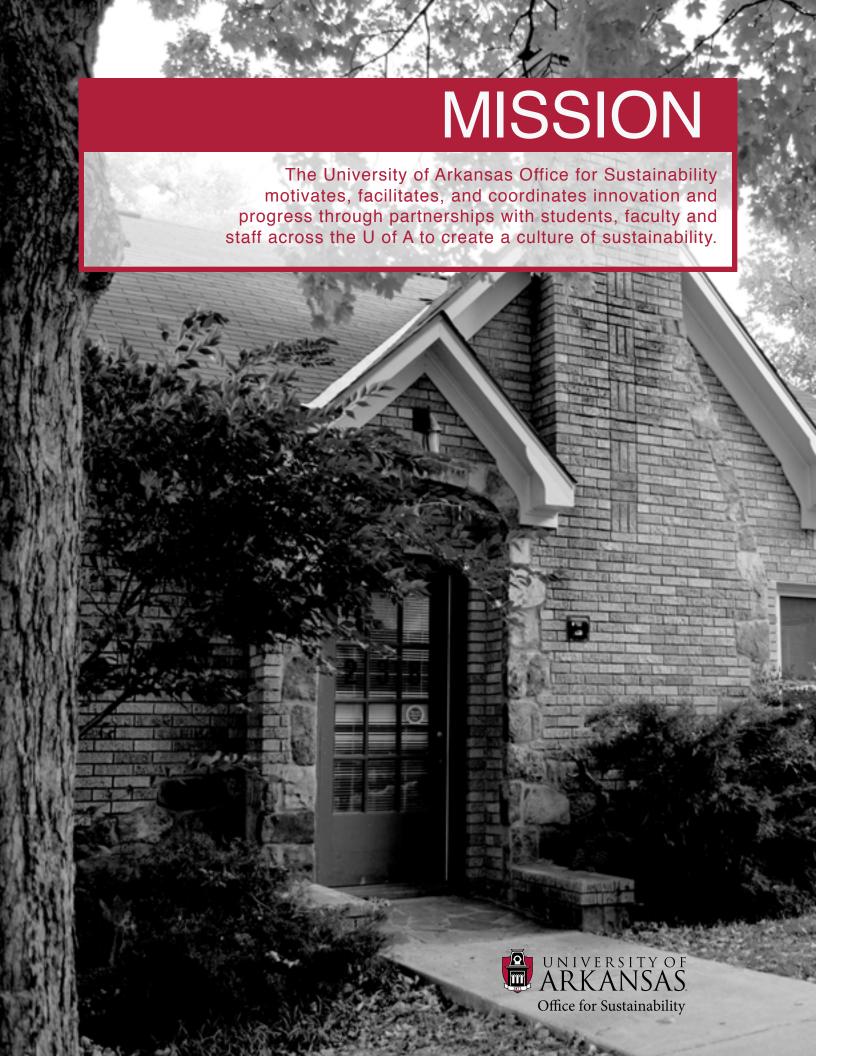
University of Arkansas Office for Sustainability





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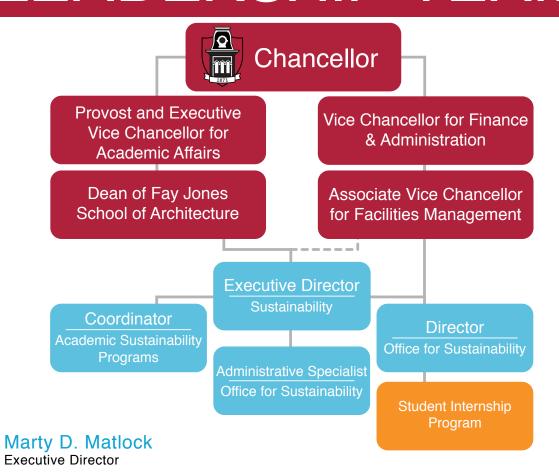
# RECOGNITION







# LEADERSHIP TEAM



Marty Matlock is executive director of the UofA Office for Sustainability and a professor in the Biological and Agricultural Engineering Department at the University of Arkansas. The focus of Dr. Matlock's research is developing metrics that inform best management practices, ecological services restoration, ecological risk assessment, and life cycle assessment of supply chain systems.

#### Eric C. Boles

#### Director

Eric Boles is director of the UofA Office for Sustainability and executive secretary of the UofA Sustainability Council. Eric is the co-founder of Paradigm Sustainability Solutions, which assists organizations with sustainability planning. He takes great pride in helping organizations acknowledge the importance of social, economic, and environmental sustainability.

