Lawson State’s Pathways into STEM 2 (2-Pi STEM) and Georgia-Alabama Louis Stokes Alliance for Minority Participation seeks to increase the number of underrepresented minorities pursuing STEM career pathways. This document provides student activity, research, college transfer and career updates.

Lawson State Community College

STEM SCHOLAR PROFILES & HIGHLIGHTS

Dr. Calvin Briggs, STEM Director
Co-Principal Investigator, Editor
Lawson State Community College
3060 Wilson Road
Birmingham, AL 35226
cbriggs@lawsonstate.edu

Dr. Perry Ward, President

Dr. Bruce Crawford, Vice President
2-Pi-STEM Principal Investigator (PI)

Dr. Calvin Brown, Program Evaluator

Funded by grants from the National Science Foundation’s Historically Black Colleges and Universities-Undergraduate Program (HBCU-UP.)
NSF Award No. HRD-1137594 & NSF Prime Award No. HRD-1305041; Sub Award No. RSP-09-13-215045-004
January 2016

Prepared by:
Calvin Briggs, Ed.D., STEM Director
Lawson State Community College
3060 Wilson Road S.W., Birmingham, AL 35221

With the assistance of
Bruce Crawford, Ph.D.
Calvin Brown, Ph.D.

Funded by the
National Science Foundation

Historically Black Colleges and Universities-
Undergraduate Programs
Claudia Rankins
Andrea Johnson
Toni Edquist
Earnestine Easter
Hands-on activities in robotics, smart-phone technology, and engineering were only a few examples of science, technology, engineering, art, and mathematics (STEAM) presented at the Morehouse School of Medicine Youth Outreach Day. GA-AL LSAMP/STEM Scholars from Spelman College and Lawson State Community College facilitated hands-on activities with area elementary and middle school students during the day-long event. Mindstorms Lego robots were used to demonstrate the many ways robotics impact our lives. In addition, scholars demonstrated a new innovative way to convert smartphones into microscopes.
# Table of Contents

The office of the President ................................................................................................. 1
The office of the Vice President .......................................................................................... 2
From the Desk of the Director ............................................................................................ 3
Lawson State Welcomes ...................................................................................................... 4
Executive Summary ........................................................................................................... 5
**Profiles and Highlights** .................................................................................................. 6
Lawson State Community College STEM Scholars honored with SOAR Award .............. 6
STEM Scholars attends Auburn University “E” Day ............................................................. 6
Lawson State STEM Scholars Attend Emerging Researcher’s National Conference in Washington, D.C .................................................................................................................. 7
Best Practices Supporting Underrepresented Minorities ....................................................... 7
Exceeding Expectations ....................................................................................................... 8
Seizing the Moment ............................................................................................................ 9
Perseverance Becomes Success .......................................................................................... 10
A Servant and a Scholar ..................................................................................................... 11
From SEI to Mississippi State University ........................................................................... 12
HBCU-UP Grant Increases STEM Completers at Lawson State ........................................... 13
Summer Enrichment Institute Pre and Post Survey at a Glance .............................................. 14
**STEM Program Descriptive Summary** ......................................................................... 16
STEM Scholars .................................................................................................................. 16
Summer Enrichment Institute Participants 2012-2015 ......................................................... 16
Pathways College Bridge ................................................................................................... 17
Intrusive Advising .............................................................................................................. 18
Why is Intrusive Advising Needed ..................................................................................... 18
2-Pi STEM Best Practices ................................................................................................. 19
Scholar Update .................................................................................................................. 20
Creating New Possibilities for Teaching and Learning in STEM ........................................... 30
Works Cited....................................................................................................................... 31
Lawson State is an institution with a rich history of academic achievement and an unmatched record of community leadership and service. Ranked as a Top 5 Community College in the nation and a leader in science, technology, engineering, and mathematics (STEM) degree production, Lawson is proud of its ability to provide seamless administrative processes and educational support services for students and other constituents. In addition, Lawson State has emerged as a leader in STEM initiatives, securing more than 4 million dollars in funding from the National Science Foundation, National Aeronautical and Space Administration, and National Institutes of Health to support its innovative programs.

As President, I am committed to student success and excellence in teaching and learning, particularly those that seek to increase minority participation in STEM career pathways. Consequently, the college offers an affordable and flexible education that is comprehensive, innovative, technology rich and designed to meet the diverse education needs of constituents in Jefferson County. The college has positioned itself to equip, engage and empower students to be active and responsible participants in the educational process as well as in future endeavors. This can be accomplished through face-to-face instruction as well as through online programs.

I look forward to having Lawson State continue to lead in STEM initiatives and degree production, enhancing the state, the region, and nation’s workforce via technical training, occupational programs, and four-year college transfer opportunities.

The college’s motto is “It’s All Here!” Indeed it is.

Perry W. Ward, Ph.D., President
The Pathways into Science, Technology, Engineering, and Mathematics (2-Pi STEM) has made a significant impact on the academic goals of students at Lawson State Community College. As principal investigator and Vice President of Instructional Services, I am proud to report that the 2-Pi STEM program has supported forty-eight undergraduates and 131 area secondary students from eighteen area high schools. Since 2010, Lawson State has experienced an 18% increase in STEM completers college-wide and a STEM Scholar persistence rate of 75%. Approximately 58% of the LSCC STEM Scholars have transferred into four-year institutions; the remaining 42% are currently progressing through the STEM pipeline at Lawson State.

In addition, Lawson State STEM Scholars have participated in undergraduate research experiences at Alabama State University, Harvard University, University of Alabama Birmingham, Alabama Agricultural & Mechanical University, Clark Atlanta University, and University of Virginia. These research opportunities are essential to each scholar’s growth and development, honing their research, problem-solving, and presentation skills. Ultimately, LSCC’s STEM Scholars will be abundantly prepared to meet the rigor of the four-year college/university setting.

The STEM programs at Lawson State have established a strong foundation, creating innovative possibilities to enhance and broaden STEM initiatives throughout the state, region, and country. These initiatives will support student success, community development, and workforce throughout Alabama for decades to come.

Dr. Bruce Crawford, Vice President of Instructional Services
From the Director’s Desk

The 2-Pi STEM and GA-AL LSAMP Programs at Lawson State Community College seeks to increase the number and quality of underrepresented minorities entering STEM career pathways. To this end, the program depends profoundly on the collaborative efforts of the LSCC STEM faculty, two and four-year partners, regional and federal supporters, and our business and industry stakeholders. The Lawson State STEM faculty, supporting the goals and objectives of the 2-Pi STEM and GA-AL LSAMP Programs, implemented innovative instructional strategies and technological enhancements, actively recruiting and retaining students through intrusive advising efforts.

