“Helping to Build a Stronger Community and Nation through Science, Technology, Engineering, and Mathematics Careers”
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The UAPB STEM Academy expresses deep appreciation to all who contribute to its successful outcomes. Special appreciation is extended to our funding agencies:

- The National Science Foundation
- 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)

All donors are deeply appreciated.

- Mary E. Benjamin, Principal Investigator
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. Currently, the STEM Academy has 229 undergraduates and six graduate students.

Disciplines include: chemistry, mathematics, physics, computer science, biology, plant and animal sciences, and industrial technology.
We are excited about the new developments in Science, Technology, Engineering, and Mathematics (STEM) at the University of Arkansas at Pine Bluff.

The STEM Academy is one of our premiere programs at the university designed to increase the number and diversity of well-prepared graduates who will be among the nation’s leading professionals in the U.S. and global scientific workforce. Last year was a very productive year that included the implementation of the Master’s Degree in Computer Science and Technology as well as the groundbreaking for the new STEM Complex and Conference Center, which is now slated for completion in 2014.

We have entered into an Era of Excellence at our university, where our programs and initiatives are on the road to newer heights. We have dynamic faculty who are dedicated to high quality instruction and student preparation. With our resources, partnerships, and research, we are able to provide opportunities that will further enhance our development.

It is with sincere gratitude that we recognize our administrators, stakeholders, and supporters who have been zealous in their efforts to progressively enrich this institution. Through our collaborative endeavors, we are able to help build a stronger state and nation through Science, Technology, Engineering, and Mathematics careers.

Sincerely,

Laurence B. Alexander, Ph.D.
Chancellor
LETTER FROM THE PRINCIPAL INVESTIGATOR

Two thousand thirteen, ten years after the award of our first National Science Foundation (NSF) Planning Grant to assess our curricula, resources and needs for Science, Technology, Engineering, Mathematics enrichment, we look back at accomplishments and forward to new opportunities.

In looking back, we remember the first advisory board and strong supportive members, including Mrs. Carolyn McCoy, Dr. Rolfe Bryant, Dr. Gail McClure, Dr. Robert McGeehee, Dr. Suzanne Mitchell, Mrs. Donna Stone, Dr. William Willingham, and Dr. Clifton Orr. We also remember those technical experts who gave us consultation on grant writing for NSF funding. Included are Dr. Robyn Hamnigan, Dr. Cecil McDermott, and Dr. Abdul Mohammed. Prairie View A&M University helped us to experience an NSF-funded Historically Black Colleges and Universities – Undergraduate Program (HBCU-UP) in operation. Dr. Kelvin Kirby and Dr. Freddie Frazier hosted the University of Arkansas at Pine Bluff (UAPB) HBCU-UP planning team and shared the essential elements for successful implementation.

During our assessment and planning process, we received very valuable input from area high school students interested in STEM and their teachers during a community forum which the UAPB Planning Team sponsored. With careful observation, listening, review of guidelines and many after-hour sessions, we submitted the proposal for the NSF HBCU-UP grant which we excitedly received in June 2005.

Lessons learned in implementing the 2005 NSF award, contacts made, a continuing need (state and national) were the foundation for our second major NSF award, the Louis Stokes Alliance for Minority Participation grant (ARK-LSAMP) (2008). ARK-LSAMP, which is composed of eight Arkansas colleges/universities all sharing a common vision to help increase the number of well-prepared underrepresented minority STEM graduates. The Alliance also crafted and embraced an integrated set of interventions, many drawn from the success of the UAPB HBCU-UP Program. All members took responsibility for ensuring the delivery of these interventions to the ARK-LSAMP cohort on their individual campuses. The institutions are Arkansas State University, Philander Smith College, Pulaski Technical College, Southeast Arkansas College, University of Arkansas, Fayetteville, University of Arkansas at Little Rock, University of Arkansas at Monticello, and the University of Arkansas at Pine Bluff (the lead institution).

As we simultaneously implemented the two grants and worked closely with high school students and teachers in our Saturday Academy and through our Science Fair Expo established in 2003, we felt that we should extend our STEM intervention to middle and high school STEM teachers. This resulted in a grant, HBCU Master’s Degree Program funded by the U.S. Department of Education. Through this grant, we enriched the M.S. Education curricula in science and mathematics and awarded assistantships for the first time in the School of Education. Already two graduates of this program have been hired by the Pine Bluff School District, one a middle school mathematics coach and the other as a well-prepared, technology savvy science teacher.

