AS DEAN OF ENGINEERING, I am proud to present the 2016 Fact Book. This collection of data portrays who we are as a college and illustrates our role as part of a land grant university. Organized according to the objectives of our strategic plan, it presents the metrics we use to track our progress toward our goals. Not only does this document allow us to be transparent and accountable to our stakeholders, it tells our story. You can see where we have been, what progress we have made and how we are working to prepare our students, faculty, staff and alumni for tomorrow.

John R. English
Dean, College of Engineering
Professor of Industrial Engineering
Irma F. and Raymond F. Giffels Endowed Chair in Engineering
College of Engineering
2016 Fact Book


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**Fall 2016 Total Enrollment**

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>22,548</td>
</tr>
<tr>
<td>Graduate</td>
<td>4,275</td>
</tr>
<tr>
<td>Law</td>
<td>371</td>
</tr>
<tr>
<td>Total Enrollment</td>
<td>27,194</td>
</tr>
</tbody>
</table>

**University of Arkansas Fall 2016 Enrollment** *(Degree Seeking Only)*

<table>
<thead>
<tr>
<th>School</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing Education (correspondence only)</td>
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</tr>
<tr>
<td>School of Law</td>
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<tr>
<td>Graduate School</td>
<td>7,932</td>
</tr>
<tr>
<td>Interdisciplinary</td>
<td>5,500</td>
</tr>
<tr>
<td>Sam M. Walton College of Business</td>
<td>4,285</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>6,132</td>
</tr>
<tr>
<td>College of Education and Health Professions</td>
<td>265</td>
</tr>
<tr>
<td>J. William Fulbright College of Arts and Sciences</td>
<td>371</td>
</tr>
<tr>
<td>Fay Jones School of Architecture</td>
<td>67</td>
</tr>
<tr>
<td>Dale Bumpers College of Agricultural Food and Life Sciences</td>
<td>67</td>
</tr>
</tbody>
</table>

**Total Students**

- Undergraduate: 22,548
- Graduate: 4,275
- Law: 371
- Total Enrollment: 27,194
University of Arkansas Rankings*

* Source: U.S. News and World Report

- National University Rank
- Public University Rank

Dale Bumpers College of Agricultural Food and Life Sciences
Fay Jones School of Architecture
J. William Fulbright College of Arts and Sciences
College of Education and Health Professions
College of Engineering
Sam M. Walton College of Business
Graduate School Interdisciplinary
School of Law
Continuing Education (correspondence only)

* Includes engineering students enrolled in interdisciplinary programs.

**Total undergraduate enrollment is up 1.4 percent over 2015.**

Since 2007, undergraduate enrollment has more than doubled.

We have **756 new freshmen** for 2016.

Our 2016 freshman class is **24 percent female**, The total percentage of female undergraduates is at a record high at **23.4 percent**.

Underrepresented students—**female, minority and first generation college students**—make up **52 percent** of the freshman class.

<table>
<thead>
<tr>
<th>Enrollment Type</th>
<th>Number</th>
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<tbody>
<tr>
<td>Undergraduate</td>
<td>3,311</td>
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<tr>
<td>Graduate*</td>
<td>993</td>
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<tr>
<td><strong>Total Enrollment</strong></td>
<td><strong>4,304</strong></td>
</tr>
</tbody>
</table>

* Includes engineering students enrolled in interdisciplinary programs.
Fall 2016 Undergraduate Enrollment by Department*

- Biological and Agricultural Engineering: 111
- Biomedical Engineering: 184
- Chemical Engineering: 306
- Civil Engineering: 302
- Computer Science and Computer Engineering: 452
- Electrical Engineering: 216
- Industrial Engineering: 238
- Mechanical Engineering: 577

Total Students

* Students in the Freshman Engineering Program and students enrolled in distance learning are not included.
University of Arkansas System President – Donald Bobbitt
Chancellor – Joseph Steinmetz
Provost – Ashok Saxena
Dean – John English

2016 Revenue (excluding gifts)

2016 Expenditures (excluding gifts)

Total Revenue: $51,711,996
Total Expenditures: $51,013,423

For complete financial information, see Appendix page 36

* Cooperative Extension Service not included
** As reported to ASEE and USNWR
*** Reported and compiled by the U of A Research Accounting Office and submitted to the NSF
**College of Engineering**

**Strategic Plan**

**Vision**

Pursue excellence in research, scholarship and education, ensuring personal and professional growth for future generations of engineering leaders who will stimulate prosperity for Arkansas, the nation and the world.

**Strategic Goals**

- Recruit and graduate diverse, high-quality students
- Increase number and diversity of faculty and staff
- Support, recognize and reward faculty and staff excellence
- Increase research proposals and funding
- Build research and development culture
- Cultivate relationships with alumni and corporate partners
- Plan for infrastructure growth

**Objectives**

1. **Increase student quality and diversity**
   - ACT and GRE quantitative scores
   - Career placement rate
   - Graduate student acceptance rate
   - Honors student completion rate
   - Student diversity

2. **Provide student centered education**
   - Experiential learning participation
   - Freshman retention rate
   - Six year undergraduate graduation rate
   - Student-faculty ratios
   - Student semester credit hours per FTE
   - Undergraduate degrees awarded

3. **Recruit and retain high quality faculty and staff**
   - Faculty retention
   - National awards
   - Professional society leaders and fellows
   - National Academy of Engineering membership
   - Staff to faculty ratios
   - Faculty diversity

4. **Increase research productivity**
   - Doctoral and master’s degrees granted
   - New research grants received
   - Peer reviewed publications
   - Research proposals submitted
   - Research expenditures (total and per faculty)
Balanced Growth

- 3,500 undergraduate students
- 1,000 master’s students
- 350 doctoral students
- 135 tenured and tenure-track faculty members
- 65 clinical and research faculty members
- 180 staff members
- $300,000 in research expenditures per faculty member

Increase economic development
- Invention disclosures
- Industry research expenditures
- Patents awarded
- Startup companies

Increase alumni and corporate partnerships
- Philanthropic giving
- Endowed faculty positions
- Endowed scholarships and fellowships
- Percentage of alumni who give

Provide high quality infrastructure
- Academic space
- Research space
- Renovated space
- Renovation investment

Preparing You for Your Tomorrow
Ryan DuChanois  
B.S.C.E. 2015  
2015 Outstanding Senior  

Ryan DuChanois, an Honors College civil engineering graduate, managed to combine superb academic scholarship with a wealth of extra-curricular and service activities.