Lawson State’s determination to advance STEM, along with its stakeholders and collaborators has established it as a leader in STEM recruitment, retention, and completion, reflecting a 24% increase in STEM student enrollment from 2004–2014; a 43% completion and transfer rate, 12% higher than the national average and nearly three times the overall graduation average among Alabama community colleges. In addition, STEM majors have steadily increased, representing 12% of student enrollment at Lawson State (2014).

Along with the efforts of the LSCC STEM Faculty the Honors College, led by Mr. Weymon Holloway, Director and Dr. Shawanda Thomas, Co-Director LSCC’s STEM Program collaborated on multiple activities broadening the possibility of exposing STEM to some of the college’s best and brightest. Dr. Tracey Wilson has continued to enhance and broaden collaborations with the University of Alabama at Birmingham (UAB), assisting with numerous transfer and research opportunities for STEM students via the Bridge to Biomedical Careers and Noyce Scholarship Partnership Grant administered by UAB Collaboration for Excellence in Science and Math Education.

Key administrative personnel, under the leadership of Dr. Perry Ward, have provided unwavering support to broaden STEM recruitment, retention, completion, and bridge opportunities: Dr. Bruce Crawford, Vice President of Instructional Services and 2-Pi STEM Program Principal Investigator; Mrs. Sharon Crews, Vice President of Student Services; Dr. Sherri Davis, Academic Dean and 2-Pi STEM Curriculum Coordinator; Dr. Karl Pruitt, Associate Academic Dean; Dr. Tracey Wilson, Natural Science & Physical Education Department Chairperson and LSCC Coordinator, UAB Blazing Biomedical Careers Program; Ms. Katherine Long, Federal Grants and Budget Manager; and our LSCC recruitment team (Jose Alvarado, Katrina Harrell; Joe Hollins; and Cyrondys Jackson). I applaud each and every contributor for their commitment and service to achieving the grants overarching goal to increase the number of underrepresented minorities entering and persisting in STEM Career Pathways.

Dr. Calvin Briggs, STEM Director
Lawson State Welcomes...

President Barack Obama

President Barack Obama speaks to an overflow crowd at Lawson State Community College (Spring 2015).

Dr. Willie May, Director of the National Institute of Science and Technology (NIST), shares STEM research opportunities with Lawson State’s faculty and students.

Mr. Weymon Holloway (left), Dr. Calvin Briggs, Dr. Willie May, and Dr. Perry Ward (right) (Fall 2014).

Mrs. Heather McTeer Toney, Environmental Protection Agency (EPA) Region 4 Administrator, signs MOU with Lawson State.

Dr. Perry Ward (left), Mrs. Heather McTeer Toney (center), and Dr. Calvin Briggs (right), (Fall 2014).
Executive Summary

Funded by the National Science Foundation, the goals of the 2 Pathways into STEM (2-Pi STEM) and Georgia Alabama Louis Stokes Alliance for Minority Participation (GA-AL LSAMP) Projects at Lawson State Community College is to increase the number and quality of underrepresented minorities entering STEM career pathways. The framework of the projects are designed to increase STEM efficacy, encourage persistence, and promote STEM enrichment and research through awareness activities, field experiences, teaching and learning through problem-based learning concepts, social and academic engagement through STEM learning communities and professional organizations. To date Lawson State has enjoyed a rising STEM enrollment (24%) from 2004-2014; a 43 % completion and transfer rate, 12% higher than the national average and climbing. Currently, STEM majors comprise 12% of student enrollment at Lawson State (2014).

The 2-Pi STEM (2-Pathways into STEM) HBCU-UP Implementation Grant at Lawson State has provided students, teachers, and educational partners the opportunities to develop and capitalize on their roles in the development of STEM career pathways. Additionally, faculty involvement in the partnership has increased their academic and technical performance and knowledge of STEM careers. The project is a five-year program between the National Science Foundation, Lawson State Community College, educational partners, and business/industry. The three primary goals, identified for the Implementation Grant (2-Pi-STEM), were designed to support and promote the National Science Foundation: (1) provide cross curricular mentoring and learning communities for STEM students improving persistence and efficacy in STEM courses (Mentoring Program); (2) create STEM enrichment and academic enhancement programs for high school and undergraduate students (Summer Enrichment Institute); (3) implement college bridge program for incoming freshman/sophomore and transfer students (STEM Bridge Pathway).

The GA-AL LSAMP, realizing the continuing need to increase the quantity and quality of underrepresented minority (URM) graduates in the STEM fields, established an alliance of nine institutions: Lawson State Community College, Drake State Technical College, University of West Georgia, Clark Atlanta University, Morehouse College, Paine College, Georgia State University, Spelman College, and Atlanta Metropolitan College to meet the goals of the Alabama - Georgia LSAMP program. The alliance has built on prior accomplishments, the alliance of nine partners have collectively prepared approximately 524 STEM baccalaureate graduates. The alliance works collaboratively to (1) progressively increase the number of students recruited into STEM majors by 50% over five-years; (2) progressively increase persistence and progression of STEM students in the expanded alliance to 85% over five-years; (3) progressively increase the number of STEM students transferring from alliance two-year community colleges to four-year baccalaureate alliance institutions from 31% to 50% over five-years; (4) Progressively increase the number of STEM baccalaureate graduates from the 2012 baseline total by 100% from 380 to 760 over five years; (5) progressively increase the number of STEM Baccalaureate graduates who compete successfully for entry into graduate degree programs from 40% to 80% over five-years.

The STEM projects at Lawson State Community College have made a significant impact in the lives of more than 131 secondary students and 39 undergraduates between the 2011-2014 academic years. Precisely 88% of secondary students in the Summer Enrichment Institute (SEI) indicated confidence in STEM subjects; eight percent more (96%) indicated higher confidence in STEM subjects after participating in the SEI. 12% more SEI participants (72%) indicated they would do better than their peers in STEM subjects. STEM Scholars completing research experiences during 2014 reached 50%.
Lawson State Community College STEM Scholars Honored with “SOAR Award”

On Friday, February 27, 2015, four Lawson State Community College STEM Scholars received the “Student on Academic Rise” (SOAR) Award for Science, Technology, Engineering and Mathematics (STEM) at the Miles College Alabama Majesty Awards. The awardees included Julian Dill (biomedical engineering), Tiara Trammell (biology), Brittney Terry (materials engineering), and Randall King (pre-veterinary).

The Alabama Majesty Awards, a salute to African American Living Legends, served as an important documentary-styled awards event; honoring living legends (Richard Arrington, Jr., former Birmingham Mayor; Claude Brunson, M.D., first African American President of the Mississippi State Medical Association; Dr. George French, President of Miles College) who have transformed our collective human experience. The Alabama Majesty Awards presented SOAR Awards to students from the Alabama Community College System and the Birmingham Public School Systems.