As we planned and implemented STEM initiatives across the decade 2003–2013, we outgrew our 12,000 ft. suite and became acutely aware of the need for more space designed to accommodate our programs and students. Consequently, in our proposal to the U.S. Department of Education Master’s Degree in STEM Programs a request for building funds was included. This funded grant provided the first $1.5M for the construction of the UAPB STEM Academy and Conference Center. Today, with major support from the UAPB Office of Development which directs the University’s Title III Program which is funded by the U.S. Department of Education, Office of Postsecondary Education, Strengthening Institutions, Title II, Part B, Historically Black Colleges and Universities Program; the Arkansas Legislative Assembly; the Honorable Governor Mike Beebe; State Senator Linda Chesterfield; Arkansas Representative Charles L. Armstrong, and St. Paul Missionary Baptist Church, the STEM Academy and Conference Center is under construction with the STEM Academy expected to be completed by April 2014 and the adjoining Conference Center to be completed by August 2014.

Our thanks are extended to all who have contributed to the emergence and growth of the STEM Academy and its programs over the past decade. The list is extensive and includes those already mentioned along with the former University of Arkansas System President B. Alan Sugg and Vice Chancellor for Academic Affairs, Dan Ferritor; former Chancellor Lawrence A. Davis, Jr.; the University of Arkansas Board of Trustees; the National Science Foundation, the U.S. Department of Education; the Arkansas Science and Technology Authority; Interim Chancellor Calvin Johnson; the Alumni; the UAPB STEM Faculty, the STEM staff and students; our ARK-LSAMP partner institutions (Arkansas State University, Philander Smith College, Pulaski Technical College, Southeast Arkansas College, University of Arkansas Fayetteville, University of Arkansas at Little Rock, University of Arkansas at Monticello); Mr. Robert Wall, UAPB Physical Plant Director, Woods Architectural Group, Con-Real, our construction manager, and Mr. O.C. Duffy, our quality control representative. Thanks are also extended to others unnamed but always supportive.

This year, 2013, ushered in a new Chancellor, Dr. Laurence B. Alexander. His vision for STEM at UAPB is to build on the foundation already laid and enhance the momentum that is presently underway. This is encouraging, exciting and foretelling of a great future for Science, Technology, Engineering, and Mathematics at the University of Arkansas at Pine Bluff.

Mary E. Benjamin, Vice Chancellor for Academic Affairs
University of Arkansas at Pine Bluff
UAPB STEM ACADEMY LEADERSHIP

Dr. Mary E. Benjamin
Principal Investigator

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(870)575-7165

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HBCU-UP STEM Scholars Academy
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(870)575-7112
UAPB STEM ACADEMY STUDENT LEADERSHIP

STUDENT OFFICERS

Taylor Osborne
(Biology Major)
President

Asia Colen
(Biology Major)
Treasurer

Miaya Holliman
(Biology Major)
Vice President

Jessica Bailey
(Biology Major)
Project Manager

LaCresha Stewart
(Mathematics Major)
Secretary

Carnell Foots
(Industrial Technology Management and Applied Engineering)
Sergeant at Arms

Kelin Key
(Chemistry Major)
Mr. STEM

Twynenia Liggins
(Chemistry Major)
Ms. STEM
## Undergraduate Programs

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<tr>
<th></th>
<th>Fall 2005</th>
<th>Fall 2006</th>
<th>Fall 2007</th>
<th>Fall 2008</th>
<th>Fall 2009</th>
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<th>Fall 2012</th>
<th>Fall 2013</th>
<th>% Change Fall 2005/Fall 2013</th>
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<td>44</td>
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<td>49</td>
<td>52</td>
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<td>110</td>
<td>112</td>
<td>121</td>
<td>127</td>
<td>136</td>
<td>114</td>
<td>100</td>
<td>104</td>
<td>-24.1%</td>
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<tr>
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<td>119</td>
<td>124</td>
<td>157</td>
<td>176</td>
<td>162</td>
<td>158</td>
<td>158</td>
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<td>Management and Applied Engineering</td>
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<td></td>
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<tr>
<td>Biology</td>
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<td>190</td>
<td>187</td>
<td>207</td>
<td>230</td>
<td>269</td>
<td>304</td>
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<tr>
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<td>40</td>
<td>45</td>
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<td>7</td>
<td>5</td>
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<td>7</td>
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<td>7</td>
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<tr>
<td><strong>TOTAL - STEM</strong></td>
<td>667</td>
<td>621</td>
<td>647</td>
<td>716</td>
<td>791</td>
<td>842</td>
<td>769</td>
<td>800</td>
<td>797</td>
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<tr>
<td><strong>TOTAL - UAPB (UG)</strong></td>
<td>3,132</td>
<td>3,051</td>
<td>3,099</td>
<td>3,388</td>
<td>3,651</td>
<td>3,283</td>
<td>3,063</td>
<td>2,724</td>
<td>2,521</td>
<td>-19.5%</td>
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<tr>
<td>% STEM/ TOTAL UAPB</td>
<td>21.3%</td>
<td>20.4%</td>
<td>20.9%</td>
<td>21.1%</td>
<td>21.7%</td>
<td>25.6%</td>
<td>25.1%</td>
<td>29.4%</td>
<td>31.6%</td>
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### Master's Programs