### **David Hyatt**

#### Academic Programs Coordinator

David Hyatt is the coordinator of Academic Sustainability Programs and a clinical assistant professor at the University of Arkansas's Sam M. Walton College of Business. Dr. Hyatt's primary research concerns sustainability in global supply chains, and when, how, and why nonprofits and businesses collaborate to solve issues of the natural environment.

# INTERNS

### **GRADUATES**

Brandon Wayerski — Business Administration Todd Hansen — Architecture

### **SENIORS**

Chandler Buckingham — Environmental Soil and Water Science

Lillian Hay — Graphic Design and Drawing

Grant James — Finance, Sustainability Minor

Brittany Jurgens — Biology

William Woodward — Mechanical Engineering, Computer Science Minor

Deanna Mantooth — Geology

### **JUNIORS**

Olivia Morgan — Psychology, Indigenous Studies Minor

Linden Cheek — Biological Engineering, Sustainability Minor

Lydia Campbell — Civil Engineering

Fischer Jones — Finance

Ryan Clark — Biological Engineering, Sustainability Minor

Yvonne Ngome — Biology

Hannah Saunders — Music

Jack Scaccia — Finance

Samuel Lahodny — Biological Engineering



# FACULTY

More than 40 faculty members are engaged in sustainability research and education at the University of Arkansas. This is not a comprehensive list; in many ways the challenges of sustainability are core to the mission of a land grant university, engaging almost every faculty research and teaching program.

### Dale Bumpers College of Food, Agriculture, and Life Sciences

Kristophor Brye, Ph.D. Crop, Soils and Environmental Sciences

Zola Moon, Ph.D. Sustainability Program and Human Environmental Sciences

Lanier Nalley, Ph.D. Agribusiness and Agricultural Economics

Jennie Popp, Ph.D. Agribusiness and Agricultural Economics

Curt Rom, Ph.D. Horticulture

Mary Savin, Ph.D. Crop, Soils and Environmental Sciences

Thad Scott, Ph.D. Crop, Soils and Environmental Sciences

Andrew Sharpley, Ph.D. Crop, Soils and Environmental Sciences

Kate Shoulders, Ph.D. Agricultural Education, Communications and Technology

### Fay Jones School of Architecture and Design

Noah Billig, Ph.D. Landscape Architecture Phoebe Lickwar, M.L.A. M.Ed. Landscape Architecture

Carl Smith, Ph.D. Landscape Architecture

Ken McCown, MS-Arch Landscape Architecture

Steve Luoni, MS-Arch Community Design Center

Peter MacKeith, MS-Arch Architecture

Alison Turner, MS-Arch Architecture

### School of Law

Nicole Civita, J.D. School of Law Uché Ewelukwa, S.J.D. School of Law Sara Gosman, J.D. School of Law Janie Hipp, J.D. School of Law Don Judges, J.D. Ph.D., School of Law Christopher Kelley, J.D. School of Law Susan Schneider, J.D. School of Law

