As dean of engineering, I am proud to present the 2015 Fact Book. This collection of data portrays who we are as a college and illustrates our role as part of the 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, Ph.D., P.E.
Dean, College of Engineering
Professor of Industrial Engineering
Irma F. and Raymond F. Giffels Endowed Chair in Engineering
College of Engineering
2015 Fact Book
A guide to our vision for Arkansas engineering education


2 University of Arkansas Highlights
4 College of Engineering Highlights
8 Strategic Plan
10 Top 50 Balanced Growth
14 **Objective One:** Increase student quality and diversity
20 **Objective Two:** Provide student centered education
22 **Objective Three:** Recruit and retain high quality faculty and staff
24 **Objective Four:** Increase research productivity
28 **Objective Five:** Increase economic development
30 **Objective Six:** Increase alumni and corporate partnerships
32 **Objective Seven:** Provide high quality infrastructure
35 Appendix
40 Contact Information
Fall 2015 Total Enrollment

Undergraduate  
22,158

Graduate  
4,221

Law  
375

Total Enrollment  
26,754

University of Arkansas
Fall 2015 Enrollment  *(Degree Seeking Only)*

- 7,692
- 5,138
- 4,186
- 5,810
- 3,053
- 253

Total Students
University of Arkansas Rankings

<table>
<thead>
<tr>
<th>Year</th>
<th>National University Rank</th>
<th>Public University Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>134</td>
<td>67</td>
</tr>
<tr>
<td>2014</td>
<td>128</td>
<td>63</td>
</tr>
<tr>
<td>2015</td>
<td>135</td>
<td>69</td>
</tr>
<tr>
<td>2016</td>
<td>129</td>
<td>62</td>
</tr>
</tbody>
</table>

* All Honors College students are enrolled in an academic college and are also counted as part of that college.
Our stories.

Our stories.

2015 Enrollment Highlights

Undergraduate  3,265
Graduate*     970
College of Engineering
  Total Enrollment  4,235

Total undergraduate enrollment is up 8 percent over 2014.

Since 2007, undergraduate enrollment has more than doubled.

We have 803 new freshmen—a new record, up 13 percent over 2014.

Our 2015 freshman class is 26 percent female, the largest percentage of women in the college’s history.

The total percentage of female undergraduates is also at a record high at 23 percent.

Underrepresented students—female, minority and first generation college students—make up 50 percent of the freshman class.

* Includes engineering students enrolled in interdisciplinary programs.
### Fall 2015 Enrollment by Department

<table>
<thead>
<tr>
<th>Department</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological and Agricultural Engineering</td>
<td>111</td>
</tr>
<tr>
<td>Biomedical Engineering</td>
<td>204</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>315</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>305</td>
</tr>
<tr>
<td>Computer Science and Computer Engineering</td>
<td>509</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>327</td>
</tr>
<tr>
<td>Industrial Engineering*</td>
<td>299</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>596</td>
</tr>
</tbody>
</table>

**Total Students**

* Students in the Freshman Engineering Program and students enrolled in distance learning are not included.

For information on Operations Management enrollment, see Appendix page 38.
College of Engineering
Organization & Finances*

Board of Trustees

University of Arkansas System President – Donald Bobbitt, Ph.D.

Interim Chancellor – Dan Ferritor, Ph.D.

Provost – Ashok Saxena, Ph.D.

Dean – John English, Ph.D., P.E.

Senior Associate Dean
Norman Dennis, Ph.D., P.E.

Academics
Student Services

Associate Dean for Research
Heather Nachtmann, Ph.D.

Diversity
Facilities
Research

Senior Director of Development and External Relations
Kelly Sartorius, Ph.D.

Alumni Relations
Communications
Development

Assistant Dean for Financial Affairs
Larry Esch, M.Acc.

