

ASU

ARIZONA STATE UNIVERSITY
VOLUME 25 NUMBER 1

Thrive[®]

2021 Year in review

Highlights from another year of innovative breakthroughs

PLUS
**WORLD'S FIRST
MEDICAL CENTER FOR
THE PLANET IS AT ASU**

**THE POWER OF THE
STORY ENDURES**
Hollywood insiders
on film's future



Scan with your smartphone camera to view the digital edition.

TRANSFORMING LEARNING

Reinventing education in the sciences for students online

Lab- tested AND online

ASU
Arizona State University

We customize. You could save **\$947.¹**

Arizona State University has chosen to partner with Liberty Mutual Insurance, so now you could save \$947¹ with customized auto and home insurance.



Teaming up with people you trust gives you the peace of mind you need to live life your way. Millions of people across the country trust Liberty Mutual to protect what's most important. Join them and take advantage of a special discounted rate on:



Auto Insurance

which includes Lifetime Repair Guarantee.²



Home Insurance

which includes Personal Property Replacement.³



For your free quote, call
1-888-680-5644.

Client #9697

AUTO | HOME | RENTERS | UMBRELLA | MOTORCYCLE | CONDO | WATERCRAFT

¹Savings validated by new customers who switched to Liberty Mutual between 1/2020-10/2020 and participated in a countrywide survey. Savings may vary. Comparison does not apply in MA. ²The property damage must be covered by your policy, and repairs completed by a Guaranteed Repair Network Vendor. Guaranteed Repair Network not available in Rhode Island or Massachusetts. In Massachusetts we offer you our Superior Service Program (SSP), which is similar to the Guaranteed Repair Network, however, the estimate is completed by a Liberty Mutual appraiser. For more information, speak with your Liberty Mutual Claims Representative. ³Not available in all states. Coverage provided and underwritten by Liberty Mutual Insurance and its affiliates, 175 Berkeley Street, Boston, MA 02116 USA. Equal Housing Insurer. ©2019 Liberty Mutual Insurance 14591054
This organization receives financial support for offering this auto and home benefits program. AFF686950-11 CW-AH 2019/09

Contributors

May Busch

The former COO of Morgan Stanley Europe is now an executive coach, speaker, advisor, author and executive in residence in ASU's Office of the President.

Marcus Baram

He spent more than 20 years as an editor and reporter including as a senior editor at Fast Company and an associate news editor at The Wall Street Journal. Baram's biography, "Gil Scott-Heron: Pieces of a Man" (St. Martin's Press) was recently optioned for film.

Jennifer Kite-Powell

A senior technology contributor at forbes.com, she was named one of the top 100 women in technology in Europe in 2012 and shortlisted for best tech journalist by the TechCrunch Europas Awards.

Jeff Newton

An editorial and commercial photographer, his clients include Google, adidas Originals, The New York Times, Sports Illustrated, Men's Journal, Popular Science, Forbes, Entrepreneur, Banner Health and Cold Stone Creamery.

Daniel Oberhaus

A staff writer at Wired magazine and the author of "Extraterrestrial Languages" (the MIT Press), he is an ASU alumnus, '15 BA in English (creative writing) and philosophy, and a graduate of Barrett, The Honors College.

Kevin Scanlon

An award-winning portrait photographer, his clients include Bloomberg Businessweek, Outside, Time and The New York Times Magazine.

The official publication of
Arizona State University
Winter 2022, Vol. 25, No. 1

CHIEF CREATIVE OFFICER, PUBLISHER
Jill Andrews '97 BS, '03 MPA

SENIOR DIRECTOR, EDITOR
Lindsay Kinkade

SENIOR ART DIRECTOR
Heidi Easudes

FEATURES STORY EDITOR
Kari Redfield

DEPARTMENT EDITOR, COPY EDITOR
Leigh Farr

ART DIRECTOR
Danielle Knotts

PHOTOGRAPHER PRINCIPAL
Jarod Opperman

DIRECTOR, ASU NEWS
Penny Walker

DESIGNER
Tamara Kopper

PRODUCTION
Chris Myers, Jason Puckett

STORY IDEAS AND AD INQUIRIES
asuthrive@asu.edu

ASU THRIVE MAGAZINE
PO Box 875011, Tempe AZ 85287-5011
480-727-5440
asuthrive@asu.edu
news.asu.edu/thrive-magazine

ASU Thrive (USPS 024-438; ISSN 1940-2929) is published quarterly by the Arizona State University Enterprise Marketing Hub, PO Box 875011, Tempe, AZ 85287-5011, 480-727-5440. Subscriptions are sent to all ASU alumni. For detailed information about alumni memberships, visit alumni.asu.edu/give-back/asu-alumni-membership. Periodicals postage is paid at Tempe, Arizona, and additional mailing offices. Postmaster: Please send address changes to ASU Thrive, Attention: Circulation, PO Box 875011, Tempe, AZ 85287-5011. Permissions: Portions of this publication may be reprinted with the written permission and proper attribution by contacting the ASU Thrive editor. ASU Thrive can be accessed online at news.asu.edu/thrive-magazine.

If you would prefer to receive only a digital edition of the magazine, please update your subscription:

Alumni
news.asu.edu/content/subscribe

Faculty and staff
print.asu.edu/mag/unsubscribe



ASU Thrive is printed on paper that is certified to the Forest Stewardship Council® (FSC®) Standards.



ASU Thrive is paper neutral, replanting trees equivalent to paper usage in geographic areas of need.

Leading education online

ASU has intentionally redesigned itself to enhance access to quality education for all learners capable of performing university-level work, regardless of the person's socioeconomic status or geographic location.

As an eager learner from a nomadic family of limited means myself, I changed schools often and learned that intellectual curiosity alone was not always enough to realize your academic goals. People learn in different ways, and there needs to be more than one route to success.

With the help of a design culture focused on student success at every level, reliable analytics, knowledgeable partners and leading-edge innovations, technology-enabled learning can elevate students to new levels in both fully immersive (on-campus) and digitally immersive environments.

The same faculty members who teach our on-campus classes teach all of our online courses. We have demonstrated that it is possible to conduct digital courses that are equal in quality to in-person coursework. In this issue, we go into the science laboratories where online students conduct experiments with the same level of rigor as all of our students — hypothesizing, measuring, dissecting and testing to build strong scientific foundations.

The advancement of technology and our knowledge creation is growing at an unprecedented speed. The resulting data is giving us new and important insights about how people learn and how we can tailor lessons to more effectively meet the needs of individual learners.

Right now, ASU has nearly 300 online degree and certificate programs that serve more than 59,000 undergraduate and graduate students in Arizona and around the world through ASU Online.

We are advancing our approach to Universal Learning® on all fronts — integrating online learning, virtual reality, artificial intelligence, game-based learning, entrepreneurship, public and private sector partners and global alliances to be the future-ready leader the world needs right now.

Michael M. Crow

President, Arizona State University

✉ michaelcrow [in michaelcrow](https://www.linkedin.com/in/michaelcrow) [@ asuprescrow](https://www.instagram.com/asuprescrow) [f presidentcrow](https://www.facebook.com/presidentcrow)

Go

Calendar of events

Populate your agenda with upcoming event highlights on ASU's campuses. 4

Update in the news

Students join shark research expeditions. 10

ASU-LACMA art fellowship expands to Miami. 13



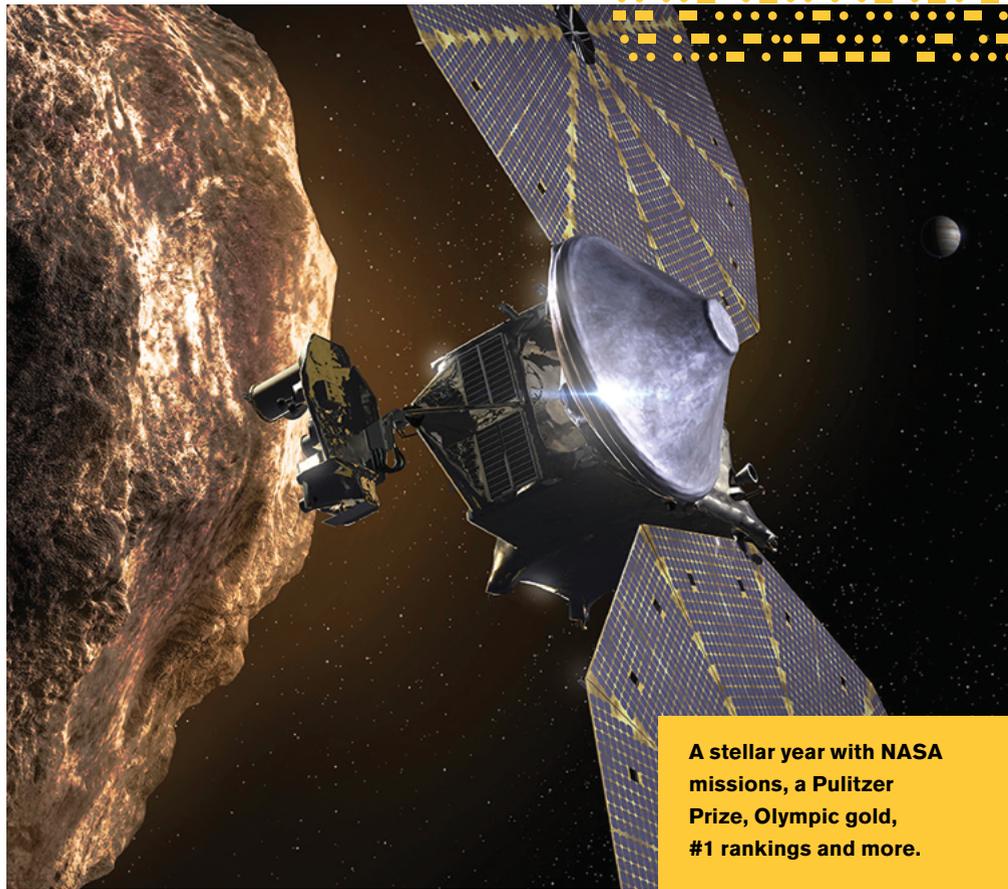
Careers are a journey — how to guide yours.

Advance your career

Ahead of the curve

Understanding your career path. 18

May Busch: Use the career S-Curve to guide your success. 21



A stellar year with NASA missions, a Pulitzer Prize, Olympic gold, #1 rankings and more.

Review

Year in review

Highlights in excellence. 24

Discover possibilities

Like a medical center for the planet

The Julie Ann Wrigley Global Futures Laboratory is tackling some of the most important and complex problems of our time. 32

Inspiring new planetary navigators. 39
Putting a dent in plastic waste. 41



Finding actionable solutions to Earth's most challenging issues.

NASA



youtube.com/ASU
youtube.com/ASUathletics



alumni.asu.edu/linkedin
linkedin.com/school/Arizona-State-University



instagram.com/ArizonaStateUniversity
instagram.com/ASU_alumni
instagram.com/SunDevilAthletics



Lab-tested and online

Reinventing education in the sciences for students online. 42

All-star faculty. 49

Expand your mind

The power of the story endures

Long-form storytelling, from film to streaming TV, continues to captivate audiences today. 52

Opening architecture to all who qualify. 58



ASU Online reinvented science and engineering labs for students online.



Ted Hope, a Hollywood producer, working with students in Los Angeles.

JEFF NEWTON; KEVIN SCANLON; JAROD OPPERMAN/ASU

Play like a Sun Devil

Triathlon and wrestling: Tops in field and academics. 60

Cheer

75 years of Sparky: Check out the evolution of ASU's beloved mascot. 64



Digital extras and the latest updates

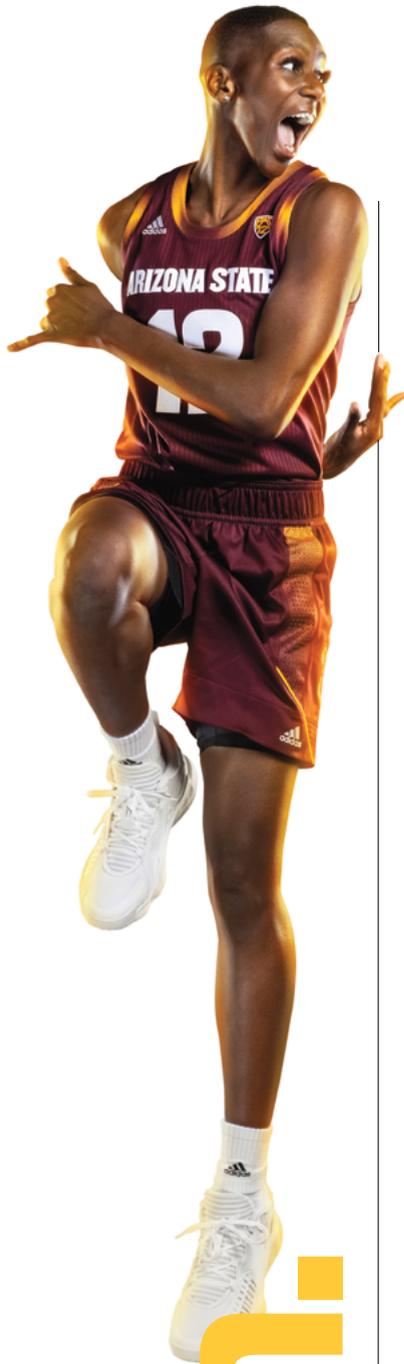
Please visit magazine.asu.edu for the digital magazine with embedded videos and links.



 twitter.com/ASU
twitter.com/ASU_alumni
twitter.com/TheSunDevils

 facebook.com/ArizonaStateUniversity
facebook.com/ASUalumni
facebook.com/ArizonaStateSunDevils

 magazine.asu.edu
 pinterest.com/ArizonaStateUniversity



Jan.

Sun Devil hoops

Join Sun Devil Basketball, men's and women's, as they dribble, dunk and dazzle their way through the season!

Now through March,
Desert Financial Arena,
Tempe campus

thesundevels.com

Family **Ticketed**



Striving toward inclusion

In her talk titled "Effective, Culturally Responsive Mentorship," Angela Byars-Winston, a counseling psychologist, will discuss the impact of cultural diversity variables on academic and career development and mentorship, particularly in STEM fields. Byars-Winston, who received her doctoral degree at ASU in counseling psychology, is currently the principal investigator in the National Research Mentoring Network leading the Culturally Aware Mentoring initiative through the National Institutes of Health.

Thursday, Jan. 20, 10–11 a.m., online

asuevents.asu.edu

Free **Online**

Renewal through art

"Art in Focus: Journeys Toward Healing" provides an interlude — mental and physical — for contemplating ideas of wholeness and well-being. This exhibition suggests that art can serve as a source of healing and point to more restorative solutions to critical community issues. "Journeys Toward Healing" highlights works of paper, ceramics, baskets and wood from the museum's collection.

