

THE STEM CLARION

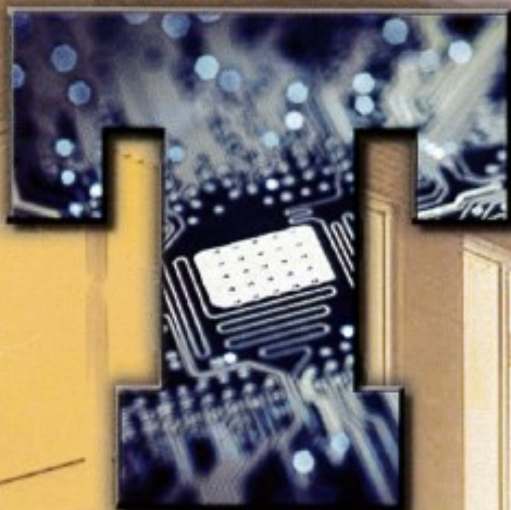
Helping to Build a Stronger Community and Nation Through
Science, Technology, Engineering and Mathematics Careers

FALL 2016
SPRING 2017

STEM



WPB
UNIVERSITY
of ARKANSAS
AT PINE BLUFF
1873



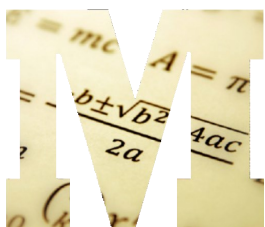
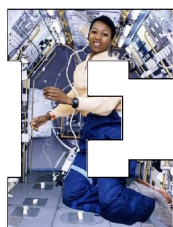
STEM CLARION

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2016-2017



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“Greatness is a choice that is available to everyone who has the desire to be great.”



Purpose of UAPB STEM SCHOLARS ACADEMY

The UAPB STEM Academy is a well-integrated set of enrichment programs designed to help meet local, state and national human resource needs in STEM areas. As an HBCU with a land grant mission, the University of Arkansas at Pine Bluff (UAPB) has a legacy of service to underserved, rural and minority populations. The STEM Academy reflects this mission and has a particular emphasis on helping to increase the pool of well-prepared underrepresented minorities in STEM majors and careers.

Currently, there are three enrichment initiatives, including the NSF-funded HBCU-UP Comprehensive Implementation grant which is foundational to the STEM Academy; the NSF-funded Arkansas Louis Stokes Alliance for Minority Participation grant which is reflective of best practices learned in the HBCU-UP STEM Academy; and the U.S. Department of Education funded M.Ed. Degree in Science and Mathematics Education Program. All are designed to help meet research, teaching, and industry needs in science areas, with a particular emphasis on diversity in these critical area. The Arkansas Science and Technology Authority is also a major partner in these initiatives.

Some key components of the STEM Academy initiatives include: Guest Lecture Series, advisory board, Pre-First Year Summer Institutes/Academy, hands-on research/mentoring experiences, internships, study groups, curricula and infrastructure upgrades.

Disciplines include: ***chemistry, mathematics, physics, computer science, biology, plant and animal sciences, and industrial technology.***



Office of the Chancellor

Your headline is an important part of the newsletter and should be considered carefully.

In a few words, it should accurately represent the contents of the story and draw readers into the story. Develop the headline before you write the story. This way, the headline will help you keep the story focused. Examples of possible headlines include Selling Your Home and New Office Opens Near You.

If you have to break a headline into two rows, try to find a natural break in the content. Each line should stand alone so that your readers can easily understand what is in the story even while skimming.

Newspaper editors consider headline writing like poetry. How can you get the reader's attention and draw them into the story in only a few words?

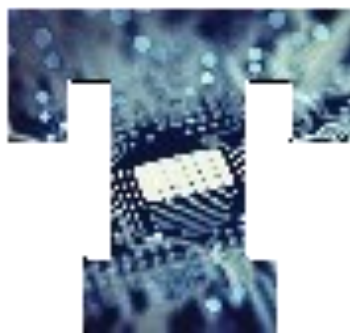
Meanwhile, you don't want to give too much away, or the reader doesn't even have to read the story to understand the content.



Letter from the Principal Investigator



To Dr. Colen, Dr. Buckner, Dr. Walker, Ms. Bender, Ms. Hildreth, each STEM Scholar and Friends, Good morning.

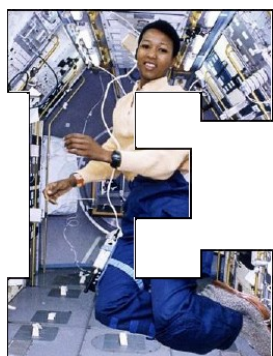


Thank you for the invitation to speak during this highly regarded STEM Guest Lecture Series ... designed to present useful information to help equip you for success in your STEM career. Today, my assignment evokes mixed emotions:

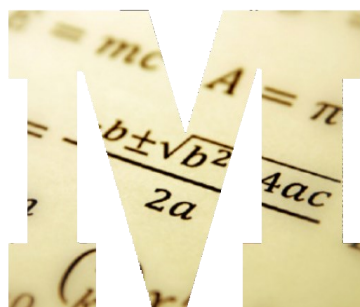
Happiness: To be invited by you the STEM Scholars.

Melancholy: At the thought of not having day- to- day involvement with UAPB's outstanding STEM Scholars and the STEM Academy.

Having been the founder of this well-designed and productive program has consumed a magnanimous amount of my energy, creativity and soul. Many days, nights, weekends and holidays have been invested in this program ... willingly and joyfully as our team coalesced:



Dr. William Willingham, Dr. Clifton Orr, Dr. Charles Colen, Dr. Islam Chowdhury, Dr. Mansour Mortazavi, Mrs. Carolyn McCoy (ARESC), Dr. Robyn Hanigan (ASU), Dr. Gail McClure (ASTA), Dr. Suzanne Mitchell (ADHE), Dr. Cecil McDermott (ASTA consultant), Dr. Jewell Walker (Dean, University College), Dr. Dominick Fazarro (Industrial Technology) and later Dr. Antonie Rice along with Dr. Jessie Walker.



We shared ideas, meals and long hours along with a trip to Prairie View A&M University which had an HBCU-UP Program for its Engineering Department. All this was with a vision of enriching the STEM curricula at UAPB for our then current and future students ... YOU!! You are the personification of our seminal vision. The National Science Foundation (NSF) awarded UAPB HBCU-UP a \$50,000 planning grant in 2002 and the rest is history. We have generated more than \$18,000,000 in student focused funding in addition to partnering with our UAPB Title III Office to secure funds (most from the U.S. Department of Education along with additional funding from Former Governor Mike Beebe, Senator Linda Chesterfield and Former Representative Charles Armstrong) for our STEM Academy and Conference Center, a \$10M facility.

This original journey of commitment and faith led to three five-year HBCU-UP awards and to the replication of our HBCU-UP Program. We teamed with a group of like-minded colleges and university leaders and developed the Arkansas Louis Stokes Alliance for Minority Participation. Dr. Anissa Buckner was employed as our Project Coordinator, became a Co-PI and is now the PI. Along the way, we hired great staff including Mrs. Felicia Parks, Mrs. Kimberly Withers, Mrs. Donna Ryles, Ms. Chandra Taylor, Ms. Marikka Bender and Ms. Laura Hildreth.

