at the Alabama Institute for Deaf and Blind (AIDB), Microsoft, the Federal Bureau of Investigation (FBI) and the American Printing House for the Blind.

"Many of our campers make use of assistive technologies like screen readers, magnifiers, braille devices, etc., to learn cybersecurity," Hairston says.

The CCRE also hosted the GenCyber Deaf Cyber Force camp for deaf and hard of hearing students, UAH's fifth in a row, showing campers how their skills could make an impact.

"Due to the increase in cybersecurity threats, there's a rapidly growing demand for specialists with cybersecurity skills," says Steven Forney, a research associate at UAH's Systems Management and Production Center who helped conduct the camp and is deaf himself. "This camp comes with the resources and skills that help deaf and hard of hearing students become familiar with different kinds of tools and systems to perform various cybersecurity tasks."

The FBI was on hand to lead an interactive case scenario, as well as discuss cybersecurity careers and demonstrate the use of real-world tools for digital forensics.

"Students learned about online safety, cybersecurity careers, cryptography and more," Hairston says. "This year our focus was on digital forensics and programming microcontrollers."

GenCyber is funded through a grant from the National Security Agency. The CCRE also held a GenCyber virtual training camp for more than 50 teachers. ■



# ART PARTNERS WITH UAH ROTORCRAFT CENTER TO CREATE COMMERCIAL ARTS AND TECHNOLOGY LAB

The Department of Art, Art History and Design has teamed with the UAH Rotorcraft Systems Engineering and Simulation Center (RSESC) to establish a new collaborative project aimed at benefitting both programs.

The Commercial Arts and Technology (CAT) lab was formed as a partnership between the RSESC and Art, Art History and Design faculty and students as a way to connect the University's commercial art programs with industry partners. The lab is intended to leverage the commercial art capabilities of the department with the technology, engineering and software expertise of the Rotorcraft Center, offering everything from virtual engineering and 3D asset development, to 2D and 3D animation for classified and unclassified projects.

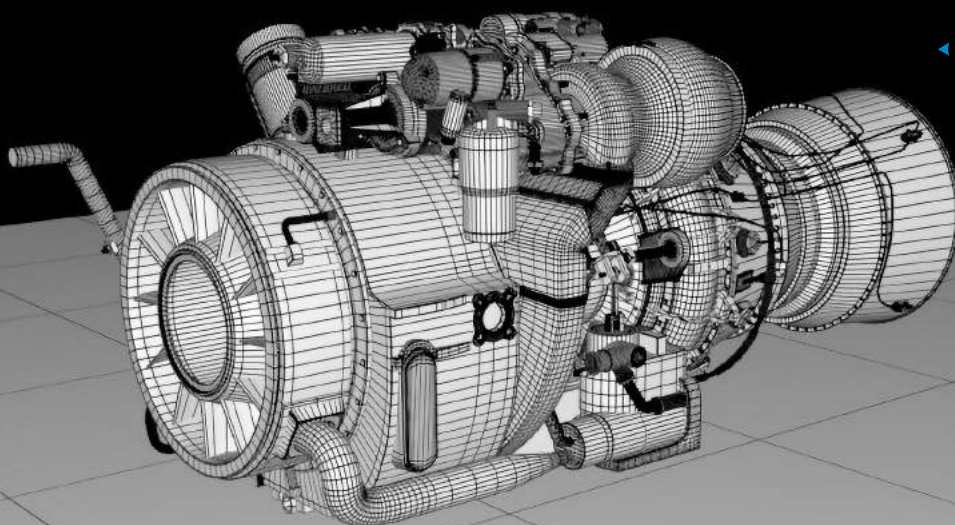
The venture was spearheaded by Vinny Argentina, an associate professor of art animation and game design, to enable his students to provide creative digital technologies to a wide array of government and commercial applications.

"Many people think of animation and interactive tools as being limited to gaming, movies, TV etc.," Argentina explains. "But the truth is, animation and interactive tools are much more widely used across many industries. Many of the same tools and processes used for making AAA video games and feature films are also used for making visualizations,

simulations, serious (learning/training) games, virtual engineering projects, marketing and advertising projects, etc."

Argentina feels that initiating such a partnership generates new opportunities in a variety of areas. "There are quite a few companies in Huntsville doing these types of projects and many more that would benefit from access to a labor force that can help them. The Rotorcraft Center has a great deal of experience integrating with commercial and government partners on engineering and technical projects. I wanted to extend these types of opportunities to students in commercial arts (animation, game design, graphic design, photography, technical illustration). In addition, combining the RSESC's engineering work with Virtual Reality and Augmented Reality development opens up new workflow opportunities for both internal and external projects."

The Rotorcraft Center is a multifaceted research center focused on providing applied engineering and systems engineering techniques, design and system analysis, rapid prototyping, integration and fabrication. RSESC has established an impressive track record supporting industry and government organizations in space mission analysis and the design, qualification and fabrication of space and aircraft-mounted payload systems. ■



◀ Visual design project  
GE T700-701D  
Turboshift Engine.