Friday–Sunday through Feb. 13,
11 a.m.–5 p.m., ASU Art Museum,
51 E. 10th St., Tempe

asuartmuseum.asu.edu

Free **Family**



Movies on the Field

ASU 365 Community Union presents "Movies on the Field" at Sun Devil Stadium. Bring a blanket, sit on the grass and enjoy your favorite films on the big screen under the stars. Events are open to ASU and the community.

Friday nights, Sun Devil Stadium, once each month through May

asu365communityunion.com

Free **Family**



Yoga at the stadium

Live Well Yoga offers free one-hour yoga classes led by a rotating cast of local instructors. In-person and online classes are open to the public and all levels are invited to practice, from beginner to expert. **Select Tuesdays and Saturdays. Full list of dates and registration information online.**

asu365communityunion.com/wellness

Free **Family**

Live Well



An evening with Tim Allen

Tim Allen, star of the sitcom "Last Man Standing" on Fox network and before that the long-running TV comedy "Home Improvement," voice of Buzz Lightyear in the "Toy Story" movies, author of "Don't Stand Too Close to a Naked Man" and "I'm Not Really Here," and holiday icon for his "Santa Clause" films, performs a night of stand-up comedy.

Saturday, Feb. 19, 7:30 p.m., ASU Gammage, must be 18 or older to attend

asugammage.com

Ticketed



A learning adventure for the whole family

Curious about ant castles, or want to know why humans are obsessed with taking pictures? Open Door invites the local community — adults and children of all ages — to experience ASU and discover what makes it so innovative. This fun, exciting experience will take place at each of ASU's four metro-Phoenix campuses, and you are invited to visit them all.

You will find hundreds of interactive, hands-on activities and opportunities to visit with students, faculty and staff. This signature event of the Arizona SciTech Festival offers you and your family the chance to discover all things science, the arts, humanities, sustainability and more. Enjoy these in-person experiences:

West campus: Saturday, Feb. 5, 1–5 p.m.

Polytechnic campus: Saturday, Feb. 12, 1–5 p.m.

Downtown Phoenix campus: Saturday, Feb. 19, 1–5 p.m.

Tempe campus: Saturday, Feb. 26, 1–5 p.m.

opendoor.asu.edu

Free Family Lifelong learning

Visit asuevents.asu.edu for up-to-date information about events around all ASU campuses and online. Visit thesundevils.com for athletics news, events and ticketing.



Family hike to the 'A'

Sparky will meet attendees at the base of "A" Mountain for photos, a painting craft and an overview of the mountain's history and traditions. Members of the Student Alumni Association will lead Sun Devil Generations families on a hike to the "A."

Saturday, March 19, at the base of "A" Mountain
alumni.asu.edu/engage/sun-devil-generations

Free Family



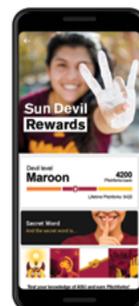
Celebrating Native heritage

American Indian dancers and singing groups from across the U.S. and Canada will be featured in the Pow Wow at ASU, a social gathering that reinforces the common bond and spirituality existing among individuals from many North American nations.

Friday, April 8–Sunday, April 10

powwow.asu.edu

Family Ticketed



Check in to events to earn rewards

Sign in to the ASU Mobile App and find Sun Devil Rewards, where you can earn Pitchforks for checking in to ASU events, reading news, playing games and more. Redeem Pitchforks for exclusive Sun Devil® merchandise and rewards money can't buy. m.asu.edu

Chapters



Tillman Honor Runs

Lace up your running shoes and join your local Tillman Honor Run. During the month of April, the ASU Alumni Association, in partnership with the Pat Tillman Foundation, hosts Tillman Honor Runs from coast to coast to honor the legacy and impact of former Sun Devil and Army Ranger Pat Tillman. These 4.2-mile runs/walks are hosted by alumni chapters and clubs and are open to the community.

In-person

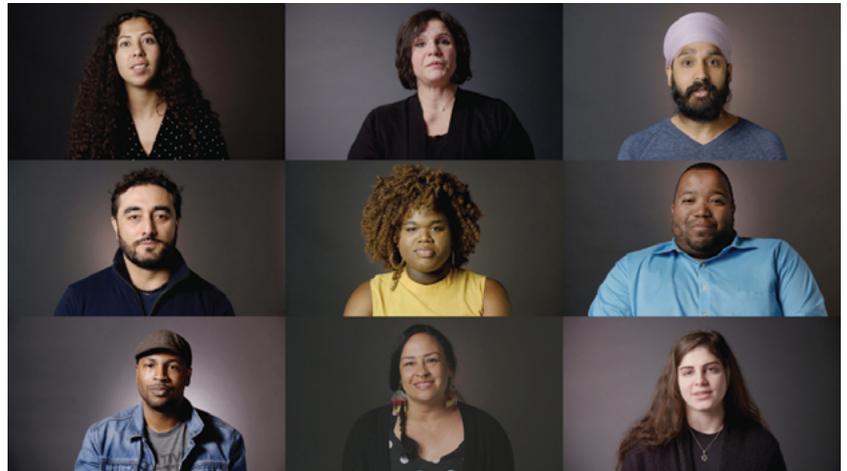
alumni.asu.edu/events/tillman-honor-runs

Family **Ticketed**



Stay in touch

Update your info to stay in the know with invites to special events and more.
alumni.asu.edu/update



How can we approach understanding bias with curiosity, empathy and compassion?

A new YouTube series developed by ASU's Social Transformation Lab, "To Be Welcoming" builds an engaging framework for driving reflection and conversation on the topic of bias. The series, adapted for YouTube, stems from curriculum initially developed in partnership with Starbucks and explores the intersectionality of the many identities we each hold — gender, sexuality, race, religion, culture and more — and how we can approach understanding bias with curiosity, empathy and compassion. Having a framework to understand the biases that profoundly affect those with different identities than our own can be the foundation for constructive dialogue, conversation and understanding.

Watch the videos at youtube.com/asu.

Take the course at the Starbucks Global Academy starbucksglobalacademy.com/to-be-welcoming.

Free **Online** **Lifelong learning**

Sun Devils volunteer together

Throughout the month of March, ASU Alumni chapters nationwide gather to participate in family-friendly volunteer activities as part of ASU Cares. From cleaning up parks to supporting community members facing hunger, you can give back in your community with fellow Sun Devils.

Connect with volunteer opportunities at alumni.asu.edu/give-back/volunteer/asu-cares.

Free **Family** **Service**

Community



“ASU has made significant impacts on our firm and on me personally as we have **strived to develop a sustainable practice.”**

– MICHELE SHELOR, WHOSE DESIGN OF ORANGE MALL OUTSIDE THE MEMORIAL UNION AND STUDENT PAVILION EARNED SITES SILVER AND LEED PLATINUM CERTIFICATIONS

Designing a career, sustainably

At first, you may not recognize the oasis at the heart of the Tempe campus. The tranquil garden spaces, learning labs and eco-resilient water features at the Orange Mall at the Student Pavilion are the award-winning work of ASU alum Michele Shelor, '95 BA in history, '01 BS in landscape architecture.

Shelor remembers how the area was during her time at ASU, “During my first semester as a student at ASU, I walked every day from the Cholla dorms along Orange Mall to my classes in the central part of the campus. I can still remember it being very hot with no shade, seating, or vitality even though it was one of the primary circulation paths to the central hub of the campus.”

When her firm was selected to redesign it, she used her history to inform the project.

The green infrastructure project is the first ASU project to be developed following the SITES criteria, which is used by landscape architects, designers, engineers, planners, ecologists, architects, developers, policymakers and others to align land development and management with innovative sustainable design.



The project earned a SITES Silver honor as well as LEED Platinum certification.

Reflecting on her time at ASU, she shares what she would have done differently. “I really wish I’d taken some business classes!”

“We put so much time into learning how to be good designers, but it is equally important to learn how to run a business effectively,” she says.

Learn more about the project at tours.asu.edu/tempe/orange-mall-green-infrastructure-project.

Learn more about navigating a career in sustainability at schoolofsustainability.asu.edu/careers/career-advising.

Tap business resources at entrepreneurship.asu.edu.



Career and Internship Fair: Virtual

Networking and connecting with employers is a great way to grow your career. Join us for this virtual career fair that will allow you to meet a wide variety of employers from various industries who are looking to connect with Sun Devils.

Friday, Feb. 25, 11 a.m.–2 p.m., online
asuevents.asu.edu

Free **Networking**
Job search **Online**



OFFICE SPACE

ASU, Blue Origin to create business park in orbit

A mixed-use business park in space may sound like a daydream of the distant future, but the university is partnering with Blue Origin and other space industry leaders to create one by 2030. Dubbed Orbital Reef, the pioneering space station will make its home in low-Earth orbit and offer the infrastructure to support new markets in space, including research, manufacturing, travel, education and exploration. And it's not just for specialists.

Just like Earth-side business parks, Orbital Reef will provide a shared facility that entities can lease to serve research, government, industrial, international and travel customers. By offsetting the complexity and cost of living and working in low-Earth orbit, Orbital Reef opens the space economy to a wider array of small businesses, projects and nations.

Learn more about ASU projects paving the way for humans in space at interplanetary.asu.edu.

A detailed rendering of the Orbital Reef space station in orbit above Earth. The station consists of several large, white, cylindrical modules connected together. One prominent module in the foreground has a large, circular opening, revealing internal components like a lens or sensor. The Earth's blue oceans and white clouds are visible in the background. The title "Update in the news" is overlaid in the top right corner in a large, white, sans-serif font.

Update in the news

Humans' most powerful eye on the universe

Telescope to measure the first galaxies.

11

New ways to teach and learn

Adapting K–12 for teachers and students.

12

“Throughout the 20th century, space exploration has been the realm of the hero, the unreachable astronaut, the one special person. But with Orbital Reef, we will make it accessible for so many more people who can participate in many different ways.”

— LINDY ELKINS-TANTON, VICE PRESIDENT OF ASU'S INTERPLANETARY INITIATIVE AND PRINCIPAL INVESTIGATOR OF THE NASA PSYCHE MISSION



Tillman Center celebrates milestone serving veterans and families

ASU's Pat Tillman Veterans Center commemorated its 10th anniversary with celebrations and reflections at all four campuses. The story of the football player who gave up a lucrative NFL contract to join the Army Rangers and fight for his country prompted the creation of a center at his alma mater to help veterans and their families succeed. The center provides services to more than 10,400 military-affiliated students to promote a smooth transition to campus, including help processing benefits and providing a hub for veterans to gather for studying and making social connections. [Learn more at veterans.asu.edu.](https://veterans.asu.edu)



Professor James Sulikowski and students conduct an ultrasound examination on a female tiger shark to determine if she is pregnant.

Students join shark research expeditions

While many ASU students were enjoying the last few days of winter break, Juliana Kaloczi, an undergraduate biological sciences student, was planning her date with Great White Sharks in the Atlantic Ocean. She was invited by Professor James Sulikowski, an internationally recognized marine biologist with the New College of Interdisciplinary Arts and Sciences, to discover the reproductive habits one of the largest and most powerful shark species. The expedition is the first of perhaps a dozen research trips Sulikowski will undertake with students this year, tagging and tracking sharks across various climate zones. Sulikowski's research is in a race against time to better understand shark reproductive behaviors as global climate change and industrialization impact shark habitats, possibly displacing them to other areas. "It is surprising how little we actually know about shark reproduction, birthing and pupping habits," says Sulikowski. "That's why we are developing innovative new technology to be able to do so."



Expanding premodern race scholarship

The Arizona Center for Medieval and Renaissance Studies will use a \$3.5 million grant from the Andrew W. Mellon Foundation to extend reach of field in both higher education and wider public discourse. The grant supports the center's ongoing RaceB4Race conference series and professional network community by and for scholars of color who are working on issues of race in premodern literature, history and culture.

"The investment that ASU has made in premodern studies is unprecedented, and the Mellon grant allows us to sustain, build and innovate the important work we started with RaceB4Race," says Ayanna Thompson, director of the Arizona Center for Medieval and Renaissance Studies and creator of RaceB4Race.



Bridging many traditional disciplinary divides, RaceB4Race is a conference series that creates innovative scholarly dialogues and fosters social change within premodern studies.

The goal of the grant is to expand and diversify the reach and tools available to those contributing to the robust body of premodern critical race scholarship.

Learn more and join the effort at acmrs.asu.edu/raceb4race.



Afghan refugee fund aids educational pathways

Arizona is expected to receive 1,610 Afghan evacuees, and ASU is preparing to help many with their education-related needs when they arrive. The Educational Futures for Afghan Refugees fund was established by the ASU Foundation to help Afghan refugees with pathways into the ASU community as K-12 and higher education students who may need assistance with tuition and education support, technology support, room and board, English language courses and more. It will also offer faculty assistance for Afghan refugees who will teach at ASU.

Keep up with the headlines at ASU by subscribing to the ASU News e-newsletter at news.asu.edu/subscribe.



Powerful telescope to look back in time

Humankind's most powerful eye on the universe was scheduled to be launched from French Guiana in December, giving astronomers the ability to look back in time. The James Webb Space Telescope is an orbiting infrared observatory with longer wavelength coverage and greatly improved sensitivity. The longer wavelengths enable Webb to look much closer to the beginning of time and to hunt for the unobserved formation of the first galaxies, as well as to look inside dust clouds where stars and planetary systems are forming today.

Rogier Windhorst, an astronomer and Foundation Professor of astrophysics, is one of the world's six interdisciplinary scientists for the telescope. His group at ASU plans to use the Webb telescope to map the epoch of the first light in the universe in detail.



NOW ON THE ROSTER

ASU partners with schools to adapt instruction to meet student and teacher needs

Mesa Public Schools, the largest school district in Arizona, is joining Roosevelt, Kyrene and Creighton school districts, and ASU Preparatory Academy in adopting Next Education Workforce models in an effort designed to empower teachers and improve student learning outcomes. The goals of the Next Education Workforce are based on a recognition that the prevalent one-teacher, one-classroom model of schooling is failing both learners and educators.

The models are developed with ASU's Mary Lou Fulton Teachers College. The new models establish teams of educators who share rosters of students. They put a premium on adapting instruction to meet the needs of individual students, and are designed to leverage different teaching styles and content expertise among teachers.

Learn more about the benefits for students and teachers at workforce.education.asu.edu.

ASU-LACMA fellowship program expands to include Pérez Art Museum of Miami

The Los Angeles County Museum of Art and ASU's Herberger Institute for Design and the Arts have welcomed the Pérez Art Museum Miami as a new partner in the ASU-LACMA Master's Fellowship in Art History. PAMM's first fellow, Emily Valdes, joins what is now the third cohort of individuals in the program, along with five new fellows from LACMA.

The ASU-LACMA Master's Fellowship was founded in 2018 as a partnership between ASU and LACMA with the aim to culturally diversify the leadership of art museums in the U.S. The three-year degree program combines rigorous academic training with on-the-job experience to develop a new generation of diverse curators, directors and other museum professionals. The goal is to invest in the existing pipeline of talent and accelerate the careers of individuals already working on museum staffs. The fellows earn their master's degrees in art history from the ASU School of Art's distinguished art history program in the Herberger Institute, while also working at LACMA, the ASU Art Museum or, beginning this fall, PAMM.