Department Heads

2015 Revenue (excluding gifts)

State Appropriations & Tuition
$21,712,044
Distance Learning Revenues, Ft Smith, Service Centers, Conferences
$3,140,177
Research Incentive Funds
$942,325
Biological Engineering Teaching and Agricultural Experiment Station
$1,851,719
Sponsored Research
$15,907,692
Sponsored Activities and Scholarships
$1,537,123
Student Equipment Fee Revenues (TELE-net)
$2,302,119

Total Revenue: $47,393,199

2015 Expenditures (excluding gifts)

Salary and Benefits
$18,744,220
Operating Expenditures
$1,301,172
Dept Restricted Fees/Misc
$1,239,293
Student Equipment Fees
$2,241,529
Scholarships
$758,241
Research***
$22,476,266

Total Expenditures: $46,760,722

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.
Pursue excellence in research, scholarship, and education, ensuring the production of engineering leaders who will stimulate prosperity for Arkansas.

Vision

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

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

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

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

Increase research productivity
- Doctoral degrees
- New research funding
- Peer-reviewed publications
- Research project submissions
- Research expenditures (total and state)

Preparing You for...
### Top 50 Balanced Growth
- Top 50 ranking among public universities
- 3,500 undergraduate students
- 1,000 master’s students
- 350 doctoral students
- 135 tenure-track faculty members
- 65 clinical and research faculty members
- 240 staff members
- $300,000 in research expenditures per faculty member

### Increase Research Activity
- Invention disclosures
- Industry research expenditures
- Patents awarded
- Startup companies

### Increase economic development

### 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

For Your Tomorrow
“Students at the U of A have the opportunity to be instructed on crucial engineering principles from some of the best in our field. We learn valuable life lessons from all faculty, staff and peers we see every day. However, it wasn’t until my last semester here that I realized that the jokes we made as sophomores about saving the world weren’t just about distant opportunities anymore. I realized that if anyone can change the world, engineers can.”

Shelby Paschal Spence
B.S.B.E. ’15
2015 Outstanding Senior
Top 50 Balanced Growth

- 3,500 undergraduate students
- 1,000 master’s students
- 350 doctoral students
- 135 tenure-track faculty members
- 65 clinical and research faculty members
- 240 staff members
- $300,000 in research activity per faculty member
“One of the biggest draws at the University of Arkansas was the level of research coupled with the opportunity to develop project management experience. My research adviser always encouraged me to present at conferences, collaborate with other researchers, and take new risks to further develop as an individual. Because of this, I was able to travel the world, present at several nationally recognized conferences and start a company because of my research. Not only did I learn analytical and project management skills, but I was also able to learn how to drive business results. The quality of my degree is first class.”

James Phillip Turner  
B.S.Ch.E. ‘10, Ph.D. ‘15  
Project Specialist, Sam’s Club
The University of Arkansas aspires to be listed in the top 50 of public universities, as ranked by U.S. News & World Report. This publication, a popular source of university rankings, ranks both undergraduate and graduate programs. For Ph.D. programs, it considers metrics related to the quality of students the college attracts and metrics related to graduates’ achievements. U.S. News also surveys deans, program directors, senior faculty and professionals who hire engineering graduates to establish peer and corporate recruiter assessment data. For its college undergraduate rankings, U.S. News uses only peer assessment data. The 2016 rankings are based on a two year average of data from 2013 and 2014.
Our stories.

“The College of Engineering provides the personalized attention of a small college along with the advantages and excitement of a large university. In recent years, our student population has grown dramatically. We’ve managed to expand our student population while maintaining our high standards, as you can see by our students’ impressive ACT scores and grade point averages.”

Norman Dennis, Ph.D., P.E.
Senior Associate Dean
University Professor of Civil Engineering
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.
“I chose the U of A because of the available scholarships and the chance to conduct research as an undergraduate. Once I got here, I joined the Honors College, and this led to even more opportunities. I was able to study abroad and present my research at an international conference. In addition to that, I participated in internships, which helped me develop a passion for construction and the energy industry. The combination of international experience, critical thinking skills and real world experience I received at the U of A set me up for a successful career.”