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<tr>
<th></th>
<th>Fall 2005</th>
<th>Fall 2006</th>
<th>Fall 2007</th>
<th>Fall 2008</th>
<th>Fall 2009</th>
<th>Fall 2010</th>
<th>Fall 2011</th>
<th>Fall 2012</th>
<th>Fall 2013</th>
<th>% Change Fall 2005/Fall 2013</th>
</tr>
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<tbody>
<tr>
<td>Computer Science &amp; Technology</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Mathematics Education</td>
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<td>1</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>100.0%</td>
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<tr>
<td>Science Education</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>11</td>
<td>8</td>
<td>5</td>
<td>6</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>TOTAL - STEM</strong></td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>15</td>
<td>13</td>
<td>16</td>
<td>21</td>
<td>600.0%</td>
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<tr>
<td><strong>TOTAL - UAPB (GR)</strong></td>
<td>99</td>
<td>77</td>
<td>101</td>
<td>137</td>
<td>141</td>
<td>145</td>
<td>125</td>
<td>104</td>
<td>94</td>
<td>-5.1%</td>
</tr>
<tr>
<td>% STEM/ TOTAL UAPB</td>
<td>3.0%</td>
<td>5.2%</td>
<td>5.9%</td>
<td>5.8%</td>
<td>6.4%</td>
<td>10.3%</td>
<td>10.4%</td>
<td>15.4%</td>
<td>22.3%</td>
<td></td>
</tr>
</tbody>
</table>

## Undergraduate Enrollment

![Undergraduate Enrollment Graph](image)

## Graduate Enrollment

![Graduate Enrollment Graph](image)
STEM DATA

University of Arkansas at Pine Bluff - STEM Retention Fall 2005 - Fall 2013

**First-Time Entering STEM Students Profile with Comparative First Year Retention Rates**

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>% Arkansas Residents</th>
<th>% Arkansas Residents from Jefferson County</th>
<th>Average High School GPA</th>
<th>Average ACT Composite Score</th>
<th>All First-Time Full-Time Freshmen</th>
<th>STEM First-Time Full-Time Freshmen</th>
<th>STEM Academy Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-06</td>
<td>60.50%</td>
<td>56.40%</td>
<td>2.86</td>
<td>17</td>
<td>56.30%</td>
<td>66.20%</td>
<td>65.20%</td>
</tr>
<tr>
<td>2006-07</td>
<td>56.00%</td>
<td>50.50%</td>
<td>2.82</td>
<td>17</td>
<td>54.30%</td>
<td>60.40%</td>
<td>81.80%</td>
</tr>
<tr>
<td>2007-08</td>
<td>60.00%</td>
<td>54.80%</td>
<td>2.89</td>
<td>17</td>
<td>57.00%</td>
<td>64.20%</td>
<td>82.10%</td>
</tr>
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<td>2008-09</td>
<td>55.70%</td>
<td>46.70%</td>
<td>2.86</td>
<td>17</td>
<td>60.40%</td>
<td>69.10%</td>
<td>80.40%</td>
</tr>
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<td>2009-10</td>
<td>54.40%</td>
<td>52.40%</td>
<td>2.77</td>
<td>17</td>
<td>63.90%</td>
<td>69.80%</td>
<td>80.00%</td>
</tr>
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<td>2010-11</td>
<td>54.50%</td>
<td>50.80%</td>
<td>2.77</td>
<td>17</td>
<td>57.00%</td>
<td>65.00%</td>
<td>81.30%</td>
</tr>
<tr>
<td>2011-12</td>
<td>52.30%</td>
<td>45.20%</td>
<td>3.37</td>
<td>21</td>
<td>54.60%</td>
<td>63.90%</td>
<td>87.00%</td>
</tr>
<tr>
<td>2012-13</td>
<td>59.60%</td>
<td>41.60%</td>
<td>3.43</td>
<td>22</td>
<td>56.20%</td>
<td>58.00%</td>
<td>93.10%</td>
</tr>
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**UNDERGRADUATE DEGREES CONFERRED IN STEM DISCIPLINES BY ACADEMIC YEAR**