# GRAMMY

## Alumna Danaë Xanthe Vlasse in consideration for music's biggest award

After graduating UAH with a degree in piano performance, Danaë Xanthe Vlasse (B.A. Music 2003) followed her aspirations of composing music to Los Angeles where she is experiencing a level of success many musicians only dream about. Her most recent album of original compositions and performances have garnered critical acclaim and is in consideration for a GRAMMY.

Vlasse cites her professors during her time at UAH as being deeply influential, both on her technical abilities as a musician, as well as her confidence as a performer and a composer. "I'm so grateful for the foundation and friendships I found during my undergraduate years," she says. "I wasn't sure if I wanted to continue with

performance as I approached graduation, but my teachers believed in me and helped me pursue my passions beyond the university curriculum. I still stay in touch with them."

Dr. Carolyn Sanders, professor of music and one of Vlasse's mentors, applauds Vlasse's talent and success: "As a student at UAH, Danaë possessed the gifts of both musical talent and academic talent. She has had a string of stellar accomplishments in both the music composition and teaching worlds since completing her degree at UAH, reflective of her extraordinary abilities, as well as her desire to give back to the world in a significant and meaningful way."

Bolstered by this belief, Vlasse established a career as a composer collaborating with musicians from all over the world. Most recently, she released "Mythologies," a classical vocal album inspired by her father, who was the son of a fisherman and raised on the Greek island of Ithaca. "Penelope," one of the pieces from the album, was recently featured on the PBS special *Front and Center*.

This most recent album is one of 11 she has written either solo or as a collaborator, but this one, Vlasse discloses, is a culmination of everything she's learned. "Everything I've done as a musician has led to this," she says proudly. "It's my crowning achievement." And the critics have taken note; "Mythologies" is currently under consideration for a GRAMMY in the Classical field.

In addition to composing, Vlasse pays it forward by teaching and inspiring the next generation of musicians. In 2005, she moved to Los Angeles and opened Music Vision Studios, where she teaches piano, theory and composition to students ranging from age seven to 89. Even during the pandemic she persevered, teaching her students via Zoom. She has several students who have graduated from her studio to continue their pursuit of music in higher education.

"Kids who study music fare far better in every realm of scholastic work, at every grade level," she notes. "They can learn language patterns, they understand structure, they learn empathy and collaboration and they develop leadership skills – all of which apply to a variety of career paths." ■

▲ Images courtesy of  
Danaë Xanthe Vlasse





## Dr. Kimberly Robinson named U.S. Space & Rocket Center CEO

◀ Image courtesy of NASA

U AH alumna Dr. Kimberly Robinson (M.S. Engineering (Industrial and Systems 1999), Ph.D. (Industrial and Systems 2010) was named Executive Director and CEO of the U.S. Space & Rocket Center (USSRC). The hiring was announced this year by the Alabama Space Science Exhibition Commission, which oversees the operation of the center.

Dr. Robinson is a 31-year veteran of NASA. She is the recipient of numerous NASA performance awards, including an Exceptional Achievement Medal and the Silver Snoopy.

She began her career at Marshall Space Flight Center in 1989 as a Project Engineer in the Propulsion Laboratory, then later became an astronaut trainer, served as an Executive Intern to the Center Director, was the Project Integration Manager for the Ares 1-X test flight, acted as the Payload Mission Manager for Artemis 1, the first integrated flight test of NASA's Space Launch System (SLS) rocket with the Orion spacecraft, and most recently led Utilization for all Artemis missions.

"This was a major change to my life plan," Dr. Robinson says, reflecting on her career decision. "I had never planned to leave NASA. But now that it's happened, it totally makes sense to me. There are other roles that come along with this position. It goes beyond STEM education and space exploration: we run a museum, gift shop, restaurants and a large number of camp programs under Space Camp. Those areas are all new for me, and it's fun for me to learn."

Dr. Robinson's background makes her particularly well-suited for her new role in ways beyond her technical qualifications.

The alumna is fully versed in sharing the future of human space exploration with the public through her work in various NASA posts, such as SLS Strategic Communications Manager at MSFC.

"You have to be able to communicate, talk to the public and your team, explain where we are going, and how we will get there," she says.

Officially on the job since last February, Dr. Robinson hit the ground running, anxious to put her personal philosophy to work reshaping USSRC operations. She is quick to point out that one of the most important factors in supporting her vision for the Center is the people behind it all.

"At NASA I learned important lessons, like how to manage risk and make decisions with people's lives depending on it. It's mostly about team building. I believe I can do almost anything with the right motivated team, solve any problem, move any mountain. That's how we landed on the Moon!"

And she fully understands the importance of helping this cherished Huntsville landmark thrive.

"It is a solemn responsibility that I take seriously," she notes. "It is human nature to explore the unknown and push the boundaries, and space exploration is one way we have done that to a magnificent degree. The U.S. Space & Rocket Center showcases those human achievements that have expanded technologies, opened new frontiers and discovered new worlds." ■





The UAH Department of Athletics is pleased to unveil the Inaugural Class of the UAH Athletics Hall of Fame, announcing 10 members that will be enshrined for their extraordinary accomplishments and contributions as a Charger.