### J. William Fulbright College of Arts and Sciences

Myria Allen, Ph.D. Communications

Robert Coridan, Ph.D. Chemistry and Biochemistry

Jackson Cothren, Ph.D. Geosciences

Ralph Davis, Ph.D. Geosciences

Sean Dempsey, Ph.D. English

Marlis Douglas, Ph.D. Biological Sciences

Michael Douglas, Ph.D. Biological Sciences

Michelle Evans-White, Ph.D. Biological Sciences

Kevin Fitzpatrick, Ph.D. Sociology and Criminal Justice

Rocio Gomez, Ph.D. Latin American History

Warren Herold, Ph.D. Philosophy

Kusum Naithani, Ph.D. Biological Sciences

David Stahle, Ph.D. Geosciences

J. D. Willson, Ph.D. Biological Sciences

### College of Engineering

Andrew Braham, Ph.D. Civil Engineering

Brian Haggard, Ph.D. Biological and Agricultural Engineering

Jamie Hestekin, Ph.D., P.E. Chemical Engineering

Alan Mantooth, Ph.D., M.S.E.E. B.S.E.E. Electrical Engineering

Marty Matlock, Ph.D., P.E., B.C.E.E. Biological and Agricultural Engineering

Darin Nutter, Ph.D., P.E. Mechanical Engineering

Scott Osborn, Ph.D., P.E. Biological and Agricultural Engineering

Benjamin Runkle, Ph.D., P.E. Biological and Agricultural Engineering

Greg Thoma, Ph.D., P.E. Chemical Engineering

Wen Zhang, Ph.D., P.E. Civil Engineering

Jun Zhu, Ph.D., P.E. Biological and Agricultural Engineering

### Sam M. Walton College of Business

Amy Farmer, Ph.D. Economics

David Hyatt, Ph.D. Supply Chain Management

Jon Johnson, Ph.D. Management

Gary Peters, Ph.D. Accounting

Mathew Waller, Ph.D. Supply Chain Management

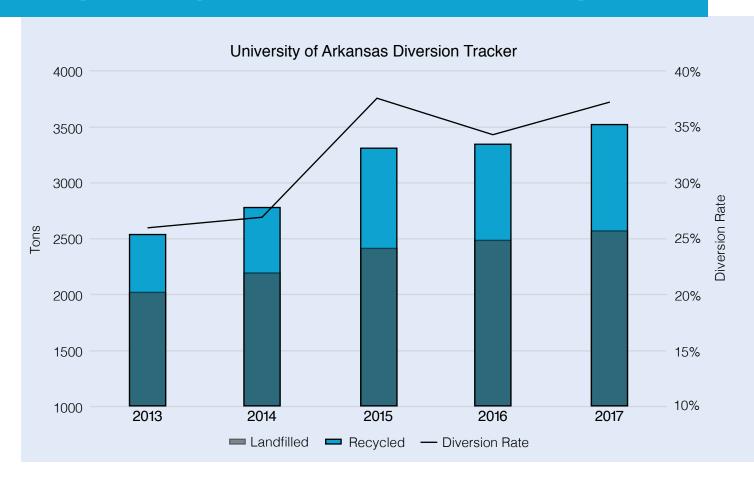
# **ZERO WASTE**

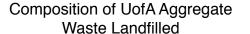
In 2017, the University of Arkansas established a benchmark goal to attain a 50% diversion rate by the year 2021. This is an achievable increase from the current campus diversion rate of approximately 30%, however, achieving the upcoming 2021 goal will require continued innovation and commitment to waste aversion and diversion strategies. Moving forward, these strategies will focus on purchasing items of recyclable and reusable materials for on-campus sale and use, as opposed to disposable materials such as polystyrene. Such efforts could significantly increase our rate of diversion of waste from landfills. Highlights in waste reduction efforts over the past year include the establishment of composting within campus dining halls, the Athletic Program's continued dedication to the Game Day Challenge competition, and the amazing food repurposing efforts of Razorback Food Recovery. The campus diversion rate benchmarks have the support of the UofA community from top to bottom, and are as follows:

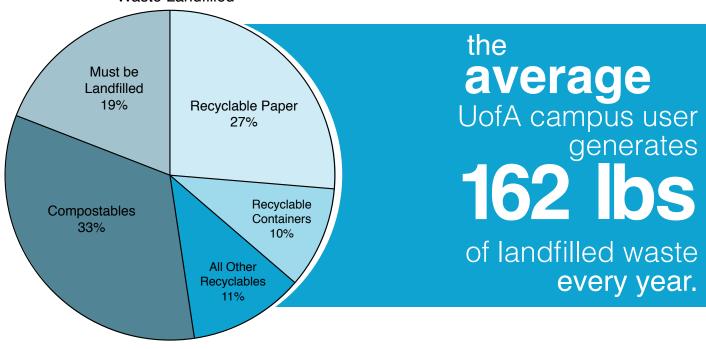
2021: 50% diversion from landfill 2027: 70% diversion from landfill 2040: 90% diversion from landfill



# ON OUR CAMPUS









50% diversion rate by

2021

landfill.

Mid-Term Goal

Razorback Food Recovery

70% diversion rate by 2027, in alignment with the City of Fayetteville's goal

Razorback Food Recovery (RFR) has proven itself as a major method of combating both food waste and

food insecurity. RFR volunteers work with Chartwells, the UofA's food provider, to recover food from

campus restaurants and cafeterias. This food is separated into individual, freezable meals that are then given to community partner agencies who distribute it to the food insecure members of our community. This results in free, healthy meals going to people who need them and a lot less good food ending up in the

This May, RFR announced that they officially recovered 100,000 lb of food – enough to feed 27,750 people with three full meals. Not only has this food been prevented from going to waste, but it has been distributed - free of charge - to those in need. Additionally, the effects of RFR's efforts are expanding far beyond NWA. The RFR team has developed a food recovery model and training program to help other colleges and universities establish their own pantries and food recovery projects. To get involved, go to service.uark.edu.



90% diversion rate by 2040, in alignment with the UofA's carbon neutrality goal



100,000









Razorback Food Recovery has recovered and redistributed over 100,000 lbs of food.