DuChanois participated in research projects in South Africa and at the University of Virginia, and he received an EPA-sponsored Greater Research Opportunity Fellowship to conduct research in Corvallis, Oregon. DuChanois has traveled as far as India to present his work at conferences.

In addition to his academic and research accomplishments, DuChanois has been an active leader in a variety of campus organizations. He is a member of the American Society of Civil Engineers, the Engineering Student Council and Chi Epsilon. He has worked as a peer mentor in the Freshman Engineering Program, and volunteered at the campus Center for Educational Access.

DuChanois received both the prestigious Gates/Cambridge Graduate Fellowship and an NSF Graduate Research Fellowship, and he will be pursuing graduate studies at Cambridge University next year.

* Interdisciplinary students are included in the department of their faculty advisor.
**Balanced Growth Goals**

- 3,500 undergraduate students
- 1,000 master’s students
- 350 doctoral students
- 135 tenured and tenure-track faculty members
- 65 clinical and research faculty members
- 180 staff members
- $300,000 in research activity per faculty member
Adrian Beirise

As a graduate student in biological engineering, Adrian Beirise studied a method that would help researchers calculate the amount of oxygen consumed by sediment in lakes. A more accurate and efficient way to determine this would lead to more effective water quality management. Beirise presented his research at the annual meeting of the Institute of Biological Engineering and won the graduate poster competition there.
Graduate Rankings Metrics:

Quality assessment:
- Peer assessment: 25%
- Corporate recruiter assessment: 15%

Student Selectivity:
- Mean GRE quantitative score: 6.75%
- Graduate acceptance rate: 3.25%

Faculty resources:
- Student-to-faculty ratio - Ph.D.: 7.50%
- Student-to-faculty ratio - M.S.: 3.75%
- Percent of faculty in the National Academy of Engineering: 7.50%
- Doctoral degrees awarded: 6.25%

Research activity:
- Total research expenditures: 15%
- Average research expenditures per faculty member: 10%

Look for this icon throughout the book. It indicates metrics that directly affect our *U.S. News* ranking.
“Our students are our highest priority and our most valuable asset. We work hard to make sure we are attracting a diverse group of talented students, and through programs like the Freshman Engineering Program and the Engineering Career Awareness Program, we have been able to provide support for students, which is reflected in our improved retention and graduation rates. In addition, we provide our students with real-world experience, career development services and networking opportunities to help them start careers once they graduate.

“The College of Engineering is also committed to diversity. In fact, over half our student population is comprised of students who are traditionally underrepresented in the field of engineering—female students, minority students and first generation college students.”
Preparing for Tomorrow:

- We will continue our outreach to Arkansas K-12 schools with increasingly excellent STEM programming to interest young people in engineering careers and to enhance the number of students pursuing STEM disciplines.
- We are working to create more endowed scholarships to support engineering undergraduates who have financial need.
- We hope to establish more doctoral fellowship endowments to recruit graduate students and provide our faculty with excellent assistants in their research.
- We plan to increase scholarships for juniors and seniors who display exceptional leadership and academic qualities.
SanJuana Mota
Chemical Engineering Student

A Texas native, SanJuana Mota decided to come to the U of A because she “fell in love with the campus.” After spending a summer at the Engineering Summer Academy, a summer camp for high school students hosted by the College of Engineering, Mota knew she wanted to study engineering at the U of A. Mota is currently a junior studying chemical engineering, and she is an Honors College student and a participant in the Engineering Career Awareness Program. Mota has made the most of her time at the U of A. She gained valuable work experience through an internship at the Arkansas Department of Health-Engineering Section, and spent a summer working on water quality monitoring at public water systems.
Fall 2016 Incoming Student Awards

- Bodenhamer Fellows: 2
- Honors College Fellows: 29
- National Merit Scholars: 26

Recipients of Nationally Competitive Awards and Scholarships

<table>
<thead>
<tr>
<th>Award</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Science Foundation Graduate Research Fellowship</td>
<td>4</td>
<td>1</td>
<td>8</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>National Science Foundation Graduate Research Fellowship Honorable Mention</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Goldwater Scholarship</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
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<tr>
<td>Goldwater Honorable Mention</td>
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<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Whitaker Fellowship</td>
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<td>1</td>
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<tr>
<td>NSF CyberCorps Scholarship for Service</td>
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<tr>
<td>Udall Scholarship</td>
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<tr>
<td>Truman Scholarship</td>
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<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Gates Cambridge Scholarship</td>
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<td>1</td>
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</tbody>
</table>

Preparing for Tomorrow:

- Every semester, our STEM Career Fair attracts over 100 employers and over 1,000 students. We also offer networking events and workshops around the event, so that students receive many opportunities to work on their resumes, practice their interview skills and connect with potential employers.