Sydney (Dickson) Waddle
B.S.C.E. ’15
Construction Engineer, Bechtel
Fall 2015 Incoming Student Awards

Bodenanmer Fellows ............................................... 1
Honors College Fellows .......................................... 34
National Merit Scholars ........................................... 15

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.
“I came to the U of A because it is the highest ranked school in Arkansas. The Engineering Career Awareness Program (ECAP) has been my home away from home. It’s a group of like-minded people who share the same goals and help each other. Through ECAP, I’ve had many exciting opportunities. I’ve studied abroad in Belize and conducted research at the Massachusetts Institute of Technology. I’ve discovered that there are many different ways I can use my chemical engineering degree.”

Britney Washington
B.S.Ch.E. ’17
Engineering Career Awareness Program
**Engineering Career Awareness Program Student Demographics**

- African American: 31.25%
- Asian: 6.25%
- Hispanic/Latino: 50%
- Native Hawaiian/Pacific Islander: 6.25%
- Native American: 6.25%
- Female: 64.7%
- Male: 31.3%

**Engineering Career Awareness Program Six Year Graduation Rate**

<table>
<thead>
<tr>
<th>Cohort Year</th>
<th>Received a degree from the U of A</th>
<th>Received an engineering degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>79%</td>
<td>79%</td>
</tr>
<tr>
<td>2009</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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.

**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.
“The Freshman Engineering Program helped me adjust to college by providing me with an exceptional peer mentor who is not just my mentor, but my friend. Our class projects helped me develop teamwork, analytical thinking and communication skills. The Freshman Engineering Program helped shape my future plans by providing me with the resources and experience I needed to choose the engineering discipline that I would enjoy most.”

Anthony Woods
B.S.I.E. ’18
2015 Freshman of the Year

First Year Retention Rate

Six Year Graduation Rate

Bachelor’s Degrees Awarded

Strategic Plan Objective Two: Pro
Our students characterize their professors as knowledgable, approachable and always ready to help. Chancellor Emeritus and respected industrial engineer John A. White Jr., Ph.D., instructs students on leadership in engineering.

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.

Student-Faculty Ratio

<table>
<thead>
<tr>
<th>Fall 2011</th>
<th>Fall 2012</th>
<th>Fall 2013</th>
<th>Fall 2014</th>
<th>Fall 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Students</td>
<td>23.4</td>
<td>26.1</td>
<td>28.3</td>
<td>27.1</td>
</tr>
<tr>
<td>Master's Students</td>
<td>1.9</td>
<td>1.9</td>
<td>2.3</td>
<td>2.2</td>
</tr>
<tr>
<td>Ph.D. Students</td>
<td>1.9</td>
<td>2.0</td>
<td>2.1</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Student Semester Credit Hours per Faculty Full Time Equivalence

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>341</td>
<td>352</td>
<td>409</td>
<td>408</td>
<td>440</td>
</tr>
</tbody>
</table>

Our progress.

Experiential Learning
(students who participated in cooperative education, undergraduate research or study abroad)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>236</td>
<td>275</td>
<td>295</td>
<td>337</td>
<td>342</td>
</tr>
</tbody>
</table>

Student-Faculty Ratio

Our progress.

Our future.

<table>
<thead>
<tr>
<th>Fall 2011</th>
<th>Fall 2012</th>
<th>Fall 2013</th>
<th>Fall 2014</th>
<th>Fall 2015</th>
</tr>
</thead>
<tbody>
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<td>26.1</td>
<td>28.3</td>
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<tr>
<td>Ph.D. Students</td>
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<td>2.1</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Student Semester Credit Hours per Faculty Full Time Equivalence

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>341</td>
<td>352</td>
<td>409</td>
<td>408</td>
<td>440</td>
</tr>
</tbody>
</table>

vide student centered education
“In my eight years of teaching computer science at the U of A, I have had an opportunity to instruct amazing students from many different degree programs and backgrounds. One thing that is particularly rewarding is how enthusiastic and hardworking these students are. It is a joy to teach students who really want to learn. I know that when I shake their hands on graduation day, these students will make me and the university proud in all they do.”

John Gauch, Ph.D.
Professor of Computer Science and Computer Engineering
2015 John L. Imhoff Award for Teaching Recipient

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

* ASEE salary survey data for fall 2015 is not available until January. Instructor salaries are not benchmarked in the ASEE salary survey.