- ▶ **MELANIE CARTER (B.S. Biological Sciences 2003) | SOFTBALL | 2000-2003**  
Enshrined in GSC Hall of Fame in 2016; four-time All-American (2000, 2001, 2002, 2003); four time All-GSC (2000, 2001, 2002, 2003).
- ▶ **JIM HARRIS | DIRECTOR OF ATHLETICS | 1995-2010**  
Enshrined in GSC Hall of Fame in 2015; UAH hockey won two NCAA Division II national championships and two CHA championships during tenure.
- ▶ **MATT JANSEN (B.S. Engineering (Chemical) 2002) | BASEBALL | 1998-2002**  
Two-time CoSIDA Academic All-American (2000 and 2002); NCBWA South Region Pitcher of the Year (2002); two-time All-GSC (2000 and 2002).
- ▶ **BECKY STITT PLOTT (B.S. Biological Sciences 1999) | VOLLEYBALL & WOMEN'S BASKETBALL | 1995-1999**  
GSC Volleyball Player of the Year (1997); four-time All-GSC in volleyball (1995, 1996, 1997, and 1998); two-time All-GSC in women's basketball (1998 and 1999).
- ▶ **DOUG ROSS | HOCKEY | 1985-2007**  
Guided Chargers to NCAA Division II national championships in 1996 and 1998; posted 376 wins during his 22 NCAA seasons.
- ▶ **TASO SOFIKITIS (B.S. Business Administration (Marketing) 1996) | HOCKEY | 1992-1996**  
CoSIDA Academic All-American (1996); member of 1996 national championship team that posted program's only unbeaten record (26-0-3).
- ▶ **WENDY HURST STEWART (B.A. Elementary Education 2000) | SOFTBALL | 1996-1999**  
Enshrined in GSC's first Hall of Fame class (2014); two-time All-American (1998 and 1999); four-time All-GSC (1996, 1997, 1998 and 1999)
- ▶ **TONY VANN | MEN'S BASKETBALL | 1975-1979**  
Two-time NAIA All-American (1978 and 1979); career records in points, rebounds, field goals, field goal %; drafted by NBA Kansas City Kings.
- ▶ **ERIN ZELLERS (B.A. Psychology 2009) | WOMEN'S CROSS COUNTRY & TRACK | 2005-2009**  
Four-time All-GSC in cross country (2005, 2006, 2007, and 2008); top runner in 11 races during cross country career.
- ▶ **LINCOLN ZIYENGE (B.S. Business Administration (Management) 1997 ) | MEN'S SOCCER | 1993-1996**  
GSC Player of the Year (1996); All-GSC in 1996; also served as UAH head women's soccer coach from 1998-2009, tallying 96 wins. ■

uahchargers.com



Charger Nation,

We cannot begin to thank you for supporting UAH Athletics. Our mission is to provide student-athletes with the opportunity to compete within a structured sporting environment that facilitates and enriches one's intellectual, personal, cultural and professional development.

We are committed to the complete welfare of all student-athletes and we advocate for an environment that promotes excellence in academic and athletic performance, ethical conduct, rules compliance, sportsmanship, diversity and equity. We strive to help our student-athletes to be leaders in the UAH campus community and our community as a whole.

We want to do things that matter. We want it to matter in competition. We want it to matter in the classroom. And finally, we want what we do to matter in life after sports.

**Thank you for supporting  
Huntsville's Team and Go  
Chargers!**

Dr. Cade Smith  
(M.S. Management (HR Mgt) 2018)  
Director of Athletics



# Advance Your Career with a UAH Graduate Degree!

**80+** **GRADUATE  
DEGREE**  
AND CERTIFICATE PROGRAMS

**AVERAGE 13**  
GRADUATE CLASS SIZE

**\$131.6M**  
in Research Expenditures

**#1** **RETURN ON  
INVESTMENT  
in Alabama**  
– PayScale

Request More Information  
[uah.edu/grad-learn-more](http://uah.edu/grad-learn-more)

Apply Today  
[uah.edu/grad-apply](http://uah.edu/grad-apply)

**UAH**  
THE UNIVERSITY OF  
ALABAMA IN HUNTSVILLE



THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

Office of Marketing and Communications  
Shelbie King Hall, Room 370  
301 Sparkman Drive  
Huntsville, AL 35899

Nonprofit Org.  
U.S. Postage  
PAID  
Huntsville, AL  
35899  
Permit No. 283

The University of Alabama in Huntsville is an EEO/AA/Title VI/Title IX/Section 504/ADA/ADEA institution in the provision of its education and employment programs and services.

PART OF THE  **University of Alabama System**



THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

The College of Arts, Humanities, & Social Sciences presents

# Peace ON EARTH



featuring

# VOCTAVE

THURSDAY, DECEMBER 2, 7:30 P.M.

VBC Mark C. Smith Concert Hall | [uah.edu/peace](http://uah.edu/peace)