The Pérez Art Museum Miami is a new partner in the ASU-LACMA Master's Fellowship in Art History.



Researcher chosen to be a Howard Hughes Medical Institute Investigator

For the first time, an ASU researcher has been selected as a Howard Hughes Medical Institute Investigator. John McCutcheon, associate director of the Biodesign Center for Mechanisms of Evolution and a professor with the School of Life Sciences, will receive about \$9 million over a seven-year term to pursue his research. He and his team study how mitochondria and chloroplasts function.

"The research that Dr. McCutcheon is involved in has the potential to provide critical insights into important biological processes," says Dr. Joshua LaBaer, executive director of the Biodesign Institute at ASU. "These insights could help deliver new innovations to improve human health."



At a press conference in Phoenix, David Hondula speaks about heat-related illnesses and deaths.

Professor named director of Phoenix's new Office of Heat Response & Mitigation

In a city known for scorching heat, a new office has been created in Phoenix to address the growing issue of urban heat, and an ASU professor was tapped to lead the effort. David Hondula, associate professor in the School of Geographical Sciences and Urban Planning at ASU, has dedicated his research to

"The application of research to meet community needs has always been an aspiration for my academic work."

— DAVID HONDULA, ASSOCIATE PROFESSOR IN THE SCHOOL OF GEOGRAPHICAL SCIENCES AND URBAN PLANNING

understanding urban heat and working toward mitigating the negative impact it can have on people in the community.

The Office of Heat Response & Mitigation will establish

a strategic action plan to address the growing hazard of urban heat. The city of Phoenix is the first in the nation to create a publicly funded office focused on heat response.

PolitiFact partners with ASU, expanding footprint in the nation's capital

The Poynter Institute's PolitiFact will move its offices to ASU's campus in the heart of Washington, D.C., in a unique collaboration that will expand training in fact-checking journalism, create a new website to fact-check Arizona politicians and grow Poynter's teaching footprint in the nation's capital. The Pulitzer Prize-winning digital fact-checking organization has long been rating the accuracy and claims of elected officials from Washington offices on Connecticut Avenue. The new physical presence at ASU's nearby location allows for greater visibility, plus access to the university's cutting-edge technology, enhanced research, curriculum development, innovative teaching and event space.

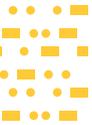
Learn more about ASU in the nation's capital at washingtondc.asu.edu.

The ASU logo is displayed in white on a dark background. It features the letters 'ASU' in a bold, sans-serif font, with a stylized sunburst or starburst graphic behind the letter 'U'.

ASU

“The Cronkite School and Poynter are heavyweights in the journalism training arena, and this partnership presents tremendous opportunities for us to be impactful on a broad level.”

— BATTINTO L. BATTS JR.,
DEAN OF THE CRONKITE SCHOOL



Professor appointed to AP board of directors

For the first time in its 175-year history, the Associated Press, an award-winning news organization, has appointed an ASU faculty member to sit on its board of directors. Mi-Ai



Mi-Ai Parrish

Parrish, managing director of ASU Media Enterprise, will serve a three-year term. As the first minority and second woman to serve as president and publisher of The Arizona Republic/azcentral.com and market president at USA Today Network, Parrish also holds the

inaugural Sue Clark-Johnson Professorship for Media Innovation and Leadership at the Walter Cronkite School of Journalism and Mass Communication — a position named after The Republic’s first female publisher.

Esports campus group bond, destress and share gaming with local elementary school

ASU’s Esports Association has become one of the university’s biggest and most active clubs. With more than 2,000 members, the group has provided a safe and diverse space for people of all backgrounds.

“During the past two years, students from all of the campuses, including ASU Online, were able to connect with others going through the same struggles, and were able to bond and destress by playing games together,” says Jesse Brawders, ASU Esports Association vice president. As the club continues to grow, members have influenced the surrounding community to start their own esports clubs. Pendergast Elementary recently started its club with advice from ASU Esports at West campus.

Learn more about clubs at eoss.asu.edu/clubs.



Making strides in soft robotics

Walking with coffee is something most of us do every day without considering the physics preventing the coffee from spilling over.

“While humans possess a natural, or gifted, ability to interact with complex objects, our understanding of those interactions — especially at a quantitative level, is next to zero,” says Ying-Cheng Lai, an electrical engineering professor. Yet, understanding such factors is fundamental in applied fields such as soft robotics.

A paper published in Physical Review Applied by Brent Wallace, National Science Foundation Graduate Fellow and ASU doctoral student, revealed that humans are able to switch abruptly from one synchronous attractor to another, a mechanism that can be exploited for designing smart robots to adaptively handle complex objects in a changing environment.



Circular economy research makes plastic more sustainable

Since the 1950s, plastics have changed our lives. But these amazing materials are mostly made of fossil hydrocarbons like oil, gas and coal — and none are biodegradable. The vast majority of the 18 trillion pounds of plastic ever produced is now trash in landfills and oceans.

“Sustainability of plastics remains a huge challenge. It’s a looming national and global crisis,” says Timothy Long, a professor in the Ira A. Fulton Schools of Engineering and the School of Molecular Sciences at ASU. “It’s coming to the forefront now for people to address. There is a sense of urgency now.”

One way to reduce the challenge of plastic waste is to introduce circularity: the notion that everything created is returned to the manufacturing system with nothing sent to the landfill.

“It’s the idea that garbage becomes gold,” says Long, who also directs the Biodesign Center for Sustainable Macromolecular Materials and Manufacturing.

Developing a viable plan for a circular plastics economy is the key focus of a National Science Foundation Emerging Frontiers in Research and Innovation project. The research team includes ASU and Virginia Tech — two early university members of the Ellen MacArthur Foundation, a global hub and leader of advances to circular economies — in addition to the National Renewable Energy Laboratory, Oak Ridge National Laboratory and adidas.



The MBA for what's next.

With 20+ ways to tailor your MBA to your goals and interests, the W. P. Carey MBA at Arizona State University will prepare you for your next step and your entire career. You'll have support every step of the way with 1:1 career coaching, mentorship from senior executives, and generous scholarships. GMAT and GRE test waivers available for well-qualified applicants.

Full-time MBA

- Innovative, focused curriculum developed to meet the needs of hiring companies
- 96% employment within 6 months of graduation (2021)

Online MBA

- Five-week classes, delivered one at a time and 100% online
- Areas of emphasis highlight current strengths or build new ones

Evening MBA

- Designed to fit around the schedule of busy working professionals
- Customize your MBA with concurrent degrees, certificates, and 40+ electives

Executive MBA

- The MBA for senior leaders with 10+ years management experience
- International practicum and an optional health care concentration

Fast-track MBA

- With a previous master's in business, earn your MBA in as little as 12 months
- Develop the fundamentals you need to succeed in any industry



No. 5 Highest ROI, Full-time MBA

No. 6 Online MBA

No. 18 Executive MBA

No. 22 Part-time MBA

No. 30 Full-time MBA

Earn your MBA at the most innovative university in the U.S. — seven years in a row.

(U.S. News & World Report, 2016-2022)

Advance your career

“We’re working to create a seamless viewing of complementary datasets, such as for those working on the Mars Sample Return program.”

— LAUREN GOLD, GRADUATE STUDENT,
ON HER INTERNSHIP AT NASA’S JPL



MISSION TO MARS

Lauren Gold took her remote internship to a whole new level, going full extended reality at NASA’s Jet Propulsion Laboratory’s DataSPACE lab. A grad student in the School of Arts, Media and Engineering, she develops software and hardware systems for augmented reality and virtual reality. During her NASA internship, among other projects, Gold designed a prototype virtual reality tool for the Mars Sample Return proposed mission to enable full immersion for researchers. Working with scientists at ASU, the Mars Sample Return program’s goal will be to collect samples of rocks and soils on the red planet.

Ahead of the curve

3 career stages and how to master them.
18

Arriving at your career goals

Your unique career S-Curve.
21

Ahead OF THE curve

Understanding your
career path — the
career S-Curve





May Busch

The former COO of Morgan Stanley Europe is now an executive coach, speaker, advisor, author and executive in residence in ASU's Office of the President. Find her at maybusch.com/asuthrive.

When you're feeling anxious, lost or worried about your career, then step back, zoom out and get your bearings by looking at your entire career visually. This also works as a way to plan out a successful career that moves you toward your aspirations.

Here's how I look at this: I call it the S-Curve, and it's a graph of your career potential over time. It's also the shape of a learning curve, which is another way to think of your career — as a series of learning opportunities.

Where are you now?

Let's think of your career in three primary stages:
"Aspiring" — the early stage
"Driving" — the middle stage
"Arriving" — the advanced stage

Aspiring

When you're in the Aspiring stage, you're starting out and exploring career options. You're working hard, developing skills and gaining a variety of experiences. But your visible achievement is still quite modest because you're building a foundation.

It's like those construction sites that are fenced off with dark green

hoarding. You walk by on the way to work for months and it doesn't look like any progress is being made. But what they're doing is extremely important — they're digging the foundation.

Driving

Then comes the Driving stage, when you've chosen where you want to make your mark and must demonstrate all the things that it takes to be excellent in your chosen field. In my case, it was how to run a deal, lead a team, build client relationships and become a "rainmaker" who brings in business.

In the construction analogy, this is when all of a sudden the building structure seems to go up in a very

short period of time. Similarly, your visible achievement tends to be much greater during the Driving stage.

Arriving

When you've achieved your desired level of success, this is what I call the Arriving stage. You're still working hard but you've achieved so much that the incremental achievement no longer seems as big. This is because expectations of you have risen along with your capabilities — your own expectations as well as the expectations of others.

Back to the hypothetical building, this is working on the interior and putting in all the pipes, wiring and walls. There's a



tremendous amount of important work going on, but it doesn't look like much is happening from the outside.

The question mark

At some point during this Arriving stage, you may find yourself thinking, "What's next? Is this all there is?" And indeed, there is a question mark at the end of the Arriving stage.

That's when you have some choices to make. Do you opt out and retire altogether, keep doing what you've been doing and coast a bit, or decide to get on a new S-Curve, whether that's re-upping your commitment to advance where you are or doing something completely different?

Which S-Curve are you on?

The good news is that none of us is limited to just one S-Curve in our careers. In fact, your overall career S-Curve is made up of smaller S-Curves that link up. While each distinct segment of your career constitutes a different S-Curve, you don't have to start all the way at the bottom when you jump onto a new S-Curve. That's because you've developed skills, capabilities, experience and wisdom along the way that you can build upon.

For example, my first career S-Curve was my 24-year investment banking career. I then got to the question mark and chose to get on a new S-Curve and become an entrepreneur who helps

achievers accelerate their career success. In my second S-Curve, I'm just starting the Driving stage.

Putting it all together

No matter where you are, it's important to recognize what stage you're in, the aspirations you have and how you can keep learning, growing and staying engaged in the work you do.

Because when you're engaged and using your best talents, you become unstoppable in your career.

In the next issue, we'll look at keys for success in all stages — and pitfalls to avoid. ■

Stage matters as much as age

Remember that your overall career S-Curve is made up of smaller S-Curves that link up. For example, while you might be in your midcareer in terms of overall time in your career, you could be on a new S-Curve and in the Aspiring stage.

Early career — Aspiring:

Acquire skills and lay the foundation for your career.

- Gain knowledge.
- Be presentable.
- Soak everything up.

Midcareer — Driving:

Develop as a leader, leverage your strengths and focus on career milestones that matter to you.

- Transition from individual contributor to manager and leader.
- Build your credibility.
- Invest in your network.

Advanced career — Arriving:

Assess progress toward your aspirations and identify the next level of transformation that will energize you.

- Develop wisdom and insight. Use your gravitas to encourage junior colleagues rather than to intimidate them — less talking, more listening.
- Mentor those who come after you. You were once in the first two stages of the S-Curve, so understand your colleagues' needs based on their career stage.
- Become a master communicator.



CARVING YOUR CAREER

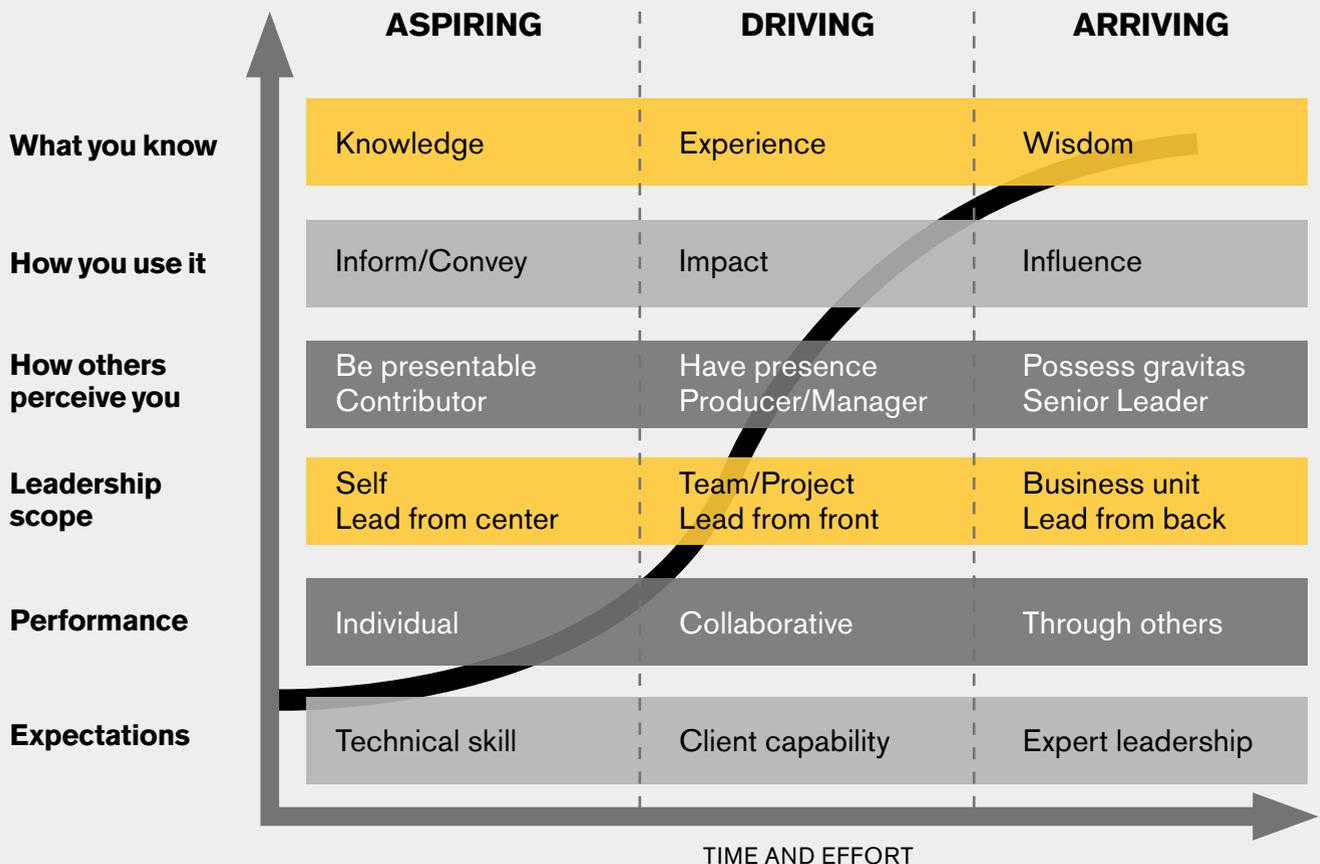
The S-Curve — where are you?