Faculty Retention

<table>
<thead>
<tr>
<th>Year</th>
<th>Faculty Retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>97%</td>
</tr>
<tr>
<td>2012</td>
<td>98%</td>
</tr>
<tr>
<td>2013</td>
<td>98%</td>
</tr>
<tr>
<td>2014</td>
<td>98%</td>
</tr>
<tr>
<td>2015</td>
<td>99%</td>
</tr>
</tbody>
</table>

Staff-Faculty Ratio

<table>
<thead>
<tr>
<th>Year</th>
<th>Staff-Faculty Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>0.89</td>
</tr>
<tr>
<td>2012</td>
<td>0.86</td>
</tr>
<tr>
<td>2013</td>
<td>0.88</td>
</tr>
<tr>
<td>2014</td>
<td>0.89</td>
</tr>
<tr>
<td>2015</td>
<td>0.86</td>
</tr>
</tbody>
</table>

Strategic Plan Objective Three: Recruit and retain high quality faculty and staff

In my eight years of teaching computer science at the U of A, I have had an opportunity to instruct amazing students from many different degree programs and backgrounds. One thing that is particularly rewarding is how enthusiastic and hardworking these students are. It is a joy to teach students who really want to learn. I know that when I shake their hands on graduation day, these students will make me and the university proud in all they do.”

John Gauch, Ph.D.
Professor of Computer Science and Computer Engineering
2015 John L. Imhoff Award for Teaching Recipient
Preparing for Tomorrow:

- We plan to add endowed department head chairs in order to recruit and retain faculty in these vital positions and continue our tradition of exceptional leadership for our departments.

- One of the hallmarks of faculty success is attaining an endowed professorship or chair. The prestige and resources that come with this honor are an important tool in our mission to attract, support and retain talented faculty members.
“As a land grant institution, the University of Arkansas has a mission to provide innovative solutions to the challenges Arkansans face now and in the future. Engineering research holds the key to many of the environmental and economic issues in our state, nation and world, and at the U of A, the College of Engineering faculty have much to contribute from their labs. By nurturing our established research strengths, the college can ensure that our research program will remain robust and will help create solutions for the next generation.”

Heather Nachtmann, Ph.D.
Associate Dean for Research
Professor of Industrial Engineering

---

**Research Activity/Expenditures by Department**

- Biological and Agricultural Engineering
- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Science and Computer Engineering
- Electrical Engineering
- Industrial Engineering
- Mechanical Engineering
- Engineering

**Research Proposals Submitted**

- FY 2011: 260
- FY 2012: 213
- FY 2013: 232
- FY 2014: 279
- FY 2015: 306

**Peer-reviewed Publications**

- 2010: 321
- 2011: 290
- 2012: 312
- 2013: 336
- 2014: 397

---

**Strategic Plan Objective Four:**

---

Increase research productivity

New Research Grants Received

<table>
<thead>
<tr>
<th>Year</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
<th>FY 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>$15.5M</td>
<td>$10.5M</td>
<td>$10M</td>
<td>$16.4M</td>
<td>$17.3M</td>
</tr>
</tbody>
</table>

Total Research Activity/Expenditures*

<table>
<thead>
<tr>
<th>Year</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
<th>FY 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>$20.9M</td>
<td>$20.9M</td>
<td>$17.7M</td>
<td>$13.3M</td>
<td>$15.9M</td>
</tr>
</tbody>
</table>

* As reported to ASEE.

Advanced Degrees Awarded

<table>
<thead>
<tr>
<th>Year</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>360</td>
<td>365</td>
<td>356</td>
<td>329</td>
<td>380</td>
</tr>
</tbody>
</table>

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.

Alan Mantooth, Ph.D., Distinguished Professor of electrical engineering, holder of The Twenty-First Century Research Leadership Chair and Arkansas Research Alliance fellow. Mantooth received the 2015 College of Engineering Most Engaging Research Faculty Award for his work in power electronics.

Julie Carrier, Ph.D., professor of biological and agricultural engineering, earned the 2015 John L. Imhoff Award for Research for her work in biochemicals.
**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.
• Centers in this area include High Density Electronics Center, the Institute for Nanoscience and Engineering, 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

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.
Our stories.