<table>
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<tr>
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<td>Agriculture Science</td>
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<td>30</td>
<td>24</td>
<td>19</td>
<td>27</td>
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<tr>
<td>Chemistry</td>
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<td>2</td>
<td>3</td>
<td>8</td>
<td>5</td>
<td>10</td>
<td>6</td>
<td>200.00%</td>
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<tr>
<td>Computer Science</td>
<td>12</td>
<td>10</td>
<td>6</td>
<td>7</td>
<td>4</td>
<td>8</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>-8.33%</td>
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<tr>
<td>Industrial Technology</td>
<td>12</td>
<td>26</td>
<td>17</td>
<td>22</td>
<td>21</td>
<td>15</td>
<td>28</td>
<td>30</td>
<td>26</td>
<td>116.67%</td>
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<td>Management and Applied</td>
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<td>Engineering</td>
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<td>2</td>
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<td>0</td>
<td>2</td>
<td>2</td>
<td>0.00%</td>
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<td>Physics</td>
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<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
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<tr>
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<td>82</td>
<td>79</td>
<td>82</td>
<td>72</td>
<td>79</td>
<td>75</td>
<td>102</td>
<td>107</td>
<td>40.79%</td>
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<tr>
<td>Percent Change</td>
<td>- -</td>
<td>7.9%</td>
<td>-3.7%</td>
<td>3.8%</td>
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<td>9.7%</td>
<td>-5.1%</td>
<td>36.0%</td>
<td>4.9%</td>
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<td>372</td>
<td>376</td>
<td>365</td>
<td>401</td>
<td>375</td>
<td>382</td>
<td>461</td>
<td>394</td>
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<td>% STEM/ TOTAL UAPB UG</td>
<td>18.1%</td>
<td>22.0%</td>
<td>21.0%</td>
<td>22.5%</td>
<td>18.0%</td>
<td>21.1%</td>
<td>19.6%</td>
<td>22.1%</td>
<td>27.2%</td>
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</table>

Retention

STEM Majors
The University of Arkansas at Pine Bluff (UAPB) held its 9th Annual Science Fair Exposition (Expo) on February 16, 2013. The Expo was held in the arena of the Kenneth L. Johnson, Sr. HPER 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. 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 eighteen (18) project categories:

- Animal Sciences
- Biochemistry
- 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
- Mathematical Sciences
- Medicine and Health Sciences
- Microbiology
- Physics and Astronomy
- Plant Sciences
- Social & Behavioral Sciences
- Teams

There were 161 total participants for the 2013 Science Fair and Exposition.

Thirty-four judges were recruited to evaluate the research projects and interview students in all categories at both the junior and senior high school levels.

The Overall Best of Fair was awarded by the Office of the Vice Chancellor for Academic Affairs. This year’s recipient was Mr. Jacob Andersen, a 9th grader at Ridgway Christian School. Mr. Andersen received a full academic and tuition scholarship to the University of Arkansas at Pine Bluff.

UAPB 10th Annual Science Fair Exposition will be held February 18, 2014 in the...
STEM Saturday Academy
for
Area High School Science and Mathematics Teachers and Students

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 in STEM disciplines.

In 2013, 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 System (GIS).

The HBCU-UP STEM Scholars Academy developed a partnership with the Little Rock School District, which increased participation for 2012 by 58% for student participants and 36% for teacher participants. In 2013, participation remained stable.

2014 STEM Saturday Academy Dates:

February 1, 2014
February 15, 2014
March 1, 2014
March 8, 2014

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, English, writing skills, 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 thirty students in 2013. Each student received room and board for the length of the seven week period as well as a stipend for attending the Summer Academy.

<table>
<thead>
<tr>
<th>TYPICAL DAILY ACTIVITIES</th>
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<tbody>
<tr>
<td>6:15A-7:00A Physical Fitness</td>
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<tr>
<td>7:00A-8:00A Breakfast</td>
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<tr>
<td>8:10A-9:30A Mathematics</td>
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<tr>
<td>9:35A-10:55A Biology LAB</td>
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<tr>
<td>11:00A-12:00P Technical Writing</td>
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<tr>
<td>12:00P-1:15P Lunch</td>
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<tr>
<td>1:20P-2:40P Chemistry LAB</td>
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<tr>
<td>2:45P-3:45P Coll Surv/Comp Sci</td>
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<tr>
<td>4:00P-4:45P Professional Dev.</td>
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<tr>
<td>4:50P-5:30P Dinner</td>
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<tr>
<td>6:30P-8:30P Tutorial/Study Time</td>
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</table>