- With endowed funds for colloquia, we invite speakers to campus and create programs for visiting scholars and executives in residence at the university. This exposes our students and faculty to the emerging trends in engineering excellence.
Our stories

Ikenna Egbosimba
Electrical Engineering Student

“I have always had a passion for how technological devices worked. As a child, I would often take apart old laptops, game systems, and other devices just to see their internal components. As I went through my high school courses, I found a passion within my math and science classes which coincided perfectly with my passion for technology. So I decided to pursue a career out of it and chose to major in electrical engineering at the University of Arkansas.

“I chose the University of Arkansas for a number of reasons but primarily due to the fact that I was a recipient of the Engineering Career Awareness Program scholarship (ECAP). This program single handedly changed my outlook from a collegiate standpoint. I was afforded the luxury of complimentary tuition, housing, meal plan, and the opportunity to interact with other highly intelligent students. This, which I am still very thankful for to this day, was definitely the determining factor in my decision to attend the University of Arkansas.”

Increase student quality and diversity

Gender Diversity

<table>
<thead>
<tr>
<th>Year</th>
<th>Undergraduate Students</th>
<th>Graduate Students*</th>
<th>Faculty **</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2012</td>
<td></td>
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<td></td>
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<tr>
<td>Fall 2013</td>
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<td></td>
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<tr>
<td>Fall 2014</td>
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<td></td>
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<tr>
<td>Fall 2015</td>
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<tr>
<td>Fall 2016</td>
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</tbody>
</table>

* Does not include distance students.
** Includes tenured and tenure-track faculty

Ethnic Diversity

<table>
<thead>
<tr>
<th>Year</th>
<th>Undergraduate Students</th>
<th>Graduate Students*</th>
<th>Faculty **</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2012</td>
<td></td>
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<tr>
<td>Fall 2013</td>
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<tr>
<td>Fall 2014</td>
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<tr>
<td>Fall 2015</td>
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</tr>
<tr>
<td>Fall 2016</td>
<td></td>
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</tr>
</tbody>
</table>

* Does not include distance or international students
** Includes tenured and tenure-track faculty
Our future

The Engineering Career Awareness Program is a recruitment and retention program that removes barriers for underrepresented students to earn engineering degrees.

Preparing for Tomorrow:

- Our Engineering Career Awareness Program (ECAP) has led to significant increases in students who are underrepresented in engineering. These include first generation college students, women and minorities.

- In order to maintain and expand on this success, we are pursuing significant financial backing for underrepresented students with financial need, so that they have the means to attend the university and earn engineering degrees.

Our progress

Engineering Career Awareness Program

Student Demographics

- African American: 52%
- Asian: 2.5%
- Caucasian: 2.5%
- Hispanic/Latino: 30.5%
- Native Hawaiian/Pacific Islander: 4%
- Native American: 8.5%

- Female: 43%
- Male: 57%

Engineering Career Awareness Program Six Year Graduation Rate

- Received any degree from the U of A:
  - 2008: 71%
  - 2009: 69%
  - 2010: 85%

- Received an engineering degree:
  - 2008: 79%
  - 2009: 79%
  - 2010: 90%

STEM Preparation Program

We are easing students’ transition from two year colleges through the STEM Preparation Program. This program provides online science, engineering and math classes for students enrolled at an Arkansas community college. These classes count toward an associate's degree at the student’s community college and a bachelor's degree in engineering, science or math at the University of Arkansas.
Emily Matlock
2015 Freshman of the Year

“The Freshman Engineering Program was extremely beneficial to my freshman year. Through the peer mentoring program, where freshmen students are paired with an upperclassman engineering student, I felt connected early on and appreciated the guidance that they provided in our weekly meetings. Through the informational sessions, where we learned about each discipline, I was able to make a confident and educated decision about which discipline I wanted to study. These sessions truly make a difference as evidenced by my changing my choice of disciplines. The faculty were always open and supportive, and we had the benefit of having a faculty mentor help us with our research throughout the year. Because of the Freshman Engineering Program, I feel sufficiently ready for my future academic career.”
Preparing for Tomorrow:

- In order to cement our success in retaining and graduating engineers, we are seeking to endow the Freshman Engineering Program so that it is assured support in perpetuity.

- We plan to continue to connect successful alumni with our students through classroom presentations, mock interviews, industry visits and other activities.
Dale Thompson
Associate Professor of Computer Science and Computer Engineering
Recipient of the 2016 John Imhoff Award for Teaching

Dale Thompson serves on his department’s undergraduate curriculum committee and on the College of Engineering Distance Education Committee for the MSE program. In addition, he performs a significant amount of teaching and service for the department, serving as the ABET Coordinator since 2007. The computer science and computer engineering department went through ABET assessment successfully under his leadership.

Thompson recently received a significant grant from the National Science Foundation for a project called Training Arkansas Computing Teachers, which provides access to computer science instruction for high schools. This program has a goal of training at least 50 Arkansas high school teachers to become certified to teach computer science in the next three years.
**Our progress**

### Membership in the National Academy of Engineering

<table>
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<tr>
<th>Year</th>
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<td>2013</td>
<td>2</td>
</tr>
<tr>
<td>2014</td>
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<tr>
<td>2015</td>
<td>2</td>
</tr>
<tr>
<td>2016</td>
<td>2</td>
</tr>
</tbody>
</table>

### Staff-Faculty Ratio

<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>2012</td>
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<tr>
<td>2013</td>
<td>0.88</td>
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<tr>
<td>2014</td>
<td>0.89</td>
</tr>
<tr>
<td>2015</td>
<td>0.86</td>
</tr>
<tr>
<td>2016</td>
<td>0.87</td>
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</tbody>
</table>