The Alabama Majesty Awards links media and education by showcasing our nation’s civil rights pioneers. The event seeks to motivate the next generation of African American leaders and innovators.

STEM Scholars Attend Auburn University “E” Day

Auburn’s Annual Engineering Day gave Lawson State Community College STEM and Honor students a chance to learn about Auburn’s campus, academic programs and opportunities at Auburn's Samuel Ginn College of Engineering.

Students had the opportunities to chat one-on-one with Auburn students and faculty, experience interactive exhibits, and visit classes and labs, including the new Shelby Center for Engineering Technology. They also toured the beautiful Auburn campus and learned about admissions, scholarships, financial aid and student life. Julian Dill indicated the information he was offered by Dr. Raines, Auburn University Professor of Engineering, helped him think further about what major he should choose upon transferring to a four-year college/university.
Lawson State STEM Scholars Attend Emerging Researcher’s National Conference in Washington, D.C.

Lawson State’s 2-Pi STEM and GA-AL LSAMP Scholars attended the Emerging Researchers National (ERN) Conference in Science, Technology, Engineering and Mathematics (STEM) 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 conference is aimed at college and university undergraduate and graduate students who participate in programs funded by the NSF HRD Unit, including underrepresented minorities and persons with disabilities.

The four day conference (February 18 - 21, 2015), in Washington, D.C., provided LSCC students the opportunity to discuss research with their peers from across the nation and U.S. territories. Scholars attended oral and poster research presentations, in addition to workshops providing guidance on academic funding and summer research opportunities.

Best Practices Supporting Underrepresented Minorities STEM

Recruitment and Persistence of Underrepresented Minorities in STEM Pathways.” The poster shared student successes and a programmatic framework centered on a conceptual model with “intrusive advising” at its core. The seven best practices that radiate from this model are: 1) Required Student Advisor/Mentor Contact Hours 2) Cohort Format 3) Weekly Student Led Meetings 4) STEM Student Engagement 5) Community & Service Learning Commitment 6) Research Commitment and Development 7) Curriculum Enhancements.

In addition, attendees attended workshops designed to enhance program collaboration, leveraging of funding, and program management. The National Science Foundation Program Officers also shared information regarding 2015-2016 proposals.
Exceeding Expectations

Damaris Gachungi, a 2013 Lawson State pre-pharmacy graduate is now attending Hampton University in Hampton, VA. Damaris’ academic journey in pharmacy began at Lawson State Community College and her enrollment into the 2-Pi STEM Scholars Program. As a STEM Scholar, Damaris was engaged in mentoring and advising, peer tutoring, STEM enrichment, and research.

“My experience in the 2-Pi STEM Program gave me the confidence I needed to make it into pharmacy school.”

While attending Lawson State (2011 -2014) Damaris completed mandatory research experiences for undergraduates (REU) at Tuskegee’s Integrative Biosciences REU (summer 2013) and a summer research experience at the University of Virginia (Summer Research Experience). The titles of her research presentations were “High Through-Put Drug Screening for Metastatic Cancer” and “Association of calcium and insulin secretion in hyperglycemia,” respectively. Damaris presented at the Annual Bio-Medical Research Conference for Minority Students (ABRCMS) on November 13, 2013 in Nashville, TN, and the Emerging Researchers Conference in Washington, D.C. February 21, 2014. These research experiences provided Damaris with the hands-on experience needed to enhance her already impressive academic record, ensuring her admittance into the Hampton University’s School of Pharmacy.
Seizing the Moment

Ms. Marylyn Creer a 2010 biology graduate of Lawson State Community College is now a junior at Alabama A & M University, majoring in Physics and Biology, with a minor in Chemistry. She is a non-traditional student who has a tremendous passion for learning, particularly research. While maintaining a 3.82 GPA, she was also president of AAMU’s local chapter of The Society for Physics Students (SPS).

“Lawson State Community College was the best foundation I could ever hope to get. The mentorship and advisement I received from Dr. Briggs and Dr. Crawford was invaluable.”

Marylyn was the recipient of both AAMU’s prestigious Presidential Scholarship, and the AAMU 2011 Legacy Award. Ms. Creer also has multiple scholarships from several organizations, including The Fellowship of Faith Church, The Methodist Women of the United Methodist Church, Alpha Phi Alpha Fraternity, Inc., Delta Theta, and The International Chapter of The PEO Organization.

As a summer intern, Marylyn participated in research sponsored by the Quality Education for Minorities Group in Washington, D.C. and Tuskegee University’s IBS-REU, where she studied “The Effect of D4E1 Synthetic Peptide on Soil Phosphatase Enzyme Activity.” Marylyn’s research at AAMU has focused on the “Development of A Mold Sensor Using the Extracellular Biosynthesis Process Via Silver Nanoparticles.” Since January 2012, Marylyn has been an active participant in AAMU’s NSF/HBCU-UP Undergraduate Research Program.

Marylyn’s intense studies and desire to learn has amassed into her most notable achievements to date: being awarded a 2013 internship from Harvard University in Cambridge, Massachusetts, where she spent the summer engaging in cutting edge research in biophysics; serving as a 2014 Center for Disease Control Thurgood Marshall Ambassador, featured in Fortune 500 Magazine; and the student speaker for the Alabama A&M Dean’s Speaker Series.
Perseverance becomes Success

A 2003 Bessemer Tech nursing graduate and single mother, Ashley Barnes returned to Lawson State Community College during the fall of 2011 to pursue a degree in biology. Excelling academically Ashley was encouraged to become a peer tutor for bio 102, 103, and 104; chemistry; and college algebra courses for the LSCC Student Support Center/TRIO and the 2-Pi STEM Program. Epitomizing hard work and perseverance Ashley completed her degree in May 2012 with a 4.0 GPA.

“By pressing forward and staying focused on the end result, I have moved one stone per day. However, over the years, I have moved mountains!”

Ashley was also selected to participate in the summer 2013 Integrative Biosciences Research Experience for Undergraduates (IBS-REU) Program at Tuskegee University. However, a family illness prevented her from being able to participate. In spite of this setback, Ashley persisted at Lawson State and became a member of the Lawson State Ambassadors, serving as the group’s secretary. As an ambassador Ashley served the surrounding communities on numerous community service projects; in addition, Ashley joined the Lawson State STEM Scholars program, where she passionately tutored and mentored other STEM majors.