College of Engineering Startup Companies

Since 1990, 23 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>
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<td>2004</td>
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<td>2010</td>
<td>■</td>
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<tr>
<td>2011</td>
<td>■</td>
</tr>
<tr>
<td>2014</td>
<td>■ ■</td>
</tr>
</tbody>
</table>

Ellen Brune, Ph.D.
B.S.Ch.E ’09, M.S.Ch.E. ’13, Ph.D. ’13
Founder and CEO
Boston Mountain Biotech, LLC

“The University of Arkansas and the College of Engineering have always been a great support to my education and exploration as a scientist and entrepreneur. From starting as an Honors College Fellow all the way through grad school as a Doctoral Academy Fellow, the school has been there providing support, resources and opportunities for me to be successful.”

Strategic Plan Objective Five:
Douglas Hutchings, Ph.D. ’13, and Seth Shumate, Ph.D. ’15, are the founders of Silicon Solar Solutions and Picasolar. These two companies, which have office and lab space at the Arkansas Research and Technology Park, are creating more efficient solar cells.

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.
“I believe a steady exchange of ideas between university leadership and its alumni is vital to both the economic and educational success of the university. Alumni are a resource for advice and political and financial support for the college. They also play an important role as future employers of the engineers who graduate from the university.

“I owe a large part of my success to my engineering degree from the U of A. I was able to earn my degree due to the support provided by my family and the scholarship aid furnished by College of Engineering alumni. This has motivated me to support the College of Engineering so I can return the kindness and support that was afforded me early in life.”

Grady Harvell
B.S.C.E ’72
President of AFCO Steel
Chairman of the College of Engineering Advisory Council
Our future. Our progress.

Strategic Plan Objective Six: Increase alumni and corporate partnerships

Endowed Faculty Positions

<table>
<thead>
<tr>
<th>Year</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
<th>FY 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumni</td>
<td>31</td>
<td>31</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>

Endowed Scholarships and Fellowships

<table>
<thead>
<tr>
<th>Year</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
<th>FY 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumni</td>
<td>31</td>
<td>31</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>

Philanthropic Giving

<table>
<thead>
<tr>
<th>Year</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
<th>FY 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumni</td>
<td>31</td>
<td>31</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>

For more information, see Gifts and Endowments chart on Appendix page 37.

alumni and corporate partnerships

2015 Hall of Fame Award
- Hugh H. Brewer, B.S.E.E. '59, retired owner and president, Upchurch Electrical Supply
- Jim M. Hefley, B.S.I.E. '61, retired executive vice president, Gemini Consulting

2015 Distinguished Alumni Award
- Sam K. Alley, B.S.C.E. '79, chairman and chief executive officer, VCC
- Melinda Pettet Faubel, B.S.I.E. '80, director of external affairs, AT&T Arkansas
- William Brock Johnson, B.S.C.E. '72, M.S.C.E. '80, president and chief executive officer, Garver Engineers (posthumous award)
- Jeffrey D. Madden, B.S.Ag.E. '88, director of engineering and construction services, Riceland Foods Inc.
- George Eugene “Gene” Mann, B.S.M.E. '63, B.S.C.E. '65, retired directorate of public works, Red River Army Depot
- Adam Monroe, B.S.Ch.E. '88, president, Americas, Novozymes
- Rebecca Wilson, B.S.C.S.E. '92, service delivery manager, Microsoft Corp.

2015 Early Career Award
- Shawn Brewer, B.S.B.A.E. '95, M.S.B.A.E. '98, hydraulic engineer, USDA Natural Resources Conservation Service
- Jesse Buffington, B.S.M.E. '07, B.S. '12, lead, exploration EVA strategy and architecture integration, NASA's Johnson Space Center
- Edgar Cilio, B.S.E.E. '04, M.S.E.E. '08, engineering manager, APEI
- Timothy Doolittle, B.S.Ch.E. '97, global process technology associate, The Dow Chemical Co.
- Jaysson Funkhouser, B.S.C.E. '98, M.S.C.E. '00, assistant director, U.S. Geological Survey
- William Richardson, B.S.B.E. '07, postdoctoral research fellow, University of Virginia Health System
- Ami Spivey, B.S.I.E. '95, senior vice president, Walmart International
- Jeremy W. Stobaugh, B.S.C.S.E. '00, M.B.A. '10, director of information services, J.B. Hunt Transport Services Inc.
“Not only do we need increasing classroom space for our burgeoning enrollment, our laboratory space will determine our research growth.”