### U of A and American Society for Engineering Education (ASEE) Average Faculty Salary Comparisons*

<table>
<thead>
<tr>
<th>Year</th>
<th>ASEE Aspirant Professor</th>
<th>U of A Professor</th>
<th>U of A Associate Professor</th>
<th>U of A Assistant Professor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 11</td>
<td>$0</td>
<td>$100,000</td>
<td>$75,000</td>
<td>$50,000</td>
</tr>
<tr>
<td>Fall 12</td>
<td>$50,000</td>
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<td>$125,000</td>
<td>$100,000</td>
</tr>
<tr>
<td>Fall 13</td>
<td>$100,000</td>
<td>$200,000</td>
<td>$175,000</td>
<td>$150,000</td>
</tr>
<tr>
<td>Fall 14</td>
<td>$150,000</td>
<td>$250,000</td>
<td>$225,000</td>
<td>$200,000</td>
</tr>
<tr>
<td>Fall 15</td>
<td>$200,000</td>
<td>$300,000</td>
<td>$275,000</td>
<td>$250,000</td>
</tr>
</tbody>
</table>

* ASEE salary survey data for fall 2016 is not available until January. Instructor salaries are not benchmarked in the ASEE salary survey.

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**Our future**

Ashlea Milburn, assistant professor of industrial engineering, received a grant through the National Science Foundation's Faculty Early Career Development program, known as the CAREER award, to support her research on the role social media can play in disaster relief.

Matthew Patitz, assistant professor of computer science and computer engineering, also received a CAREER award to support his work analyzing DNA-based self-assembling systems.
Heather Nachtmann  
Associate Dean for Research  
Professor of Industrial Engineering

“Engineers have always been on the front lines of discovery and innovation, and as part of a land-grant research university, the College of Engineering has a special responsibility to provide knowledge and innovation for the state of Arkansas and beyond. In recent years, the College of Engineering has defined and prioritized our research strengths, and this emphasis has led to growth in our research activity. The College also encourages interdisciplinary and collaborative research, and many of our research centers bring together faculty from different disciplines.”
Preparing for Tomorrow:

- We plan to recruit innovative faculty through endowed chairs in the top five areas of research strength and the 10 emerging research areas.
- We would also like to establish incentive funds for faculty who pursue innovative research.

Jin-Woo Kim, professor of biological and agricultural engineering, received the 2016 College of Engineering Most Engaging Research Faculty Award based on his research in self-assembling nanostructures.

Alan Mantooth, Distinguished Professor of electrical engineering, holder of the Twenty-First Century Research Leadership Chair and Arkansas Research Alliance fellow. Mantooth received the 2016 John L. Imhoff Award for Research.
Electronics
The College of Engineering has been producing graduates focused on electronics for over 30 years. Researchers in this area are developing new materials for circuits and photovoltaic cells, designing and modeling circuits, creating packages that protect and integrate electronic devices, and creating and testing new technologies to improve our power grid.

Energy
The broad area of energy has a foundation in electronics, but has expanded to include power systems, energy storage, smart grid innovation, biofuels, and oil and gas research. As the world struggles to find and integrate safer and more sustainable sources of energy, research in this field is more important than ever.

Healthcare Systems Engineering
This research area focuses on reducing costs and improving quality in the healthcare industry by optimizing the way supplies and therapies are administered. Researchers look at many different aspects of the healthcare industry, including supply chain costs, medical decision making, therapy scheduling, statistical monitoring and detection of epidemics.

Nanomaterials Science and Engineering
The nanotechnology area has existed for about 15 years. Researchers in this area use computational modeling to design and model novel nanoscale materials, synthesize them, integrate them into devices and device packaging, create advanced nanomaterial coatings, use nanoscience to improve photovoltaic and thermoelectric technologies and study biological materials on the nanoscale in order to create new bio-inspired surfaces and materials.

Transportation and Logistics
The College of Engineering has been a national leader in transportation and logistics for more than twenty years. Researchers are looking at distribution, transportation, information technology and software solutions, and maritime and multimodal transportation.

Aerospace
The U of A is moving to respond to this area, which is the single largest export market from the state of Arkansas.

Big Data Analytics
Technology has increased the amount of data we produce, leading to an increased need to analyze this data.

Cybersecurity
Researchers are looking at increasing security, especially in the areas of ports, transportation and the power grid.

Healthcare
With the new biomedical engineering department, the college is poised to marry technical and biological research in this area.

Infrastructure
As a land-grant institution, the U of A has a responsibility to maintain the nation’s water and electric resources, communications and transportation.

EXISTING strengths
In January 2014, a research task force appointed by dean John English identified existing and emerging strengths in the college. Existing strengths are those areas where the college is already nationally recognized. Emerging areas are fields where the college has some key presence, expertise and momentum. These are expected to emerge into strengths with additional investment. The full report can be found at http://engineering.uark.edu/about-us/strategic-plan/research-strategy.php

EMERGING areas

EXISTING strengths

EMERGING areas

university of arkansas college of engineering

RESEARCH STRENGTHS

EXISTING strengths

EMERGING areas

university of arkansas college of engineering
**Materials and Manufacturing**

Keeping manufacturing jobs in America and maintaining our competitiveness in this area is key for economic growth.

**Optoelectronics**

This field is emerging from the broader field of electronics. It involves new semiconductor materials, biophotonics and photovoltaics.

**Sustainability**

Faculty across the college are engaged in some form of research involving sustainable practices, design or technologies.

**Systems Integration**

This area encompasses research in automation, robotics and systems and process control, and inspires keen interest in our students.

**Water**

Research in this area includes water quality, wastewater treatment and watershed management.