During the fall 2013 semester Ashley received several honors, the Executive Women International (EWI) Award, Adult Students in Scholastic Transition Scholarship (ASIST) Award, induction into Phi Theta Kappa Honor Society, LSCC Ambassador (with a full tuition scholarship), STEM Tutor and Ambassador of the year, and the Phi Theta Kappa transfer scholarship to University of Alabama at Birmingham (UAB). Ashley graduated from Lawson State with a 4.0 GPA in May of 2014 with honors and an associate of science degree, concentrating in biology.

Selected to become a member of UAB’s National Honor Society after only her first semester (3.8 GPA), Ashley has epitomized the meaning of perseverance. Ashley plans to complete her bachelors of Science degree in May of 2016. After which she plans to pursue a master’s of Science, focusing in research. Ashley currently serves as a mentor and inspiration to all she comes in contact with, helping them establish a strong academic foundation. She has overcome the odds and changed the trajectory for future generations by being the first person in her family to earn a college degree, much less attend a University with honors. Now, the dreams of helping the next generation fulfill their potential are within her grasp.
A Servant and a Scholar

Charles Caldwell, Jr., a graduate of Birmingham’s Ramsey High School and a pre-engineering major at Lawson State Community College (LSCC) possessed a deep desire to learn and serve others. He epitomized determination and persistence; some call it “Grit”, in his pursuit of academic excellence and service. In spite of suffering from debilitating illnesses since the age of nine Charles refused to allow them to define who he was or limit how far he would go in life. An Alabama Public Television “Young Hero,” LSCC 2-Pi STEM Program Scholar and member of the Honors College, Ambassadors, and Student Government Association, Charles became an integral part of the college, never avoiding an opportunity to serve and inspire those he came in contact with. His goal was to complete his associate’s degree in science and pursue a degree in bio-medical engineering at the University of Alabama at Birmingham and pursue a bachelor’s degree in bio-medical engineering. When called a hero Caldwell responded: 

“I feel like a hero is an o.k. name, I’m just being myself—this is who I am.”

At the age of nine Charles was diagnosed with disseminated glioneuronal tumors. The tumors spread throughout his brain and spine, requiring him to undergo chemotherapy for a year. He suffered from seizures associated with the presence of the tumors. After a year of treatment, the spread of tumors seemed to have halted, but Charles was left with neuropathy (nerve damage) in his arms and legs. By 2008, he had developed scoliosis (cuvature of the spine) and had to undergo corrective surgery, as much as was allowed due to the tumors on his spine. In November of 2011, Charles was diagnosed with hydrocephalus, a medical condition in which there is an abnormal accumulation of fluid in the ventricles, or cavities, of the brain. The condition required the placement of a shunt, a one-way valve that drains the excess fluid from the brain and carries it to other parts of the body. Later that year, an MRI indicated the growth of one of the tumors—which meant that Charles had to undergo a new regimen of chemotherapy.

In addition to these medical battles, the family (Charles, his mother, and his younger sister and brother) endured a great family tragedy. Charles’ father—Charles Caldwell Sr.—passed away within a month after being diagnosed with stomach cancer.

Charles was a member of the percussion section in the Ramsay High School Band. During his freshman year, though challenged by his illness, he was able to participate in the marching band. Band Director Anita Dye commented, “It was a joy to see him attempt and become successful at the maneuvers and routines. He serves as a wonderful example for others to follow.”

An excellent scholar, Charles also participates in the Golden Pen Club, the tennis team, and the school choir. In service to his community, Charles is a volunteer at the McWane Science Center, the community garden program, and the Brother Bryan Mission to feed homeless people. Active in the ministries of his church, Charles also serves as one of the church’s drummers.
From SEI to Mississippi State University

Hey Dr. Briggs,

Since leaving the 2-Pi Stem Program I have done various things concerning engineering. I participated in a DOW sponsored Summer Bridge Program at Mississippi State University. During that program, I had an overview on Physics, Chemistry, and Pre-calculus. I also programmed a drone using Python and analyzed the efficiency of double pipe heat exchangers using different methods of fluid flow. As one of the top students of the program, I received a scholarship from DOW that includes a CO-OP with the company. They only gave this scholarship to 6 of 48 students, and I was the only female to get it.

Since school has begun, I have gotten adjusted to the grind of college life, and I am now enjoying life at Mississippi State University.

Sincerely,

Kristen Hubbard
HBCU-UP Grant Increases STEM Completers at Lawson State

Lawson State Community College was awarded its second, five-year cycle of funding from the National Science Foundation’s Historically Black Colleges and Universities – Undergraduates Programs (HBCU-UP) Grant, providing funding for the 2-Pi STEM Program. The college has enjoyed consistent increases among STEM completers during the current and previous HBCU-UP grant cycles (see figures A and B). Although female enrollment (59%) outpaces male enrollment (41%) fewer females comprise the 12% of STEM majors at LSCC (see figures A – D). Males make up 53% of STEM degree seeking students (see figure E.)

Figure A. LSCC Completers 6 Year Comparison
HBCU-UP Grant Cycle (2005 -2010)

Figure B. LSCC Completers
Pre-HBCU (2000 -2004)
HBCU-UP Grant Cycle (2005 -2014)

Figure C. LSCC Student Enrollment by Gender 2014-2015

Figure D. LSCC STEM Student Enrollment 2014 -2015

Figure E. LSCC STEM Student Enrollment by Gender 2014-2015
Summer Enrichment Institute Pre/Post-Survey at a Glance

The 2-Pi STEM Summer Enrichment Institute recruits high school students to participate in a 4-week project-based program to enhance and enrich students’ knowledge and understanding of STEM related activities, instruction, and career pathways. Students participating in the 2014 SEI Program consisted of thirty-one high school students, 16(52%) females and 15 (48%) males; 31 (100%) identified as African American. Participants received enrichment in forensics (biology and chemistry), electrical engineering, mathematics, computer-aided drafting, and robotics. In addition, students completed a two-day American College Testing (ACT) Preparatory course. Twenty-four of the thirty-one participants completed the pre and post-survey. Likewise, a significant number of the students for both, the pre-survey 8 (33%) and the post-survey 12 (50%), indicated that they had already completed 3-4 science and mathematics courses. The following data are brief highlights from the 2014 external evaluation results (figures 1a. - 2b.)