We also added wonderful and bright students. So, today, we have gathered to tell the story and to take a group picture that will grace the wall in our administrative suite on the second floor of this STEM Academy. In the years to come, it is my hope that you will return as a Ph.D. STEM Scholar and point to your picture with pride as you recount and tell the story of how this STEM Scholars Academy impacted you and your career success.

To help you store some of these features in your long-term memory, I will list a few:

The application and interview process

The Summer Academy

The 6:00 A.M. exercise sessions

Dormitory life and campus cuisine

The summer internship(s)

Attendance and participation at state, national and international conferences

Serving as a STEM mentor, officer, recruiter

Serving as an usher and tour guide for the 2014 Open House Ceremony for the new STEM Academy and Conference Center

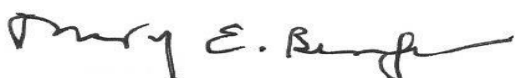
Travel abroad

Drs. Colen, A. Buckner, K. Walker, J. Walker, Njue, Mortazavi, Onyilagha, A. Rice, S. Rice, Ms. Bender, Ms. Hildreth, et.al

You fill in the blanks

As I pass the baton to Drs. Charles Colen, Anissa Buckner, Karl Walker, Sederick Rice and other UAPB STEM researchers. I am comfortable that through their leadership, vision and ability to periscope the future, this University of Arkansas at Pine Bluff STEM Academy will soar to new heights, be accorded the state, national and international acclaim which it deserves, and serve as a beacon to students who want to pursue their dream of a solid, fulfilling and productive STEM career which will help make their lives meaningful and this society better, safer, healthier, and more secure.

To all, I say goodwill and stay focused.



UAPB STEM Academy Leadership



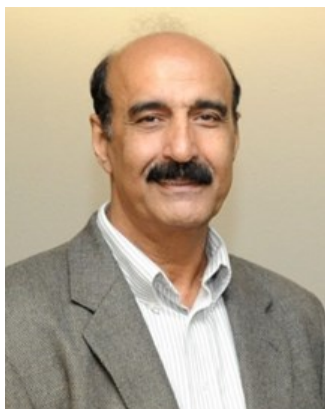
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2016 - 2017 UAPB STEM Academy

Student Leadership

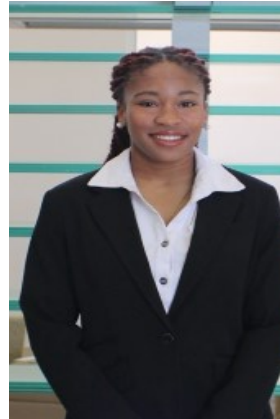


POSTEM

**President of STEM
Jonathan McClinton**



**Communication Liaison
Kiersten Larry**



**Sergeant at Arms
Brianna Burke**



**Secretary
Monesha McDaniels**



**Project Manager
Ayliah Coleman**



**Ms. STEM
Sharoya Simmons**



**Assistant Secretary
Mamie Jennings**



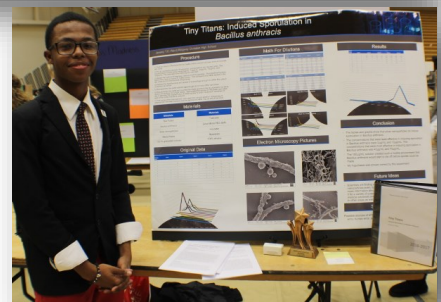
**Treasurer
Sydney Worlds**

UAPB Science Fair Exposition

The University of Arkansas at Pine Bluff (UAPB) held its 13th Annual Science Fair Exposition (Expo) on February 9, 2017. The Expo was held in the arena of the Kenneth I. Johnson, Sr. HYPER Complex. The date of the Expo was set to enhance the readiness and competitiveness of students for the regional fairs at Monticello, Jonesboro, Batesville, Central Arkansas and the state fair at the University of Central Arkansas in Conway, Arkansas. It is conducted as an affiliated regional fair, following the state and national mandated

rules governing research and the presentation/display of results. There were seventeen (17) project categories to choose from.

- Animal Sciences
- Biochemistry
- Cellular and Molecular Biology
- Cellular and Molecular Biology
- Chemistry
- Computer Science
- Earth and Planetary Science
- Energy and Transportation
- Engineering: Electrical and Mechanical
- Engineering: Materials and Bioengineering
- Environmental Management
- Environmental Sciences
- Medicine and Health Sciences
- Microbiology
- Physics and Astronomy
- Plant Sciences
- Social and Behavioral Sciences Teams



UAPB STEM Saturday Academy

Each year a number of 10-12th grade students are selected to attend the STEM Saturday Academy where they conduct experiments in various science, technology, engineering and mathematics (STEM) areas. The track for teachers focuses on benchmark measures in science and mathematics along with strategies to recruit students to major STEM disciplines. In 2017, the STEM Saturday Academy students conducted experiments in the areas of Chemistry, Biology, Computer Hardware, Computer Animation, Industrial Technology, Mathematics, Robotics, Global Positioning Systems (GPS) and geographic Information Systems (GIS).



**UNIVERSITY OF ARKANSAS AT
PINE BLUFF**

STEM Summer Academy

The STEM Summer Academy is a bridge program that offers the necessary skills and knowledge to pre-college high school graduates to help make a seamless transition to college. STEM Scholars receive room and board. The STEM Scholars Summer Academy is designed to enhance, enrich, and refresh the in-coming freshmen in mathematics, chemistry, technical writing skills, biology, social decorum, and campus survival skills. Student achievement is assessed during and after the program.

HBCU-UP offered a seven week STEM Scholars Summer Academy for a total of twenty-six students in 2014. Each student received room and board for the length of the seven week period as well as a stipend for attending the Summer Academy.

TYPICAL DAILY ACTIVITIES

6:15A-7:00A Physical Fitness	12:00P-1:15P Lunch
7:00A-8:00A Breakfast	1:20P-2:40P Chemistry LAB
8:10A-9:30A Mathematics	2:45P-3:45P College Survival/Comp Sci
9:35A-10:55A Biology LAB	4:00P-4:45P Professional Dev.
11:00A-12:00P Technical Writing	4:50P-5:30P Dinner
6:30P-8:30P Tutorial/Study Time	

ARK-LSAMP offered a six week Pre- First Year Summer Institute in 2014. Each student received room and board for the length of the six week period as well as a stipend for attending the Summer Institute Students in the program are drawn from six four-year colleges/universities in the 10-member alliance.

STEM SCHOLARS ACADEMY (HBCU-UP)

The National Science Foundation (NSF) awards HBCU-UP grants to help increase the number of under-represented minority students (URM) in the areas of Science, Technology, Engineering and Mathematics. The University of Arkansas at Pine Bluff (UAPB) has formed partnerships with eight targeted school districts and with research institutions in planning a comprehensive program to increase the number of URM students in STEM areas. The program consists of a transitional summer academy, mentoring, research internships, faculty development, equipment upgrades, curricula re-design, guest lecture series, and infrastructure enhancement.

At the STEM Scholars Academy level, the scholars are expected to perform and transition from college students to knowledgeable professionals within one of the STEM areas. While obtaining their education, STEM Scholars perform research projects that will further enhance their knowledge of their field of study.