- Centers in this area include High Density Electronics Center, the Institute for Nanoscience and Engineering and Grid-Connected Advanced Power Electronics Systems and the National Center for Reliable Electronic Power Transmission
- Over $5 million per year in research expenditures
- Several startup companies have emerged from this area

- The GRAPES and NCREPT centers are focused on energy research, with research expenditures of $2 million per year
- Biofuel research in chemical and biological engineering is supported by the National Science Foundation, the Department of Energy and the Department of Transportation
- Combining electronics and non-electronics energy research could lead to the development of future research centers

- Much of the research in this area is conducted through the Center for Innovation in Healthcare Logistics (CIHL)
- CIHL has had $3 million in research expenditures over the past 5 years
- Researchers in this area collaborate with industry and share findings with the healthcare community

- Nanomaterials research is conducted at the Institute for Nanoscience and Engineering and supported by micro-fabrication facilities at HiDEC and in labs throughout the college
- Annual research expenditures for the college in this area are approximately $2 million per year
- Companies such as the award-winning NanoMech, co-founded by a faculty member in mechanical engineering, are demonstrating successful tech transfer in this area

- Centers include the Center for Excellence in Logistics and Distribution and the Mack-Blackwell Rural Transportation Center
- Research expenditures total approximately $2 million per year
- The college works closely with the Arkansas State Highway and Transportation Department and many other transportation stakeholders across the nation
Corey Thompson, Ph.D. 2014, founded the company WattGlass in 2014 to commercialize technology he developed through his doctoral research under Min Zou, professor of mechanical engineering at the U of A. The technology allows WattGlass to deposit a high performance antireflective coating using water-based chemistry that is cheaper than current alternatives, while also providing a self-cleaning and anti-fog surface that has applications in solar and other markets.

In September 2016, the U.S. Department of Energy awarded $679,413 to WattGlass through the SunShot Initiative. The award will help commercialize the University of Arkansas’ patent-pending coating technology that makes glass anti-reflective, self-cleaning and highly transparent. WattGlass is affiliated with the Arkansas Research and Technology Park, an innovation hub that works in association with the university to commercialize emerging technologies.
College of Engineering
Startup Companies
Since 1990, 24 companies have been created based on engineering research at the U of A.

<table>
<thead>
<tr>
<th>Year</th>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>■</td>
</tr>
<tr>
<td>1999</td>
<td>■</td>
</tr>
<tr>
<td>2003</td>
<td>■</td>
</tr>
<tr>
<td>2004</td>
<td>■</td>
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<tr>
<td>2005</td>
<td>■ ■ ■ ■ ■</td>
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<tr>
<td>2007</td>
<td>■ ■</td>
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<tr>
<td>2008</td>
<td>■</td>
</tr>
<tr>
<td>2009</td>
<td>■ ■ ■ ■ ■</td>
</tr>
<tr>
<td>2010</td>
<td>■</td>
</tr>
<tr>
<td>2011</td>
<td>■</td>
</tr>
<tr>
<td>2014</td>
<td>■ ■</td>
</tr>
<tr>
<td>2016</td>
<td>■</td>
</tr>
</tbody>
</table>

Preparing for Tomorrow:
- We plan to encourage faculty development in entrepreneurship, by providing opportunities such as commercial concept testing, academics in residence positions in industry, economic development initiatives and community service.
Bob Storey  
B.S.CH.E. 1980  
Principal, The MVR Company  
Chairman of the Engineering Dean’s  
Advisory Council  

“The inspirations of faculty and mentors were the sparks that may have ignited many of our careers, but for me, the U of A and the College of Engineering impacted my life in ways that I didn’t fully appreciate until much later in my career. I now see fundamental building blocks, attitudes, and lifetime outcomes that were a result of those experiences – some perhaps accidentally attained – but many as a result of the caring guidance from those that came before us. Our roles as alumni are to help fan those innovative flames in the next generation – in any way that the gifts bestowed upon us allow. We may encourage, we may challenge, we may inspire – but we must always be there to support.”

Endowed Faculty Positions

Percentage of Alumni Who Give
Endowed Scholarships and Fellowships

2016: 133

Our Students’ Home States

Alumni By State

Alumni By Country

2016 Hall of Fame Award

• Troy C. Alley, Jr., B.S.E.E. 1969, executive vice president and chief operating officer, Con-Real Inc.
• David D. Foust, B.S.I.E. 1964, vice president and general manager of the Americas (retired), Bakaert
• Stanley Reed, B.S.A.E. 1973, JD 1976, owner, Reed Family Farm (posthumous)

2016 Distinguished Alumni Award

• Sharon Booth McGee, B.S.Ch.E. 1987, M.S.Ch.E. 1988, vice president, corporate development and strategy, Albemarle Corp.
• David Humphrey, B.S.I.E. 1982, M.S.I.E. 1983, vice president of investor relations, ArcBest Corp.
• Michael D. Jones, B.S.Ag.E. 1967, M.S.Ag.E. 1968, principal, PQR Inc. (retired)
• Jerry W. Martin, B.S.C.E. 1967, M.S.C.E. 1968, chair, Engineering Services Inc. (retired)
• Jack Murders, B.S.M.E. 1986, vice president of Arkansas facilities, Marshalltown Co.
• Joseph Michael Roblee, B.S.C.S.E. 1990, chief information officer, U.S. HealthRecord Inc.
• Jon Michael Russ, B.S.M.E. 1986, director of power delivery, Arkansas Electric Cooperative Corporation

2016 Early Career Award

• Steven M. Karp, B.S.C.S.E. 1999, senior systems engineer, Juniper Networks
• Matthew C. Loach, B.S.Ch.E. 1996, financial planning manager, ExxonMobil Chemical Co.
• Kevin Oden, B.S.I.E. 2007, M.B.A. 2011, partner, ImPro Advisors
• Chris Pixley, B.S.B.A.E. 2002, Ph.D. 2013, head of production, Novozymes
## Renovated Space