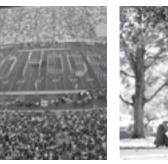












Food Recovery Hierarchy

**Source Reduction** 

Feed Hungry People

**Feed Animals** 

**Produce Energy** 

Compost

Landfill





# Chartwells Composting Program

In 2017, Chartwells established a permanent composting program to process the food waste from the Fulbright, Pomfret, Union, and Brough cafeterias. This program was based off of the composting pilot conducted in 2016. Currently, Chartwells is recovering the food waste from prep and post-consumption waste. This food waste is kept in compost bins until it is collected by the City and taken to the City composting facility. Students and faculty can help this composting program be a success by not placing any contaminating materials into the compost holding bins. The materials that can be composted are shown on an infographic on the their lids.

69 Tons

The UofA recovered 69 tons of food waste as part of their new composting partnership.























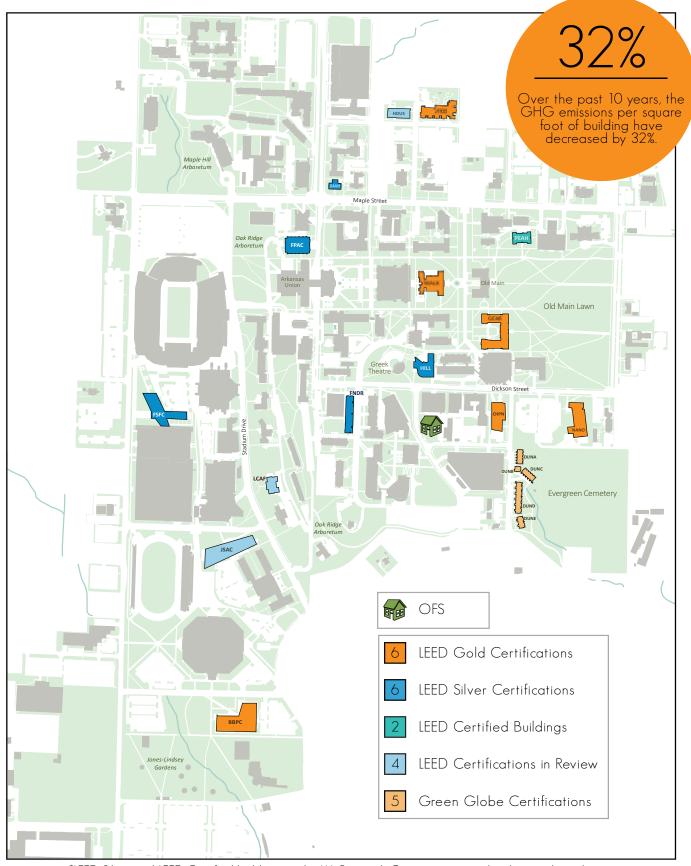




# **CARBON NEUTRAL**

The University's formal path toward carbon neutrality began in February 2007 as the UofA was among the first institutions in the nation to sign the American College & University President's Climate Commitment, a pledge to become Climate Neutral by 2040. The UofA proved its commitment to this pledge by ratifying a Climate Action Plan (CAP) in 2009 and investing over \$50 million in Energy Saving Performance Contracts. In 2014, the UofA successfully acheived the first CAP benchmark by reducing to 1995 levels of emmisions. In December 2015, the University of Arkansas took another leap towards sustainability and carbon neutrality by adopting the Second Nature Climate Leadership Commitment, which encompasses both carbon and resiliency goals. Next, the Combined Heat and Power System was completed, reducing campus emmisions by 20%. This, in conjunction with campus wide sustainability initiatives, led to the 2017 designation of a Gold rating by AASHE STARS an internationally recognized standard of sustainability. This milestone was accompanied by the impressive acheivment of meeting the CAP mid-term goal of reducing to 1990 emmision in 2017, four years before the stated 2021 goal. Achieving carbon neutrality at the UofA by 2040 will require continued cooperation and support by students, faculty, and staff as they make wise choices regarding their energy usage, purchasing habits, and transportation.





\*LEED Silver and LEED Certified buildings at the UA Research Center are not within the map boundaries.



Reduce to 1995

levels by 2014;

163,000 metric tons

**lid-Term Goal** 

Reduce to 1990 levels by 2021; 125,000 metric tons

### Long Term Goal

Achieve net zero carbon emissions by the year 2040











### Distribution of Emissions by Source

### Scope

Combined Heat & Power Other On-Campus Stationary Campus Vehicle Fleet

> Landfill Emissions Paper Purchases

Commuting & Business Travel

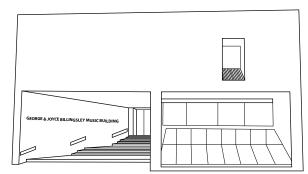
Purchased Electricity

32%

# Green Revolving Fund

The mission of the University of Arkansas Green Revolving Fund (GRF) is to facilitate interdisciplinary collaboration through student-led initiatives that demonstrate economic benefit and environmental leadership. The GRF provides financing for efficient, sustainable, and cost-savings projects. These savings are tracked and used to replenish the fund to help finance additional projects.