Figure 1. I am confident I have the ability to learn the materials taught in science, technology, engineering, and mathematics (STEM) courses

Figure 2. I am confident I can do well in a STEM major

8% indicated higher confidence in STEM
12% more students believe they will do well or better than other students in STEM majors

100% of Parents strongly agree

Summer Enrichment Institute Participant (2007-2009)

Mathematics at P.D. Jackson-Olin High School in Birmingham, AL

Brittney Seay
attended Birmingham City Schools, graduating from Ramsay High School. Brittany is a graduate from Alabama A&M University, where she majored in mathematics with a concentration in secondary education. Brittn ey is currently working on a master’s degree in secondary education mathematics at the University of Montevallo in Montevallo, AL. She currently teaches mathematics at P.D. Jackson-Olin High School in Birmingham, AL. Brittany is a devoted member of 8VALU TION, where she is able to express herself musically.
Lawson State Community College was awarded its second five-year cycle of funding from the National Science Foundation’s Historically Black Colleges and Universities – Undergraduates Programs Grant, providing funding for the STEM Scholar Learning Community, the Summer Enrichment Institutes (SEI) and the Pathways College Bridge activity. The overarching goal of these three activities is to increase the number of underrepresented minorities in STEM career pathways.

**STEM Scholars**

This descriptive summary of the 2Pi-STEM Scholars Program consist of returning and recruited scholars beginning in the fall **2014 -2015 semester**. The total number of STEM scholars recruited was twenty-one, 12 (57%) males and 9 (43%) females. From the fall to the spring semester 2014-2015, 11(52%) of the original 21 STEM Scholars persisted. The lack of persistence was due to several factors: death, change of major; college transfer, and lack of academic progress. As a result, 4 additional STEM scholars were recruited; increasing the total number of STEM scholars to fourteen for the spring semester. From the remaining STEM Scholars 8 (57%) secured REU’s, 7 (50%) of those scholars accepted, 5 (71%) females, 2 (29%) males.

The 2-Pi STEM Program funded eleven undergraduate students during the **2011-2012 academic year**, 4(36%) females and 7 (64%) males; 11 (100%) identified as African American. During the **2012-2013 academic** year, seven undergraduate students were supported, 2 (29%) females and 5 (71%) males; 7 (100%) identified as African American. The **2013-2014 academic year** yielded support for ten undergraduate students, 2 (20%) females and 8 (80%) males; 10 (100%) identified as African American.

Student support for the STEM scholars was derived from the 2-Pi STEM Grant and the GA-AL LSAMP Programs. The support period spanned one full academic year from August 12, 2014 to July 30, 2015. Scholars receiving funding were required to participate in all program activities, including conferences, field trips, community outreach, field experiences, presentations, academic and leadership workshops, and peer tutoring. In addition to these activities STEM scholars were required to apply and secure a summer research experience for undergraduate (REU) students or some other substantive STEM experience involving research and/or internship.

**Summer Enrichment Institute Participants (2012 -2015)**

During the **summer 2012** SEI funded thirty-six high school students, 18(50%) females and 18(50%) males; 35 (97%) identified as African American and 1(3%) identified as Asian. The following year, **summer 2013**, supported thirty-seven high school students, 20(54%) females and 17(46%) males; 36 (97%) identified as African Americans and 1(3%) identified as Pacific Islander (Filipino). During the **summer 2014** SEI supported thirty-one high school students, 16(52%) females and 15 (48%) males; 31 (100%) identified as African American. Most
recently, the **summer 2015** SEI supported twenty-seven high school students, 15 (55%) females and 12 (45%) males; 27 (100%) identified as African American.

**Pathways College Bridge (2011-2015)**

**Summer 2014** marked the first year of the 2-Pi STEM Pathways College Bridge Program, funding 6 recent high school graduates, 3 (50%) females and 3 (50%) males, 6 (100%) identified as African American; 2 (33%) indicated computer science as their major, 2 (33%) identified psychology as their major, and 2(33%) identified biology as their major. During **summer 2015** the bridge program supported 5 recent high school graduates, 2 (40%) females and 3 (60%) males; 5(100%) identified as African Americans; 5(100%) students identified biology as their major.

**Activities, Collaborations and Presentations**

The 2014-2015 academic year yielded more than fifty-three program activities, research projects, collaborations, and presentations. These accomplishments provided STEM faculty, students, collaborators and partners opportunities to recruit, retain and enrich STEM students. In addition, program leadership disseminated best practices, research findings and expanded collaborative efforts state and nation-wide. A notable collaboration was established with the University of Illinois Chicago (UIC) as a result of a best practices Presentation at the National Conference on Race in Ethnicity 2014, Indianapolis, ID., the Associate Vice Provost for Academic and Enrollment Services, Cecil Curtwright extended an invitation to share UIC STEM and Honor College opportunities with students at Lawson State Community College. On April 25, 2015 twenty Lawson State STEM and Honor’s College students traveled to Chicago, Illinois to meet with STEM & Honors College Deans, faculty and students. Students met with admission and financial aid counselors.

**Summary**

The 2-Pi STEM Program provided funding for twenty-four Lawson State Community College STEM students, twenty-six Birmingham area high school students, six college/university interns, and five Lawson State Community College Bridge students. The students’ majors included: pre-med/biology, mathematics, pre-engineering, chemistry, and computer science. During the fall 2015-2016 academic year, the mathematics, honors, and science programs will be adding a mandatory humanities course to provide additional advising, career guidance, research, and writing development, and opportunities for guest lecturing. The humanities course will be added to all STEM and Honor College students' degree plans; becoming a mandatory course.
Intrusive Advising

The 2-Pi STEM Program has created a conceptual model (The Briggs Model, figure 4) based on the goals and objectives outlined in its proposal, this conceptual model consists of advising and mentor, research, recruitment, and enrichment opportunities for students. According to Jennifer Varney, Intrusive Advising involves intentional contact with students with the goal of developing a caring and beneficial relationship that leads to increased academic motivation and persistence (2007). Earl defines it as proactive interactions with students, with the intention of connecting with them before a situation occurs that cannot be fixed (1988). If you believe that intrusive Advising is “hand-holding” or parenting, it is not, according to Upcraft & Kramer, but rather it is active concern for students’ academic preparation; it is a willingness to assist students in exploring services and programs to improve skills and increase academic motivation (1995).

The framework of the conceptual model includes advising and mentorship, research, recruitment, and enrichment, these components radiate into projects and activities: learning communities, research experiences for undergraduates, summer enrichment institute, and College Bridge opportunities. The projects and activities are encompassed by guided pathways to success and broadening participation; emphasizing the need to increase underrepresented minorities. In spite of all the other components of the conceptual model, intrusive advising is the central force which binds the model.

Intrusive advising is action-oriented; involving motivating students to seek help when needed. Intrusive (Proactive or Intentional) advising: (mentoring; enrichment; academic enhancement, accountability, and advising; social, and economic resources, academic monitoring; progress reports; study plans; time management; social enhancement (social accountability)

Why is “Intrusive” advising needed?