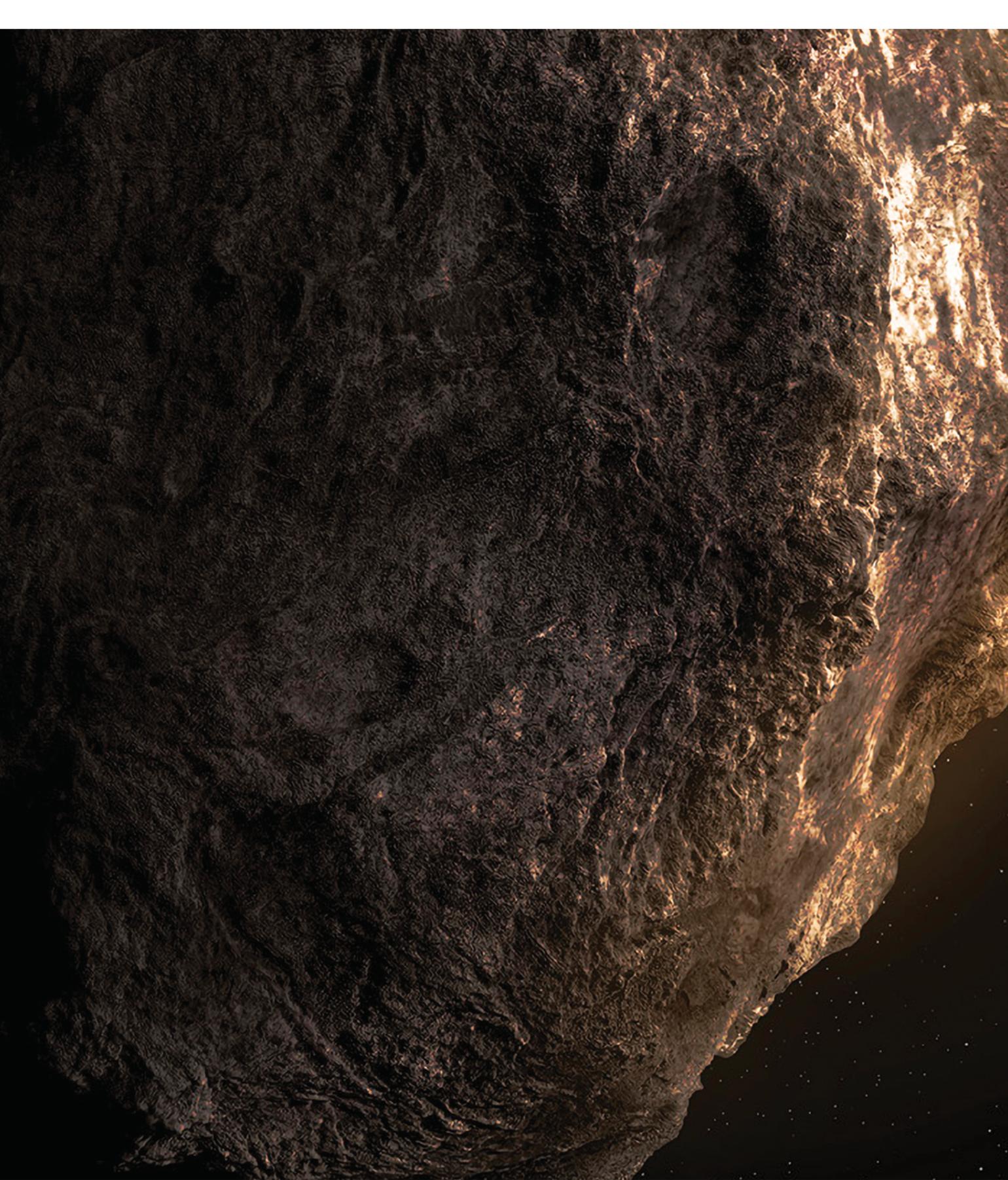
The S-Curve is a graph of one’s career potential over time. It’s also the shape of a learning curve, which is another way to think of our careers — as a series of learning opportunities.

Think of the S-Curve as a map, like those floor plan directories in shopping malls with a big orange dot marked “You are here.” Each stage has key traits in terms of what you bring to the table, how you use skills, how you lead, how you perform, and what’s expected of you.

Just as with the shopping mall map, the two most important questions for your career map are: (1) Where are you now? and (2) What does “arriving” (aka “success”) look like for you?

Being able to clearly identify those two points makes it much easier to navigate from here to there. ■







Review

ASTEROID ORIGINS

NASA Lucy Mission carries ASU instrument, namesake

In October 2021, the Lucy Mission to the Trojan asteroids lifts off. It is named for the fossil discovered in 1974 by Donald Johanson, founding director of the Institute of Human Origins. On board is the ASU-led Lucy Thermal Emission Spectrometer. Watching the launch are STEM students nationwide who attended the ASU-led Lucy Mission L'SPACE Academy.

Year in review

Successes and triumphs from 2021.

24

By the numbers

Research, academic and impact achievements.

28

Year in review

In the news

20

January

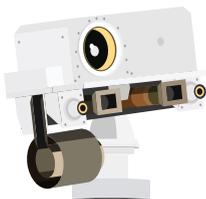
ETX center nationally recognized for effective digital learning

Well before the pandemic, ASU's Center for Education Through eXploration was transforming learning by developing and deploying digital learning experiences. ETX Center Director and President's Professor Ariel Anbar and his team have created online science courses, empowered educators to create and share next-generation courseware and technology and created Infiniscope, which uses education to bring NASA science to high schools and middle schools.

February

ASU Mastcam-Z team celebrates rover landing

ASU holds a live landing watch party as NASA's Mars 2020 Perseverance rover lands on Mars. On board the rover is the ASU-led mast-mounted camera system Mastcam-Z, which can zoom from wide angle to telephoto, take 3D images and videos, and take photos in up to 11 unique colors.



January

Film school renamed after Sidney Poitier

ASU renames its film school after actor and filmmaker Sidney Poitier, the first Black man to win the Academy Award for best actor. Poitier is known for breaking racial barriers and embodying characters with dignity and wisdom. Cheryl Boone Isaacs, former president of the Academy of Motion Picture Arts and Sciences, will lead the school as its founding director. Boone Isaacs is drawn to

ASU because of its emphasis on "representation, and the idea of inclusion, not exclusion," she says.

ASU virtual campus tour on Amazon Prime Video

ASU College Tour, a 60-minute episode about ASU in the new Hollywood-produced series, "The College Tour," offers an innovative approach to providing virtual college tours to future Sun Devils.

March

Deep-sea exploration breakthrough to guide future space missions

Scientists from ASU's Systematic Underwater Biogeochemical Science and Exploration Analog program pioneer a new approach to the scientific process of geochemical exploration for Earth and beyond. Their work, published in the journal Planetary and Space Science, could help change the paradigm of planetary exploration by speeding the interpretation of data from months to hours.



2

1



April

#1 university in the U.S. for global impact

Times Higher Education magazine ranked ASU the No. 1 university in the U.S. and No. 9 in the world for global impact in addressing the United Nations Sustainable Development Goals in research, outreach and stewardship in 2021. The ranking is driven by work on issues such as poverty and hunger, gender equality, clean water and air, climate change and providing quality education.

Starbucks, ASU partner on new facility

The ASU-Starbucks Center for the Future of People and the Planet is a research and rapid innovation facility created to find new ways to design, build and operate Starbucks stores. It focuses on greener stores, food, wellness, community betterment and innovation test stores.

Advanced digital partnership top in the U.S. for equity

A four-year partnership between the Pendergast Elementary School District and ASU Prep Digital offers high school courses to about 150 seventh and eighth graders every year in algebra, geometry and English. It was a first-place winner of honors from the National School Boards Association.

May

ASU Health Futures Center opens

ASU's new Health Futures Center, home of the Mayo Clinic and ASU Alliance for Health Care, is the latest development in the nearly two-decades-long relationship between the nation's most innovative university and the recognized world leader in patient care, medical education and research.



May

Novus Innovation Corridor receives LEED-ND Gold certification

In a first for Arizona, the Novus Innovation Corridor earns LEED-ND Gold certification from the U.S. Green Building Council. The 355-acre, mixed-use, public-private partnership between ASU and Catellus Development Corporation is adjacent to the ASU Tempe campus.

“When we walk the talk, operating our campuses in a sustainable manner, we are telling students that we actually believe in what we are teaching and we value their future.”

— MICK DALRYMPLE
DIRECTOR OF UNIVERSITY
SUSTAINABILITY PRACTICES

ASU moves up nearly 30 spots on a list of top universities in the U.S. and is ranked No. 1 in the state, ahead of both Northern Arizona University and The University of Arizona.

— QS WORLD UNIVERSITY
RANKINGS



June

Poet Natalie Diaz wins Pulitzer Prize

Natalie Diaz, associate professor in the Department of English, wins the 2021 Pulitzer Prize in Poetry for her collection, “Postcolonial Love Poem.” The honor comes mere months after the MacArthur Fellow made history by becoming the youngest chancellor ever elected to the Academy of American Poets.

Alum Jon Rahm wins the U.S. Open



Professional golfer and Sun Devil Jon Rahm, '16 BA in communication, takes home first place at the U.S. Open in Torrey Pines, marking his first major championship win.

Mathematicians win prize for malaria research

Kamaldeen Okuneye, '18 PhD in applied mathematics, and Foundation Professor Abba B. Gumel win the 16th Bellman Prize. Their work presents a mathematical model to investigate the effect of temperature and rainfall on malaria transmission and the development of an effective public health policy.



July

Sun Devil Hall of Famer Lucy Casarez coaches Japan's softball team to gold-medal win in the 2020 Tokyo Olympic Games, held in 2021.



Sustainability is integrated into construction, including the new ISTB7 Building, with glass fiber reinforced concrete, creating levels of shade during the day.

August

ASU scientist meets with pope amid climate crisis

Greg Asner, director of ASU's Center for Global Discovery and Conservation Science, meets with Pope Francis to discuss the ways in which science and faith can work in concert to combat climate change. Faith, according to Asner, offers understanding while science provides tools to navigate forward.



September

#1 university in sustainability

In North America's greenest colleges and universities, ASU ranks No. 1 on Sierra magazine's 15th annual "coolest schools" competitive ranking, ahead of UC Berkeley, Penn State, UCLA and Yale. This marks the first time the university attained this honor out of a record 328 institutions, rising from No. 4 previously, thanks to its comprehensive approach to sustainability that spans academia, campus operations, student life and endowment investments.



ASU California Center will feature top-ranked programs and opportunities to connect with Los Angeles companies and global industries.

Innovation takes root in the City of Angels

ASU holds a dozen events in the historic Herald Examiner Building in downtown Los Angeles — the site of ASU's California Center — since its opening. It's home to more than 100 students enrolled in L.A.-based programs.

First global coral reef maps completed

Using Earth-mapping technology, the team led by the Center for Global Discovery and Conservation Science identifies areas essential for biodiversity and climate resilience, and provides an estimate of the total amount of land area requiring protection to address biodiversity loss and climate change.

#1 in the U.S. for innovation

For the seventh year in a row, ASU is ranked No. 1 in innovation by U.S. News & World Report.

“This past year and a half has been a time of great challenges.

The university community persevered and innovated in order to continue to be of service. This recognition reflects that determination, which is emblematic of the Sun Devil spirit.”

— PRESIDENT MICHAEL M. CROW
ON INNOVATION RANKING

October

Dreamscape Learn VR space installed

Construction on two new Dreamscape Learn pods begins on ASU's Tempe campus. The new virtual reality immersive curriculum, scheduled to be rolled out this spring, is a partnership between ASU and Dreamscape Immersive, the world's leading VR company.



1 millionth COVID-19 test

The university completes its 1 millionth COVID-19 test, a marker that commemorates the Biodesign Institute's massive effort to marshal all its resources and respond to the pandemic statewide.

Professor to lead National Endowment for the Arts

President Biden nominates Maria Rosario Jackson as chair of the National Endowment for the Arts. An Institute Professor in the Herberger Institute for Design and the Arts, she is the first African American and Mexican American in the U.S. nominated to lead the NEA.

#2 in the U.S. in EPA Green Power Partnership

ASU ranks No. 2 on the Environmental Protection Agency's Top 30 College & University Partners listing. 78% of ASU's total electricity use is green power derived, helping to reduce the effects of air pollution and emissions while supporting the development of clean energy resources.

ASU is one of two U.S. universities to achieve net zero emissions.

— TIMES HIGHER
EDUCATION, 2021

ASU, Blue Origin to create business park in orbit

ASU announces it is part of a team led by Blue Origin and Sierra Space to develop a commercial space station called Orbital Reef. The station will make its home in low-Earth orbit and offer the infrastructure to support new markets in space including research, manufacturing, travel, education and exploration.

December

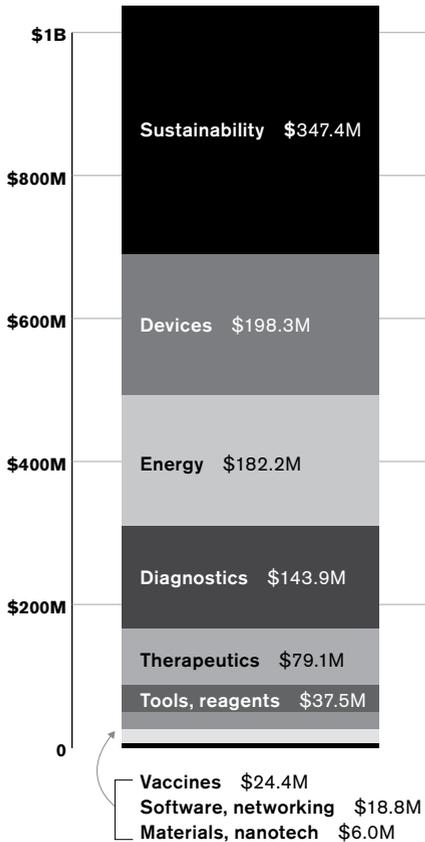
Students Brinlee Kidd and Sylvia Lopez represent the U.S. at the Red Bull Basement Global Final in Turkey for mentorship and networking for their note-taking app, Jotted.