John R. English, Ph.D., P.E.
Dean

Strategic Plan Objective Seven: Provide high quality infrastructure

2015 Renovations

Academic Space
5,236 square feet

Research Space
8,200 square feet

2015 Renovations

Academic Space
$546,000

Research Space
$304,000

Strategic Plan Objective Seven:
Strategic Plan Objective Seven: Provide high quality infrastructure

Preparing for Tomorrow:

- Construction of the CEREC will provide research space for structures analyses and allow the Department of Civil Engineering to remain regionally competitive.

- 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.

<table>
<thead>
<tr>
<th>2015 Total</th>
<th>Academic Space</th>
<th>Research Space</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>77,416 square feet</td>
<td>92,272 square feet</td>
</tr>
</tbody>
</table>
## 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>$17,434,865</td>
<td>$18,231,900</td>
<td>$20,117,970</td>
<td>$20,787,672</td>
<td>$21,712,044</td>
</tr>
<tr>
<td>Distance Learning Revenues, Ft Smith, Service Centers, Conferences</td>
<td>$3,429,109</td>
<td>$3,606,851</td>
<td>$3,335,980</td>
<td>$3,103,014</td>
<td>$3,140,177</td>
</tr>
<tr>
<td>Research Incentive Funds</td>
<td>$1,789,723</td>
<td>$1,714,543</td>
<td>$1,635,454</td>
<td>$1,643,657</td>
<td>$942,325</td>
</tr>
<tr>
<td>Biological Engineering Teaching and Agricultural Experiment Station*</td>
<td>$1,651,146</td>
<td>$1,758,085</td>
<td>$1,947,726</td>
<td>$1,787,000</td>
<td>$1,851,719</td>
</tr>
<tr>
<td>Sponsored Research**</td>
<td>$15,029,997</td>
<td>$16,005,505</td>
<td>$14,930,781</td>
<td>$11,805,030</td>
<td>$15,907,692</td>
</tr>
<tr>
<td>Student Equipment Fee Revenues (TELE-net)</td>
<td>$1,429,442</td>
<td>$1,767,505</td>
<td>$2,092,715</td>
<td>$2,286,709</td>
<td>$2,302,119</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$42,110,687</td>
<td>$44,802,564</td>
<td>$45,396,844</td>
<td>$42,931,241</td>
<td>$47,393,199</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>$14,192,862</td>
<td>$16,248,982</td>
<td>$16,572,659</td>
<td>$17,363,641</td>
<td>$18,744,220</td>
</tr>
<tr>
<td>Operating Expenditures</td>
<td>1,588,827</td>
<td>1,828,291</td>
<td>$2,751,265</td>
<td>$2,615,636</td>
<td>$1,537,123</td>
</tr>
<tr>
<td>Dept Restricted Fees/Misc</td>
<td>2,209,167</td>
<td>2,385,329</td>
<td>$2,466,727</td>
<td>$2,773,673</td>
<td>$1,239,293</td>
</tr>
<tr>
<td>Student Equipment Fees</td>
<td>1,101,442</td>
<td>1,786,399</td>
<td>$1,606,694</td>
<td>$2,122,512</td>
<td>$2,241,529</td>
</tr>
<tr>
<td>Scholarships</td>
<td>289,681</td>
<td>369,645</td>
<td>$302,547</td>
<td>$1,193,379</td>
<td>$758,241</td>
</tr>
<tr>
<td>Research*</td>
<td>23,653,834</td>
<td>25,116,772</td>
<td>$23,972,316</td>
<td>$20,729,821</td>
<td>$22,476,266</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>43,035,813</td>
<td>44,802,564</td>
<td>45,396,844</td>
<td>42,931,241</td>
<td>47,393,199</td>
</tr>
</tbody>
</table>