ARK-LSAMP offered a six week Pre-First Year Summer Institute in 2013. Each student received room and board for the length of the six week period as well as a stipend for attending the Summer Academy. Students in the program are drawn from each of the eight colleges/universities in the 8-member alliance.
STEM Scholars Academy

Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)

The National Science Foundation (NSF) awards HBCU-UP grants to help increase the number of minority students 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 minority students in STEM areas. The program consists of a transitional summer academy, mentoring, research internships, faculty development, equipment upgrades, curricula redesign 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 will 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
- **MATHEMATICS**—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 into the HBCU-UP STEM Scholars program are required to attend regular weekly meetings. Each of those STEM Scholars will also receive a paid research experience throughout the Fall and Spring semesters upon adhering to all of the requirements of the program.

A Research and Educational Program Funded by

The National Science Foundation
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
- Pulaski Technical College
- University of Arkansas, Fayetteville
- University of Arkansas at 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 has also provided rich research internship experiences for the students. Among the eight ARK-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 and 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
- **MATHEMATICS** – 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 an ARK-LSAMP STEM Scholar**

- Must have a high school GPA of 2.9 or higher
- Must have a composite ACT score of 19 or above
- Must complete all application requirements and forms to be submitted to the institution prior to Fall of the school year of interest
- Must declare a STEM major at one of the Alliance Institutions

**STEM students accepted into ARK-LSAMP program are required to attend regular weekly meetings. Paid research experiences are offered during the Fall and Spring semesters in compliance with grant guidelines for the program.**
ARKANSAS LOUIS STOKES ALLIANCE
FOR MINORITY PARTICIPATION
(ARK-LSAMP)

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The University of Arkansas at Pine Bluff STEM Scholars Academy has outgrown the 1,200 Sq. Ft. of dedicated space for its STEM enrichment programs. A new building is being constructed to accommodate the current program along with new enrichment programs. Woods Architectural Group and Con-Real are providing leadership for construction of the $10M, 29,000 Sq. Ft. facility devoted to academic collaboration, teaching, learning, student support, and program administration along with multidisciplinary/multifunctional research and education labs.

The new STEM Complex has a contemporary flair and uses materials related to the existing campus architecture. The building is a two-story complex featuring ample natural lighting and “green” building technology and utilizes locally available green building materials. The emergency generators will utilize locally manufactured biodiesel fuel produced from Arkansas soy beans. The complex will have other energy saving features such as energy saving glass, automated window blinds, use of solar power, grey water recovery system and an interactive building control system.
The Science, Technology, Engineering and Mathematics (STEM) Scholars Academy is one of the most successful programs at the University of Arkansas at Pine Bluff (UAPB). The STEM scholars are actively investing in their future careers in STEM fields. While the increased presence of academic excellence in the profiles of the STEM scholars is an important factor in STEM student success, we cannot overlook the strong leadership of Dr. Mary E. Benjamin that has been the driving force to make this all possible. With a clear vision for the future of the STEM students at the university, Dr. Benjamin has moved the Academy forward. Through strong leadership and excellence, she has inspired the staff, faculty and students to strive to achieve greatness.

Dr. Mary E. Benjamin is Vice Chancellor for Academic Affairs at UAPB and Principal Investigator on the HBCU-UP and ARK-LSAMP awards from the National Science Foundation, the US Department of Education, and the Arkansas Science and Technology Authority (ASTA) totaling more than $16M since 2004, all focused on helping to increase the number of well-prepared underrepresented minority STEM graduates. Her most recent adventure has been giving leadership in gaining approval and developing coalitions to successfully fund a $10M STEM Academy and Conference Center to centrally house the STEM enrichment programs at the University of Arkansas at Pine Bluff. The facility is scheduled for completion by August 2014.

She received the 2013 Career Communication Group’s Women of Color Award for her promotion of STEM at the college level. She was nominated by Lieutenant Colonel Jeffrey Foster at the University of Arkansas at Pine Bluff.

“"Our honoree graduated from Tuskegee Institute and Atlanta University before earning her Ph.D. in Sociology from Mississippi State University. As the Vice Chancellor for Academic Affairs at the University of Arkansas at Pine Bluff, she has developed innovative programs promoting academic advance for students and faculty. She skillfully manages recommendations for employment, promotion, tenure and retention. She serves as academic liaison to the Arkansas Department of Higher Education and is the founder of the UAPB STEM Academy. She has given leadership in obtaining STEM expansion grants totaling $16M from agencies including the National Science Foundation, the U.S. Department of Education and the Arkansas Science and Technology Authority. She is passionate about increasing higher education STEM opportunities for students at HBCUs. I am honored to present this award for College Level Promotion of Education to Dr. Mary E. Benjamin.”