- It is essential to teach students to seek help when they need it, and before it’s too late.
- **Increasing Cognitive Bandwidth** [familial, socio-economic barriers, cultural norm (racial stereotypes, gender bias)]
- **Academic self-efficacy** [Improving mathematics self-efficacy (enhanced study skills, peer support, peer tutoring, social accountability, academic accountability), faculty support, enhanced research skills, time management, academic engagement, and social/academic engagement].
2-Pi STEM Best Practices

The success of the 2-Pi STEM, promoting the recruitment and persistence of underrepresented minorities in STEM, has implemented best practices which supports the intentionality of its goal. These best practices have enhanced instructional strategies; student learning, leadership, and engagement, academic enrichment activities, and curriculum.

1. **Required Student Advisor/Mentor Contact Hours**
   a. Students are required to meet with advisor/mentor to complete academic schedules;
   b. Advisor/Mentor emphasizes 15 credit-hour (minimum) semester

2. **Cohort Format**
   a. Students complete courses in cohort format.
      i. Providing peer support;
      ii. Supporting and enhancing STEM learning community model

3. **Weekly Student Led Meetings**
   a. Emphasizing student leadership development;
   b. Students provide input regarding activities and experiences (buy-in)

4. **STEM Student Engagement**
   a. Students must commit to STEM engagement (15 - 20 hours a week).
      i. Mentor/Advisor (5 - 10 hours)
      ii. Research/Peer Tutoring (5 -10 hours)

5. **Community & Service Learning Commitment**
   a. K-12 tutoring, 4-year and business collaborations

6. **Research Commitment/Development**
   a. Students must obtain and complete summer research experience, i.e., Research Experience for Undergraduates (REU);
   b. Engage students in research related activities facilitated by mentor/advisor.

7. **Curriculum Enhancements**
   a. New boot camp (self-remediation), occurs between semesters, provides students the opportunity to retake Compass Placement Exam as a pathway to college level coursework;
   b. Bridge Program provides incoming freshman the opportunity to complete developmental coursework, gain post-secondary exposure, and develop mentor/mentee relationships during summer term.
Julian Dill
A STEM Scholar (2013-2015) majoring in biology. To date, Dill has completed two research experiences for undergraduates: Clark Atlanta University Summer Explorers (CAUSE) and the University of Alabama Community Outreach Development Reynolds Summer Science Institute Blazing to Biomedical Careers and CORD SSI-III Research Interns Program (CORD), during the summers of 2014 and 2015, respectively. Dill’s research at CAUSE, led by Dr. Conrad Ingram and Charity Burgos, “The Absorptive Removal of Methylene Blue from Aqueous Solution with Nanoporous Materials,” focused on the development of a model of a drug delivery system based on the absorption of methylene blue (representing a drug) on zeolites (representing a porous material). Dill will graduate from LSCC in December of 2015 and plans to pursue his bachelor’s degree in bio-medical engineering at the University of Alabama Birmingham.

Takeiyah Johnson
A STEM Scholar (2014-2015), majored in bio-medical science and minoring in Spanish at Lawson State Community College. Takeiyah completed her first summer research experience at the University of Alabama Community Outreach Development Reynolds Summer Science Institute Blazing to Biomedical Careers and CORD SSI-III Research Interns Program (CORD). The title of her research was “Vitamin D Receptor Is Regulated by Stress in Neural Stem Cell,” University of Alabama at Birmingham CORD Program.
Terry McCullough
A STEM Scholar (2014-2015), is majoring in chemical engineering at Lawson State Community College. Terry recently completed his first summer research experience at the University of Alabama Community Outreach Development Reynolds Summer Science Institute Blazing to Biomedical Careers and CORD SSI-III Research Interns Program (CORD). The title of his research was “Protein Expression of ATP Synthase Regulators in Pressure-overload induced Cardiac Hypertrophy,” completed in the Department of Nutrition Sciences, University of Alabama at Birmingham.

Brittney Terry
A STEM Scholar (2013-2015), majored in materials engineering and member of the LSCC Honors College, she completed her first summer research experience at Tuskegee University’s Department of Engineering. The title of her research is “Investigation into the Structural, Thermal and Mechanical Properties of Chemically Treated Jute Fiber.” Brittney, an ASCENT Scholarship recipient, will transfer to the University of Alabama, Tuscaloosa. In addition to Brittney’s academic accomplishments she served as a college ambassador and was recently honored as an emerging leader at Wiley College in Marshall, TX.

Cheyenne Law
A STEM Scholar (2014-2015), majoring pre-dentistry, completed her first summer research experience at the University of Alabama Community Outreach Development Reynolds Summer Science Institute Blazing to Biomedical Careers and CORD SSI-III Research Interns Program (CORD). Cheyenne’s research was titled “Insight of Orthodontic Treatment.” Cheyenne plans to transfer to Meharry Medical School, Nashville, TN.
Itzel Mendoza
A STEM Scholar (2014-2015), completed her first summer research experience at the University of Alabama Community Outreach Development Reynolds Summer Science Institute Blazing to Biomedical Careers and CORD SSI-III Research Interns Program (CORD). Itzel research was titled “Dv12 mutation causing variations of heart defects in DiGeorge Syndrome Patients,” Cellular and Development Integrative Biology, University of Alabama at Birmingham.

Chapman Wilson
A STEM Scholar (2012-2014), completed a research experience for undergraduates at Alabama State University’s Center for Nano-biotechnology Research. Chapman’s research led by his mentor, Dr. Vig Komal, was “Using LIBS for Nanomaterials Analyzation and Quantification.” The study focused on the laser induced breakdown spectroscopy (LIBS) technique. Chapman, also served as a college ambassador and received an associate’s degree in biology in May of 2014, currently he is matriculating at Alabama State University.

Mitchell McCreary
A STEM Scholar (2014-2015), majoring in electrical engineering, completed a summer research experience at Clark Atlanta University in Atlanta, GA., titled “Constructing an Inflation Rheometer: A Novel Instrument for Testing Commercial Plastics For The thermoforming industry.” Mitchell currently attending Auburn University pursuing a degree in electrical engineering.
Damaris Gachungi
A STEM Scholar (2012-2015) completed a research experience for undergraduates (REU) at Tuskegee’s Integrative Biosciences REU (summer 2013). The title of her research presentation was “High Through-put Drug Screening for Metastatic Cancer.” As a requirement of the 2-Pi STEM Program, all 2-Pi STEM scholars must participate in an off-campus summer research experience for undergraduates (REU). Damaris presented at the Annual Biomedical Research Conference for Minority Students (ABRCMS) on November 13, 2013 in Nashville, TN, the Emerging Researchers Conference in Washington D.C. February 20-22, 2014. Damaris has most recently completed a summer research experience at the University of Virginia (Summer Research Experience). The title of her research was “Association of calcium and insulin secretion in hyperglycemia”; Dr. Craig Nunemaker, Mentor. Damaris currently attends Hampton University’s school of Pharmacy.