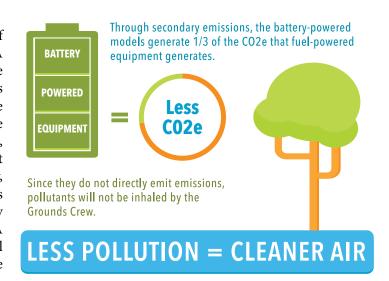
### LED Bulb Swap



The Green Revolving Fund recently provided funds for the Billingsly Music Building to be completely illuminated by LED lights. The new lights will reduce both energy consumption and associated expenses by over 60%. The project was proposed by UofA students Brittany Jurgens and Grant James who demonstrated the project's economic viability and environmental responsibility. The materials and labor associated with the installation have a simple payback period of 3.3 years with an annual return on investment of 22%. Over the lifetime of the installation, an estimated 840 metric tons of carbon dioxide will be abated. This project could foreshadow additional transitions of UofA buildings towards high efficiency LED fixtures.

### Grounds Crew Goes Green

The GRF was used to fund the purchasing of electric leaf blowers to be used by the UofA groundskeepers. The OFS determined that the old gas blowers were emitting dense emissions due to their E10 blend fuel. These emissions have negative health impacts when inhaled by the operators and UofA community. In comparison, the battery powered blowers do not directly emit any CO2e or pollutants during use. Additionally, the OFS found that the battery powered blowers were more economically and environmentally viable than their gas counterparts. The UofA purchased battery powered blowers in the Fall of 2017 and have established plans to purchase battery powered trimmers in the Spring of 2018.







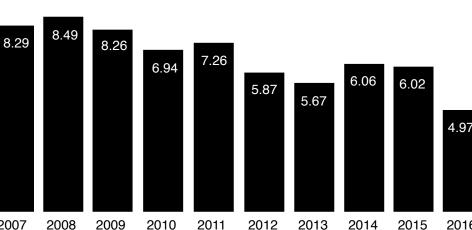


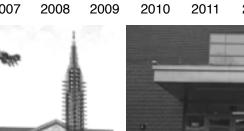




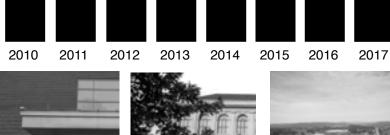


## **Annual Tons of Greenhouse Gasses** per University of Arkansas Student

















# BIKES ON CAMPUS



As part of the effort to improve the quality of life for campus members and reduce scope 3 emissions, the University of Arkansas has been planning and deploying more pedestrian and bicycle friendly infrastructure and programming. In late 2016, the University was awarded as a Silver Bicycle Friendly University by the League of American Bicyclists. This was a leap forward from the UofA's 2014 application which only received Honorable Mention. Applications are scored across five "E" categories by a review team comprised of league staff, local cyclists and outside experts. Examples of characteristics for a silver rating include:



### **ENGINEERING**

Campus has made a significant investment in its bicycle facilities and has invested in making the streets around the campus bicycle friendly. Engineering standards meet the currently recognized safety standards.



### **EDUCATION**

Bicycling educational materials are provided to all students, staff, and faculty. Safety classes are offered on a regular basis, and the campus actively promotes safe bicycling. Each fall semester kicks off with a bike safety block party.



### **ENCOURAGEMENT**

Campus has an on-campus bike shop and a bike-share program. Each spring the Office for Sustainability partners with UREC Outdoors and other bicycle advocacy groups to host a bicycle festival.



### **ENFORCEMENT**

Officers are familiar with laws relating to bicyclists and work with the bicycling community on campus to disseminate safety information to motorists and cyclists. Some officers are patrolling on bikes and provide safety outreach on-bike.



### **EVALUATION**

A significant percentage of students, faculty and staff bike to campus more than twice a week. Goals have been set for campus-wide bike use.