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

## Financial Position

<table>
<thead>
<tr>
<th></th>
<th>$47,393,199</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Expenditures</td>
<td>-$46,760,722</td>
</tr>
<tr>
<td>+ Gifts (net)</td>
<td>$3,354,798</td>
</tr>
<tr>
<td><strong>2015 Financial Position</strong></td>
<td>$3,987,275</td>
</tr>
</tbody>
</table>
## Gifts and Endowments*

<table>
<thead>
<tr>
<th>Revenue</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
<th>FY 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributions - Expendable</td>
<td>$1,961,124</td>
<td>$1,222,770</td>
<td>$2,709,746</td>
<td>$1,126,807</td>
<td>$871,121</td>
</tr>
<tr>
<td>Contributions - Endowed &amp; Restricted Gifts</td>
<td>$2,797,204</td>
<td>$956,115</td>
<td>$1,072,257</td>
<td>$5,238,427</td>
<td>$3,620,544</td>
</tr>
<tr>
<td>Investment Income:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expendable</td>
<td>$2,132,333</td>
<td>$2,133,632</td>
<td>$2,322,307</td>
<td>$2,577,659</td>
<td>$2,617,325</td>
</tr>
<tr>
<td>Endowed (reinvestment)</td>
<td>$3,680</td>
<td>$1,090</td>
<td>$1,042</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Endowed Market Value Adjustment</td>
<td>$6,618,498</td>
<td>($1,170,897)</td>
<td>$4,133,111</td>
<td>$6,979,898</td>
<td>($298,852)</td>
</tr>
<tr>
<td>Net Transfers and Allocations</td>
<td>$244,658</td>
<td>$33,732</td>
<td>$13,743</td>
<td>($1,224,342)</td>
<td>$0</td>
</tr>
<tr>
<td>Total Revenue</td>
<td>$13,757,497</td>
<td>$3,176,442</td>
<td>$10,252,206</td>
<td>$14,698,448</td>
<td>$6,810,138</td>
</tr>
</tbody>
</table>

<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>$904,468</td>
<td>$1,017,287</td>
<td>$1,119,101</td>
<td>$1,154,870</td>
<td>$836,285</td>
</tr>
<tr>
<td>Other College Support</td>
<td>$3,364,245</td>
<td>$3,576,456</td>
<td>$2,574,873</td>
<td>$2,272,358</td>
<td>$2,154,828</td>
</tr>
<tr>
<td>Capital Outlays</td>
<td>$97,135</td>
<td>$108,988</td>
<td>$152,525</td>
<td>$218,170</td>
<td>$72,484</td>
</tr>
<tr>
<td>Development costs**</td>
<td>$486,472</td>
<td>$466,370</td>
<td>$350,435</td>
<td>$347,631</td>
<td>$391,743</td>
</tr>
<tr>
<td>Total Expenditures</td>
<td>$4,852,320</td>
<td>$5,169,101</td>
<td>$4,196,934</td>
<td>$3,993,030</td>
<td>$3,455,340</td>
</tr>
<tr>
<td>Revenues less Expenditures</td>
<td>$8,905,177</td>
<td>($1,992,659)</td>
<td>$6,055,272</td>
<td>$10,705,419</td>
<td>$3,354,798</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*

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

### 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>$9,757,844</td>
<td>$8,245,875</td>
<td>$9,411,703</td>
<td>$8,219,552</td>
<td>$11,335,354</td>
</tr>
<tr>
<td>Pooled Investment Funds - Endowments</td>
<td>$43,327,810</td>
<td>$42,994,532</td>
<td>$46,329,354</td>
<td>$55,042,921</td>
<td>$52,222,964</td>
</tr>
<tr>
<td>Scholarship Endowments</td>
<td>$8,388,097</td>
<td>$8,284,086</td>
<td>$9,643,672</td>
<td>$12,348,260</td>
<td>$14,376,759</td>
</tr>
<tr>
<td>Fellowship Endowments</td>
<td>$3,066,491</td>
<td>$2,983,974</td>
<td>$3,305,901</td>
<td>$3,785,316</td>
<td>$3,991,624</td>
</tr>
<tr>
<td>Total Fund Balances</td>
<td>$64,540,242</td>
<td>$62,508,467</td>
<td>$68,690,630</td>
<td>$79,396,049</td>
<td>$81,926,701</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>Master of Science in Operations Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>2011</td>
</tr>
<tr>
<td>2012</td>
</tr>
<tr>
<td>2013</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>2015</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>Master of Science in Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>2010</td>
</tr>
<tr>
<td>2011</td>
</tr>
<tr>
<td>2012</td>
</tr>
<tr>
<td>2013</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>2015</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