The University of Arkansas at Pine Bluff STEM Scholars Academy includes students from the following disciplines:



BIOLOGY

Prepares students for careers in research, health sciences, and related fields



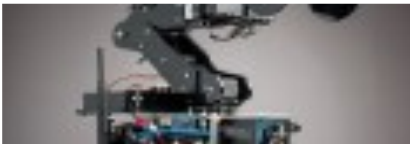
CHEMISTRY

Prepares students for careers in chemistry or work in research



COMPUTER SCIENCE

Prepares students for careers in the computer industry, advanced graduate studies in information sciences, or work as computer programmers



INDUSTRIAL TECHNOLOGY MANAGEMENT AND APPLIED ENGINEERING

Prepares students for diverse careers such as production management, electronics design, quality control management, construction management, quality engineering, and inventory management



MATH

Prepares students to become statisticians or for related careers with emphasis on data-based problem-solving and decision-making



PHYSICS

Prepares students for careers in diverse areas such as engineering, research, work as a physicist or science educator



PLANT AND ANIMAL SCIENCES

Prepares students for graduate school and careers in the areas of plant and animal sciences

Requirements to become HBCU-UP STEM Scholar:

- **Must have a high school GPA of 3.0 or higher**
- **Must have a composite ACT score of 19 or above**
- **Must complete all application requirements and forms to be submitted in the institution**
- **Must declare a STEM Major**

Students accepted in the HBCU UP STEM Scholars program are required to attend weekly meetings. Each of those STEM Scholars will also receive a paid intern experience throughout the Fall and Spring semesters upon adhering to all of the requirements of the program and based on award funding.

ARKANSAS LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION (ARK-LSAMP)

The National Science Foundation funds STEM alliances to increase the number of underrepresented minority students in STEM majors and graduates from campuses that have developed a collaborative plan with a shared vision to increase the number of underrepresented minority STEM professionals.

ARK-LSAMP Member Institutions

University of Arkansas at Pine Bluff

Arkansas State University

Philander Smith College

Philips Community College of the University of Arkansas

University of Arkansas Fayetteville

University of Arkansas Little Rock

University of Arkansas at Monticello

Southeast Arkansas College

ARK-LSAMP has not only helped to prepare its students for campus leadership positions, it also provided rich research internship experiences for the student. Among the eight ARL-LSAMP programs, there were 80 internships provided with five being international. Many of these sites were cultivated through the Guest Lecturer Series which has manifold purposes: role modeling of STEM professionals, first hand contact by university, industry and governmental agency representatives with STEM students; and introduction of students to diverse research models, sites in the following STEM disciplines:



BIOLOGY

Prepares students for careers in research, health sciences, and related fields



CHEMISTRY

Prepares students for careers in chemistry or work in research.



COMPUTER SCIENCE

Prepares students for careers in the computer industry, advanced graduate studies in information sciences, or work as computer programmers



INDUSTRIAL TECHNOLOGY MANAGEMENT AND APPLIED ENGINEERING

Prepares students for diverse careers such as production management, electronics design, quality control management, construction management, quality engineering, and inventory management



MATH

Prepares students to become statisticians or for related careers with emphasis on data-based problem solving and decision-making



PHYSICS

Prepares students for careers in diverse areas such as engineering, research, work as a physicist or science educator

Students accepted in the ARK-LSAMP STEM Scholars program are required to attend weekly meetings. Each of those STEM Scholars will also receive a paid intern experience throughout the Fall and Spring semesters upon adhering to all of the requirements of the program and based on award funding.

Requirements to become ARK-LSAMP STEM Scholar:

- **Must have a high school GPA of 3.0 or higher**
- **Must have a composite ACT score of 19 or above**
- **Must complete all application requirements and forms to be submitted in the institution**
- **Must declare a STEM major at one of the Alliance Institution**



ARKANSAS LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION (ARK-LSAMP)



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STEM Enrollment Data

University of Arkansas at Pine Bluff - STEM Enrollment Fall 2005 - Fall 2016

Undergraduate Programs														
Major	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	One Year % Change Fall 2015 to Fall 2016	% Change Fall 2015 to Fall 2016
Agriculture Science	126	131	137	133	160	168	100	159	162	144	134	148	10.4%	17.5%
Chemistry	27	28	35	44	54	49	52	54	49	52	47	51	8.5%	88.9%
Computer Science	137	110	112	121	127	136	114	100	104	106	110	105	-4.5%	-23.4%
ITMAE	136	119	124	157	176	162	158	158	137	157	163	190	16.6%	39.7%
Biology	193	190	187	207	230	269	304	296	311	327	364	322	-11.5%	66.8%
Mathematics	44	40	45	49	39	52	34	29	27	35	33	38	15.2%	-13.6%
Physics	4	3	7	5	5	6	7	4	7	6	11	13	18.2%	225.0%
TOTAL - STEM	667	621	647	716	791	842	769	800	797	827	862	867	0.6%	30.0%
TOTAL - UAPB (UG)	3,132	3,051	3,099	3,388	3,651	3,283	3,063	2,724	2,521	2,401	2,545	2,721	6.9%	-13.1%
% STEM/ TOTAL UAPB	21.3%	20.4%	20.9%	21.1%	21.7%	25.6%	25.1%	29.4%	31.6%	34.4%	33.9%	31.9%	-5.9%	49.6%

STEM Enrollment Data

Master's Programs														
Major	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013	FALL 2014	FALL 2015	FALL 2016	One Year % Change Fall 2015 to Fall 2016	% Change Fall 2015 to Fall 2016
Computer Science & Technology	-	-	-	-	-	-	-	5	8	15	23	16	-30.4%	-
Mathematics Education	0	2	1	3	3	4	5	6	7	3	1	2	100.0%	100.0%
Science Education	3	2	5	5	6	11	8	5	6	8	3	4	33.3%	33.3%
TOTAL - STEM	3	4	6	8	9	15	13	16	21	26	27	22	-18.5%	633.3%
TOTAL - UAPB (GR)	99	77	101	137	141	145	125	104	94	112	113	100	-11.5%	1.0%
% STEM/ TOTAL UAPB	3.0%	5.2%	5.9%	5.8%	6.4%	10.3%	10.4%	15.4%	22.3%	23.2%	23.9%	22.0%	-7.9%	626.0%

University of Arkansas at Pine Bluff

STEM Degrees Awarded AY 2004-05 to AY 2015-16

Undergraduate Programs

Major	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	One Year % Change AY 2014-15 to AY 2015-16	% Change AY 2004-05 to AY 2015-16
Agriculture Science	19	23	30	24	19	27	13	14	30	24	22	22	0.0%	15.8%
Chemistry	2	4	1	2	3	8	5	10	6	4	9	10	11.1%	400.0%
Computer Science	12	10	6	7	4	8	11	11	11	10	12	13	8.3%	8.3%
Industrial Technology, Management and Applied Engineering	12	26	17	22	21	15	28	30	26	39	19	14	-26.3%	16.7%
Biology	29	17	24	25	22	19	17	32	32	45	36	57	58.3%	96.6%
Mathematics	2	1	1	2	2	2	0	2	2	1	2	1	-50.0%	-50.0%
Physics	0	1	0	0	1	0	1	3	0	1	1	1	0.0%	100.0%
TOTAL - STEM	76	82	79	82	72	79	75	102	107	124	101	118	16.8%	55.3%
Other UAPB UG	344	290	297	283	329	296	307	359	287	305	258	271	5.0%	-21.2%
TOTAL - UAPB (UG)	420	372	376	365	401	375	382	461	394	429	359	389	8.4%	
% STEM/ TOTAL UAPB	18.1%	22.0%	21.0%	22.5%	18.0%	21.1%	19.6%	22.1%	27.2%	28.9%	28.1%	30.3%	7.8%	