Randall King
A STEM Scholar (2014-2015) and pre-veterinary major, served as Lawson State Community College’s Student Government President and member of the LSCC Honors College. Randall was awarded the Ethical Leader Award during Wiley College’s Student Leadership Conference in Marshall, TX. Randall also presented a research poster at the Georgia-Alabama Louis Stokes Alliance for Minority Participation 2015 Spring Symposium at the University of West Georgia. The poster of titled “Veterinarian Medicine: A Look into Animal Science.” Randall currently attends Tuskegee University, majoring in pre-veterinary sciences. Randall is currently attending Tuskegee University majoring in veterinary sciences.
Sharlicia Gray  
A STEM Scholar (2014-2015) and chemistry major, was a member of the Lawson State Community Honor’s College completed a undergraduate research experience at the University of Alabama Birmingham (UAB) titled “Influence of Glycogen Synthase Kinase 3 on Metalbolic Gene Expression.” Sharlicia currently attends UAB majoring in chemistry with a minor in Biology.

Adrienne Ashberry  
A 2009-2011 SEI participant is a senior at Alabama Agricultural & Mechanical University majoring in biology (pre-med). Adrienne plans to pursue a career in medical research upon graduation.

Walter Agee  
A STEM Scholar (2014-2015), is majoring in physical therapy at Lawson State Community College. Walter was a 2013 SEI participant and will graduate in May of 2016.

Tiaria Trammell  
A STEM Scholar (2014-2015), graduated from Lawson State Community College, where she majored in biology. Tiaria served as the student government association’s sophomore class treasurer, member of Phi Theta Kappa Honor Society, and a peer tutor for Student Support Services. She is currently attending Alabama Agriculture and Mechanical University in Huntsville, AL.

Eric Yarborough  
A STEM Scholar (2013-2015), was a member of the Lawson State Community College Baseball Team and a pre - chemical engineering major. In addition Eric was honored as a 2015 Arthur Ashe, Jr. Sports-Scholar Awardee in Diverse Issues in Higher Education. Eric is currently attending Alabama Agricultural & Mechanical University in Huntsville, AL.
Alanna Payton
A STEM Scholar (2014-2015), completed her associate of science degree in biology from Lawson State Community College in May of 2015. Alanna’s research experience for undergraduates (REU) at Tuskegee’s Integrative Biosciences REU (summer 2014) allowed her to complete research in molecular epidemiology. Alanna now attends Tuskegee University majoring in veterinary medicine.

Kristofer Marshall
A STEM Scholar (2013-2015), is majoring in respiratory therapy and plans to transfer to Meharry Medical school. Kristofer is also a member of the student government association.

Marsalis Roper
A STEM Scholar (2013-2015), majored in biology. Marsalis was an active member in the student government association and college ambassadors; currently he attends Samford University pursuing a pre-medicine degree.

Kiera Fletcher
A STEM Scholar (2014-2015), is majoring in graphical information systems (GIS) at Lawson State Community College. Kiera plans to pursue her bachelors degree at the University of Alabama at Birmingham

Charles Jennings
A STEM Scholar (2014-2015), majored in pre-chemical engineering at Lawson State Community College. Charles transferred to Auburn University and now pursues a bachelor’s degree in chemical engineering.

Sonitra Dukes
A STEM Scholar (2013-2015), is majoring in pre-chemical engineering at Lawson State Community College. Sonitra plans to transfer to the University of Alabama Birmingham.

Warren Cotton
STEM Scholar (2014-2015), is majoring in computer science at Lawson State Community College. Warren plans to transfer to the University of Alabama Birmingham.
Justin Bryant
A Lawson State Community College STEM Scholar (2013-2015), majored in physical therapy and was an active member of the honors college. Justin currently attends Alabama State University majoring in physical Therapy.

Latorius Carlisle
A Lawson State Community College STEM Scholar (2014-2015), is majoring in computer science. Latorius was an active member in the student government association and plans to pursue a bachelors degree at Alabama Agricultural & Mechanical University in Huntsville, AL.

Mylz Jamison
A Lawson State Community College STEM Scholar (2014-2015), is majoring in pre-electrical engineering and a active member of the college ambassadors and student government association. Mylz plans to transfer to the Univesity of Alabama at Birmingham.

Lakeisha Ringo
STEM Scholar Participant (2012-2014) majored in mathematics at Lawson State Community College. Presidential Scholarship recipient, Lakeisha has now completed a bachelor of science degree in mathematics from Alabama State University in Montgomery, AL.

Simone Nelson
A Lawson State Community College STEM Scholar (2014-2015), is a pre-medicine major. Siomone was an active participant in the student government association and now attends the University of Alabama, Birmingham.

Charles Caldwell
A Lawson State Community College STEM Scholar (2013-2015) and honor student, majored in bio-medical engineering. Charles was also active in the student government association and college ambassadors. His academic excellence and persistence inspired peers, faculty, staff, and administration.

Jeff Hill
Is currently employed with Fiat Chrysler Group as Power and Signal Distribution Engineer. He began his career at Chrysler as an intern in 2012 while attending Alabama A.M. University. A 2009 Lawson State Community College mathematics graduate, Jeff is currently completing a master’s of engineering degree in industrial management at Oakland University.

Brittney Seay
Is currently employed at Jackson Olin High School, Birmingham AL, as a Math Teacher, instructing pre-calculus, pre AP and Geometry and pre AP algebra II with Trigonometry. Brittney was a 2008 and 2009 Summer Enrichment Institute participant. Brittney plans to pursue a graduate degree in mathematics at the University of Alabama at Birmingham.
Ashley Barnes
A 2014 STEM Scholar and Lawson State Community College graduate in biology, attends the University of Alabama Birmingham pursuing a bachelor’s of biology degree with an emphasis in research. Ashley has participated in the Collaboration for Excellence in Science and Math Education (CESAME) program for the past two summers. Ashley’s goal is to become a researcher and college professor.

Ashley Johnson
A graduate of George Washington Carver High School (2009) and Alabama Agricultural & Mechanical University (2014), was a Summer Enrichment Institute participant from 2006-2009. Ashley received her bachelor’s degree in industrial engineering and currently serves as an Industrial Engineer with Calsonic Kansei Corporation (Automotive), Murfreesboro, Tennessee.