Year in review

By the numbers

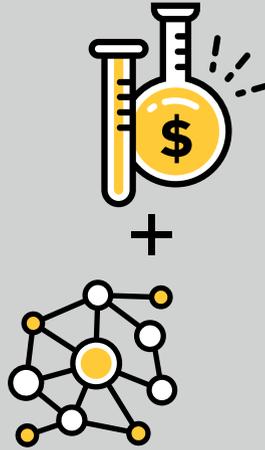
\$1 billion+ in external funding for ASU's Skysong Innovations startups

ASU passed the milestone in its portfolio at Skysong Innovations, the entity that brings ASU research into the marketplace.



SOURCE: SKYSONG INNOVATIONS

Research



#6
in the U.S. for
total research
expenditures among
universities without
a medical school

— NATIONAL SCIENCE
FOUNDATION HIGHER
EDUCATION RESEARCH AND
DEVELOPMENT SURVEY, 2019

With an estimated
**\$673M total research
expenditures in FY20,**

ASU is one of the fastest-
growing research enterprises
in the U.S.

— ASU KNOWLEDGE ENTERPRISE



**Top 10 in
the U.S.
for patents**

ASU with MIT,
Stanford and Harvard

— U.S. NATIONAL
ACADEMY OF
INVENTORS AND
THE INTELLECTUAL
PROPERTY OWNERS
ASSOCIATION

Academics

#1 most innovative in the U.S. for seven consecutive years, ahead of MIT and Stanford

— U.S. NEWS & WORLD REPORT, SEVEN YEARS, 2016–2022

39 programs in the top 10 in the U.S.

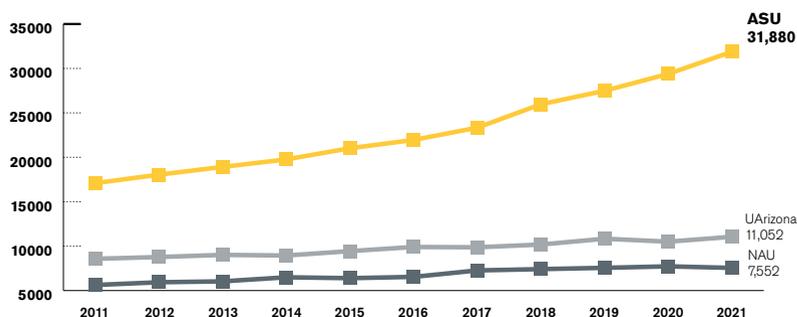
Along with 87 ASU degree programs in the top 25

— U.S. NEWS & WORLD REPORT, 2022

Top 10 nationally for best online bachelor's programs

— U.S. NEWS & WORLD REPORT, 2021

Degrees awarded



ASU annually graduates thousands of innovators who excel in engineering, business, education, the arts and other fields. In 2020–21, ASU awarded 22,067 undergraduate degrees and 9,813 graduate degrees.

— ASU OFFICE OF INSTITUTIONAL ANALYSIS, UARIZONA UNIVERSITY ANALYTICS AND INSTITUTIONAL RESEARCH, NAU INSTITUTIONAL RESEARCH AND ANALYSIS

#1 public university and in the top 5 in the U.S. chosen by international students

— INSTITUTE OF INTERNATIONAL EDUCATION, 2021

Top producer of elite scholars

For the past 10 years, ASU has been a top-producing university for elite scholars, including 279 Gilman Scholars, 191 Fulbright Scholars, 18 Goldwater Scholars, 14 Udall Scholars, 9 Gates Cambridge Scholars, 4 Marshall Scholars, 4 Truman Scholars, 2 Rhodes Scholars and 1 Churchill Scholar.

— LORRAINE W. FRANK OFFICE OF NATIONAL SCHOLARSHIPS ADVISEMENT, 2021

Athletics

Best in field

- Turner Washington won NCAA championships in both indoor and outdoor shot put and in discus.
- Jorinde van Klinken won the NCAA title in discus.
- Nine Sun Devils won Pac-12 individual titles, including five wrestlers.
- Baseball's Drew Swift earned Pac-12 Defensive Player of the Year.
- Four Sun Devils earned CoSIDA Academic All-America honors, led by Turner Washington who earned Academic All-American of the Year for men's track and field.
- Olivia Mehaffey (women's golf) and Samantha Plaster (beach volleyball) earned Pac-12 Scholar-Athletes of the Year.
- Lacrosse mentor Tim McCormack earned Pac-12 Coach of the Year.
- Wrestling, led by Sun Devil graduate Zeke Jones, won its 20th Pac-12 title and fourth in five years.

Philanthropy

\$356.6 million

raised by the ASU Foundation in FY21 for students, faculty, research and community programs



97,069
unique donors
to ASU in FY21

7,416 ASU students received scholarships funded by donors in the 2020–21 academic year. The total amount disbursed was \$29.7 million.



INFORMATION GATHERING

A deep dive through time

The ASU Natural History Collection is a huge facility of labs, storerooms, and nine collections of plants, mammals, fish, birds, reptiles, insects and other types of flora and fauna. Slowly swelling its ranks is a special collection. Instead of most biological samples, where the intent is to learn more about the individual organism, this is a three-decade attempt to better understand how U.S. ecosystems are changing. It's called the NEON Biorepository, part of the National Science Foundation's National Ecological Observatory Network, a research project with 81 field sites. The facilities collect long-term, open-access ecological data to observe changes to U.S. ecosystems. Researchers hope to unravel the complexity of the ecological responses to environmental change.

The NEON Biorepository at ASU is the primary host of the samples from across the country. So far, 70 types of samples have been collected, with more than 100,000 samples coming each year and an expected 3 million samples collected when the project is completed.

Learn more at biokic.asu.edu.

Discover possibilities



NEON Cryo Collections Manager Azhar Husain shows soil samples at the ASU National Ecological Observatory Network repository. Each tank holds about 60,000 samples so that scientists can study changes over time.

Earth's medical center

Tackling some of the planet's most complex problems.

32

Inspiring planetary navigators

An epic journey around the Pacific.

39



Tackling complex problems like planetary health and biodiversity loss requires transdisciplinary solutions and deep, new types of knowledge, as well as collaboration with stakeholders.



Like a medical center for the planet

The Julie Ann Wrigley Global Futures Laboratory is tackling some of the most important and complex problems of our time

Story by DANIEL OBERHAUS, '15
BA ENGLISH, BA PHILOSOPHY

The challenges for the planet's health and the future of humanity and other life forms command urgency — and the university is accelerating its wide-reaching collaborative work to help keep the planet not only habitable but healthy.

In 2019, ASU established the Julie Ann Wrigley Global Futures Laboratory as a first-of-its-kind initiative designed to find actionable solutions to the most challenging issues facing global society and

our planet. The laboratory is ASU's response to the growing awareness that conventional approaches to sustainability and planetary wellness are not adequate. Instead, designing a thriving future requires a holistic approach defined by uncompromising transdisciplinary research and open collaboration among universities, businesses, policymakers and the wider public.

In many ways, the laboratory can be conceived as an entity that operates like a medical center for

the planet, says ASU President Michael M. Crow. Its mission consists of diagnosing social and environmental maladies, developing new ways of acquiring data from all components of the Earth's systems, triaging problems to ensure they are properly prioritized, and ultimately prescribing both treatment and ongoing proactive wellness regimens that minimize harm while maximizing health.

"The Global Futures Laboratory is an entity that focuses on how the world might look in the future and imagines pathways that will keep it a place worth living in," says Peter Schlosser, the laboratory's vice president and vice provost. "That means a world that is habitable and leaves options for the next generation to shape their lives according to their desires."

The laboratory consolidates existing research efforts and schools and augments them with new ones. For example, the Global Institute of Sustainability and the Institute for the Future of Innovation in Society have merged to become an encompassing research institution: the Global Institute of Sustainability and Innovation. The laboratory also adds numerous dedicated resources to solving Earth's greatest challenges, attracts new partner organizations, acts as a single voice with policymakers and influencers like the U.N., and works as a robust center of knowledge and learning about Earth's health.



A global force

ASU named the most impactful U.S. university in addressing the U.N.'s 17 sustainable development goals

#1 university for sustainability

30,000 sustainability alumni from 20+ years of teaching sustainable solutions

In the Global Futures Laboratory

720 dedicated scientists and scholars

1,500+ students

Goal of **5,000** students by 2025

Sources: Times Higher Education rankings, Sierra Club/Sierra Magazine, ASU

Hundreds of the best and brightest minds

Students will be able to work side-by-side with researchers from the Humanities Lab, the Center for Negative Carbon Emissions, the Swette Center for Sustainable Food Systems and several other organizations. Together, they will explore a staggering range of issues such as water scarcity, biosystems, food security, health systems, Indigenous knowledge, future cities and more.

The heart of the Global Futures Laboratory is the new Interdisciplinary Science and Technology Building 7 on the Tempe campus, a \$200 million facility hosting more than 500 faculty and 1,300 students. ISTB7 is the largest research building on ASU's campuses with both wet and dry labs outfitted for many disciplines, including sustainability, engineering, biology and robotics. Although the building will serve as the lab's headquarters, the initiative's impact will extend far beyond its walls to engage partners across ASU's campuses, out in the field and around the world.

"When people walk into that building, I want them to see that they're moving into the Anthropocene, the new era shaped by human activities," Schlosser says. "I want them to recognize the urgency of the moment and see hope in the people at work across collaborative spaces. This new building is a physical center

for those who work on how to get us back onto a trajectory of global wellness.”

Transdisciplinary solutions

When Sally Kitch, founding director of the Humanities Lab, heard about Schlosser’s plans, she wasted no time pitching him on folding humanities into the laboratory. “I approached him right away,” Kitch says. “He agreed immediately.”

The emphasis on collaboration among natural scientists, social scientists and humanists is part of what makes the lab unique. And for many of the researchers, it’s also the reason they think the laboratory will succeed in creating solutions to humanity’s and Earth’s biggest problems where others have failed.

“Getting to the root of these problems is not just about finding technological fixes, it’s about changing human beings’ relationship to the planet and to one another,” Kitch says. She co-directs the Seize the Moment initiative — designed to leverage the arts, humanities and sciences to answer pressing existential questions — along with Diana Ayton-Shenker, the CEO of Leonardo, a renowned think tank and publishing group that came to the university for just this kind of collaboration. “All these problems — social justice, environmental and health problems — are all very interconnected. You need the humanities in there so we can act quickly and with wisdom.”

This transdisciplinary approach

is one of the keys to taking research and implementing it in the real world.

“In my view, we are not limited by scientific knowledge at this point,”

“When you couple the science-based efforts at BIOS to our efforts led by Greg Asner in the Pacific, a clearer picture of the overall ocean dynamics and health will begin to come into full view.”

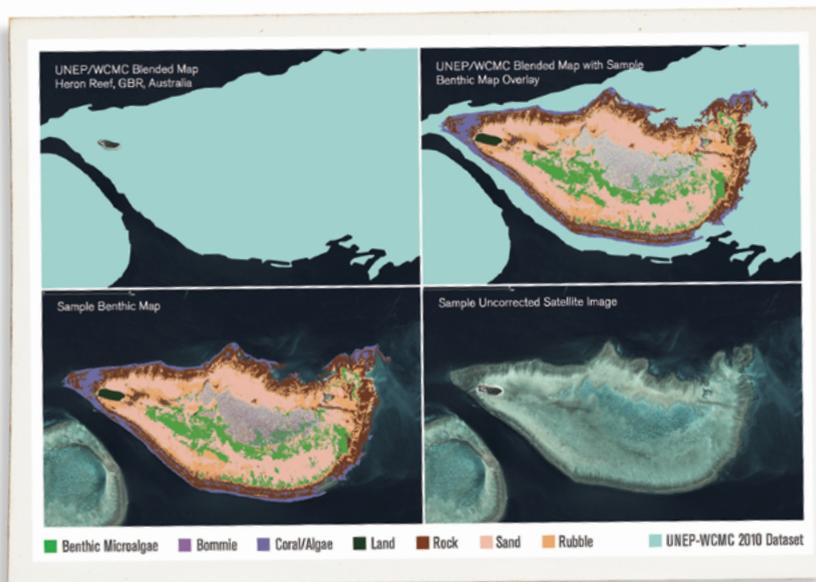
— MICHAEL M. CROW, PRESIDENT OF ARIZONA STATE UNIVERSITY

Schlosser says. “We are limited by translating that scientific insight into action.”

Data and knowledge for improving positive outcomes

A major part of the concept of the Global Futures Laboratory is hundreds of dedicated scholars and scientists across multiple disciplines gathering knowledge and data about how the planet functions across various systems. This is essential for creating wellness solutions and interventions that create positive outcomes.

In September, an international team of researchers including Greg Asner, the director of the Center for Global Discovery and



The Allen Coral Atlas shows detailed coral reef health in a way never before available at scale.

Conservation Science, completed work on the first-ever coral reef atlas. The mapping tool, initiated via a partnership among ASU, Vulcan Inc., National Geographic, Planet and The University of Queensland, allows researchers and policymakers to leverage satellite data to track coral reef health around the world. Prior to the Allen Coral Atlas, this data had never been available at this scale.

In the Atlantic Ocean, the laboratory is partnering with the Bermuda Institute of Ocean Sciences, a premier research institute studying ocean processes. Building on yearslong work, the partnership will share expertise in ocean sciences to study the highly interlinked, complex problems related to the future of the planet and will put students on the cutting edge of ocean science. It also will allow BIOS to hire some of these passionate students post-graduation to continue to develop sensors and robotic systems to monitor the ocean in the coming decades, says BIOS President and CEO Bill Curry.

“When you couple the science-based efforts at BIOS to our efforts led by Greg Asner in the Pacific, a clearer picture of the overall ocean dynamics and health will begin to come into full view,” Crow says. “We expect that this new partnership will be a huge benefit to all Earth scientists seeking a clearer and more concise view of

the ‘state of the planet.’”

With these types of knowledge and data, researchers also can help prioritize actions. One of the many examples of this is a

“In my view, we are not limited by scientific knowledge at this point. We are limited by translating that scientific insight into action.”

— PETER SCHLOSSER
VICE PRESIDENT AND
VICE PROVOST, THE GLOBAL
FUTURES LABORATORY

report by the Swette Center for Sustainable Food Systems led by Executive Director Kathleen Merrigan. It details 46 recommendations to guide the Biden administration’s approach to organic agriculture. The recent Swette report will help policymakers at all levels triage issues to make the biggest positive impacts on carbon emissions, soil and water health, and people’s health in the shortest amount of time.

Addressing global issues

Dave White, director of the Global Institute of Sustainability and Innovation, says the laboratory’s



Leah Gerber (right) near Maui conducts research on humpback whales with graduate students and collaborators.

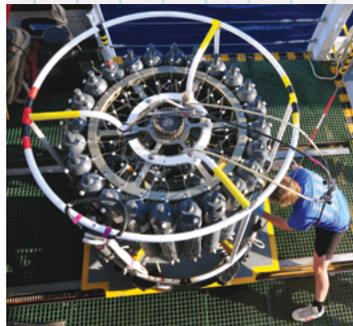
findings can help locally and globally.