OUR STEM SCHOLARS ENGAGE IN GLOBAL INTERNSHIP EXPERIENCES

<i>American Greetings, Inc.</i>	<i>Iowa State University</i>	<i>Tyson Foods, Inc</i>
<i>Arkansas Center for Space and Planetary Science</i>	<i>Jackson State University</i>	<i>United Health Science Center</i>
<i>Arkansas INBRE</i>	<i>John Deere</i>	<i>United States Steel</i>
<i>Ball Aerospace & Technologies Corporation</i>	<i>John Hopkins University</i>	<i>United Water</i>
<i>Boeing Corporation</i>	<i>Johnson & Johnson Corporation</i>	<i>University of Alabama- Tuscaloosa</i>
<i>Booz, Allen and Hamilton</i>	<i>Monsanto</i>	<i>University of Arkansas at Fayetteville</i>
<i>Boston Specific</i>	<i>NASA Science and Technology Institute</i>	<i>University of Arkansas at Pine Bluff</i>
<i>Census Bureau</i>	<i>National Center for Toxicological Research</i>	<i>University of Arkansas for Medical Sciences</i>
<i>Children's Defense Fund Freedom Schools</i>	<i>National Oceanic Atmospheric Administration</i>	<i>University of Central Arkansas</i>
<i>Cincinnati Children's Hospital</i>	<i>Nationwide Children's Hospital</i>	<i>University of Cincinnati</i>
<i>City of Pine Bluff</i>	<i>Natural Resource Conservation Service</i>	<i>University of Louisville</i>
<i>Cornell University</i>	<i>North Dakota State University</i>	<i>University of Michigan</i>
<i>Dale Bumpers National Rice and Research Center</i>	<i>North Texas Health Science Center</i>	<i>University of Minnesota</i>
<i>Dallas Zoo</i>	<i>Nucor Yamato Steel</i>	<i>University of North Texas Health Science Center</i>
<i>Department of the Army, Joint Munitions Command</i>	<i>Oak Ridge National Laboratory</i>	<i>University of Pittsburgh</i>
<i>Eaton Corporation</i>	<i>Pine Bluff Arsenal</i>	<i>University of South Florida</i>
<i>Genentech</i>	<i>Pine Bluff School District</i>	<i>University of Utah School of Dentistry</i>
<i>General Motors</i>	<i>Proctor and Gamble</i>	<i>URS Corporation - Washington Group</i>
<i>Graduate/Florida A&M University</i>	<i>Ring</i>	<i>Vanderbilt Summer Science Academy</i>
<i>Graduate/General Election Aviation</i>	<i>Rockwell Collins</i>	<i>Vector Marketing</i>
<i>Graduate/Purdue University</i>	<i>Texas A&M University-Biochemistry & Biophysics Dept.</i>	<i>Walmart</i>
<i>Graduate/University of Arkansas for Medical Sciences</i>	<i>Texas Highway Department of Transportation</i>	<i>Walt Disney World</i>
<i>Graduate/University of Tennessee at Knoxville</i>	<i>The Pennsylvania State University College of Medicine</i>	<i>Washington School of Medicine</i>
<i>Hensel Phelps Construction, Co.</i>	<i>Tri-State International</i>	<i>Washington State University</i>
<i>Howard University</i>		



S

tephanie Carlton
K-12 Science Specialist
Math and Science Pre-College Center
University of Arkansas Pine Bluff

Mrs. Carlton is responsible for the professional development (pD) opportunities for new and experienced (K-12) science educators. She provides teacher support by researching and developing lessons that involve phenomenal activities and modeling teaching strategies that include three-dimensional learning.



The school districts that we currently support are: Pine Bluff, Watson Chapel, Dollarway, White Hall, Sheridan, Stuttgart, Arkansas School for Deaf, Lighthouse, Quest and Ridgeway Academy.

However, we may service any school district in the state of Arkansas.

It is essential that all students have access to a high-quality science education that provides them



with the skills and knowledge they need to be well-informed citizens, to be prepared for college and careers, and to understand and appreciate the scientific enterprise. By introducing students to a phenomenon, it allows them to become fully engaged and explorative.

This strategy makes science exciting and fun for which learning takes place for ALL students.





Celeste Alexander

K-12 Math Specialist

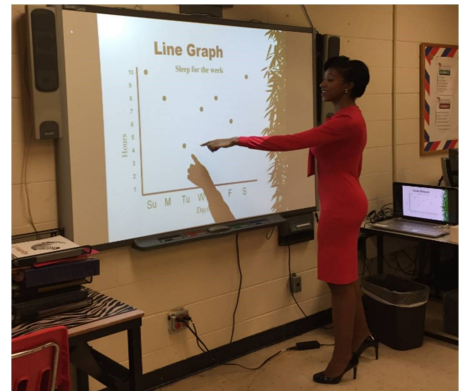
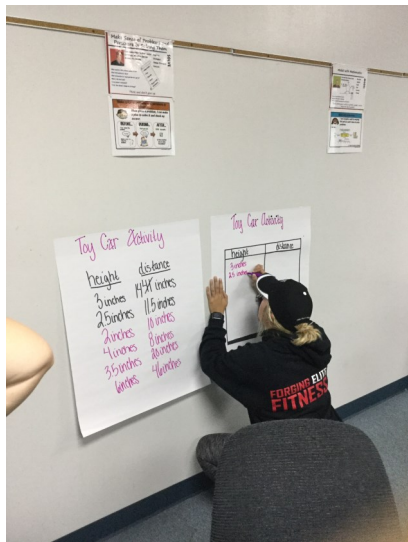
Math and Science Pre-College Center

University of Arkansas Pine Bluff

I am responsible for providing professional development and support for new and experienced (K-12) math educators. I also provide professional development for pre-service student teachers at UAPB. The teaching profession can be very challenging and stressful. My role is to help relieve some of that stress by providing teachers with support and solutions to the daily problems they face as educators. My areas of expertise are classroom management, effective use of technology, student engagement, student motivation, and preparation for standardized tests including the ACT College



Entrance Exam and the ACT Aspire. One of my favorite quotes is "A teacher takes a hand, opens a mind, touches a heart, and shapes the future." This is a huge responsibility that can often lead to fatigue and burnout. It is vital that teachers feel supported and appreciated for the life-changing work that they do. My daily goal is to uplift as many teachers as I can so that they have the confidence, stamina, and desire to continue inspiring their students.



UAPB Host the Million Women Mentors Launch for the Arkansas Delta

The Million Women Mentors Launch at the University of Arkansas at Pine Bluff was held on July 12, 2016 in the STEM Conference Center. This launch was a part of a national initiative to encourage more girls and young ladies to select science, technology, engineering or mathematics majors and careers. The initiative is led by STEMconnector, a national non-governmental organization. Walmart is partnering with Lt. Governor Tim Griffin in launching this initiative in different regions of the state. UAPB hosted the launch for the Arkansas Delta.