<table>
<thead>
<tr>
<th>Year</th>
<th>Academic</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>6,420 ft²</td>
<td>14,449 ft²</td>
</tr>
<tr>
<td>2015</td>
<td>5,236 ft²</td>
<td>8,200 ft²</td>
</tr>
</tbody>
</table>

## Renovation Investment

<table>
<thead>
<tr>
<th>Year</th>
<th>Academic</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>$229,500</td>
<td>$430,500</td>
</tr>
<tr>
<td>2015</td>
<td>$546,000</td>
<td>$304,000</td>
</tr>
</tbody>
</table>

## Total Space

<table>
<thead>
<tr>
<th>Year</th>
<th>Academic</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>84,229 ft²</td>
<td>102,067 ft²</td>
</tr>
<tr>
<td>2015</td>
<td>77,416 ft²</td>
<td>92,272 ft²</td>
</tr>
</tbody>
</table>
Preparing for Tomorrow:

- The college plans major renovations to John A. White, Jr. Engineering Hall. This historic building has housed engineering classes and labs since 1927. We plan to upgrade the space and create a classic interior that pays homage to the building’s rich history.

- Construction of the Civil Engineering Research and Education Center will provide research space for structures analyses and allow the Department of Civil Engineering to remain regionally competitive.
### Revenues (excluding gifts)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State Appropriations &amp; Tuition</td>
<td>$18,231,900</td>
<td>$20,117,970</td>
<td>$20,787,672</td>
<td>$21,712,044</td>
<td>$22,948,204</td>
</tr>
<tr>
<td></td>
<td>40.16%</td>
<td>46.86%</td>
<td>48.42%</td>
<td>45.81%</td>
<td>48.42%</td>
</tr>
<tr>
<td>Distance Learning Revenues, Ft Smith, Service Centers, Conferences</td>
<td>$3,606,851</td>
<td>$3,335,980</td>
<td>$3,103,014</td>
<td>$3,140,177</td>
<td>$3,325,452</td>
</tr>
<tr>
<td></td>
<td>7.95%</td>
<td>7.77%</td>
<td>7.23%</td>
<td>6.63%</td>
<td>7.02%</td>
</tr>
<tr>
<td>Research Incentive Funds</td>
<td>$1,714,543</td>
<td>$1,635,454</td>
<td>$1,643,657</td>
<td>$942,325</td>
<td>$1,077,827</td>
</tr>
<tr>
<td></td>
<td>3.78%</td>
<td>3.81%</td>
<td>3.83%</td>
<td>1.99%</td>
<td>2.27%</td>
</tr>
<tr>
<td>Biological Engineering Teaching and Agricultural Experiment Station*</td>
<td>$1,758,085</td>
<td>$1,947,726</td>
<td>$1,787,000</td>
<td>$1,851,719</td>
<td>$1,893,397</td>
</tr>
<tr>
<td></td>
<td>3.87%</td>
<td>4.54%</td>
<td>4.16%</td>
<td>3.91%</td>
<td>4.00%</td>
</tr>
<tr>
<td>Sponsored Research**</td>
<td>$16,005,505</td>
<td>$14,930,781</td>
<td>$11,805,030</td>
<td>$15,907,692</td>
<td>$18,372,457</td>
</tr>
<tr>
<td></td>
<td>35.26%</td>
<td>34.78%</td>
<td>27.49%</td>
<td>33.57%</td>
<td>38.77%</td>
</tr>
<tr>
<td>Sponsored Activities and Scholarships</td>
<td>$1,718,175</td>
<td>$1,336,218</td>
<td>$1,518,160</td>
<td>$1,537,123</td>
<td>$1,658,126</td>
</tr>
<tr>
<td></td>
<td>3.78%</td>
<td>3.11%</td>
<td>3.54%</td>
<td>3.24%</td>
<td>3.50%</td>
</tr>
<tr>
<td>Student Equipment Fee Revenues (TELE-net)</td>
<td>$1,767,505</td>
<td>$2,092,715</td>
<td>$2,286,709</td>
<td>$2,302,119</td>
<td>$2,436,534</td>
</tr>
<tr>
<td></td>
<td>3.89%</td>
<td>4.87%</td>
<td>5.33%</td>
<td>4.86%</td>
<td>5.14%</td>
</tr>
<tr>
<td>Total</td>
<td>$44,802,564</td>
<td>$45,396,844</td>
<td>$42,931,241</td>
<td>$47,393,199</td>
<td>$51,711,996</td>
</tr>
</tbody>
</table>

* Cooperative Extension Service not included.
** As reported to ASEE and USNWR.