“The Global Futures Laboratory allows us to scale up to other areas around the world,” White says.

In 2021, for example, researchers working with the ASU Rob and Melani Walton Sustainability Solutions Service, the Center for Biodiversity Outcomes and Conservation International joined forces with the U.S. Agency for International Development to lead a new program in Peru, which currently is experiencing biodiversity loss from unsustainable land development. It is meant to create solutions to foster entrepreneurship that help to protect biodiversity, not only in the Amazon, but beyond.

The program builds on years of transdisciplinary work by Leah Gerber, the founding director of the CBO. She and colleagues are developing new ways of funding conservation by drawing on tools from economics and finance, such as defining biodiversity’s “return on investment” and creating conservation markets in which people can buy shares of species.

“Given that there is a scarcity of resources going toward biodiversity conservation, the big question is: How can we maximize what we’re getting?” explains Gerber. “Everything I do is done with the idea that we can amplify it and it could be more generally applied.”



Bermuda Institute of Ocean Sciences partnership

BIOS, in St. George’s on the island of Bermuda, is a premier deep-ocean observatory in the Western Hemisphere. It is now part of the Global Futures Laboratory. The Bermuda Atlantic Time-series Study (BATS) has collected data on the physical, biological and chemical properties of the ocean every month since 1988.



BIOS has been sampling plant and animal life to compile the longest, most complete dataset showing changes in the ocean’s carbon dioxide content over time in the Atlantic Ocean.

Honoring Native knowledge and youths’ wisdom

Researchers affiliated with Global Futures also are having an impact around the world through the inclusion of Indigenous knowledge about living in balance with Mother Earth. This includes the hiring of Indigenous scientists, collaborative projects and the direct listening to and working with Indigenous groups and other stakeholders.

Recently, Native Hawaiian Assistant Professor Haunani Kane, who joined the Global Futures Laboratory’s Center for Global Discovery and Conservation Science last summer, led a two-week climate research voyage in Hawaii that drew on Indigenous traditions to study how the islands are responding to rising sea levels.

Around the same time, the laboratory received a five-year, \$6.4 million grant from the National Oceanic and Atmospheric Administration that will support the Global Futures-led Pacific Regional Integrated Sciences and Assessments (Pacific RISA) program to address climate challenges on the Pacific islands. As the next phase in yearslong work, this new center, in partnership with local Indigenous peoples and colleagues at the University of Hawaii and the East-West Center, will help create solutions to pressing climate issues and ways to mitigate climate-change-caused damage to these communities.



Haunani Kane conducting research on rising sea levels. Her focus areas include Samoa, the Marshall Islands and Hawaii.

Another key focus is creating opportunities for students to make an impact. As Schlosser points out, many young people feel as though earlier generations disenfranchised them by not addressing climate change. The laboratory's approach supports students in pursuing research that has real-world outcomes now and far into the future — their own and their future grandchildren's and beyond.

"These students and young activists are capable of anything given the right kinds of opportunities," Kitch says. "If you put a team of students together and give them the freedom and support to design something that is a step toward changing policy, that's a whole different learning experience."

Plotting a course to a thriving future

The Global Futures Laboratory embraces students from across the university and partners and stakeholders from around the world. Andrew Maynard, director of the Risk Innovation Lab and an associate dean in the College of Global Futures, says the full curriculum will focus on cultivating skills students need to work on challenges that require a holistic understanding of complex systems. "We have the capacity to equip students not only with the skills, but the mindset to see pathways forward in a way never done before in educational programs," Maynard says. "We're at the end of the line in terms of problems that we can solve with individual disciplines. The way we're going to solve problems

Join us

We partner with leading institutions around the world to achieve a critical mass of intellectual resources to address these challenges:

globalfutures.asu.edu/#networks

is by merging and transcending disciplines. And that's exactly what we will be training students to do."

There are still many unknowns, but this comes with the territory of launching an entirely new model for how universities engage with the era's most pressing problems. What is certain, however, is that this ambitious medical center for a habitable planet would never have been possible without the university's commitment to fostering academic work with real-world impacts and its decadeslong support of sustainability and transdisciplinary research. Together, these laid the foundation for the success of the Global Futures Laboratory and, perhaps, the planet as a whole.

"The increasing number of global climate and societal events we are witnessing proves that urgency is one of the major messages that we have to convey to ourselves, to our partners and to the world," Schlosser says. "But the next 10 years also present an opportunity unlike we have ever seen before. We are leading the way by pursuing what we think is necessary, but the world needs to decide to act. The world needs more global futures laboratories. We cannot do it alone. Together, we create hope." ■

“These precious islands are a school that holds lessons for all of humanity and the Earth, and our canoes are the classrooms.”

— NAINOA THOMPSON,
PRESIDENT OF
THE POLYNESIAN
VOYAGING SOCIETY

OPEN SEAS

Inspiring new planetary navigators

The French Frigate Shoals in the Pacific Ocean is often thought of as a place with significant wildlife and deep cultural meaning. The Polynesian Voyaging Society hopes to train 120 sailors in this area in nautical instruction, Indigenous leadership skills and sustainability research. And it won't stop there. After its first sail in 2022, PVS will depart for an epic voyage to circumnavigate the Pacific Ocean in which ASU will play an important partner role. The 41,000-mile, 42-month voyage will cover 46 countries and archipelagoes, nearly 100 Indigenous territories and 345 ports — to inspire the public to act as planetary stewards.

Learn more at hokulea.com.

Members of the Polynesian Voyaging Society prep their canoe for a test sail. It's all in preparation for their historic 41,000-mile voyage. To follow along, watch for the related virtual reality experience.



WELCOME TO EXCLUSIVE SAVINGS



ALWAYS-ON SAVINGS



EARLY ACCESS TO PREMIER EVENTS



DEDICATED ACCOUNT TEAM



EXCLUSIVE OFFERS

To learn more visit: www.Dell.com/ASU

- Access to Member Only Offers
- Electronics Accessories 10% Coupon
- Best Price Guarantee on Award Winning Dell Products
- Military and Veterans Receive Additional 10% Discount
- Benefits extend to family and friends

You've got the talent. We've got the tech. Do great things.



Copyright © 2021 Dell Inc. or its subsidiaries. All Rights Reserved. Dell Technologies, Dell, EMC, Dell EMC and other trademarks are trademarks of Dell Inc. or its subsidiaries. Other trademarks may be trademarks of their respective owners. 302514



SURROUND YOURSELF WITH COLLEGIATE ENERGY!

Explore the engaging lifestyle at Mirabella.

Mirabella at ASU is the nation's most exciting new community for older adults! Located right on the Arizona State University Tempe campus, our integration with ASU means an experience like no other, with access to classes, lectures, performances, sporting events and so much more. Along with luxurious high-rise residences, resort-like living and a continuum of on-site healthcare services, Mirabella at ASU is a revolution in retirement!

SCHEDULE YOUR TOUR TODAY!

Call 602-247-7638 or visit us online at retirement.tours/mba



Mirabella at ASU is a nonprofit, resident-centered community developed in partnership with Pacific Retirement Services and Arizona State University. Equal housing opportunity.



“When I learned that our plastic recycling rate in the United States is lower than 9%, I knew that new solutions were needed.”

— TYLER EGMEN, PROJECT MANAGER ASSOCIATE FOR THE ROB AND MELANI WALTON SUSTAINABILITY SOLUTIONS SERVICE IN THE JULIE ANN WRIGLEY GLOBAL FUTURES LABORATORY

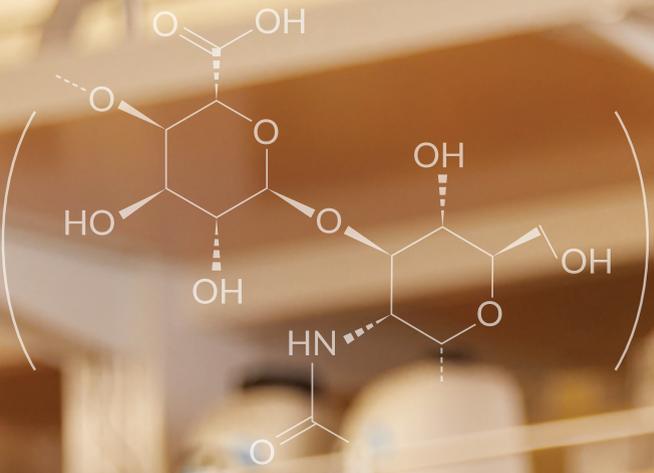
CHIPPING AWAY

Putting a dent in plastic waste

Tyler Eglan, '21 MS in global technology and development, used to have more free time, but now he's spending that time on a passion topic: plastics. Eglan, a project manager associate for the Rob and Melani Walton Sustainability Solutions Service in the Julie Ann Wrigley Global Futures Laboratory, was a graduate student when he started the Precious Plastic club at ASU. Eglan had been part of the Graduate Immersion Program in the Office of Applied Innovation, which awarded him with a stipend that helped the club purchase the plastic-shredding machine and helped him connect to and work with other units, along with mentorship and workshop sessions. Next, the club plans to go beyond the university and start collections in the city of Mesa.

Go behind the scenes and learn more about the process at plasticasu.org.

The Precious Plastic club collects recyclables on ASU campuses, shreds them into a “flake” and places them into an extruder to create new products, including a plastic lumber often used for park benches, porches and playgrounds.



ASU's online biological sciences degree programs include an intense on-campus lab week. Jid'dah (Jai) Ado-Ibrahim, a junior in the program, says the lab week provides critical hands-on experience. She balances her education with parenting her three daughters and working full time at a local pharmaceutical company.

Jid'dah Ado-Ibrahim, B.S.



Lab- tested AND online

Reinventing
education in
the sciences
for students online

Story by JENNIFER KITE-POWELL
Photos by JEFF NEWTON

**Some say it's
impossible to
predict the future.**

For centuries, the best scientists have tried, from Nostradamus to Nobel prize-winning Marie Curie to Nikola Tesla. But in the world of higher education, there have been few willing to put it all on the line.

Then in 2009, leaders at ASU saw a better future — with no boundaries for learning and the entire campus available to the broadest audience possible with the most sophisticated learning

tools humans could build. And even while measuring success through inclusion, ASU leaders set out to prove that online courses can command the same academic rigor as any on-ground classroom learning.

To do this, President Michael M. Crow chose Phil Regier as university dean for educational initiatives and CEO of EdPlus to restructure and manage ASU Online, and increase the information technology budget to power the digital learning machine. And, to reinvent education and provide truly immersive experiences for all students (online and in-person), Crow doubled down on ASU's commitment to finding faculty with ties to technology and science institutions, like NASA scientist and astronaut Cady Coleman and Jim Bell, a planetary scientist and the principal investigator for the Mastcam-Z cameras on NASA's Mars 2020 rover.

Four years later, in 2013, ASU had the first online hard science degree, the Bachelor of Science in engineering (electrical engineering), up and running. It was just the beginning of the online hard sciences future ASU envisioned. It now extends to biological sciences degrees that have earned graduates spots in top medical schools.

The successful reinvention of more than 120 STEM programs for online required that ASU's faculty and staff adopt a paradigm shift in how they approached the digital curriculum. It required embracing



Online programs include lab kits so students can master rigorous concepts.

inclusion and the willingness to redesign entire curricula and labs by learning from both students and instructional designers. And it required ensuring that technology partners would foster the academic rigor the curriculum needed.

The science agenda

Regier says many people in higher education think sciences can't be taught online because they believe it's impossible to achieve the same standards. But ASU faculty and staff have put the hard work

into transforming education.

"We were and are operating from the mindset that we are abundant and we don't have limited or constrained resources, so why not do science online?" Regier says.

"Our undergraduate electrical engineering degree is ABET-accredited and I remember when the agency pushed back when we put that degree up for accreditation," Regier recalls. "In the end, we won the accreditation with flying colors."

The tipping point for more



“We put all our knowledge, expertise and resources toward creating the unimpeachable academic rigor for online hard sciences as we did for the same courses on campus.”

— PHIL REGIER, UNIVERSITY DEAN
FOR EDUCATIONAL INITIATIVES
AND CEO OF EDPLUS

One student who reinvented her career is Maria-Elena Sisneroz, '21 BSE in electrical engineering. “I already received my first degree in biology from UCSD and my doctorate in physical therapy from Northwestern University,” she says. But when she decided to change careers, she needed to take an online program because of her life situation. She emphatically states that she chose ASU because it was the only fully online ABET-accredited program.

Sisneroz says she was able to master the concepts through the take-home lab kits and digital labs. “I had to put a circuit together on a breadboard and observe the signals on an oscilloscope,” Sisneroz says as an example.

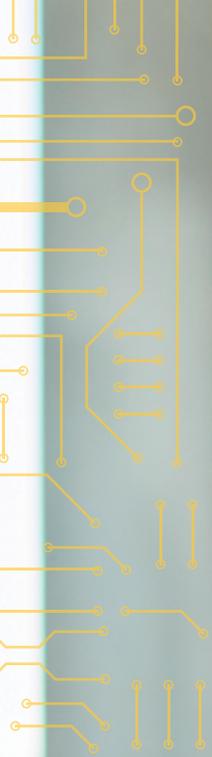
In addition to using her engineering degree to work on device design for physical

online science degree programs, such as in biochemistry and astronomy and planetary sciences, was electrical engineering. Successfully teaching it online opened up the idea of being able to do a lot of other challenging things.

“Then, after we took the biologies online, the physics and chemistry faculty said, ‘If that can be online, then so can physics and chemistry,’” Regier explains. “And that belief led to the growth in astronomy and planetary sciences. So you began to see

this rollout of science degrees with impeccable academic rigor and outstanding faculty credentials that you won’t find anywhere else online today.”

In addition to the need to make rigorous science programs available to more students, there’s an economic imperative to educate people for in-demand occupations, such as in STEM. STEM field jobs are expected to grow 8% by 2029, compared with 3.7% for all occupations, according to the U.S. Bureau of Labor Statistics.



Virtual reality labs allow students to simulate being in a physical lab and get additional insights beyond what is possible in an in-person lab.

rehabilitation applications for her own startup, KinesioTech, LLC, she took a job as an electrical engineer at Edwards Air Force Base in Southern California.

The power of labs

Justin Harding is the senior director of Instructional Design and New Media for ASU Online. Harding says that the challenge with many science and engineering degrees is the capability, through additional resource investment, to create and offer quality lab experiences for students online.

“Labs are the initial barrier to why many universities are not interested in pursuing online science degree development,” Harding says. “It is not just about saying we will have an online lab, it is reevaluating the goal of lab activities and creating and conceptualizing those experiences in the online modality.”