The University of Arkansas at Pine Bluff
invites you to participate in the launch of the

Million Women Mentors program

Tuesday, July 12, 2016
10:00 am
STEM Conference Center
1301 L. A. 'Prexy' Davis, Dr.
Pine Bluff, AR 71601

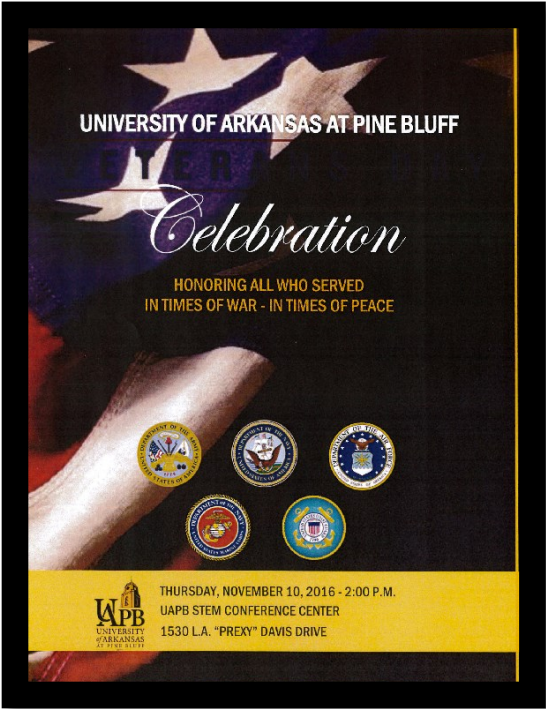
RSVP via www.uapb.edu/mwm
For more information, please call (870) 575-8214





Veterans Recognized at Special UAPB Event

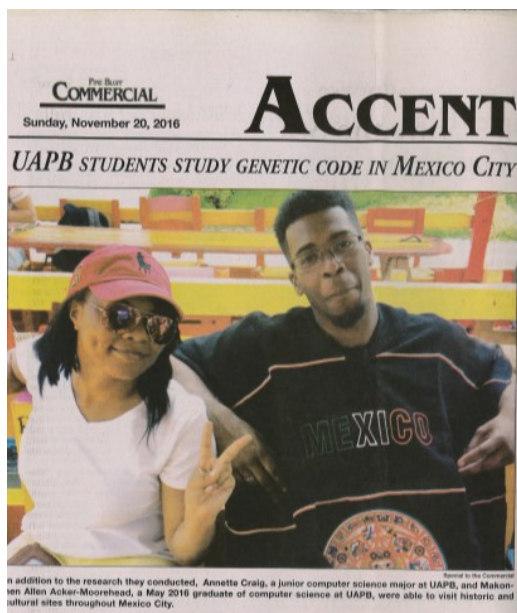
On Thursday, November 10, 2016, Veterans discussed connecting their fellow veterans to support services and encouraged people to thank them for their sacrifice Thursday at a celebration at the University of Arkansas at Pine Bluff's STEM Academy Conference Center.



STEM in the News

UAPB Students Study Genetic Code in Mexico City

The National Science Foundation funded the program titled "The Genetic Code of Protein Molecules." Additional funding was provided through the program titled "From the Mississippi Delta to the Niger Delta: Strengthening Teaching and Extension Capacity at UAPB to Enhance International Programming," with the USDA- National Institute of Food and Agriculture. UAPB Students participated in the international exchange and presented to the STEM Academy students accompanied with a Power Point presentation.



Students Annette Craig, and Makonen Allen Acker-Moorhead



Joseph Onyliagha, Associate Professor of Biology at UAPB, with Annette and Makonen



Hometown: Pine Bluff, Arkansas
Classification: Sophomore
Major: Industrial technology

Congratulations to today's Hercules Scholar, Alvin O'Guinn of University of Arkansas at Pine Bluff. His dream is to build his own analytic firm, and create affordable analytic software for small businesses.

Alvin expresses his appreciation for the Hercules scholarship, saying it "means more to me than just financial assistance; this scholarship would serve as an avenue for me to reach my ultimate goals."

STEM 2016-2017

GRADUATES



Winter Graduation: December 9, 2016

Industrial Technology

Tranequa Dale
La'Keesha Franklin
Marcus Hampton
Brandon Starks

Mathematics

Danielle Rauls



Spring Graduation: May 13, 2017

Chemistry

Mikiah Ballard
Taylor J. Connor
Ebony Cotton
Kionna Henderson
Tia'Asia James
Jasmine K. Johnson
Sydney Reed
Joidan Romes

Biology

Rae'Vyn Britt
Aaliysha Brown
Janay Brown
Joshua Byrd
Saige Davis
Aliyah Glover
Lauren Hardiman
Xavius Hymes
Tonisha Holiday
Mamie Jennings
Justin Jones
Kiersten Larry
Tyronda Lewis
Christina Moore
Tredijah Sykes
Sydney Worlds

Industrial Technology

Jarrion Harris
Sharoya Simmons
Mathematics
Jatryce Bush
Stacey Reed
Toni Richardson

GRADUATE SCIENCE ENRICHMENT PROGRAM

Through a grant from the U.S. Department of Education HBCU Master's Degree in STEM Area Enrichment, the STEM Academy offers, in collaboration with the School of Education, enriched Master's degrees in Science and in Mathematics Education. The grant includes assistantships, funds to develop a new master's degree in Computer Science and Technology and \$1.5M for construction of the STEM Academy and Conference Center.

Persons with bachelor degrees from regionally accredited colleges and universities in mathematics, science, and computer science or technology can apply for the graduate assistant positions. Graduate assistants (GAs) will be teaching assistants (seeking licensure) or research assistants (licensed) to perform extensive academic research in the field of mathematics or science as assigned by a professor or principal investigator of a research project. GAs will assist with grant applications, correspondences, research, and research writing. Additionally, they will assist professors with instructional responsibilities that will consist of developing technological products and handouts, tutoring, conducting research, preparation of formal presentations, and assist in laboratories and other mathematics/science related activities.

Qualifications

1. Bachelor's degree in mathematics or mathematics education, science or science education, or computer science (computer information systems or technology) or bachelor's degree with 30 hours or more in a one of the above listed licensure areas (Courses must have the appropriate prefix to support that area).
2. Passing scores on all parts of Praxis I
3. Completed application (that includes a one-page narrative highlighting the applicant's professional experiences in science, technology, engineering and/or mathematics. Also, this narrative should discuss the applicant's commitment to teaching in a secondary education public school in the area of mathematics, science or a computer science related area).
4. Resume
5. Official transcript
6. Undergraduate grade point average of 3.0 cumulative or 3.0 in the major
7. Interview by admission committee
8. Entering student (that is, one who has not previously begun a degree in a graduate mathematics- or science- related area).

STEM SPEAKER SERIES 2016-2017



September 8, 2016

Monsanto Company is a publicly traded American multinational agrochemical and agricultural biotechnology corporation. It is headquartered in Creve Coeur, Greater St. Louis, Missouri. Monsanto is a leading producer of genetically engineered (GE) seed and Roundup, a glyphosate-based herbicide.