### Expenditures (excluding gifts)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary and Benefits</td>
<td>$16,248,982</td>
<td>$16,572,659</td>
<td>$17,363,641</td>
<td>$18,744,220</td>
<td>$18,211,503</td>
</tr>
<tr>
<td></td>
<td>30.71%</td>
<td>31.95%</td>
<td>34.19%</td>
<td>36.95%</td>
<td>35.70%</td>
</tr>
<tr>
<td>Operating Expenditures</td>
<td>$1,828,291</td>
<td>$2,751,265</td>
<td>$2,615,636</td>
<td>$1,301,172</td>
<td>$1,149,449</td>
</tr>
<tr>
<td></td>
<td>3.46%</td>
<td>5.30%</td>
<td>5.15%</td>
<td>2.56%</td>
<td>2.25%</td>
</tr>
<tr>
<td>Dept Restricted Fees/Misc</td>
<td>$2,385,329</td>
<td>$2,466,727</td>
<td>$2,773,673</td>
<td>$1,239,293</td>
<td>$1,121,038</td>
</tr>
<tr>
<td></td>
<td>4.51%</td>
<td>4.76%</td>
<td>5.46%</td>
<td>2.44%</td>
<td>2.20%</td>
</tr>
<tr>
<td>Student Equipment Fees</td>
<td>$1,786,399</td>
<td>$1,606,694</td>
<td>$2,122,512</td>
<td>$2,241,529</td>
<td>$2,082,936</td>
</tr>
<tr>
<td></td>
<td>3.38%</td>
<td>3.10%</td>
<td>4.18%</td>
<td>4.42%</td>
<td>4.08%</td>
</tr>
<tr>
<td>Scholarships</td>
<td>$369,645</td>
<td>$302,547</td>
<td>$1,193,379</td>
<td>$758,241</td>
<td>$482,364</td>
</tr>
<tr>
<td></td>
<td>0.70%</td>
<td>0.58%</td>
<td>2.35%</td>
<td>1.49%</td>
<td>.95%</td>
</tr>
<tr>
<td>Research*</td>
<td>$25,116,772</td>
<td>$23,972,316</td>
<td>$20,729,821</td>
<td>$22,476,266</td>
<td>$27,966,133</td>
</tr>
<tr>
<td></td>
<td>47.48%</td>
<td>46.22%</td>
<td>40.81%</td>
<td>44.30%</td>
<td>54.82%</td>
</tr>
<tr>
<td>Total</td>
<td>$47,735,418</td>
<td>$47,672,208</td>
<td>$46,798,662</td>
<td>$46,760,722</td>
<td>$51,013,423</td>
</tr>
</tbody>
</table>

* Reported and compiled by the U of A Research Accounting Office and submitted to NSF.
## Gifts and Endowments

### Revenue

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributions - Expendable</td>
<td>$1,222,770</td>
<td>$2,709,746</td>
<td>$1,126,807</td>
<td>$871,121</td>
<td>$1,390,103</td>
</tr>
<tr>
<td>Contributions - Endowed &amp; Restricted Gifts</td>
<td>$956,115</td>
<td>$1,072,257</td>
<td>$5,238,427</td>
<td>$3,620,544</td>
<td>$1,303,521</td>
</tr>
<tr>
<td>Investment Income:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expendable</td>
<td>$2,133,632</td>
<td>$2,322,307</td>
<td>$2,577,659</td>
<td>$2,617,325</td>
<td>$2,816,073</td>
</tr>
<tr>
<td>Endowed (reinvestment)</td>
<td>$1,090</td>
<td>$1,042</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Endowed Market Value Adjustment</td>
<td>$(1,170,897)</td>
<td>$4,133,111</td>
<td>$6,979,898</td>
<td>$(298,852)</td>
<td>$(4,280,657)</td>
</tr>
<tr>
<td>Net Transfers and Allocations</td>
<td>$33,732</td>
<td>$13,743</td>
<td>$(1,224,342)</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total Revenue</strong></td>
<td>$3,176,442</td>
<td>$10,252,206</td>
<td>$14,698,448</td>
<td>$6,810,138</td>
<td>$1,229,041</td>
</tr>
</tbody>
</table>

### Expenditures

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scholarships and Student Support</td>
<td>$1,017,287</td>
<td>$1,119,101</td>
<td>$1,154,870</td>
<td>$836,285</td>
<td>$621,766</td>
</tr>
<tr>
<td>Other College Support</td>
<td>$3,576,456</td>
<td>$2,574,873</td>
<td>$2,272,358</td>
<td>$2,154,828</td>
<td>$2,002,086</td>
</tr>
<tr>
<td>Capital Outlays</td>
<td>$108,988</td>
<td>$152,525</td>
<td>$218,170</td>
<td>$72,484</td>
<td>$187</td>
</tr>
<tr>
<td>Development costs**</td>
<td>$466,370</td>
<td>$350,435</td>
<td>$347,631</td>
<td>$391,743</td>
<td>$131,177</td>
</tr>
<tr>
<td><strong>Total Expenditures</strong></td>
<td>$5,169,101</td>
<td>$4,196,934</td>
<td>$3,993,030</td>
<td>$3,455,340</td>
<td>$2,755,216</td>
</tr>
<tr>
<td>Revenues less Expenditures</td>
<td>$(1,992,659)</td>
<td>$6,055,272</td>
<td>$10,705,419</td>
<td>$3,354,798</td>
<td>$(1,526,175)</td>
</tr>
</tbody>
</table>

* Planned and Charitable Remainder Trust Accounts are not reported.

** Development costs budgeted from U of A Foundation funds and includes administrative overhead charges to gift revenues.

## Gifts and Endowments Financial Position

*Endowment Funds Held with the University of Arkansas Foundation, University of Arkansas, and Agricultural Development Council*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and Cash Equivalents - Expendable</td>
<td>$8,245,875</td>
<td>$9,411,703</td>
<td>$8,219,552</td>
<td>$11,335,354</td>
<td>$12,807,764</td>
</tr>
<tr>
<td>Pooled Investment Funds - Endowments</td>
<td>$42,994,532</td>
<td>$46,329,354</td>
<td>$55,042,921</td>
<td>$52,222,964</td>
<td>$52,164,081</td>
</tr>
<tr>
<td>Scholarship Endowments</td>
<td>$8,284,086</td>
<td>$9,643,672</td>
<td>$12,348,260</td>
<td>$14,376,759</td>
<td>$13,770,926</td>
</tr>
<tr>
<td>Fellowship Endowments</td>
<td>$2,983,974</td>
<td>$3,305,901</td>
<td>$3,785,316</td>
<td>$3,991,624</td>
<td>$4,292,359</td>
</tr>
<tr>
<td><strong>Total Fund Balances</strong></td>
<td>$62,508,467</td>
<td>$68,690,630</td>
<td>$79,396,448</td>
<td>$81,926,701</td>
<td>$83,035,131</td>
</tr>
</tbody>
</table>