### UofA Delegates Study Effective Bicycling Infrastructure

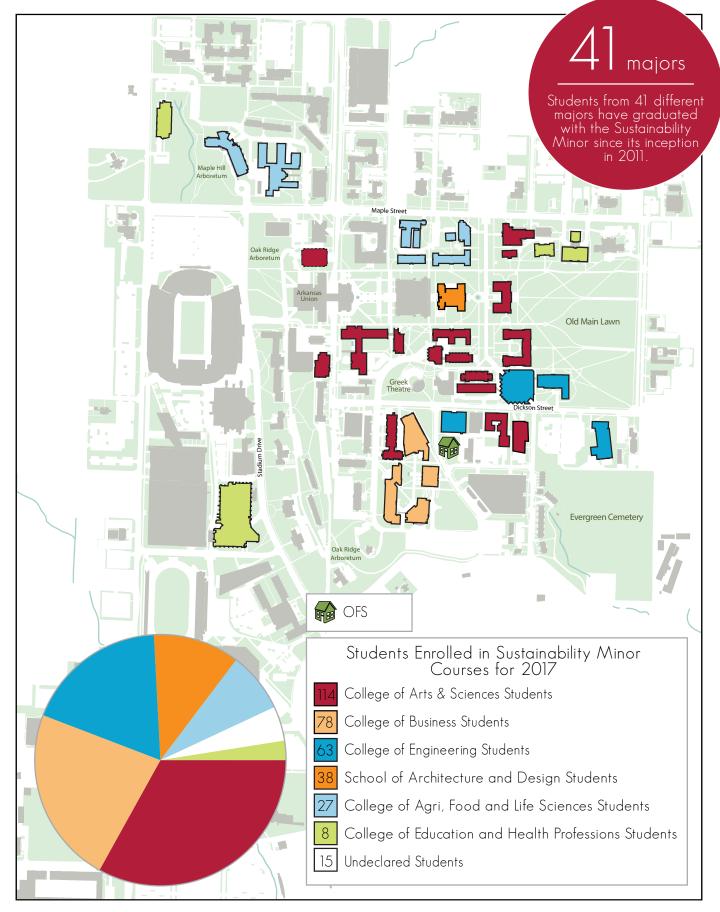
In October of 2017, five representatives from the University of Arkansas traveled to Colorado along with other delegates from northwest Arkansas as participants in BikeNWA's Bicycle Friendly University Study Tour. The tour took place at Colorado State University at Fort Collins and the University of Colorado at Boulder, which are classified as Platinum and Gold Bicycle Friendly Universities (BFU), respectively, by the League of American Bicyclists. During the tour, delegates met with university and city staff to discuss how their vision of a bike-friendly community was made a reality. They also experienced first-hand the thriving cycling cultures in Fort Collins and Boulder through a multitude of bicycle tours. The City of Fayetteville and UofA delegates plan to work in conjunction to develop the biking infrastructure within the city and the university, integrating the two systems to make Fayetteville an eminently bikeable city.



# ACADEMIC PROGRAMS

Sustainability academic programs at the University of Arkansas are growing to accommodate the increased interest in sustainability issues across our campus, community, and nation. The goal of the University of Arkansas Sustainability Program is to become a global leader in sustainability education, knowledge generation, and outreach. The last five years have seen progress with the addition of the undergraduate minor, graduate certificate, and a number of successful summer Research Experience for Undergraduate (REU) programs. The sustainability minor has consistantly been rated as one of the top 10 undergraduate minors as students from an ever wider collection of majors and disciplines choose to add a focus on sustainability to their academic path.





# SUSTAINABILITY MINOR

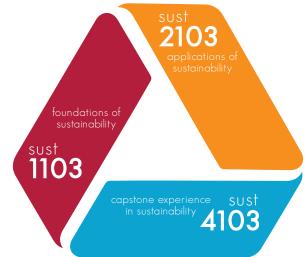
The UofA sustainability minor requires three core courses in addition to three elective courses from a portfolio of almost 100 technical electives within a broad range of disciplines. The core courses, Foundations of Sustainability (SUST 1103), Applications of Sustainability (SUST 2103), and Capstone Experience in Sustainability (SUST 4103), provide a common body of knowledge for students to approach sustainability. The elective courses are designed to be major specific, allowing students to explore how sustainability principles are relevant to their particular career path and field of study. The sustainability minor has consistently ranked among the top 10 most popular minors at the University of Arkansas.

The three required sustainability minor courses are:

SUST 1103
Foundations of Sustainability

SUST 2103 Applications of Sustainability

SUST 4103
Capstone Experience in Sustainability



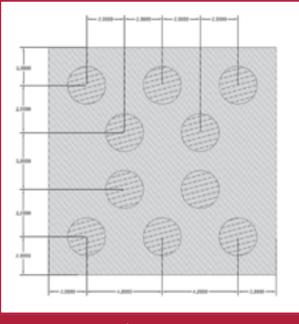
# Sustainability Graduate Certificate

The University of Arkansas Graduate Certificate in Sustainability is open to any student admitted to the Graduate School and is achieved by completing one required course and four electives from a variety of disciplines. The graduate certificate was created in 2012 to provide an opportunity for graduate students and working professionals to expand their competency in the science of sustainability.