This speaker was arranged through Career Services



September 22, 2016

**Kristen Sterba, Ph.D., Associate Dean,
Office of Graduate Student Recruiting and Retention
Graduate School, University of Arkansas for Medical Sciences**

Dr. Sterba has been working with graduate students from their recruitment to graduation since 2003 when she received her Ph.D. in Biochemistry and Molecular Biology from UAMS. She is also responsible for overseeing various Graduate School events and is Co-Director of the Scientific Communications and Ethics course for first year biomedical science students. In her role as Assistant Director of the NIGMS funded UAMS Initiative for Maximizing Student Development program, Dr. Sterba aims to increase the number of underrepresented minority and disadvantaged students receiving doctoral degrees in the biomedical sciences. She also coordinates the NHLBI funded Summer Undergraduate Research Program to Increase Diversity in Research.

October 13, 2016

AT&T, Murphy Oil, EATON Corporation

Eddy Luster attended the University of Arkansas at Pine Bluff and is a native of Little Rock, Arkansas. While at the University Eddy joined MANRRS Program (Minorities in Agriculture, Natural Resources and Related Sciences). Eddy was a member of the Kappa Alpha Psi Fraternity Inc. at the University of Arkansas at Pine Bluff. Eddy received his Bachelors of Science Degree in Agriculture Business in 2005. He was later employed by AT&T and now Eddy serves as the General Manager for the largest AT&T store in the state of Arkansas.

Carlos Buie is a Fuel Product Category Manager for Murphy Oil USA. In this position, he manages, prices and strategically plans for 205 retail fuel sites across the south. He is also a Certified Pricing Professional. He has previously worked in HR, Merchandise/Marketing and as a District Manager with Murphy Oil USA. He is a Pine Bluff native and a graduate of the University of Arkansas at Pine Bluff.

Vincent A. Roaf is a 2014 graduate from the University of Arkansas at Pine Bluff. He is currently employed by Eaton Corporation where he serves as a Senior Project Engineer for Eaton's Project Management Team that services the Southeastern district of the United States. He manages over 100 electrical assembly construction jobs throughout 5 states and is responsible for over \$175 million dollars in new and existing electrical projects. He also serves on Eaton's National Diversity Council and the Panelboard and Switchboard Subject Matter Expert (SME) for the Southeastern US.



November 3, 2016

Dr. Joseph Onyilagha, UAPB Department of Biology

Title of Research: The Origin of Protein Molecules

It is intriguing that from a pool of available molecules, life ended up using four nucleotides and twenty amino acids to encode and build its proteins. By the time of the Last Universal Common Ancestor (LUCA), the process of protein translation was largely fixed in the form of the standard genetic code. The intention of this research is to determine whether metabolic pathways found in living organisms are indeed an accurate guide to ancient evolutionary events. The project goal is to provide additional insight into the emergence of a standard alphabet of 20 genetically encoded amino acids.

STEM SPEAKER SERIES 2016-2017

November 6, 2016

STEM Webinar with Brenda Williams; National Recruiter for INROADS



Mrs. Williams is a National Recruiter in the South Central Region for INROADS. Prior to joining INROADS, she worked as a Project Manager/Technical Consultant with Incisive Info, Inc. Cultivating relationships with clients, training and managing projects will serve as value-add to the South Central Region. Mrs. Williams is active with National Association of Black Accountants (NABA). Representing the full circle of INROADS as an Alumni.

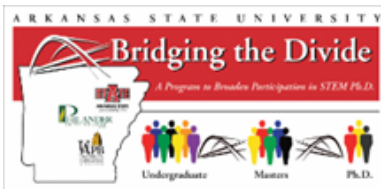
Mrs. Williams's uses the same training, mentoring and networking that was cultivated as an INROADS intern. It has developed her work ethic and business skills over the last 20 years. She holds a B.S. Accounting Control Systems from the University of North Texas. Brenda is happily married to Marvyn Williams and resides in Dallas, Texas. *Her Motto is - Life is too short, so kiss slowly, laugh insanely, love truly and forgive quickly.*

November 11, 2016

Dr. Keith Baker, Yale University Professor



Yale University professor Keith Baker said he credits his teachers from elementary school to his post-graduate studies with providing the encouragement that led to the groundbreaking research he has conducted in particle physics, including being part of the team that discovered what has been called the God particle. Baker, who holds degrees from Massachusetts Institute of Technology and Stanford University, now divides his time between teaching at Yale University in New Haven, Conn., and performing further experiments at the Large Hadron Collider, the world's largest particle accelerator, in Geneva.



January 2, 2017

Arkansas State Bridging the Divide Program

The Bridge Program prepares undergraduates for doctoral degree through performing research and scholarly activities in STEM fields. The purpose of the Bridge Program is two-fold: (1) To inspire undergraduate students to progress into graduate studies by providing opportunities in the summer for research and professional development; (2) To ensure success in academic, research, and the professional development of graduate students (Masters and Ph.D.) by providing financial support, wrap-around mentoring, and a caring community so that the students will acquire the skills and experiences necessary to become successful scientists, innovators and role models.



February 16, 2017

Dr. Michael Borellii

University of Arkansas Medical Sciences – Hosted by Dr. Mansour Mortazavi, Professor of Physics at UAPB

The Department of Neurology provides outstanding neurological care for people with disorders of the brain, spinal cord, peripheral nerves and muscles. The clinical staff, clinical faculty and neurology residents provide acute and ongoing care in both inpatient and outpatient settings as well as research.

STEM SPEAKER SERIES 2016-2017



February 23, 2017
Brandace Harrison
Entergy

As an Entergy co-op/intern, you will be assigned meaningful projects closely related to your field of study. Through a series of progressive learning experiences, you will be given the opportunity to grow both personally and professionally. At the completion of your co-op/internship, you will be given a performance evaluation to assist you in assessing your own growth.



March 2, 2017
University of Arkansas at Little Rock
Small Business Innovation Research Program-SBIR

The Small Business Innovation Research (SBIR) program is a highly competitive program that encourages domestic small businesses to engage in Federal Research/Research and Development (R/R&D) that has the potential for commercialization. Through a competitive awards-based program, SBIR enables small businesses to explore their technological potential and provides the incentive to profit from its commercialization. By including qualified small businesses in the nation's R&D arena, high-tech innovation is stimulated and the United States gains entrepreneurial spirit as it meets its specific research and development needs.



March 9, 2017
Jasmine Guy
Actress

As a frequent motivational public speaker, Ms. Guy is called upon to share her story openly with those who may benefit from her trials and triumphs. Her ongoing desire to blend balance and discipline with ambition and service continues to fuel her passion for the arts. She has traveled throughout the U.S. and appeared at more than 100 speaking engagements, addressing diverse audiences at colleges, universities, conventions, corporations, affinity groups, churches, high schools and countless charitable and fundraising events. She delivered keynote addresses in 2015 at Ultimate Women's Expo events in Atlanta, Chicago and Phoenix, and appears as

STEM STAFF....