In ASU's online science courses there are four lab types: simulations built in virtual reality, lab kits mailed to students, kitchen labs that use ingredients like soil and water from a student's environment, and follow-along video labs. And for many of the science degree programs — such as the Bachelor of Science in biological sciences, Bachelor of Science in biochemistry, Bachelor of Science in forensic science and more — there's a fifth lab type: in-person labs performed by students during an intense summer lab week on campus, or two weeks for some classes such as organic chemistry.

“They're going to be scientists, and scientists work with their hands, and we can't deprive the students

of this opportunity,” explains Ian Gould, President's Professor in the School of Molecular Sciences, about the rationale for the in-person labs. “So one of the most important components of designing our whole online degree program was to make sure the students receive the experience they need to succeed.”

Julie Greenwood, vice dean for educational initiatives at ASU Online, says that when a student completes a one-week intensive lab, they gain much greater competency in the skills and relationship building with the faculty than what they would achieve during a 15-week lab course.

“We partner with a number of tech vendors such as Cogbooks, InScribe, Zybooks and Labster, which enables digital laboratory experiences for students to focus on the concepts as opposed to the manipulations, and that kind of work is much more like what they would do in an actual career,” Greenwood says.

For example, during VR labs created with Labster, students interact with lab equipment as if in the lab in real life, and work through hypothesis and the scientific method with the help of a digital assistant who provides personalized feedback. During

ONLINE EXCELLENCE

As of the 2021 fall semester, ASU Online has more than 16,500 students enrolled in 69 online undergrad and 53 grad STEM degree programs, representing nearly one-third of the online student population. The first science online degree, Bachelor of Science in engineering (electrical engineering), has 1,300 students as of fall 2021.

“Data show that those are poor learning experiences, and students are often unable to retain what they're doing from week to week,” Greenwood says. “Now, on-campus biochemistry faculty are talking about shifting their campus lab programs to be more like what's happening with the online programs.”

Greenwood attributes the success of the digital labs to technology partnerships and the creativity and innovation of faculty.

the VR labs, students explore concepts like gene expression on a molecular level, as well as get an inside molecular look at what the lab machines are doing.

Mary Loder, instructional designer at EdPlus, adds that tools like Zybooks allow students who are learning programming, including in physics and engineering majors, to see effects in real time. “This gives students the opportunity to see animations of their code before they submit them,” Loder says.

In this sense, these robust, immersive lab experiences open up the entire university to any student regardless of life circumstances — while helping them master rigorous concepts.

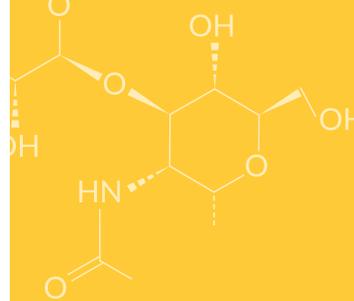
A science and math deep dive

Harding firmly believes that the reason ASU has put in the deep work to achieve the same scientific and mathematical rigor in online courses is simple: ASU recognizes that learners want quality online STEM programs.

“So even when it was challenging to build out and ensure the quality of the learning experiences, we knew we had to do it,” adds Harding.

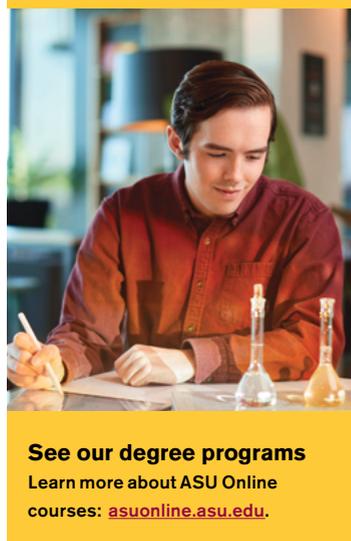
Case in point: The two Bachelor of Science in biochemistry programs and the five Bachelor of Science in biological sciences programs launched in 2017 and 2020. The former has 941 students enrolled as of fall 2021, and the latter has nearly 3,200 students, making it one of the highest enrollment online degree programs. Harding believes that these programs address a significant segment of students who cannot attend location-based programs. ASU has launched several more biological sciences degree programs since then, including a Bachelor of Science in applied biological sciences (preveterinary medicine).

“It’s a blended learning experience created specifically for these sciences students,” Harding says. “It has taken deep commitment and humility with new insights from faculty to understand



ONLINE EXCELLENCE

BioSpine started in 2019 and now has more than 12,000 students customizing their learning through their four-year biological sciences degrees.



See our degree programs

Learn more about ASU Online courses: asuonline.asu.edu.

the hard work of finding ways to reinvent the curriculum.”

Innovation in science classes is exactly what entire teams, including faculty, instructional designers, technology partners and other innovators, did to take rigorous science programs online — and continue to do to improve learner outcomes. In 2019, ASU created the first adaptive learning platform in the School of Life Sciences called BioSpine. BioSpine shifts the learning model from mass production to mass personalization through a scaffolded support

structure that personalizes each student’s learning throughout their four-year degree. It has yielded impressive results for students — and the examination of all concepts students need to master involved more than 50 faculty and 10 staff members. And, it was essential in being able to reinvent the curriculum for both the in-person and online degree programs, Regier says.

In 2020, the online Bachelor of Science in astronomical and planetary sciences launched along with an online Bachelor of Arts in physics.

The former uses the “math that helped us understand conceptually what the universe looked like before we could go above the blue line and see; it’s the math that will take us to Mars,” Loder says. “We couldn’t just re-create on-ground math courses. We had to think about the courses in a different way.”

To help people acquire new skills for the changing economy, ASU also has created numerous online certificate programs and a data science degree program. So far, ASU offers nearly 300 degree and certificate programs online.

“Students should be able to come in and take a continuing education course or two, or a full degree, to pick from the tree whatever they need,” says Regier. “More and more we’ll use even more immersive experiences like Dreamscape Learn and personalized technology. We continue to push the limits of education to make it ever more available to more learners.” ■

All-star faculty

ASU faculty members are committed to innovation and use-inspired research. They impact the lives of our students, our communities, outer space and beyond. Here are just a few of our notable educators who teach online and on-campus.

“The Interplanetary Initiative is a pilot for what future universities could be. What we’re trying to do here is **reinvent the way research teams are built and **the way education is done.**”**

— LINDY ELKINS-TANTON, VICE PRESIDENT,
INTERPLANETARY INITIATIVE; REGENTS PROFESSOR,
SCHOOL OF EARTH AND SPACE EXPLORATION



Lindy Elkins-Tanton is the vice president of the ASU Interplanetary Initiative, and she is the principal investigator of the Psyche mission, which launches in 2022 to explore a unique metallic asteroid orbiting the sun between Mars and Jupiter. For these initiatives, she seeks people who are “synergistic and respectful and integrated and diverse” — including students. Elkins-Tanton is a Regents Professor.

“Empowering learners to be creators, not just consumers, of **immersive, interactive digital resources is a key next step in education technology.”**

— ARIEL ANBAR, PRESIDENT’S PROFESSOR,
SCHOOL OF EARTH AND SPACE EXPLORATION
AND SCHOOL OF MOLECULAR SCIENCES



Ariel Anbar is a President’s Professor at ASU’s School of Earth and Space Exploration and the School of Molecular Sciences. Among Anbar’s projects are efforts to create virtual learning experiences. A recent one is the creation of virtual field trips where students narrate their own place-based stories to motivate climate action.

“It’s exciting to be involved in **educational innovations that enable and foster critical thinking, case study and **discussion-based approaches that benefit learners.**”**

— SWAPNA REDDY, CLINICAL ASSOCIATE
PROFESSOR, COLLEGE OF HEALTH SOLUTIONS



Swapna Reddy is a clinical associate professor at ASU’s College of Health Solutions. She serves as faculty in Barrett, The Honors College (medical studies). Additionally, she is an adjunct assistant professor in Health Care Administration at Mayo Clinic Alix School of Medicine-Arizona. She recently was named a Fulbright Specialist.

“The goal is for students to **learn to think like biologists and **solve problems**, and **VR is the hook to make this happen.**”**

— MICHAEL ANGILLETTA, PRESIDENT’S
PROFESSOR AND ASSOCIATE DIRECTOR OF
LEARNING INNOVATION, SCHOOL OF LIFE
SCIENCES



Michael Angilletta is a President’s Professor and the associate director of learning innovation in the School of Life Sciences. His team focuses on the BioSpine Initiative to help personalize education and Dreamscape Learn, a partnership between ASU and Dreamscape Immersive combining Hollywood storytelling and cutting-edge technology to enable students to conduct collaborative research in a virtual world.



CARDINAL DIRECTIONS

A group of ASU architecture students recently had the opportunity to tour the new South Space at James Turrell's Roden Crater. The new space acts as a calendar for celestial movements and events related to this cardinal point and is constructed with white marble, stainless steel and silicon bronze. During the daytime, this space provides a panoramic vista of the Painted Desert surrounding the crater, located in Northern Arizona. In the evening, a seat in the lower level provides a view with an eyepiece, inclined at an angle of $35^{\circ}25'35''$ and focused on Polaris, the current North Star and the brightest star in the constellation of Ursa Minor.

Expand your mind



Faculty associate Amit Upadhye (top) and grad student Abdulaziz Abdullah S Alghamdi explore the South Space at Roden Crater.

Story power

Long-form storytelling, like film, is more popular than ever.

52

Including all who qualify

Architecture program reinvented.

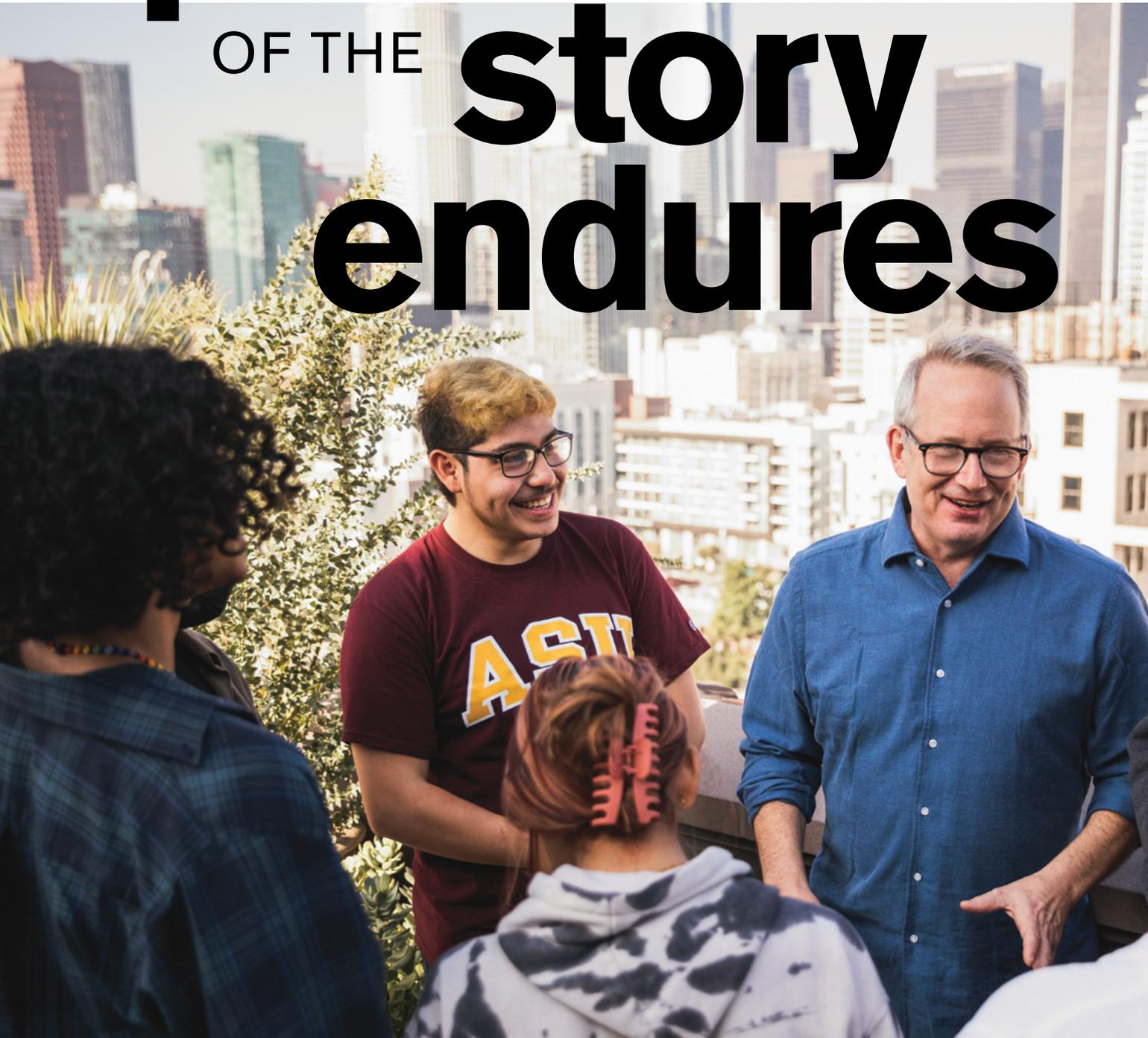
58

EXPAND

THE power OF THE **story** **endures**

Long-form storytelling, from film to streaming TV, continues to captivate audiences today

Story by MARCUS BARAM





Ted Hope (center) discussing the future of storytelling with Los Angeles-based students.

“We need folks with new perspectives, from diverse backgrounds, who have a wide variety of life experiences, who are aware of the play between disciplines.”

— TED HOPE, PROFESSOR OF PRACTICE
THUNDERBIRD SCHOOL OF GLOBAL MANAGEMENT

When Hollywood independent filmmaker Ted Hope, producer of more than 70 indie films and now a professor at ASU's Thunderbird School of Global Management, started shopping one of his first successful films, Ang Lee's "The Wedding Banquet" back in 1993, "no one initially wanted it," he recalls.

As a romance, the film followed the genre's formula but featured gay lead characters, was in Chinese and felt like a film from the 1940s. When it finally was picked up by the Samuel Goldwyn Company, it garnered rave reviews, became an audience favorite and won the top prize at the Berlin Film Festival. When Hope later asked the jury what they liked about the film, "They said that it's gay, Chinese and feels like a film from the 1940s," Hope says.



Reina Higashitani works on her film about a Japanese American family's resettlement years after WWII and their forced removal and incarceration.

That was one of the early lessons Hope learned as a filmmaker and artist: Stay true to the vision — when you do that, you will find an audience. Another learning that has driven Hope to produce films: Long-form storytelling matters.

Long-form storytelling's power

Sanjeev Khagram, director general and dean of the Thunderbird School of Global Management, recruited Hope to ASU from Amazon. There, Hope transformed Amazon Studios as co-head of movies where, among

his accomplishments, he led the streamer's entry into feature-film production and acquisitions. He greenlighted three Oscar winners, including "Sound of Metal," as well as the Oscar-nominated "Time." More recently, he shepherded through the new Adam Driver film, "Annette," which he calls "a super rare distinctive film by one of the great filmmakers of the world." This past summer, the movie won the best director award at Cannes for Leos Carax.