The STEM Scholars Academy would like to take this time to recognize Dr. Mary E. Benjamin and say thank you for her wonderful leadership.

- Editor
Our STEM Scholars Engage in Internship Experiences All Over the World!

2011-2013 Internship Sites

Ball Aerospace & Technologies Corporation
Boeing Corporation
Booz, Allen and Hamilton
Boston Specific
Census Bureau
Cincinnati Children's Hospital
Cornell University
Dale Bumpers National Rice and Research Center
Dallas Zoo
Department of the Army, Joint Munitions Command
Disney World
Eaton Corporation
Graduate/University of Tennessee at knoxville
Genetech
Graduate/Florida A&M University
Graduate/General Election Aviation
Graduate/Purdue University
Graduate/University of Arkansas for Medical Sciences
Hensel Phelps Construction, Co.
Howard University
Iowa State University
Jackson State University
John Deere
John Hopkins University
Johnson & Johnson Corporation
Monsanto
NASA Science Technology Institute
National Center for Toxilogical research
National Oceanic Atmospheric Administration
Nationwide Children's Hospital
Natural Resource Conservation Service
North Dakota State University
North Texas Health Science Center

Nucor Yamato Steel
Oak Ridge National Laboratory
Pine Bluff Arsenol
Pine Bluff School District
Research Experience for Undergraduates University of Central Arkansas
Research Experience for Undergraduates of Arkansas
Fayetteville
Ring
Rock Island Arsenol
Rockwell Collins
Summer Medical and Research Training Program
Texas A&M
Texas Highway Department of Transportation
The Penn State University College of Medicine
Tyson Foods, Inc.
Undergraduate Summer Science Enrichment Program UAMS
United States Steel
United Water
University of Alabama- Tuscaloosa
University of Arkansas at Fayetteville
University of Arkansas at Little Rock
University of Arkansas at Pine Bluff
University of Arkansas for Medical Sciences
University of Cincinnati
University of Louisville
University of Michigan
University of Minnesota
University of North Texas Health Science Center
University of Pittsburgh
University of South Florida
URS Corporation - Washington Group
Vanderbilt Summer Science Academy
Walmart
Washington State University
STEM Scholars Internships

**Cornesia Washington**

My name is Cornesia Washington and I am a senior in the STEM Scholars Academy at the University of Arkansas at Pine Bluff. During my matriculation at the university I have been privileged with the opportunity to be a participant in several life-changing activities which have led me to participate in four internship and Co-op experiences. I have served two council positions which has helped me to mature and enhance my leadership skills. With the support of the STEM Academy, I have interned at Genentech Inc., United Water Co., Tyson Food, and Johnson & Johnson Neutrogena. It was only with the help of the STEM Academy that I have been able to be successful thus far. The weekly meetings, diverse speakers, and assigned projects actually prepared me for corporate America. I am one of the many examples of what the STEM Academy can produce.

**Taylor Osborne**

Greetings! My name is Taylor Osborne and I am a junior at the University of Arkansas at Pine Bluff majoring in Biology. I am also the STEM Scholars Academy student president. Upon completion of my sophomore year, I was afforded the opportunity to participate in a paid research experience, Summer Research Experience for Undergraduates (REU), at the University of Arkansas at Fayetteville. My internship experience was extraordinary.

This internship had many subfields specific to my scholastic and professional interest. I operated under the Cell & Molecular Biology (CEMB) Program directed by Dr. Doug Rhoads for a period of ten weeks. During that time, I participated in social outings with other research participants, traveling expeditions, dinners and dialogue about our research. Although there were many festive activities included for the duration of the program, the work conducted was very challenging.

I had the honor and privilege to be mentored by Dr. Tyrone Washington, who works in the Exercise Muscle Biology Laboratory. I also had the opportunity to meet several staff members and collaborate with two Ph.D. students, Alyssa Papineau and Lem Brow, along with a Masters student, Josh Ragland. I was assigned the research task of employing molecular biology techniques with in vivo and in vitro models examining muscle plasticity. My goal was to observe how hypercholesterolemia affected skeletal muscle regeneration. During the allotted time, I observed, learned, and prepared to carry out qubit protein assays, gel electrophoresis, polymerase chain reaction (PCR), and several other techniques necessary to collect essential data for my study. To strengthen my background knowledge, the lab held weekly journal club meetings where we discussed procedures, methods, and relevant functions within the literature as it pertained to our objectives to manipulate the muscle. Furthermore, a portion of the program focused on preparing us for the Graduate Record Examination (GRE). We attended weekly seminars in which our research progress was discussed and we were assisted and given tips for applying to graduate school and fellowships.