STEM SCHOLARS INTERNSHIPS

CORVANTE DOWDY

Interns with

Stant & **Walmart**



Stant is a recognized world leader in the design and manufacturing of Vapor Management Systems, Fuel Delivery Systems, Thermal Management Systems and Engineering Services

PROJECTS

Safety Department

- Updated Chemical Inventory
- Participated and occasionally led weekly safety committee meetings (Walked the Plant)
- Completed plant wide Job Safety Analyses

Quality Department

- Conducted weekly Layered Process Audits
- Reworked reject parts saving the company an estimate of \$15,000
- Created Work Instructions for machine operators

Spring 2016-Fall 2016

**20 hours/week during the semester: 40 hours/
week during the summer**

\$15.00 hour





WALMART Internship Summer 2017

My name is Corvante Dowdy, a senior majoring in Industrial Technology Management and Applied Engineering. I currently have a 4.00 GPA and I demonstrate leadership in numerous organizations on campus, such as NSBE, STEM, YMTF, etc. This past summer I was able to participate in a superb internship with Wal-Mart Inc. in Bentonville, Arkansas. I gained this opportunity through the fall 2016 Thurgood Marshall Leadership Conference held in Washington, D.C. While in Bentonville for the summer, I learned about the Wal-Mart strategy and received first-hand knowledge about their culture. I worked in the Real Estate department with five other interns, where we received an individual project as well as a group project. Both projects were very challenging and impactful to the company business. I also participated in volunteer events in the Northwest Arkansas area, met the Walmart Real Estate executives and the company officers and CEO.

Overall it was a very beneficial experience, so beneficial that I will be returning as a full time employee after graduation in May 2018.

STEM SCHOLARS INTERNSHIPS



TIKEL DAVIS

2017 SUMMER INTERN AT HARRISON ENERGY PARTNERS

Tikel Davis had a 2017 summer intern with Harrison Energy Partners in Little Rock, Arkansas. Harrison Energy Partners is currently the largest provider of commercial and industrial HVAC systems in Arkansas and seek to hire students in the engineering field.

Tikel Davis is a senior, majoring in Industrial Technology Management and Applied Engineering (ITMAE), from Pine Bluff, Arkansas.

RODREQUIS THOMPSON



2017 Summer Intern at Evergreen Packaging

Rodrequis Thompson is a Industrial Technology Management and Applied Engineering major from Pine Bluff, Arkansas. worked as a summer intern at Evergreen Packaging Pine Bluff Mill.

Evergreen Packaging is a world leader in fiber-based liquid packing solutions, publication and converting papers. The Pine Bluff mill produces packaging board and coated publication paper. The company partnered with UAPB to place students in Cooperative Education and internship experiences that will provide hands on experience in their field of study.

STEM Academy Scholars

attend conferences



STEM Academy Scholars participated in the American Association for the Advancement of Science Emerging Research National Conference in STEM and the National Science Foundation (NSF) HBCU- Undergraduate Program this year.

Yari Mosley, a freshman biology major and STEM Academy Associate received a first place monetary award for her oral presentation on "Genetic Dissection of the Neural Circuit Underlying Cold Nociceptive Behavior."

Dr. Charles Colen, chair for the Department of Industrial Technology Management and Applied Engineering gave a talk on the UAPB STEM Academy. Dr. Anissa Buckner, chair for the Department of Biology, is a member of the AAAS Advisory Board for the Emerging Researchers Annual Conference. The conferences attracted more than 975 attendees from colleges and universities across the United States.

UAPB STEM Academy scholars Christina Moore, Aliyah Glover, Jasmine Johnson, and Yari Mosley were among the attendees to the American Association for the Advancement of Science Emerging Research National Conference in STEM. Not pictured: Mikiah Ballard, Ryan Acker, and Mercedes Winfrey.

The University of Arkansas at Pine Bluff offers a series of STEM enrichment programs through the STEM Academy which is funded by the National Science Foundation, the U.S. Department of Education, the Arkansas Economic Development Commission- Science and Technology and the Arkansas Department of Education. The principal investigator and the co-principal investigators for the STEM Academy are Drs. Mary E. Benjamin, Charles R. Colen and Anissa E. Buckner.

THE NATIONAL SOCIETY OF BLACK ENGINEERS (NSBE) CONFERENCE

March 29 – April 2, 2017

Kansas City, Missouri



Dr. Charles Colen, HBCU UP CO PI, and Mr. O C Duffy Professor, Industrial Technology to 25 students to Kansas city Missouri. The National Society of Black Engineers (NSBE) Conference includes workshops, NSBE forums, technical presentations, corporate and university forums for faculty and students. Each participant receives valuable information in developmental workshops in leadership, management, communication, manufacturing, and information technology. There are several benefits from this conference but the most beneficial is that most of all scholars attending the conference are interviewed and offered summer internships and or permanent employment.



ASHLYN CARLTON

Spring/Summer Experience

Research Involving Livestock on the UAPB Farm

During the spring and summer of 2016, I have been fortunate enough to assist in on-going animal/poultry research projects on the University of Arkansas at Pine Bluff's farm, and in the microbiology and animal science labs. I have participated in routine animal related activities including feeding, collecting and analyzing data in the lab and performing other animal/poultry husbandry activities alongside my insightful professors and hard-working coworkers. While I had a rather general understanding of the science of animals, the following activities provided a more profound view into the study, which can directly be attributed to the field and lab based research performed during this time. For example, each activity went in-depth to insure that certain aspects, like proper health management, feeding management and breeding management were maintained to departmental standards while research was conducted. This included, collecting fecal samples to evaluate the effect of probiotics on bacterial colonies along goat kid intestinal tract, routinely preparing experimental diets on the UAPB farm in comparison to commercial goat feed supplements available in the market, sampling forage and other feeds to determine botanical and nutritive value, and processing forage samples for chemical analysis. In addition, animal grazing behaviors were determined by observing the ways in which animals allocated time to various activities.

During the course of these experiments and observations, the health of the animals were also regularly monitored by weighing each animal, evaluating body condition, ear-tagging, hoof trimming, castrating and assisting the farm's veterinarian in administering vaccinations, cleaning and closing wounds, draining and treating abscesses, taking blood samples and prescribing any necessary medications.

When working with animals/poultry, it is seen as ideal to insure that each individual animal's health is properly maintained. Each activity, as well as ongoing research, has ultimately served as a valuable opportunity to not only exceed my educational ambitions, but to also establish a solid foundation for my future so that my knowledge, skills and qualifications can be adequately utilized for the betterment of my community, the environment and the entire world.



The photos above show a coworker and I nursing an abandoned goat kid using Save-A-Kid milk replacer. After suffering from severe diarrhea and a ruptured right eye and being abandoned by its mother, the goat kid weighed under 10 lbs. and was not expected to live much longer. Today, he weighs 19 lbs. and has fully recovered from his conditions after two weeks of bottle feeding and topical application of an eye ointment.



The photos above show the farm's cows (Simmentals and Brangus breeds; top left), replacement heifers being relocated to new pastures (center), one of two bulls (top right) and a pasture plot full of valuable forage (right). On the farm, it is crucial to rotate the cattle among plots to increase forage use, avoid overgrazing and help minimize parasite problems.



These photos indicate the appearance of a goat's hooves before trimming and the appearance afterwards. The photo on the far right shows me performing a hoof trimming activity. It is essential to routinely carry out these trimmings to avoid bacterial infections, painful walking and other foot problems, like foot rot.



The Lioness...The Lady....

The Legend...

DR. MARY BENJAMIN



Dr. Mary E. Benjamin has dedicated her professional career to the education of people of all ages and walks of life. She served as Vice Chancellor for Academic Affairs at the University of Arkansas at Pine Bluff (UAPB) from 1992-2013 and now serves as Vice Chancellor for Research, Innovation and Economic Development. She started her academic career as an instructor at Mississippi Vocational College, Itta Bena, Mississippi.