Hope currently is working on several new film productions and says that one thing remains the same over his entire career: Long-form storytelling, no matter whether in the form of a feature film or streaming series, remains as vibrant and popular as ever. The post-"Sopranos" explosion of high-quality bingeable television is one example. Another example of this popularity? During the pandemic, researchers found that the average American streamed eight hours of content per day and had logins for at least four streaming services.

One trick Hope's learned: "You have to keep them hooked in the first 11 minutes. After somebody's watched that much, they are supposedly much more prone to



"I still have that feeling whenever I go to a movie, no matter what I watch."

— REINA HIGASHITANI, A PROFESSOR IN THE SIDNEY POITIER NEW AMERICAN FILM SCHOOL

staying involved.”

Another reason for the enduring power of long-form storytelling, particularly film? It provides time to tell the story with nuance and complexity, which creates an immersiveness, says filmmaker Reina Higashitani, a professor in The Sidney Poitier New American Film School at ASU.

For Higashitani, the power of the story is what first inspired her. She still remembers the feeling of being mesmerized by “Star Wars” as a young girl in Japan and coming out of the theater determined to make movies. “I still have that feeling whenever I go to a movie, no matter what I watch.”

Storytelling taps into a human need

As researchers note, human brains are hard-wired with a need for stories, and not just any story, but ones that follow a specific age-old pattern. The formula: A protagonist who has a goal is challenged and tested along the way, and then experiences an emotional transformation and creates a new normal.

“In a two-hour movie like ‘John Wick,’ those things can be very basic,” says Peter Murrieta, two-time Emmy Award-winning producer and director in residence for The Sidney Poitier New American Film School. He contrasts it with a TV series like “Ted Lasso,” where the characters’ challenges get ever more complex and varied.

The lasting appeal of a great film became clear to Murrieta



5 reasons storytelling enthalls — and 3 tips for success

Some key reasons that long-form storytelling, like film, endures:

1. It follows an age-old pattern wired into the human brain: a protagonist who has a goal is challenged and tested along the way, and then experiences an emotional transformation. This also creates an emotional catharsis in the audience, explains Peter Murrieta, two-time Emmy Award-winning producer and ASU professor.
2. The story pulls the audience into a full sensory experience, says Reina Higashitani, a professor in The Sidney Poitier New American Film School at ASU.
3. It includes perspectives on life and struggles that people can empathize with, Murrieta says.
4. It entertains, says Higashitani, who vividly remembers seeing “Star Wars” as a young girl in Japan and being inspired to become a filmmaker.
5. It continues to evolve into new mediums and art forms, says producer and filmmaker Ted Hope.

How can storytellers make it more likely to get their movie, book, play or other project out into the world?

1. Stay true to the vision, Hope says.
2. Understand both the business side and the artistic side of the storytelling industries, Hope says.
3. Make the most of the fact that audience members want to see themselves reflected in stories, Higashitani says.

when his 18-year-old son recently asked to watch Paul Thomas Anderson’s “There Will Be Blood” together.

“He told me that there’s a video game inspired by it,” Murrieta says. “Someone was inspired by that movie enough to make a whole video game.”

Even today, eons into human storytelling, “I think we’re at a very early stage in storytelling,” Hope says, even though today’s stories use many of the same themes as tales told throughout human history. “How is the story different when it’s a game, a social network, a limited series, a documentary series, if it’s interactive?” he asks. “A lot has yet to be done.”

Ultimately, Hope says, long-form storytelling still wins the day with audiences, and allows the parsing of complex stories for streaming TV and many other immersive experiences.

Balancing art and business to bring projects to life

One reason Hope came to ASU is to help other creatives collaborate across disciplines and balance art with budgets, revenues and profits. A new program, the Master of Arts in Global Affairs and Management: Creative Industries, kicked off this past fall semester in downtown Los Angeles at the historic Herald Examiner Building. The program is powered by Thunderbird with support from the Herberger Institute for Design and the Arts.

“Hope will use his visionary storytelling talents and practical



Emmy award-winning producer and writer Peter Murrieta teaches at ASU in Tempe and Los Angeles.

and entrepreneurial experience to help us produce a graduate degree like no other in the world,” Khagram says. “It will also provide students invaluable insights into 21st-century creative processes and enterprises.”

Hope draws on his success selling “The Wedding Banquet” to Samuel Goldwyn Jr. as an example of what he hopes students will learn in the program.

“Goldwyn asked us: ‘Are you businessmen or are you artists?’ I said, ‘Both.’ And he said, ‘No, you have to choose.’”

Hope disagrees. Part of his success, Hope says, is his ability to straddle both worlds to showcase his artistic vision in the world. That financial acumen, combined with the ability to have creative collaborations with

“Most weekends, once it gets dark, there will be people sitting on bean bags watching a movie. And I’m upstairs looking out my window, and if I squint my eyes, it’s not that different than a campfire from who knows what era, surrounded by people telling a story.”

— PETER MURRIETA, DIRECTOR IN RESIDENCE, THE SIDNEY POITIER NEW AMERICAN FILM SCHOOL

many other people, is the key to a successful career in film, he says.

“We need folks with new perspectives, from diverse backgrounds, who have a wide



variety of life experiences, who are aware of the play between disciplines,” Hope says.

That’s why he helped to spearhead the program, intended for managers who want to learn creative competencies and for creatives seeking management expertise.

The magic of storytelling

In the end, the creative process is all about the story, whether screened in a theater, on a streaming service, on a phone or with a virtual reality headset.

“Stories give us knowledge, a sense of adventure, the feeling that we’re not alone,” Murrieta explains.

And often people want to experience those stories with other people. Murrieta recalls that during the pandemic, with movie theaters across the country shuttered, his neighbor popped up an inflatable screen in the front yard.

“Most weekends, once it gets dark, there will be people sitting on bean bags watching a movie,” Murrieta says. “And I’m upstairs looking out my window, and if I squint my eyes, it’s not that different than a campfire from who knows what era, surrounded by people telling a story.” ■

A photograph of Cheryl Boone Isaacs, a woman with dark, curly hair, wearing a black strapless dress with a silver zigzag pattern and a blue necklace. She is standing at a podium with a microphone, looking down. The background is a blue and white geometric pattern.

**“Sidney Poitier — the man,
the icon, the legend —
is my North Star.”**

— CHERYL BOONE ISAACS, FOUNDING DIRECTOR,
THE SIDNEY POITIER NEW AMERICAN FILM
SCHOOL, PICTURED AT THE 89TH ACADEMY
AWARDS IN LOS ANGELES

HOLLYWOOD EXPERIENCE

Renowned leader named founding director of film school

The university has added another well-known name to its film school. Highly respected American film marketing and public relations executive Cheryl Boone Isaacs leads The Sidney Poitier New American Film School as founding director.

With her decades on the front lines of the film industry, Boone Isaacs brings practical advice and leadership. She has worked on more than 300 movies and served four terms as president of the Academy of Motion Picture Arts and Sciences. During her 24 years as a board member, she served as president of the Academy Foundation, produced the academy’s 2012 Governors Awards and created accountable inclusion measures, including the goal of doubling the number of women and ethnically underrepresented members within four years.

Spike Lee told The New York Times, “Cheryl Boone Isaacs really made it her mission to open things up so that the voting body looked more like America.”

Visit film.asu.edu.



“We’ve rewritten the undergraduate course in architecture to be completely inclusive.”

— CATHERINE SPELLMAN, PROFESSOR OF ARCHITECTURE AND ASSOCIATE DIRECTOR OF THE DESIGN SCHOOL IN DESCRIBING THE REDESIGNED ARCHITECTURE PROGRAM

The “buildings” students mapped out on the field represent outdoor pavilions in a sculpture garden. Students learned to collaborate, organize a project and deal with on-site issues, like wind.



HANDS-ON LEARNING

Opening architecture to all who qualify

ASU's reimagined architecture program welcomed its largest first-year class this past fall — 330 students who are part of an innovative new way of teaching one of the most rigorous disciplines. “We’ve rewritten the undergraduate course in architecture to be completely inclusive,” says Catherine Spellman, professor of architecture and associate director of The Design School in the Herberger Institute for Design and the Arts. “It used to be that we had room for 45 students in the second year going forward, but we’ve rewritten the undergraduate BSD in architectural studies to accept everyone who has a 3.0 grade-point average.” In addition, the program employs innovative learning methods like a collaborative field project based on circles. The first-year class members were assigned to review a structure that’s round and redesign it in a computer program. Then they created 50-foot-wide designs on butcher paper and laid them on the Intramural Field on the Tempe campus. “They will carry this with everything else they do,” says Paola Sanguinetti, an architect and the new director of The Design School.

Learn more about architecture at design.asu.edu/degree-programs/architecture.



Kyla Roy, leading the pack in the national championship race in November 2021, is pursuing her master's degree in social work.

TEAM EFFORT

Swim, bike, run, win, graduate and get a master's degree

Sun Devil triathlon might be described as ASU's best-kept secret, and leading the way for the reigning national champions is Kyla Roy, '21 BSW in social work.

Roy, a USA Triathlon Collegiate Athlete of the Year, has propelled the ASU triathlon team into five consecutive national championship wins while boasting close to a 4.0 GPA.

She switched her major three times during her time as an undergraduate student before finding the right fit and earning her bachelor's degree in social work. But in the midst of change, the self-imposed standards remained the same.

"I always saw it as a challenge to get good grades," she says. She did so well, in fact, that she graduated before her eligibility for competition ended, completing her degree and being named a CTCA Academic All-American three years in a row. The team was recognized in 2021 by USA Triathlon, ranking first academically with the most Scholar All-Americans and a team average 3.88 GPA.



Play like a Sun Devil®

Sustainable sneaks

New shoe collaboration is good for body and Earth.

62

Legends of golf

Inductees into the LPGA Hall of Fame.

63

ADIDAS PARTNERSHIP

A sustainable leap forward

The new ASU Ultra 4D shoe released this past fall and made of 60% of high-performance recycled materials displays robust commitment to sustainability by ASU and adidas.

The updated version developed by creative teams at ASU and adidas has the look of the popular 2016 Ultra Boost 1.0 with the sustainable 4D technology of 2021.

The five-year partnership uses world-class resources from ASU in collaboration with the global power of adidas to provide research and innovation through the lens of sport.

"It's a very comprehensive partnership. It's not just uniforms on the field," says Becky Parke, Sun Devil Athletics senior associate athletics director for marketing. "They have a big focus on sustainability and that's a big thing for ASU as well. We go into every year and talk about our priorities, what the priorities are for them and how we can align."



The new ASU Ultra 4D shoe includes a midsole created with new 3D printing technology using light and oxygen. It has been precisely tuned for controlled energy return based on years of athlete data.

Green on and off the field

Sun Devil Athletics prides itself in aligning the department with the sustainable mission of ASU to minimize its carbon footprint. Since 2014, SDA has been a member of the Green Sports Alliance, the largest and most influential driver of social and environmental responsibility across the sports industry. Sun Devil Athletics has fully embraced the opportunity to advance sustainable practices as an institution and with fans.



LEED Gold certified, Sun Devil Stadium and the Butterfield Kent Furst Student-Athlete Facility incorporate architectural features that reduce energy use and environmental impact.



Zero waste efforts include all concession items in the stadium being compostable or recyclable.



Solar and shade structures are located at many facilities. Fans may also access EV charging stations.



Solar power is created and used by multiple facilities, including Desert Financial Arena.



Wrestling

Finding a niche, becoming a master

Sun Devil wrestler Anthony Valencia, '19 BA interdisciplinary studies, '21 Master of Liberal Studies (film and media studies), has been no stranger to praise and recognition. Over an illustrious four-year career, he has racked up four conference titles and two consecutive season All-American honors. His many awards and accolades are the product of a strong work ethic and a regimented training schedule. But one of Valencia's greatest achievements was not even part of his plan.

As he was flying through his summer school classes, Valencia's academic coach

informed him he was ahead of schedule. He was told he could either slow down and add electives, or speed up his pace and begin his master's degree program.

"I decided I might as well get my master's degree," he says. "I still had a few years left so I might as well continue my education, go further in that, and continue competing."

Valencia was a self-described "average student" in high school, but flipped the script once in college. He attributed the shift to a more independent routine along with interesting coursework.

"I think discipline is the biggest key," Valencia says. "Since I worked on my discipline in my schoolwork and in my training, that automatically elevates me. And I feel like it's prepared me for future endeavors."

As a redshirt senior in 2020–21, Valencia started ranked top-five in three of four preseason polls and posted a 10-0 regular season record, tying for the team lead in pins. He defeated the No. 1 ranked wrestler in the Pac-12 Championship finals to become the fourth ASU wrestler to win four conference titles.

Women's golf

Three Sun Devil legends honored in LPGA Hall of Fame class

Legendary Sun Devil women's golf Head Coach Linda Vollstedt has been officially inducted into the LPGA Professionals Hall of Fame. Vollstedt, Debbie Crews and Kathy Murphy were honored in the 2020 Hall of Fame class. After 38 years of service to the LPGA, Vollstedt is recognized as one of the most significant contributors to the sport. During her tenure as the Sun Devil women's golf coach from 1980–2001, Vollstedt built ASU into the top collegiate program in the country.

Keep up with Sun Devil Athletics news and videos at thesundevils.com.



1946



1951



1965



1970



1977



1985

SUN DEVILS

75 years of Sparky

On a clear, sunny day in 1946, Arizona State College track coach Donn Kinzle was on an early morning run along the Salt River bed. A dust devil materialized, swirling and dancing above the sand and rock. At that instant, the idea for the Sun Devil was born. More Hot Stuff than Mephistopheles, ASU's mascot turned 75 this past November. Dancing, prancing, crowd-surfing and crowd-pleasing, the pitchfork-wielding imp looks a lot different after seven and a half decades — who doesn't? — but he's passionately loved by his maroon and gold fans.



2002



2009



2013



2016

Support ASU[®] with every swipe!

*Each purchase made with your ASU[®] Debit or Credit Card triggers a MidFirst donation to ASU[®]. Over the past **10** years, MidFirst has contributed more than **\$4.6 million** for special initiatives and scholarships, and for student, employee and alumni programs.*



MidFirst Bank is proud to be the official banking partner of Arizona State University[®] and the exclusive provider of the ASU[®] Visa[®] Debit and Credit Cards.



 **MIDFIRST BANK**

888.MIDFIRST (888.643.3477) • midfirst.com/asu

Member FDIC

\$1 billion and counting

Skysong Innovations just eclipsed \$1 billion in total investment for the startups turning ASU research into real-world products. So, what's next? Next is the impact:

NeoLight – technologies that treat infants with life-threatening medical conditions.

SOURCE Global – using solar energy to produce potable water anywhere.

Dozens more startups like these are creating high-wage jobs for Arizonans and improving lives around the world.

ASU Professor Grant McFadden created an engineered virus that attacks cancer cells. He co-founded OncoMyx Therapeutics to bring the treatment to market with support from Skysong Innovations.