# **EcoREU Program**

For the past eight years, the UofA has hosted an Ecological Research Experience for Undergraduates (EcoREU) program. The program has two focuses: sustainable agricultural systems funded by the United States Department of Agriculture (USDA) and sustainable management and assessment of ecosystem services funded by the National Science Foundation (NSF). In the summer of 2016, EcoREU undertook a continuing project in partnership with the UofA Community Design Center (UACDC) to meet the Hawaii Department of Agriculture's Agribusiness Development Corporation (ADC)'s request for help in their Whitmore Food Hub. The agricultural facility in Whitmore, Oahu aims to transform a former Dole plantation facility into a high-tech facility designed to support local farmers.

# CAPSTONE PROJECTS



Design of growing medium block for vertical greenwall

**Project:** Adaptable Micro Housing Unit **Student:** Carla Chang Mata

**Department:** Fay Jones Architecture

Houses have become astonishingly large and expensive resulting in unnecessary material use and an associated carbon footprint increase. To address this, Carla Chang Mata from FJSoA+D designed a prototype 288 ft2 living unit with transformable and adaptable components that fulfill all the basic requirements of housing. This unit was designed to be part of a collection of units with shared amenities. Shared amenities encourage a sense of community, an element necessary for a sustainable society. This configuration provides a living unit that challenges the current social paradigm in favor of an alternative that ensures a high quality of life while also being economically and environmentally responsible.

**Project:** Vertical Hydroponics Design for

Brightwater Culinary School

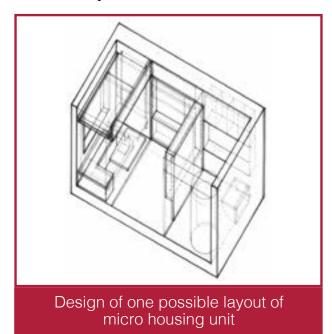
Students: McKenna Belcher, Linden

Cheek, Ryan Clark

**Department:** Biological and Agricultural

Engineering

Brightwater Culinary School approached the UofA's Office for Sustainability to create a visually appealing, efficient hydroponic system for display within the school. The design was completed by McKenna Belcher, Linden Cheek, and Ryan Clark, a team of biological engineering students. Hydroponic gardens have many assets that make them highly sustainable. Compared to traditional agriculture, hydroponic systems use less water, generate less waste, produce a more reliable crop, and produce a higher yield. The designed wall incorporated additional sustainable components, including LED lights with a low voltage and compostable planting pods. The presence of this hydroponics wall within Brightwater will expose the students, faculty, staff, and visitors to this sustainable model of food production.



# SUSTAINABILITY EVENTS

A truly sustainable and resilient campus can only be achieved by a united community effort that spans through out students, faculty, staff and even the surrounding residents of Fayetteville. The Office for Sustainability (OFS) is dedicated to fostering and enhancing these vital connections within the campus and city community and seeks to reinforce them through events hosted on campus. Exploring new ways of thinking about common problems is essential to creating a culture of innovation. As such, the OFS hosts events that bring diverse groups of people together, focusing on integrating social connections with education on the science of sustainability.



# MONTHLY THEMES

### JANUARY







#### **APRIL**







### JUNE



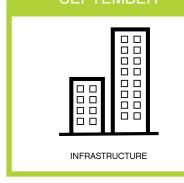
### JULY



### AUGUST



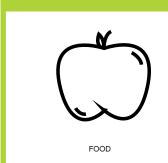
#### SEPTEMBER



### **OCTOBER**



### NOVEMBER



### DECEMBER



# **SPRING**

### Earth Week

The 2017 Earth Week, from April 18th through the 22nd, was the most extensive sustainability event ever hosted at the University of Arkansas. The celebration was integrated into the entire week with different activities featured on each day. The activities were designed to reach a broad demographic, offering education, service, and entertainment opportunities.

#### Watermelon Kickoff

OFS and UP teamed up to distribute watermelon slices to students and faculty to raise awareness of Earth Week.

#### Yoga Session

Students were encouraged stop by the south terrace of the Union for yoga with Fayettechill.

#### Pitch the Bottle

Students joined ASG to "Pitch the Bottle" as they recycled in the outfield of the Razorback baseball game at Baum Stadium.

#### Capstone Poster Display

Posters of Student Sustainability Capstone All Week - Project Clean Plate Projects were displayed in the Union during two receptions where students answered questions about their projects.