Dr. Benjamin received the Bachelor of Science Degree from Tuskegee Institute; the M.A. in Sociology from Atlanta University and the Ph.D. in Sociology from Mississippi State University. She also served as a Fellow with the American Council on Education at City University of New York.



She currently serves as a Principal Investigator for the National Science Foundation funded HBCU-Undergraduate Program for Science, Technology, Engineering, and Mathematics Academy; Arkansas Louis Stokes Alliance for Minority Participation; and the U.S. Department of Education Graduate Science Enrichment Program. She is also the budget officer for the Arkansas Master Tobacco Settlement Funding for Minorities. Her success with the development of the STEM Academy and leadership for the new STEM Building at UAPB was the featured story in the November 2016 issue of *SEALife*.



While serving as President of the UWSA, a \$6.8 million Donald W. Reynolds Foundation grant was awarded to erect the Donald W. Reynolds Community Services Building in Pine Bluff, Arkansas.

Dr. Benjamin is a member of Alpha Kappa Mu Honor Society and has received citations from the Pine Bluff Chapter of Business and Professional Women for outstanding services in education;



the State of Arkansas Senate for creativity in developing programs and degrees for UAPB; the State of Arkansas House of Representatives for founding the Annual Conference on Educational Access in 1993; and the recipient of the Extraordinary Service in Education Award presented by Alpha Kappa Alpha Sorority, Inc. – South Central Region.

Dr. Benjamin authored the chapter, “Transforming the Baccalaureate Experience for STEM Majors: An Approach in the Arkansas Delta” in Models for Success: Successful Academic Models for Increasing the Pipeline of Black and Hispanic Students in STEM Areas” Thurgood Marshall Foundation in 2008. Her article on “Boosting Diversity in STEM” is featured in International Innovation, Issue 116, North America, 2013. She received the Women of Color national award in 2013 for her creative work in collegiate STEM Education.



She is the proud mother of three adult children, Rosemary, Rommel (Moya), Marcus Benjamin and is the grandmother of Ryan Curtis and Matthew Rommel Benjamin.



Thank you for your tenacity to stand in the gap for many people and especially for students. Thank you for your leadership, your vision and the ability to implement several programs on the university campus. UAPB’s STEM program is one of the stellar programs across the country. You are a game changer and we are truly thankful that you have touched our lives and the lives of many others... Good Luck on your future endeavors...STEM Staff

The Lioness, The Lady... The Legend...

Dr. Mary Benjamin...



ACKNOWLEDGEMENTS

Funding Partners

The UAPB STEM Academy expresses deep appreciation to all who contribute to its successful outcomes. Special appreciation is extended to our funding agencies and individuals.

- ◆ The U.S. Department of Education
- ◆ The Arkansas Science and Technology Authority
- ◆ The University of Arkansas at Pine Bluff
- ◆ The Arkansas Legislative Assembly
- ◆ The Honorable Governor Mike Beebe
- ◆ The Honorable Senator Linda Chesterfield
- ◆ The Honorable Representative Charles Armstrong
- ◆ Title III Program (funded through the U.S. Department of Education, Office of Post Secondary Education, Institutional Services)
- ◆ The Taxpayers of Arkansas
- ◆ St. Paul Missionary Baptist Church
- ◆ Dr. Carolyn Blakely

All donors are deeply appreciated

Mary E. Benjamin



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STEM Scholars Academy
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Internal Advisory Board

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Dr. Charles R. Colen, Chair, Department of Industrial Technology Management and Applied Engineering

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Mrs. Margaret W. Taylor, Director, Institutional Planning

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Dr. Anissa Buckner, Chair, Department of Biology

Dr. Obadiah Njue, Chair, Department of Agriculture

Dr. Anthony Austin, Assistant Professor, Department of Social and Behavioral Sciences

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Dale Bumpers National Rice Research Center
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Dean for Graduate School & Professor of Pediatrics
University of Arkansas for Medical Sciences
- ◆ Dr. Suzanne Mitchell, Coordinator
No Child Left Behind, Arkansas Department of Education
- ◆ Mr. Al Ashley, Staff Emeritus
Stanford University

STEM FACTS

31.9% of all majors at UAPB (Science, Technology, Engineering, Math) are STEM majors.

During the next decade, the United States demand for scientists and engineers is expected to increase at four times the rate for all other occupations.

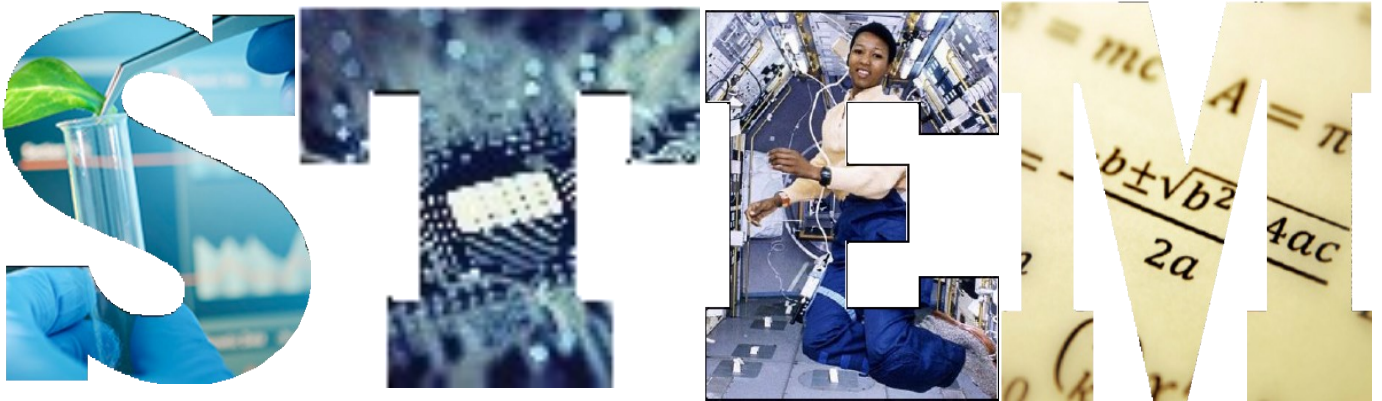
Not enough students are graduating with STEM backgrounds to fill the open positions in the marketplace.

By 2022, there will be 9 million STEM-related jobs in the United States.

If the United States is to maintain its leadership in STEM, we must produce approximately one million more STEM professionals over the next decade than is currently projected.

STEM jobs--those requiring a science, technology, engineering, or math-related degree--not only account for 6.2% of jobs in the United States as of 2014, many of them pay wages well above the U.S. all-occupations average, according to data from the Bureau of Labor Statistics.

Women earned 57.3% of bachelor's degrees in all fields in 2011 and 50.4% of science and engineering bachelor's degrees. However, women's participation in science and engineering at the undergraduate level significantly differs by specific field of study. While women receive over half of bachelor's degrees awarded in the biological sciences, they receive far fewer in the computer sciences (18.2%), engineering (19.2%), physics (19.1%), and mathematics and statistics (43.1%)



Contact Us

Give us a call for more information about our STEM Academy and programs

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Pine Bluff, Arkansas 71601

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STEM @uapb.edu

Visit us on the web at
www.uapb.edu

2016-2017