* Planned / Charitable Remainder Trust Accounts are not reported. Biological Engineering accounts retroactively reported with Engineering.
Distance Education

The Master of Science in Operations Management program was established in 1974 and since that time it has become the largest graduate degree program offered by the University. The purpose of the program is to create value through efficiency by applying the strategic, tactical and operational activities of operations management. The program offers classes at several graduate resident centers across the region. Students may complete all the requirements for the program at one of these centers, at the Fayetteville campus, or online.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Courses Offered</th>
<th>Student Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>28</td>
<td>9,669</td>
</tr>
<tr>
<td>2013</td>
<td>28</td>
<td>8,943</td>
</tr>
<tr>
<td>2014</td>
<td>29</td>
<td>8,994</td>
</tr>
<tr>
<td>2015</td>
<td>30</td>
<td>9,537</td>
</tr>
<tr>
<td>2016</td>
<td>31</td>
<td>9,243</td>
</tr>
</tbody>
</table>

The Master of Science in Engineering program has been offering online degrees since 2009. It is a fully-accredited program taught by graduate faculty from the College of Engineering. This program is designed for students who want to further their education in a variety of engineering topics, and its graduates are well-prepared for a career in engineering and management of engineering systems, processes and organizations.

This program is consistently ranked in the top 30 for best online graduate engineering programs and best online graduate engineering programs for veterans by U.S. News & World Report.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Courses Offered</th>
<th>Student Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>59</td>
<td>609</td>
</tr>
<tr>
<td>2013</td>
<td>61</td>
<td>957</td>
</tr>
<tr>
<td>2014</td>
<td>62</td>
<td>1,116</td>
</tr>
<tr>
<td>2015</td>
<td>65</td>
<td>1,182</td>
</tr>
<tr>
<td>2016</td>
<td>67</td>
<td>1,677</td>
</tr>
</tbody>
</table>
Faculty Elected as Fellows of Professional Societies

National Academy of Engineering
Mike Johnson
John White

ASM International
Ashok Saxena
Ajay Malshe

ASHRAE
Darin Nutter

American Concrete Institute
Frances Griffith
Micah Hale

American Institute for Medical and Biological Engineering
D. Keith Roper
Lalit Verma

American Society for Engineering Education
Norman Dennis
Kim Needy
John White

American Society for Engineering Management
Heather Nachtmann
Kim Needy

American Society for Testing and Materials
Ashok Saxena

American Institute of Aeronautics and Astronautics
Jim Rankin

American Society of Agricultural and Biological Engineers
Lalit Verma
Yanbin Li
Otto Loewer

American Institute of Chemical Engineers
Robert Babcock
Tom Spicer
Ranil Wickramasinghe

American Society of Civil Engineers
Norman Dennis
Findlay Edwards
Ernie Heymsfield
Mike Johnson
R. Panneer Selvam

American Society of Mechanical Engineers
Rick Couvillion
Ajay Malshe
Steve Tung
Min Zou

Arkansas Research Alliance
Alan Mantooth
Min Zou

City and Guilds of London Institute (UK)
Simon Ang

Electrochemical Society
Simon Ang

Indian Society of Agricultural Engineers
Lalit Verma

Institute for Operations Research and Management Sciences
Greg Parnell
John White

Institute of Biological Engineering
Lalit Verma

Institute of Electrical and Electronics Engineers
Simon Ang
Samir El-Ghazaly
Alan Mantooth

Institute of Engineering and Technology (UK)
Simon Ang
Omar Manasreh

Institute of Industrial and Systems Engineers
Richard Cassady
John English
Joseph Geunes
Heather Nachtmann
Kim Needy
Edward Pohl
Manuel Rossetti
John White

International Academy of Production Engineering
Ajay Malshe

International Congress on Fracture
Ashok Saxena

International Council on Systems Engineering
Greg Parnell

Lean Systems Society
Greg Parnell

Military Operations Research Society
Greg Parnell

National Academy of Construction
Mike Johnson

National Academy of Inventors
Hameed Naseem

Society of American Military Engineers
Mike Johnson

Society for Decision Professionals
Greg Parnell

Society of Reliability Engineers
Richard Cassady
Edward Pohl

Society of Tribologists and Lubrication Engineers
Min Zou
Appendix

College of Engineering Administrative Contacts

DEANS AND ASSOCIATE DEANS

John English
Dean of the College of Engineering
Irma F. and Raymond F. Giffels Endowed Chair in Engineering
jre@uark.edu
(479) 575-3054

Norman Dennis
Senior Associate Dean
dndennis@uark.edu
(479) 575-6011

Heather Nachtmann
Associate Dean for Research
hln@uark.edu
(479) 575-3484

DEAN’S STAFF

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Director of Student Records
kbullard@uark.edu
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(479) 575-5009

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(479) 575-6735

Stella Clark
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(479) 575-4092

Kyle Cook
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Larry Esch
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Kristy Fink
Assistant to the Dean
kfink@uark.edu
(479) 575-3054

Brian Henderson
Director of Employer Relations and Student Placement
bwhender@uark.edu
(479) 575-6265

Bryan Hill
Assistant Dean for Student Recruitment, Honors and International Programs
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(479) 575-7236

Rifati Raindriati
Assistant to the Associate Deans
rnraindr@uark.edu
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