James Odiabo
A 2011-2013 STEM Scholar and graduate of Lawson State Community College, currently attends Auburn University majoring in computer science. Odaibo plans to pursue a master’s degree in computer science at Auburn University.

Arielle Carter
A 2010-2013 Summer Enrichment Institute (SEI) participant is currently attending Auburn University Montgomery pursuing a degree in physical science. Arielle has recently completed research abroad in Costa Rica and has served as an SEI Intern for the past 2 years.

Cetivious Turk
A STEM Scholar (2011-2013), completed her required research experience at the University of Alabama at Birmingham (UAB) Collaboration for Excellence in Science and Math Education (CESAME) Program. Turk learned how to teach science and mathematics to k-12 students during the summer of 2013. Turk is currently enrolled at UAB seeking a degree in mathematics and education; funded by CESAME.

Eddie Carr
A STEM Scholar (2008-2010), received an associate of science degree in mathematics and certifications in computer networking and programming from Lawson State Community College. Eddie gained tremendous confidence in his mathematics ability, completing a bachelor of science degree in mathematics at Stillman College in 2013. Eddie is now employed in the information technology industry as an IT Specialist.
Oscar Coachman
A 2-Pi STEM Scholar (2012 - 2014) was accepted and attended the Harvard School of Public Health Center for Communicable Disease Dynamics Annual Outreach Conference to Increase Diversity in Mathematical Modeling & Public Health. Conference participants were required to have a 3.0 or higher grade point average, demonstrate an interest in public health, quantitative sciences, and be member of an underrepresented minority group. The Center’s work is to foster the development of students, new investigators, and emerging scientists in the field of infectious disease modeling through education, mentoring, and financial support. The Center is especially focused on supporting students & scientists from under-represented groups. Oscar, chemistry major, now attends the University of Alabama and plans to pursue a master degree in public health. Oscar’s career goal is to seek a career with the Centers for Disease Control.

Nicole Pompey
A STEM Scholar (2008-2010), originally a pre-education major, completed an associate of science degree in mathematics at Lawson State Community College in May of 2010. Nichole was a participant in the National Science Foundation (NSF) Alabama Louis Stokes Alliance for Minority Participation (ALSAMP) at the University of Alabama Birmingham (UAB), where she completed her bachelor’s and master’s degrees in mathematics, 2012 and 2014, respectively. Nicole is currently an adjunct mathematics instructor at Lawson State, Jefferson State, and Samford University. Nicole research was "Visualization and Processing of Higher Order Descriptors for Multi-Valued Data", edited by Ingrid Hotz and Thomas Schultz, Springer, pp. 93-106, 2015. She won 1st place in the graduate student Oral presentation competition at the 2014 Emerging National Researchers Conference.

Naila Jama Jaraysi
A STEM Scholar (2006-2007), received her associate of science degree in mathematics from Lawson State Community College (2007). Jaraysi went on to obtain her bachelors and masters of science in mathematics from the University of Alabama Birmingham (UAB) in 2009 and 2011, respectively. Currently Naila serves as an adjunct mathematics instructor and tutor at Lawson State, Jefferson State and Samford University.

DeZell Plump
A Summer Enrichment Institute (SEI) participant (2006-2009) is a graduate of Alabama A & M University in Normal, AL. Mr. Plump majored in Biology and is currently teaching biology and physical science at Restoration Academy Secondary School in Fairfield, AL. Recently Mr. Plump has served as SEI’s program coordinator.

Juan Valdez Givan
A STEM Scholar (2013-2015), majored in mathematics, served on Lawson State Community College’s Baseball Team as short stop and captain. Juan currently attends Nicholls State University, Thibodaux, LA Majoring in Computer Science with a minor in mathematics.

Johnae McGee
A STEM Scholar (2014-2015), is majoring in chemical engineering at Lawson State Community College. Johnae is a member of the student government association and plans to transfer to the University of Alabama at Birmingham.
Tyrone Lewis  
A STEM Scholar (2007-2009), received his associate of science degree in mathematics from Lawson State Community College in 2009. After transferring to the University of Alabama Birmingham (UAB) Tyrone completed his bachelor degree in math education (2013) and is now teaching mathematics at W.J. Christian K-8 School in Birmingham, AL. Tyrone plans to pursue a graduate degree in

Jerryin Medley  
A STEM Scholar (2006-2008), earned an associate of science degree in biology from Lawson State and a bachelor of science in environmental science from Alabama A & M University in Huntsville, AL with financial support from the United States Department of Agriculture. The scholarship provided Jerryin the opportunity to engage in ongoing research in the biological science’s microbiology laboratory. Jerryin obtained his master of science degree in environmental science from Samford University and currently works for the Bessemer City Environmental Management Department.
Creating New Possibilities for Teaching and Learning in STEM

Lawson State Community College is creating new possibilities to broaden participation in STEM among its students, charting a bold future framed with intention. Lawson State understands that there will be projected STEM job growth of 18.7% between 2010 and 2020, compared to 14.3% for all occupations, according to the U.S. Bureau of Labor Statistics. Accepting these trends, Lawson must be intentional in her efforts to provide students with the necessary skills, experience, and mentoring to compete in tomorrow’s economy. Our efforts will fuel the regional, national and world-wide economic growth, securing a prosperous and equitable future for generations to come. To this end, STEM educators, administrators, policymakers, industrialist and stakeholders must develop and implement innovative models to strengthen the STEM pipeline locally and nationally, using all necessary GRIT to seal existing leaks.

As the relevancy of community colleges become more evident, we realize that they are the obvious vehicle by which to recruit, train, and insert students into the STEM workforce. We know that nationally more 46% of students receiving bachelor’s degrees have attended a community college during their academic career (Chen, 2013); with at least a one third expressing interest in a technical or STEM field. We also know that nationally 69% and 48% of students entering STEM majors at the associates and bachelorette levels respectively, do not persist (Chen, 2013); many of which are women, Black, or Hispanic. As the nation’s population shifts it is projected that by 2044, more than half of all Americans are projected to belong to a minority group (Colby & Ortman, 2015). Lawson State’s determination to advance STEM, along with its stakeholders and collaborators has established it as a leader in STEM recruitment, retention, and completion, reflecting a 24% increase in STEM student enrollment from 2004–2014; a 43% completion and transfer rate, 12% higher than the national average and nearly three times the overall graduation average among Alabama community colleges. In addition, STEM majors have steadily increased, representing 12% of student enrollment at Lawson State (2014).

SUGGESTED CITATION


CONTACT

Lawson State Community College
STEM Program
3060 Wilson Road, SW, Birmingham, AL 35221
Works Cited


---

*STEM Scholar Profiles and Highlights
Creating New Possibilities for Teaching, Learning, and Loving STEM