Overall, I certainly enjoyed my research opportunity at the University of Arkansas at Fayetteville. That experience was profoundly enriching and has greatly enhanced the depth of my understanding of skeletal muscle regeneration. Lastly, the people I met during the course of my internship not only helped me to cultivate this understanding, but were also wonderful and interesting people to interact with during my time there. They made the internship more than a professional experience, it was an experience of comprehensive growth and development.
During the Summer of 2013, two computer science STEM scholars, Devonte Rimmer and DaJerrian McHenry, studied abroad in Rome, Italy. The University of Arkansas at Pine Bluff, with direction and leadership from Dr. Jessie Walker and Dr. Mansour Mortazavi, formed a partnership with the American University of Rome that allowed two students from each school to study abroad. The opportunity allowed each student to partake in classes and experience student life in a different country.

DeJerrian McHenry

My Name is DaJerrian McHenry. I am sophomore majoring in Computer Science. I was afforded the opportunity to study abroad in Rome during the summer of 2013. If I had to describe my overall experience abroad in one word, I would say it is different. When I landed in Rome, Italy, the airport looked different from my conventional view of an airport based on the appearances of those in the U.S. The landscape of Italy resembled a countryside because of the many hills and the houses built on them. Many of the streets in Rome are not paved like the streets are in the United States. Initially it was difficult to become acclimated to the city of Rome. I had to get used to the conversion of currency from U.S. dollars to euros. Rome itself is a tourist attraction. It is rich in history from the foundations of its buildings to the marble sculptures to the Renaissance paintings. The city of Rome is much more congested than American cities. There is a plethora of parallel parking; sometimes double and triple parking. The best ways to get around the city of Rome was either by bus, tram, or metro. Even walking is a preferred method of travel. Everything in Rome is different.

Even though Italy is different, the view was amazing. I was fortunate to travel to the island of Capri, Mount Vesuvius, Sorrento, Pompeii, Florence, Siena, and Tuscany. Capri is an island off the coast of Naples; one will find the experience very enjoyable. The view from the top of the island was breathtaking. I also climbed Mount Vesuvius. The view was a sight to behold. Florence had many tall buildings, but it was very serene. It felt like a hybrid of a rural town and countryside, but it felt like a city when walking through the streets and alleys. Their language, culture and governmental structure are different than in America. Just about everything in Italy was different and it was the differences that made the experience worthwhile and unforgettable.

Devonte Rimmer

I traveled to Rome, Italy to study abroad at the American University of Rome. I took two courses: Art history of Rome and Italian Language/Culture. While in Italy I traveled to Capri, Sorrento, Florence, Pompeii, and Mount Vesuvius. I was in Italy for about one month (July 1-August 1). I networked with people from around the country and formed great friendships. I am one of the first students from UAPB to study at this university. I had a great overall experience in Italy. The food was amazing, the people were different yet kind, and the atmosphere was splendid. I would do it all over again and recommend it to any student willing to travel and try new things.
Emerging Researchers National (ERN) Conference in STEM in Washington, D.C. Dr. Mary Benjamin, Dr. Anissa Buckner and Dr. Antonie Rice along with 12 STEM scholars from the University of Arkansas at Pine Bluff attended Emerging Researchers National (ERN) Conference in Science, Technology, Engineering and Mathematics (STEM) in Washington, D.C., February 28- March 2, 2013. The ERN conference is hosted by the American Association for the Advancement of Science (AAAS), Education and Human Resources Programs (EHR) and the National Science Foundation (NSF) Division of Human Resource Development (HRD), within the Directorate for Education and Human Resources (EHR). The objectives of the conference are to help undergraduate and graduate students enhance their science communication skills and to better understand how to prepare for science careers in a global workforce.

The C.A. Vines Arkansas 4-H Center in Little Rock, AR. Sixty-three STEM Scholars Summer Institute/Academy student participants and mentors travelled to the C.A. Vines Arkansas 4-H Center on June 20, 2013 for an afternoon of team-building exercises. The students were divided into three random groups. Each group participated in team building exercises that focused on trust, brainstorming, problem-solving, cause and effect. Overall, the 4-H center activities helped to unite HBCU-UP and ARK-LSAMP students under one umbrella; the STEM Scholars Academy.