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

Arkansas Research Alliance
  Alan Mantooth

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 Industrial Engineers
  Richard Cassady
  John English
  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

Society of Tribologists and Lubrication Engineers
  Min Zou
Appendix

College of Engineering Contacts

John English
Dean of the College of Engineering
Irma F. and Raymond F. Giffels Endowed Chair in Engineering
jre@uark.edu

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(479) 575-7455

Senior Administrative Team

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ndennis@uark.edu

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Associate Dean for Research
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Development Manager: Stella Clark
(479) 575-4092

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(479) 575-3053

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(479) 575-8412

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(479) 575-5699

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

Camilla Shumaker
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(479) 575-5697

Eric Specking
Director of Recruitment
especki@uark.edu
(479) 575-7780
Appendix

College of Engineering Advisory Council

Grady E. Harvell, Council Chair
President
AFCO Steel

Troy Alley
Executive Vice President and COO
Con-Real, Inc.

Bami Bastani
Senior Vice President
Radio Frequency Business Unit
Global Foundries

Sherman L. Black
CEO
QUMU Corporation

Kevin W. Brown
Executive Vice President,
Manufacturing and Refining
LyondellBasell Industries

Ansel L. Condray
Chairman and Production Director
(retired)
ExxonMobil International, Ltd.

William L. Cravens
Chairman (retired)
Alltel Information Services, Inc.

Robert A. Davidson
President and CEO (retired)
Arkansas Best Corporation

Melinda Faubel
Director of External Affairs
AT&T Arkansas

Alan D. Fortenberry
CEO
Beaver Water District

David D. Foust
President and CEO (retired)
Seneca Wire & Manufacturing Company

Jack A. Giles
General Partner and Consultant
Urban Spaces, LLC

Bob Harrison
Vice President/Principal
ECCI

Kendall T. Harris
Dean
Roy G. Perry College of Engineering,
Prairie View A&M University

David Humphrey
Vice President, Investor Relations and
Corporate Communications
ArcBest Corporation

Prakash Jaiihal
Senior Advisor (retired)
Global Technology Deployment Initiative
Fidelity National Information Services

James S. “Jon” Keel
Founder and CEO
Improved Results, LLC

Jack King
President and CEO (retired)
Oglethorpe Power Corporation

Rodger S. Kline
COO (retired)
Acxiom Corporation

Vincent S. Lyons
Vice President, Machinery and Technology Group
President, Product Development
Leggett and Platt, Inc.

John R. Marshall
President and CEO
Coastal Partners, Inc.

Charles F. “Micky” Mayfield
Sales Vice President
Coriant

Kirk Pond
Chairman, CEO and President (retired)
Fairchild Semiconductor International, Inc.

Ami Spivey
Senior Vice President
International Business Processes,
Walmart Stores, Inc.

Larry Stephens
Chairman of the Board
Mid-South Engineering Company

Julian Stewart
Sales and Marketing (retired)
IBM Corporation

W. Robert Storey
Principal Director, The MVR Company
Managing Director, VIC Technology Venture Development

Dan Williams
President and CEO/
Chairman of the Board
Garver Engineers

Charles Zimmerman
Vice President, International Design and Construction
Walmart Stores, Inc.
Preparing You For Your Tomorrow

University of Arkansas
engineering.uark.edu

College of Engineering
4183 Bell Engineering Center
University of Arkansas
Fayetteville, AR 72701