#### Film Screening: Before the Flood

Leonardo DiCaprio's film Before the Flood was screened at the Union Theatre, hosted by ASG and the OFS.

#### Campus Cleanup

Campus members teamed up with the OFS to walk around campus and pick up trash.

### **Block Party**

The community, campus organizations, and local businesses came together to share a common interest in sustainability with food, live music, good people, and great conversations.

Volunteers encouraged dining hall patrons to only take as much food as they could eat - and give a "clean plate" back to the dish return.



# **FALL**

## Law Symposium

This year's Arkansas Law Review symposium was titled Environmental Sustainability and Private Governance. The symposium featured panel discussions with nationally known experts, including fifteen guest scholars along with University of Arkansas faculty members. Throughout the symposium these experts explored the private standards and initiatives used by businesses, non-profits, and other non-governmental organizations to address environmental issues and promote sustainability. Panel I focused on Governance Themes, Panel II on Energy and Climate Change, Panel III on Retail and Supply Chain Management, and Panel IV on Agriculture and Food. The symposium was free to the public and well attended.



# Bike Safety Block Party

In the Fall of 2017, the UofA marked its commitment to a campus biking culture by abolishing the "Walk-Only" zone. However, the UofA also realized that enouraging increased ridership must be partnered with encouraging safe biking behavior. To get that message across - and to celebrate bicycling - the OFS hosted a Bike Safety Block Party on August 31. The party featured free food, games and prizes, and several local bike organizations who performed free bike maintenance and offered valuable bike safety information.

### Film Screenings

The OFS hosted film screenings of documentaries focused on communicating sustainable and environmental themes. This included Food Evolution, a documentary that provides an evidencebased analysis of the benefits and challenges of genetically-modified foods and examines the controversy surrounding them in the current global context. The OFS also screened An Inconvenient Sequel, a film designed as a call to action for the public to support climate conservative policy.

# LOOKING FORWARD

In July 2017 the Fay Jones School of Architecture and Design became the host of the interdisciplinary sustainability programs at the University of Arkansas. As the Fay Jones School Dean, I am proud of what we have accomplished over the past year and even more excited about our opportunities for 2018. As a school of design in a Land Grant Institution, and as the only architecture school of professional design programs in Arkansas we bring design to those who need it the most but can least afford it. Our faculty teaches young professionals to design at the level of the spaces we occupy, the buildings that house those spaces, the communities that reflect and reinforce our values, and the landscapes that support human prosperity. Our design professions are rapidly evolving to respond to the complexity of the rapidly changing world we share. We design at the nexus of the humanities and technology; our goal is to engage our entire academic community to integrate design thinking with the wisdom of many disciplines, from the arts to zoology.

During Earth Week in 2018, we will launch the University of Arkansas Resiliency Center as the coordinating unit for sustainability activities across campus. The mission of the University of Arkansas Resiliency Center is to inspire current generations to better understand the interconnectedness of economic, social, and environmental systems. We hope to integrate this understanding into knowledge and technological innovation through interdisciplinary research, and, ultimately, aim to transform the global systems our prosperity depends on by making them more resilient and sustainable.

The Resiliency Center will support new graduate programs focusing on resiliency such as the new Fay Jones School Masters of Design degrees beginning in the fall of 2018. The Resiliency Center's focus will be to expand understanding of the resilient elements of food, water, and urban systems that support economic and social prosperity. The Resiliency Center will serve as a focal point for investigating new ways to quantify complex local-to-global processes that govern food, water, and urban systems. We will achieve this goal by coordinating interdisciplinary education, research, and outreach in food, water, and urban systems.

The global challenges facing humanity's food, water, and community systems require sustainable yet resilient solutions. Design thinking gives us new ways of visualizing our common future as we create more resilient systems for food, water, and communities. Our future will be how we design it.

Peter MacKeith
Dean of the Fay Jones School of
Architecture + Design



# HOW YOU CAN HELP

### GO VOTE

public policy has a larger impact than individual effort

Tips: Voting goes beyond presidential elections. Get involved in midterm elections and local politics. Every purchase you make is a vote for what you care about.

#### **CHECK YOUR THERMOSTAT**

educe heating and cooling emissions and costs

Tips: Turning down the intensity on nights, weekends, and holidays has a measurable impact.

#### Reduce

avoid unnecessary waste and impact

Tips: Choose to reduce, repair or reuse rather than replace when possible.

### **CLEAN YOUR PLATE**

eliminate food waste

Tips: Get less than you think you can ea at the dining hall. You can always go back for more.

#### **HELP OTHERS**

volunteering fosters empathy and understanding

Tips: Not everyone has the same opportunities. Lend a helping hand at https://service.uark.edu