The National Society of Black Engineers (NSBE) 39th Annual Convention in Indianapolis, IN Dr. Charles Colen, Co-Principal Investigator, O.C. Duffy of Industrial Technology, Zohreh Howard of Computer Science and Tracey Knowlton of Career Services along with 42 students attended the National Society of Black Engineers (NSBE) 39th Annual Convention in Indianapolis, IN, March 27-31, 2013. NSBE, with more than 35,700 members, is one of the largest student-governed organizations in the country. Founded in 1975, it includes more than 394 chapters in the United States and abroad. NSBE’s mission is to increase the number of culturally responsible Black engineers who excel academically, succeed professionally and positively impact the community. The annual conference attracted more than 9,500 Black engineers and 300 corporate entities that competed for the best engineering talent in the African American community.
Dr. Sterba came to UAPB to speak to the STEM Scholars during the Fall 2013 Guest Lecture Series. She has been recruiting graduate students to UAMS since 2003. She is also responsible for coordinating various Graduate School events and is Co-Director of the Scientific Communications and Ethics course for first year basic science students. In her role as Assistant Director of the new NIH funded UAMS Initiative for Maximizing Student Diversity program, Dr. Sterba aims to increase the number of underrepresented minority students receiving doctoral degrees in the biomedical sciences.

Dr. Marian Evans-Lee came to UAPB to speak to the STEM scholars during the Fall 2013 Guest Lecture Series about graduate school and public health opportunities. The MISRGO at the University of Arkansas at Pine Bluff is funded by the Arkansas Department of Health’s Tobacco Prevention and Cessation Program. The purpose of MISRGO is to change society’s norms regarding tobacco consumption and continue educating Arkansans, especially minorities, about the dangers of tobacco products as the single most preventable cause of death and disease. Dr. Evans-Lee’s background consists of approximately 15 years of experience in program planning and development, capacity building and program evaluation.

Dr. Valandra L. German came to UAPB to speak to the STEM scholars during the Fall 2013 Guest Lecture Series about opportunities in public health. Her office provides consultation, support, and evaluation services. Key components of the Center are research and dissemination; education and training; cessation and prevention; and wellness. Prior to joining the University of Arkansas at Pine Bluff, Dr. German served as Interim Chair and Assistant Professor of the School of Public Health at Dillard University in New Orleans, Louisiana, her alma mater. She worked for M.D. Anderson Cancer Center in Houston from 2007 to 2011, and most recently as a Behavioral Science Research Manager responsible for planning, implementation, coordinating and supervising research projects related to health disparities.
STEM Scholars Academy Graduates

The University of Arkansas at Pine Bluff has conferred a total of 764 degrees to STEM majors from academic year 2003-2004 to academic year 2012-2013. The first cohort of STEM Scholars enrolled at the University of Arkansas at Pine Bluff in the Fall of 2004. At the end of the 2003-2004 academic year, the university had conferred 55 STEM undergraduate degrees. In the 2012-2013 academic year a total of 107 degrees were conferred to STEM students.

2012 Fall Graduates

Burl, II, Danny  Industrial Technology Major
Goodwin, Ketrin  Industrial Technology Major
Hawkins, Paula  Biology Major
Jones, Bruce  Computer Science Major
Kelly, Tamara  Industrial Technology Major
Manning, Richard  Industrial Technology Major
Moore, Kourtney  Biology Major
Moss, Lynette  Biology Major
Nesbit, Desmon  Industrial Technology Major
Phillips, Jamaal  Industrial Technology Major

2013 Spring Graduates

Ballard, Jr., Rodney  Chemistry Major
Banks, Saluta  Chemistry Major
Erkins, Zachary  Industrial Technology Major
Faucette, Camran  Biology Major
Grant, Shauna  Chemistry Major
Hall, Rontel  Industrial Technology Major
Hamlet, Daren  Industrial Technology Major
Holmes, Brian  Chemistry Major
Holmes, Michael  Chemistry Major
Holt-Blount, Nalita  Biology Major
Jackson, Marquita  Mathematics Major
Jones, Ranikka  Biology Major
Jordan, Maurice  Industrial Technology Major
McRae, Reginald  Biology Major
Richardson, Jasmine  Industrial Technology Major
Snyder, Sabra  Biology Major
Washington, Kanisha  Chemistry Major
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 masters degree in Computer Science and Technology and $1.5M for construction of the STEM Academy and Conference Center.

Graduate Science Enrichment Program. **Graduate Assistants** *(full time or part time)*

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, assisting with formal presentation, and assisting in laboratories and other mathematics/science related activities.

**Qualifications**

1. Bachelor’s degree in mathematics or mathematics education, science or science education, business technology education, or computer science (computer information systems or technology) or bachelor’s degree with 30 hours 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).

*Students may apply for full-time or part-time assistantships.*
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